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# The Hidden Value of Adult Informal Care in Europe

## Abstract

The hidden value of adult informal care (IC) refers to the unaccounted value of informal care in overall costs of long-term care (LTC) estimates. This paper estimates the net wellbeing value of adult IC in Europe, drawing on a wellbeing-based methodology. We use an instrumental variable strategy and a longitudinal and cross-country dataset to estimate the causal effect of the extensive and intensive margin of caregiving on subjective wellbeing. Finally, we estimate the so-called compensating surplus (CS), namely the income equivalent transfer to compensate for the net disutility of caregiving. We find that IC reduces average subjective wellbeing by about 1% compared to the mean (6% among co-residential caregivers). Relative to a country's Gross Domestic Product (GDP), the value of informal care ranges between 4.2% in France and 0.85% in Germany, which is inversely correlated with the country's share of formal LTC spending and leads to reconsidering LTC regimes. The average CS per hour of IC ranges between 9.55 €/hour, ranging between 22 €/hour in Switzerland and 5 €/hour in Spain. Finally, we also find that long-term CS is smaller than short-term CS.

JEL-Codes: I180, J170, J180.

Keywords: informal care, wellbeing methods, the value of time, caregiving, daughters, life satisfaction.

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## **1. Introduction**

In most European countries, informal care (IC), namely non-professional care aimed at supporting individuals with their basic and instrumental activities of daily living, is the most common type of support provided to older adults (Rocard and Llena-Nozal, 2022). However, while informal carers may receive some government and social support—such as training, financial assistance, and respite services—they generally do not enjoy the same level of protection as those in formal employment (Triantafyllou et al., 2010). Hence, the social value of the IC provided by them is typically “hidden” from the financial long-term care expenditure estimates.

This paper examines the hidden value of IC in Europe, both in terms of its total value, as well as the value per hour of care supplied by caregivers. Given that the value of IC is hidden, a financial perspective to measuring the costs of informal care will provided a largely biased estimate. Hence, a societal perspective ought to be adopted (Basu and Meltzer, 2005). This approach recognizes that the welfare impact of informal care (IC) extends beyond the direct effects on the care recipients to include indirect effects on caregivers (Bobinac, 2011). This paper draws on nationally representative individual data to estimate the economic value of informal caregiving, based on its impact on caregivers' life satisfaction, which considers both the negative and, at times, potentially positive effects of caregiving to the caregiver, allowing for a comprehensive consideration of the impact over both the short and long term.

Informal caregiving can be costly to caregivers as they tend to spend less time on paid work and leisure (European Commission, 2021), exhibit increased morbidity (Vitaliano et al., 2003), stress (Bugge et al., 1999), depressive symptoms (Hajek et al., 2021, Pirraglia et al., 2005), and anxiety (Pirraglia et al., 2005 (Sklenaroya et al., 2015). Caregivers generally earn lower wages than non-caregivers (Colombo and Mercier, 2012)

and tend to retire earlier (Lilly et al., 2007). Furthermore, caregivers' burden entails opportunity costs, and externalities to family members (Bobinac et al, 2010, Hurley and Mentzakis, 2013). However, under certain circumstances, IC can be beneficial to caregivers wellbeing (Brouwer et al., 2005) if they benefit from the experience of providing IC, either in terms of fulfilment of a social norm or in terms of personal development, as well as from the strengthening of emotional with the care receiver (Butcher et al., 2001; Quinn et al., 2012; Joling et al., 2016).

In estimating the economic value of informal care, the estimation method employed should be sensitive to caregiver preferences (de Meijer et al., 2010). Hence, we estimate the net effect of caregiving on individuals' utility, known as a welfare or social perspective to care valuation. The consideration of such effects is important insofar as it might give rise to significant differences in the welfare effects of different long-term care financing designs (Hoefman et al., 2013) and consider a wider range of potential welfare effects of caregiving.

We contribute to the literature as follows. First, the primary contribution of this study is the application of a well-being approach to the valuation of informal care. We draw on the wellbeing methods and longitudinal data to estimate the compensating surplus (CS) required to restore informal caregivers to the same level of life satisfaction as non-caregivers both in the short (annual income transfer) and long-term (2007-2020), alongside we estimate the cost per hour of care for 10 European countries, across gender and co-residency status. Second, unlike previous studies, we draw on an instrumental variable strategy to estimate the causal effect of the provision of IC on the well-being of caregivers and co-residential caregivers. This is important as otherwise the estimates can be biased by the presence of omitted variables and reverse causality. Third, we show evidence of the robustness of our estimates across different datasets, specifically SHARE

and the European Quality of Life Survey. Fourth, a novelty of the paper lies in the use of informal care hours from wave 8 of SHARE to calculate an estimate of the value of IC in terms of €/per hour. Previous studies focus on specific illnesses or provide aggregate estimates instead.

We find evidence of an average 7 percentage point (pp) reduction in life satisfaction (42pp for co-resident carer) of IC provision. Our estimates suggest that the individual short-term compensating surplus (CS) amounts to €13,101 on average (with a maximum in Spain at €28,196 and a minimum in Sweden at €7,230). When compared to GDP per capita, significant heterogeneity is observed, ranging from a maximum of 4.22% for France and Spain to a minimum of 0.85% for Germany and 1.27% for Sweden. These estimates are in line with previous studies suggesting that the replacement costs of IC in Europe are at 3% to 4% of GDP (Ekman et al, 2021).

The long-term CS for the period 2007-2020 is estimated at €211,365 (ranging from €350,367 in Spain and €279,499 in France, and €116,646 in Sweden and €148,735 in Germany). These estimates suggest that caregivers may, experience caregiving as partially rewarding as they engage in informal care for longer periods. Lastly, the CS per hour of care is estimated at €9.55 (ranging between Switzerland at €22.09 per hour and Spain at €4.97 per hour).

Next, we discuss the background, including the main issues at stake in the different methods for estimating the costs of IC and the literature on the effects of caregiving on life satisfaction. Section three describes the data used, section four reports the results, heterogeneity and robustness and a final section concludes.

## 2. Background

*Methods for informal care valuation.* The elicitation of the social value of IC involves valuing intangible losses such as fatigue, emotional burden and the impact on the caregiver's work and social life. However, when valuing the time spent on informal care (IC), a key challenge is determining how to quantify the value of that time. A challenge includes the difficulty of separating care activities from other common duties when making such estimations. The literature typically considers two ways of approaching this problem. First are the so-called “revealed preference” methods, which assume that the costs of IC can be inferred by observing the behaviour of individuals in markets closely related to the ‘good’ of interest, which include proxy good and opportunity cost approaches. However, such methods do not directly consider individual preferences. Instead, they assume that such preferences are inferred from choices made by caregivers. An alternative approach lies in the use of “stated preference” methods, which elicit respondents' preferences regarding hypothetical market scenarios (e.g., contingent valuation method, conjoint analysis, discrete choice experiments and the well-being method).

Among revealed preference methods, the “proxy good” method assumes that the time invested in care is valued through the cost of hiring the services of a professional caregiver in the market. The main objection to this method is that the value assigned to care bears little relation to the value of the inputs consumed. Similarly, the opportunity cost method estimates the monetary value of the best alternative use of the time spent caring for the cared-for person. However, such monetary values largely depend on the alternative use the caregiver wishes to make of the informal care time provided (e.g., leisure, paid or unpaid work time). A practical advantage is that the caregiver has to



distinguish only between the different types of normal uses of the time she sacrifices to supply care. However, as discussed in Posnett and Jan (1996), the shadow price of unpaid work may differ from its marginal wage. Furthermore, it is challenging to assign an appropriate wage for some groups of carers who might be retired or never employed. Hence, both methods are essentially incomplete cost-of-time methods that tend to ignore the preferences of caregivers and care recipients (Van den Berg et al., 2005a).

Given these limitations, alternative stated methods are recommended for the monetary valuation of informal care, including contingent valuation (Van den Berg et al., 2005c; De Meijer et al., 2010) as well as welfare valuation methods (Van den Berg and Ferrer-i-Carbonell, 2007) such as the methods used in this paper. Alternatively, one can use conjoint analysis (Van den Berg et al., 2008) and discrete choice experiments (Mentzakis et al., 2011) which draw values from hypothetical rather than actual scenarios.

The contingent valuation method simulates a hypothetical market in which the individual values his/her welfare in terms of the income he/she would be willing to forgo in the face of changes in his/her welfare level. Preferences are elicited by comparing two states of nature (initial and final) that change an individual utility function. Thus, in the valuation of informal care, the contingent valuation method asks individuals what the maximum willingness to pay (WTP) or the minimum willingness to accept (WTA) to provide a given or additional amount of informal care to the dependent person. Berg et al. (2005b) and de Meijer et al. (2010) argue that it is more appropriate to use WTA rather than WTP when subjects are asked to value a potential welfare loss, whereas WTP is more appropriate when subjects value a potential welfare gain. The drawback of this method includes the potential for protest responses and double counting if the caregiver considers both his/her preferences and the health of the person being cared for (Van den Berg et al., 2004). However, an advantage is that considers the value of improved health

and well-being independently of the impact on productivity, and considers indirect costs as well as intangible costs. Protest responses can be reduced by using conjoint analysis or discrete choice experiments, where individuals make choices from a sequence of hypothetical scenarios, which are defined in terms of different attributes and levels<sup>2</sup>. Compared to the contingent valuation method, they have the advantage that in these techniques, respondents do not directly elicit a monetary value. Instead, values are inferred from trade-offs between different dimensions of the presented scenarios, which ameliorate the risk of strategic and protest responses (Van den Berg et al., 2005a). However, one of the main limitations of these two methods is that they do not provide individual-level valuations (Lancsar et al., 2013) and can be cognitively demanding.<sup>3</sup>

Finally, the well-being method used in this study assesses the total impact (costs and benefits) of IC on the caregivers' well-being (Van den Berg and Ferrer-i-Carbonell, 2007). The value assigned to an hour of informal care represents the monetary compensation required to maintain the same level of well-being of the informal caregiver.<sup>4</sup> An important advantage of well-being methods is that data collection typically experiences minimal non-response, targets a sample of informal caregivers, and does not require prior identification of these caregivers, thus avoiding potential sample selection bias. Our contribution in this field is to use the latter welfare assessment method but, in addition, and unlike previous studies, we consider the endogeneity of caregiver selection. More specifically, we draw on longitudinal data from several countries, and we use an

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<sup>2</sup> In conjoint analysis studies, respondents are usually asked to rank or rate the scenarios presented, and in the case of discrete choice analysis, respondents are requested to choose between different scenarios.

<sup>3</sup> For example, in a conjoint analysis study for the monetary valuation of informal care performed by Van den Berg et al. (2008), only 26.6% of respondents completed the questionnaire, and the response rate obtained in a discrete choice analysis study by Mentzakis et al. (2011) was only 20%.

<sup>4</sup> Van den Berg and Ferrer-i-Carbonell (2007) found lower values for an additional hour of informal care with the well-being method than with willingness to accept. According to these authors, this could be due to the fact that the contingent valuation method does not adequately capture the positive aspects associated with informal caregiving.

instrumental variable (IV) approach to correct for the potential endogeneity of IC on subjective wellbeing estimates.

*Subjective well-being and informal care.* Next, we discuss the selection of variables that can mediate the association of IC and life satisfaction. Indeed, life satisfaction is one of the most frequently adopted proxy indicators for measuring well-being (Diener et al., 2002) and is considered a good predictor of the level of well-being (Arpino et al., 2018). Well-being is a multidimensional concept that (i) captures both perceived (e.g., social norm fulfilment) and objective (e.g., income, hour of care) components (Orgeta et al. 2013) and (ii) allows for the simultaneous consideration of multiple dimensions of well-being, hence allowing comparisons between of caregivers and non-caregivers (George and Gwyther, 1986).

The supply of care give rise to a significant burden on caregivers wellbeing, even though caregiving plays an essential role in enabling older individuals to age in place (Mitchell et al., 2015; Willemse et al., 2016). As a result, caregivers tend to report lower levels of life satisfaction compared to non-caregivers (Ha et al. 2008; Wagner and Brandt, 2018, Pearlin et al., 1990, Costa-Font et al, 2022. However, at times, the provision of care can give rise to both beneficial and detrimental effects Lin et al., 2012; Wang et al., 2018), and such effects arise simultaneously (Pinquart and Sörensen, 2005), and are likely not to remain stable over time, as caregivers might adapt to their caregiving role in the longer-term (Sugihara et al., 2004; Koerner and Kenyon, 2007).

*Gender differences.* Gender differences are important as women are more likely to become caregivers (Billaud and Gramain, 2014), though female caregivers' life satisfaction increases over time, and caregiving women report significantly higher levels of life satisfaction than caregiving men (Bookwala, 2009).

Some estimates suggest gender-specific differences in caregiving tasks that might influence the effects of IC on wellbeing. Indeed, male caregivers are more likely to perform more instrumental tasks while female caregivers are more likely to provide personal care and tasks with a more intense emotional component (Carroll and Campbell, 2008). Furthermore, some evidence indicates a greater willingness of women (especially daughters) to delegate part of care to paid formal caregivers and to retain the roles of organizers and supervisors (Da Roit, 2007).<sup>5</sup> However, previous literature is split with regard to the differential impact of caregiving on caregiver well-being. Some studies show a greater burden on female caregivers (Garlo et al., 2020; Kim et al., 2012), while others find no significant differences (Rosdinom et al., 2013).

The life satisfaction of spousal caregivers tends to be lower than that of non-caregiving spouses (Lu et al., 2015; Di Lorito et al., 2018). Raschick et al. (2004) compare rewards (feeling more life-appreciation or self-satisfaction) with costs (fatigue, lack of time for oneself, feeling overwhelmed), finding that women bear greater costs than men and that sons/daughters experience greater rewards than husbands/wives.<sup>6</sup>

*Care receivers' need.* There is no agreement on which is more *burdensome* for the caregiver's wellbeing, the care receivers' behavioural symptoms (Gallagher et al., 2011) or their cognitive or functional decline (Zucchella et al., 2012). Other predictors of lower caregiver well-being are caregiving hours (Vaingankar et al., 2016), co-residence with the dependent person (Kim et al., 2012), lack of support from other informal (Galvin et al., 2010) or formal caregivers (Zarit et al., 2011), scarcity of economic resources (Robinson et al., 2009) and lower educational level (Navaie-Waliser et al., 2002).

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<sup>5</sup> This change is not based on greater participation of men in caregiving tasks, but rather on structural factors (increase in female labor participation) and social factors (filial feelings of obligation to provide care).

<sup>6</sup> Conde-Sala et al. (2010) document evidence of the following ordering of caregiver burden from lowest to highest: husbands, wives, daughters, and then sons.

*Effect of past experiences over life satisfaction.* Life satisfaction during adulthood is affected by experiences during childhood (Frijters et al., 2014). Grossman's (1972) model considers that child development does not occur as a cumulative function of family and environment, so that skills acquired in each period have a diminishing effect as the individual ages. However, recent evidence reveals that skill formation technology follows a linear process and that childhood events may be relevant in earlier and later stages of adulthood (Case et al., 2005; Cunha et al., 2010).

Among these adverse events, some features of a child's living environment may underpin trauma or chronic stress within the first 18 years of life (Hughes et al., 2017).<sup>7</sup> Similarly, adverse events experienced during childhood can have a long-term effect (Tani et al., 2016), increasing the likelihood of depression, anxiety, behavioural disorders, personality disorders, substance abuse, high-risk behaviours and suicide (Afifi et al., 2010) and thus, resulting in lower life satisfaction (Mersky et al., 2013)<sup>8</sup>. In our analysis, we consider some adverse events such as malnutrition during childhood, since exposure to hunger in early life has been found to increase the risk for chronic disease and multimorbidity later in life (Fall, 2013), as well as the likelihood of being overweight and depressed in adulthood and old age (Cui et al., 2020).

### **3. The Data**

Data come from the seven "usual" waves of SHARE (1, 2, 4, 5, 6, 7 and 8), covering the period 2004-2020, and wave 3, also known as SHARELIFE, collected in

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<sup>7</sup> These include household dysfunction (divorce, death of a parent, not living with biological parents, parental alcohol or drug use, parental illness), abuse (emotional and physical), financial stress (scarcity of resources, lack of heating), having experienced war (forced displacement, lack of food).

<sup>8</sup> Low socioeconomic status during childhood is associated with economic stressors, limited social resources, physical symptoms in adulthood (Bromberger et al., 2017), insufficient medical and health resources in middle and old age (Sha et al., 2018) and a higher incidence of depressive symptoms in adulthood (Mäkinen et al., 2006; Sheikh et al., 2016).

2009, which refers to a special wave with retrospective life and labor market information.<sup>9</sup> Hence, given that cannot include the countries that joined SHARE after wave 3, we only have records of residents in 10 countries (Austria, Belgium, Czech Republic, Denmark, France, Germany, Italy, Spain, Sweden and Switzerland). Hence, we require that all individuals participate in regular waves 2, 4, 5, 6, 7 and 8, and in SHARELIFE to report retrospective information (which we will consider as invariant explanatory variables). However, the main advantage of SHARE is that it combines information on income, education, health status and family characteristics (current and retrospective)<sup>10</sup>.

Given that we attempt to retrieve a measure of long-term income, it is important to maximise both the number of observations and to ensure the use of standard measures across individuals. The sample consists of 7,368 individuals and 44,208 observations distributed as follows: 66.59% non-caregivers (55.88% non-caregivers and non-care recipients; 11.71% care recipients) and 32.41% caregivers (6.25% coresident caregivers and 27.92% non-coresident caregivers) (see Table A1 for a detailed description).

*Dependent variable.* Life satisfaction is the outcome of the process of an individual's adaptation to his or her environment and reflects the degree to which he or she perceives that his or her aspirations (or goals) and achievements have been fulfilled (Fugl-Meyer et al., 2002). Life satisfaction is assessed with the following question, “*All things considered, on a scale of 0 to 10, where 0 denotes not satisfied at all and 10 denotes*

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<sup>9</sup>The data have shown to be eliciting reliable information referring to the past. Havari and Mazzonna (2011) and Garrouste and Paccagnella (2011) have found that interview techniques that first start with the most immediate events and then delve into more distant domains in time lead to a small recall bias. On the other hand, combining data from administrative files does not guarantee that the result is of better quality, due to mismatch problems (Kapteyn and Ypma, 2007; Meijer et al., 2011).

<sup>10</sup> In contrast, Weis (2012) utilized retrospective data alone (SHARELIFE) to estimate lifetime earnings, drawing on respondents' recollections of earnings throughout their entire employment history. In our study, income estimates are less affected by recollection bias as self-reported income refers to the latest wave of SHARE.

*completely satisfied, how satisfied are you with your current life?*". The respondents were asked to point to their answers on a visual analogue scale.

*Informal caregiving.* We define a coresident caregiver as a binary variable that takes the value 1 if it responds affirmatively to the question "*is there someone living in this household whom you have helped regularly during with personal care, such as washing, getting out of bed, or dressing?*", and 0 otherwise. Similarly, non-residential caregiving is measured as a binary variable that takes the value 1 in the affirmative to the question: "*have you personally given any kind of help listed on this card to a family member from outside the household, a friend or neighbour?*", and 0 otherwise. In this case, there is a small limitation in the definition of the question since only informal support in personal tasks is contemplated, but not in household tasks.

Figure A1 in the Appendix displays the density function of life satisfaction (LS) of caregivers and non-caregivers stratified by gender. We observe that the density function for male and female caregivers is flatter and shifted to the left relative to that of non-caregivers. Comparing the four groups, the highest satisfaction corresponds to male non-caregivers (and non-care recipients), while the lowest satisfaction corresponds to female caregivers.<sup>11</sup>

Figure A3 in the Appendix displays the distribution of the sample by wave and type of caregiving status (see Appendix A for comments). Table A3 reveals that the country with the highest percentage of caregivers is Denmark (44.84%), compared to only 18.6% in Spain. The opposite is true when we look at co-residential caregivers (8.82% in Spain and 4.10% in Denmark).

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<sup>11</sup> Consistent with a detrimental overall effect of IC on LS, Figure A2 suggests a lower LS of non-coresident female caregivers, which reveals a difference of 0.76% (Table A2), and especially large differences in certain countries: -3.60% in Italy, -5.02% in Czech Republic and -5.64% in Spain.

*Current income and long-term income.* To estimate a measure of long-term income, we use the methodology proposed by Weis (2012). When we cannot observe the individual income in the intermediate years between each two waves<sup>12</sup>, we followed the same procedure: (i) income estimates were retrieved using linear imputation when individuals receive the same source of income in two consecutive waves (e.g., retirement pension) and (ii) when individuals retire between two waves, we identify the month and year they retire and the earnings from the wave in which they were employed until retirement, and their retirement pension afterwards. We eliminate the effect of outliers in this distribution by censoring observations that are above the 99<sup>th</sup> and below the 1<sup>st</sup> percentile. Finally, we estimate the accumulated income over the entire period 2007-2020 discounted at an interest rate of 2%.<sup>13</sup> More specifically, we attain the long-term individual income (2007-2020 adjusted by purchasing power parity (PPP) in 2020 base).<sup>14</sup>

*Endogeneity of income.* In estimating life satisfaction determinants, an emerging problem in the literature refers to the endogeneity of income. Individuals who are more satisfied with their lives tend to have higher incomes, and time-varying factors can lead to both higher satisfaction and higher incomes (Clark et al., 2008; Gardner and Oswald, 2007). There are several reasons to believe that the impact of income on life satisfaction is downward biased due to endogeneity, and this would lead to inaccurate estimates of compensation surplus (Clark et al 2008).

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<sup>12</sup> More specifically for each wave, SHARE provides information on individual income divided into the following categories: labor income, unemployment benefit, retirement pension, disability pension, social assistance and other benefits. This allows calculation of the current individual income expressed in PPP2020.

<sup>13</sup> Brenner (2010) and Weiss (2012) also assume a constant discount rate of 2%.

<sup>14</sup> Figure A4 and A5 reveal the evolution of long-term individual income (PPP2020) over the period 2007-2020, and Figure A6 displays the distribution of long-term income (accumulated over the period 2007-2020) by sex and caregiving status. Similar, Figures A7 and A8 show the distribution of long-term income (2007-2020; PPP2020) by sex and caregiving status (see Appendix A for comments).



We consider a number of instruments to address this issue. Bayer and Juessen (2015) found that long-term changes in income have significant and sizable positive effects on life satisfaction, in contrast to short-term shocks. Howley (2017) addressed this question using parental education as an instrument for earnings. However, parental education is likely to affect well-being through a variety of other channels, such as social networks, wealth, or expectations. Lachowska (2017), using an economic stimulus tax rebate implemented in the U.S. in 2008, found significantly positive and robust effects of income on affect, but not statistically significant effects on life satisfaction. Finally, McNamee and Mendolia (2019) used as an instrument whether an individual had been affected by a positive income shock in the next 12 months. Other variables instruments for lagged income include lagged assets and holdings (Fields et al. 2003) and lagged expenditures (McCulloch and Baulch 2000).

Our instruments refer to the current income from the partner alongside the current income from other household members both adjusted by purchasing power parity in 2020 (PPP2020 and in logarithms). The intuition behind these instruments relies on previous studies (Luttmer, 2005; Dolan and Metcalfe, 2008a), which have drawn on the positive externalities between human capital and education (Benham, 1974). When we estimate short-run values, our instruments are expressed in PPP2020, whilst long-run estimates are retrieved following a linear imputation procedure to obtain the entire 2007-2020 sequence and sum by updating with a 2% interest rate. Furthermore, in section 6 (Robustness checks) we propose alternative instruments following Bartik (1991). Table A4 reports descriptive statistics for time-invariant and time-varying variables.

*Time-invariant explanatory covariates* (constant across all waves). We consider controls related to respondents' childhood and adolescence since adverse events experienced during childhood have been shown to impact health status and life

satisfaction in adulthood: (i) happiest period in life, period with most stress, period with worst health, period with greatest financial stress, period of hunger; in all cases, the length of the period and the age of the respondent at the beginning of this period are also included; (ii) having been a victim of persecution and discrimination; (iii) ever experienced the following events (lived in a children's home, been fostered with another family, evacuated or relocated during a war, lived in a prisoner war camp, lived in a prison, lived in a labor camp, lived in a concentration camp, stayed in a psychiatric hospital, patient in a tuberculosis institution, been homeless for 1 month or more); (iv) health status during childhood: self-reported health status, been in hospital for more than one month, suffered an injury or accident that resulted in permanent disability; (v) family characteristics<sup>15</sup> and (vi) education (performance in Maths and Language at age 10 and current level of education).<sup>16</sup>

*Time-varying explanatory variables:* these variables include individual age, marital status, household size, size of municipality of residence, relationship with economic activity, current self-reported health status, Charlston Comorbidity Index and household wealth (adjusted by household size; PPP2020). The health status of the respondents at the time of the survey is coded using the Charlson Comorbidity Index (CCI). This variable predicts the complications of the sum of certain diseases, such as functional capacity at discharge and mortality (Charlson et al., 1987). Finally, following Diener et al. (1998), we consider whether an individual is married, has a higher educational attainment, and higher annual income all of which are associated with higher

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<sup>15</sup> (i) number of books in the household at age 10; (ii) living with biological father/stepmother/stepfather at age 10; (iii) features of accommodation at age 10: fixed bath, cold/hot running toilet supply, inside toilet, central heating; (iii) household composition (only child, oldest child, youngest child, number of brothers, number of sisters); (iv) born in other country.

<sup>16</sup> As for the reliability of personal information about past adverse events Zebrack et al. (2008) argue that subjective perceptions of physical conditions are better predictors of well-being than objective measures of health status.

life satisfaction. However, the effect of being a caregiver in the literature, So far, is not conclusive. Indeed, while Borg and Hallberg (2006) report a lower satisfaction among caregivers providing personal care, Schneider and Kleindiest (2016) observed just the opposite.

#### 4. Empirical Strategy

We specify life satisfaction (LS) as a function of a series of time-varying variables (including current individual income and caregiving status) and time-invariant variables (including past childhood experiences and long-term individual income 2007-2020) as follows:

$$LS_{it} = \beta_0 + \beta_1 \log(CI)_{it} + \beta_2 \log(LTI)_i + \beta_3 IC_{it} + W'_{it}\gamma + Z'_i\delta + \zeta_t + \vartheta_i + \varepsilon_{it} \quad (1)$$

where  $LS_{it}$  is the life satisfaction of individual  $i$  at time  $t$ ,  $CI$  is the current income of individual  $i$  at time  $t$ ,  $LTI$  is the long-term income of individual  $i$  in the period 2007-2020,  $IC_{it}$  denotes being an informal caregiver at time  $t$  (alternatively it will be replaced by two variables: coresident caregiver and non-coresident caregiver),  $W'_{it}$  depicts time-varying explanatory variables and  $Z'_i$  time-invariant explanatory variables,  $\vartheta_i$  and  $\zeta_t$  represent individual and year fixed effects.<sup>17</sup> In the econometric specification, current and long-term income are expressed in logarithms. We also include individual fixed effects in order to account for unobserved time-invariant characteristics that could have an effect

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<sup>17</sup> Although life satisfaction responses are ordinal in nature (on a scale from 0 to 10), in the empirical literature, linear models are usually estimated to facilitate the interpretation of the results. Ferrer-i-Carbonel and Frijters (2004) show that linear and ordinal models provide, essentially, the same results for life satisfaction.

on life satisfaction, such as personality traits, cultural background or risk aversion. Hence, the unobserved heterogeneity parameter may be decomposed as follows:

$$\vartheta_i = \alpha + \xi_i \quad (2)$$

The key issue at stake in estimating (1) is to identify consistent parameters for  $\beta_2$  and  $\delta$  imposing restrictions on  $\vartheta_i$ . We draw on Pesaran and Zhou (2018) approach, also known as 'fixed effect filtering (FEF)' model, which provides a two-step estimation method retrieving consistent estimates of time invariant variables when individual fixed effects are assumed to be correlated with other regressors in the model.<sup>18</sup>

In the first step, a fixed effects model is estimated, but only using the time-varying regressors ( $\beta_1$  and  $\gamma$ ). From this estimation, we retrieve the residuals as follows:  $\hat{u}_{it} = LS_{it} - \hat{\beta}_1 \log(CI)_{it} - \hat{\beta}_3 IC_{it} - W'_{it} \hat{\gamma}$ . In the second step, we estimate our equation of interest using the mean of the residuals and the time-invariant regressors. Therefore, this second step may be regarded as a between panel data estimation in which the time-varying effects are “filtered out”. Since the time-invariant variables are uncorrelated with the unobserved fixed effects, the Pesaran and Zhou (2018) model provides consistent estimators<sup>19</sup>.

When one or more of the time-invariant variables are endogenous, an IV version of the FEF estimator is also provided by Pesaran and Zhou (2018). The advantages of this estimator (FEF-IV) lie in not requiring a subset of time-varying regressors to be

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<sup>18</sup> The coefficients in equation (1) can be retrieved from a panel data model with clustered or random effects. We cannot use a fixed effects model because the time invariant variables are eliminated by the demeaning operation that subtracts the mean value from all the variables in the model. However, it is susceptible to omitted variable bias. For example, individual's response to the question regarding informal care provision may be influenced by family situation, moral norms or social conditioning. The intensity of these variables is difficult to quantify and is usually controlled by individual dummy variables in a fixed effects panel model, which, as mentioned above, fails to estimate the coefficients for time invariant variables.

<sup>19</sup> The FEF estimator is asymptotically consistent for a sufficiently large number of observations and a finite temporal sample, unbiased in the presence of serial correlation, and robust in arbitrary heteroscedasticity in  $\varepsilon_{it}$  (Pesaran and Zhou 2018).

exogenous (as in Hausman and Taylor, 1981) and being robust to residual serial correlation and heteroscedasticity of errors. However, we will proceed by performing the usual instrument validation tests and will also propose alternative instruments (see section on "Robustness checks").

IC is an endogenous variable as it is influenced by potential confounders and even reverse causality, hence it may be endogenous in our model of life satisfaction. Therefore, we need instrumental variables to correct for potential endogeneity.<sup>20</sup> These instruments should be correlated with the decision to provide informal care, but not directly with the life satisfaction of the potential caregiver. In the empirical literature, we find several instrument proposals. Lo Sasso and Johnson (2002) used the number of adult children and the presence of a coresident daughter who has no children; Van Houtven and Norton (2004) reported the number of children and whether the oldest child is a daughter; Coe and Van Houtven (2009) chose number of children in the family, percent of children who are girls and eldest child in the family being a daughter; Barnay and Juin (2016) instrumented using the proportion of daughters, having one child who is not parent him/herself, having one child being single, having one child living nearby; Wu et al. (2018) employed the number of children and the age of older children.

The number of daughters has been used as a recurrent instrument. It assumes that on the margin, a daughter is more likely to provide informal care when need arises (Bolin et alii, 2008; Bonsang, 2009; Barnay and Juin, 2016). However, the effect of daughter

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<sup>20</sup> There is an alternative approach to estimate the causal effects of informal caregiving on life satisfaction, including the matching method (Brenna and Di Novi, 2016). This method assumes that selection into caregiver status is based solely on observable variables included in the propensity score model. Although this assumption cannot be tested, it is expected to hold if all relevant variables are observable. In our case, it is plausible that if the parents' or spouse's health worsens, the probability of becoming an informal caregiver increase. But the availability of formal care (e.g., nursing homes), may increase the use of formal care, thus reducing the probability of informal caregiving. In SHARE, we do not have information on people who have entered residential care on a permanent basis; they disappear from the sample and cannot be followed up. For this reason, we consider that the use of this method is not entirely reliable in addressing the potential endogeneity of the decision to become a caregiver.

availability on care is changing across European countries (Bonsang and Costa-Font, 2024). For this reason, we use not only the number of daughters, but also the number of sons as instruments. Birth order variables have been introduced for two reasons: (i) older siblings fill a teaching role since they are more cognitively and socio-emotionally mature than their younger siblings (van Berkel et. al., 2023) and (ii) there is a cultural component according to which older children are ‘more responsible’ for parental care (Zarzycki et al., 2023). These instruments not only consider the availability of informal caregivers in the ‘i’ dimension but also in the ‘it’ dimension since changes in these instruments occur throughout the period under consideration. We found that there were 1,960 deaths of children (4.43% of the sample). Consequently, our final set of instruments for informal care includes the *number of daughters*, the *number of sons*, and *being the eldest son, the youngest son and being a single child*.

Finally, the compensating surplus (CS) is obtained following the procedure proposed by Frey et al. (2009):

$$CS_{current\ income} = \overline{CI} \left( 1 - \exp \left( \frac{\beta_3}{\beta_1} \right) \right) \quad (2)$$

$$CS_{long-term\ income} = \overline{LTI} \left( 1 - \exp \left( \frac{\beta_3}{\beta_2} \right) \right) \quad (3)$$

Where  $\beta_1, \beta_2$  and  $\beta_3$  are the estimated coefficients from (1) and  $\overline{CI}$  and  $\overline{LTI}$  denote the mean of CI and LTI, respectively. We believe that it is important to distinguish between CS associated with current income and long-term income as the temporal dimension of informal care provision can entail adaptation effects that affect the value of our estimates.<sup>21</sup>

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<sup>21</sup> While some research suggests that the length of time spent caregiving is associated with greater demands (Liu et al., 2022; Rahmani et al., 2022), other studies suggest no difference in caregiver outcomes as a function of the amount of time spent caregiving (Morimoto et al. 2003; Gaugler, 2010; Jeong et al. 2020).

## 5. Results

*First-step estimates.* Table B1 in the appendix examines caregiver selection, namely whether the probability of being a caregiver, both coresident or non-coresident caregiver, was driven by our instruments. We report the first-step regressions for current and long-term individual income too.<sup>22</sup> We consider a number of covariates such as age, sex, marital status, household size, level of education and country fixed effects as displayed in Table B1.

As expected, all five instruments are significant and reveal the expected sign. Being an only child increases the probability of being a caregiver by 14.4 percentage points (pp), and more specifically 9.29pp for men and 18.30pp for women. Being the eldest child increases the probability by 10.56pp, and the number of brothers increases this probability by 1.76pp. In contrast, being the youngest child decreases this probability by 9.15pp, and the number of sisters decreases it by 10.04pp.<sup>23</sup> According to van Berkel et al. (2023), older brothers take the lead in sibling interactions and often play an instructive role, as they are more cognitively and socioemotionally mature than their younger siblings (van Berkel et al., 2023). Additionally, Morosow and Kolk (2020) point out that: (i) daughters also face the duality of being mothers of their immediate family at home and daughters of their parents and (ii) older daughters tend to develop caring and responsible personality traits. Social expectations of females are more influential on the older daughter and may be consistent with the idea that first-born daughters are more likely to adopt traditional female gender roles than later-born sisters. Similarly,

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Evidence of an inverse relationship between caregiving burden and length of caregiving has also been documented (Zinuddin et al., 2003; Gbiri et al., 2015; Hidru et al., 2016).

<sup>22</sup> In the first-step regression for long-term individual income (2007-2020; PPP2020), long-term income from partner (2007-2020; PPP2020) and long-term income from other household members (2007-2020; PPP2020), also in logarithms, are used.

<sup>23</sup> In the case of coresident caregivers, the probability of being a caregiver increases 20.91pp for the only child (11.65pp for men and 30.32pp for women) and 20.47pp for the oldest child (12.72pp for men and 35.26pp for women).

instruments for current individual income and long-term individual income are significant and exhibit a positive sign, and from all instruments. Estimates without using an instrumental variable strategy are reported in Table B1 in the appendix for comparison<sup>24</sup>.

*Fixed effects filtered model.* Table B2 in the appendix shows the estimates for the FEF model for the total sample and Table B3 in the appendix displays the results for the main variables for each of the countries. The results of the fixed effects model with time varying regressors suggest that: (i) being a caregiver reduces life satisfaction, with the impact being higher for coresident caregivers and for women; (ii) current individual income (PPP2020) is significant and positive, and is higher for men; (iii) being unemployed, housework or with higher value of the CCI has a negative impact on satisfaction.

The results of the between model with time-invariant regressors show that the effect of long-term individual income is positive (and higher for men)<sup>25</sup>. Conversely, having experienced happy times in the past is associated with lower life satisfaction in the present.<sup>26</sup> We find that whether an individual has been born in another country, experienced episodes of persecution (-10.63pp) or discrimination has a negative effect<sup>27</sup>. Table B4 in the appendix reports the comparison of both short- and long-term income effects with and without correcting for instrumental variables. Consistently, the estimates

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<sup>24</sup> Conventional statistical tests suggest that the instruments are relevant. Anderson canonical correlations likelihood-ratio tests reject the null of under identification, and none of the Hansen's J-statistics reject the null that the instruments are satisfying the orthogonality condition.

<sup>25</sup> Consistently, the effect of long-term income is greater than that of short-term income. Having experienced past periods of stress (13.23pp), financial strain (16.51pp) or poor health (15.25pp) is associated with higher life satisfaction in the present.

<sup>26</sup> Other variables that influence life satisfaction include having lived with a biological mother, having central heating, or having hot water in the home (during childhood).

<sup>27</sup> Empirical evidence on the effects of adverse childhood events seems to indicate that in some cases (e.g., low socioeconomic status) there is an increase in life satisfaction (which indirectly acts to decrease the incidence of depression) (Tang et al., 2022), while in other cases, there is a lasting impairment in life satisfaction (i.e., maltreatment) (Pierce et al., 2018).



without IV corrections show lower standard errors, but the magnitude of the coefficients is higher.

### *Compensating surplus*

Table 1 shows the following estimates: (i) the individual short-term CS in euros (PPP 2020); (ii) the aggregate short-term CS (million €; PPP2020), (iii) aggregate short-term CS as a percentage of GDP; (iv) individual short-term CS as a percentage of GDP per capita and (v) individual short-term CS as a percentage of average wage (differentiated by sex). The average individual short-term CS amounts to €13,101 (maximum in Spain: €28,196 and minimum in Sweden: €7,230). The CS for co-resident and non-co-resident caregivers amounts to €36,693 and €9,324, a difference of €27,369<sup>28</sup>. When we estimate the CS for all caregivers in each country, the maximum value corresponds to France (90,157 million €) and the minimum corresponds to Denmark (3,474 million €), and as a percentage of GDP (PPP2020), we find the highest values in France (4.22%) and Spain (3.27%), and the lowest in Germany (0.85%) and Sweden (1.27%)<sup>29</sup>. Finally, the ratio of the CS to the average annual wage ranges between 92.64% for Spain and 84.54% in France while it is 22.58% for Sweden; for women, CS estimates is 82.87% in France.<sup>30</sup>

**[Insert Table 1 about here]**

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<sup>28</sup> This difference is the highest in Belgium (€40,583) and lowest in Italy (€7,578). The CS for men and women amounts to €17,362 and €11,739, respectively, representing a difference of €5,263. This difference is highest in Spain (€11,062) and the lowest in Denmark (€3,290).

<sup>29</sup> With respect to the percentage of individual CS short-term with respect to GDP per capita (PPP2020), the maximum corresponds to Spain (52.35%) and the minimum to Sweden (12.43%). We highlight some cases in which this percentage is above 100%: male co-residents in all countries except Italy and Switzerland; male non-co-residents in Spain; female co-residents in Belgium, Denmark and France.

<sup>30</sup> In some cases, this percentage is higher than 200% (co-resident curators in France, both men and women, and co-resident men in the Czech Republic).

Table 2 displays: (i) individual long-term CS, (ii) the aggregate long-term CS with respect to GDP (Euro PPP; 2007-2020) and (iii) the percentage of individual long-term CS with respect to GDP per capita (Euro PPP; 2007-2020). In individual terms, the long-term CS amounts to €211,365 (maximum in Spain: €350,367 and France: €279,499; minimum in Sweden: €116,646 and Germany: €148,735). To gain a clearer understanding of these figures, we compare compensating surplus (CS) over both short and long terms. In Belgium, we note that the long-term CS exceeds the short-term CS by 0.48pp, whereas in Italy and Spain is 0.06pp and 0.02pp, respectively. These variances not only indicate heterogeneity among countries but also suggest that over a span of 14 years, the significance of CS may not be as pronounced as initially anticipated<sup>31</sup>.

**[Insert Table 2 about here]**

Although the aim of this paper is not to quantify the effect of long-term care expenditure on life satisfaction, we extend our analysis to examine whether there is a relationship between CS and long-term expenditure. First, Appendix Table B5 presents the results of the estimation of a model using long-term care expenditure (€1000; PPP2020) as an explanatory variable. Then, we observe that an increase of €1000(PPP) exerts a significant and positive effect on life satisfaction (0.046 points), stronger for women (0.064 points) compared to 0.022 points for men, and reaching a maximum of 0.081 points for women carers.

In classifying long-term care systems, the expenditure amount is always accounted for. Therefore, we examine whether combining the two variables can add value to the rankings of long-term care systems. We do so by comparing short- and long-term

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<sup>31</sup> Furthermore, the role of a caregiver can lead to the discovery of latent skills, social norm fulfilment as well as a bond with the care recipient, all of which can positively impact life satisfaction (Lin et al., 2012; Wang et al., 2018).

CS with respect to long-term care expenditure. It turns out that the countries examined exhibit important differences in their long-term care systems, and we do not anticipate that two countries with similar levels of expenditure will show comparable levels of CS<sup>32</sup>. Table B6 in the appendix consistently reports the estimates following the classification from Ilinca et al. (2015, 2022) and Jiménez-Martín and Vilaplana-Prieto (2015).<sup>33</sup> Similarly, Figure 1 reports the individual short- and long-term CS to per capita long-term care expenditure.

Our CS estimations appear to inversely vary with national long-term care expenditure estimates which capture the extent of the formalisation of caregiving in a country. Figure 1 depicts three groups of countries: (i) low LTC expenditure and high CS (Spain) or moderate CS (Czech Republic, Italy); (ii) intermediate LTC expenditure and CS (Austria and France) and (iii) high LTC with low CS (Belgium, Denmark and Denmark) or intermediate (Sweden and Switzerland). In the classification reported in Table B6 in the Appendix, our results consider (i) differences in the type of family model in Europe which influences the funding of long-term- care (Costa-Font , 2010), since CS is considerably higher in Spain compared to Italy; (ii) differences in the standard care mix model (because Austria and France, and especially France, have a higher CS than Belgium and Switzerland)<sup>34</sup>.

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<sup>32</sup> However, such a comparison may be worthwhile to detect countries exhibiting both high LTC expenditure and high CS.

<sup>33</sup> This classification does not include Belgium and Switzerland. In order to include them we have relied on other works. Belgium and Switzerland are included in standard care mix model following Jiménez-Martín and Vilaplana-Prieto (2015) and Ilinca et al. (2022), respectively.

<sup>34</sup> It is important to note that our analysis lacks information on the institutionalised population, as SHARE does not interview people living in nursing homes. This fact may explain the correlation between long-term care expenditure and the value of informal care (proxied by the CS). Indeed, in countries with higher long-term care expenditures, more people can access a place in a nursing home. Conversely, in countries with lower long-term care expenditure, more people in need have to continue to live at home, receiving informal care.

**[Insert Figure 1 about here]**

### *Heterogeneity*

Table 3 displays the heterogeneity of the individual short-term CS as a function of age, place of residence and level of education. Compared to the average individual CS, we observe that the CS describes a sort of inverted U: it increases for the 60-69 years cohort (0.70%), but decreases for the youngest (-1.58%, especially for non-residents: -2.20%) and the oldest (0.42%). Similarly, it exhibits a smaller effect in smaller cities and rural areas but increases significantly in the suburbs of large cities. In large cities, CS decreases for co-resident caregivers (-1.84%) but increases for non-coresident caregivers (0.44%), and for such group the CS increases 2.59% for women versus 1.05% for men.

Similarly, when we consider an individual's education attainment, we find that the CS decreases for caregivers with no education (-5.03% for no education and -2.43% for primary education) but increases significantly for those with higher education (3.77%). In the latter case, the increase is higher for women (4.65%) than for men (2.46%). The opposite is found among caregivers with no or elementary education, for whom the greatest decrease in CS corresponds to female caregivers.

**[Insert Table 3 about here]**

### *Estimation of the CS per hour*

Finally, we estimate the CS per hour of informal care using wave 8 of SHARE. Unlike other studies, we retrieve CS estimates for each of the countries analysed (as opposed to for all countries as Schneider and Kleindienst (2016)) and our estimates are

not disease-specific<sup>35</sup>. We have estimated equation (1), considering the number of hours of informal caregiving instead of a binary variable, but we have drawn on the same instruments. Table 4 displays the average number of hours of informal caregiving and the CS per hour of caregiving (PPP2020), and Figure 2 illustrates the CS per hour alongside per capita long-term care (LTC) expenditure. These results complement those observed in Figure 1, further reinforcing the conclusions regarding country differences.

The average compensating surplus (CS) in PPP 2020 is 9.5 euros/hour for caregivers, 22 euros/hour for coresident caregivers, and 6.7 euros/hour for non-coresident caregivers. The average compensating surplus is greater for men than for women, regardless of the type of caregiver. By country, the CS for caregivers ranges from 5 euros/hour (Spain) to 22 euros/hour (Switzerland), which also holds true for non-coresident caregivers. However, when it comes to coresident caregivers, Spain is one of the countries with the highest CS per hour (27.01 euros/hour).

The finding that there are no significant differences in the number of care hours, yet notable variations in caregiver support (CS) between co-resident and non-co-resident carers (with higher CS observed for co-resident carers in Table 1), suggests that *co-resident carers may experience a greater burden*. This finding can be explained by the need to provide care tasks immediately as they arise, which may also be more complex than those typically handled by non-co-resident carers.

**[Insert Table 4 and Figure 2 about here]**

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<sup>35</sup> Previous studies refer to informal caregivers with regards to dementia (König and Wettstein, 2002); cerebrovascular accident (Oliva-Moreno et al., 2013); Alzheimer's disease (Peña-Longobardo & Oliva-Moreno, 2015); myocardial infarction (Rabier et al., 2019)).

## 6. Robustness checks

In this section we perform three robustness analyses: (i) use of a Bartik instrument for entry; (ii) placebo test to corroborate the suitability of the instruments for informal care; and (iii) computation of short-term CS using an alternative survey (European Quality of Life Survey).

### *6.1. Bartik instrument for individual income*

As an alternative to the instruments used for current and long-term income, in this section we use a Bartik-type instrument that combines employment rates at the national level across industries with differences in the initial industry structure across regions (Bartik, 1991). Our alternative instrument is a weighted average of national-level employment rates in each of the fourteen industries<sup>36</sup>, where the weights are the fraction of the working-age population employed in each industry in the year prior to the beginning of the sample period. The national employment rates are exogenous to the characteristics of workers in each region (NUTS-2),<sup>37</sup> since the regions are small relative to the overall size. The initial industrial structure of a region is likely to be correlated with the characteristics of its workers, which poses a threat to the validity of the instrument. However, the initial industrial structure is, by definition, time invariant at the region level, so we can address this threat by controlling for region-level fixed effects, which we do in

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<sup>36</sup> Agriculture, hunting, forestry, fishing; Mining and quarrying; Manufacturing; Electricity, gas and water supply; Construction; Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods; Hotels and restaurants; Transport, storage and communication; Financial intermediation; Real estate, renting and business activities; Public administration and defence; compulsory social security; Education; Health and social work; Other community, social and personal service activities.

<sup>37</sup> The European Union has created a common nomenclature of territorial statistical units, called "NUTS", to enable the collection, generation and dissemination of harmonized regional statistics in the Union. This hierarchical system is also used in socio-economic analyses of the regions and in the formulation of interventions in the context of the Union's cohesion policy. The NUTS nomenclature is hierarchical in that it subdivides each Member State into three levels: NUTS 1, NUTS 2 and NUTS 3. The second and third levels are subdivisions of the first and second levels respectively. Each Member State may establish further levels of hierarchical detail by subdividing NUTS level 3. The current NUTS nomenclature distinguishes 242 NUTS level 2 regions.

all regressions. Table C1 in the appendix shows the short-term and long-term CS obtained using the Bartik instruments, and Figure C1 shows the difference between average CS and long-term CS (short-term from Table 1 and long-term from Table 2) and the CS using Bartik. On average, the Bartik instrument overestimates the CS (2.58% in the short-term and 2.18% in the long-term). We conclude that our initial estimates are reliable and conservative.

### *6.2. Placebo test for informal care instruments*

To ensure the robustness of our analysis, we examine whether instruments for being a caregiver have a direct impact on life satisfaction<sup>38</sup>. Hence, to address these challenges, we have evaluated the impact of our set of instruments (number of brothers, number of sisters, oldest child, youngest child, only child) on life satisfaction while controlling for other explanatory variables in Table C2. We find that except for the number of siblings (which is only significant at the 10% level in the female sample), the instruments are not statistically significant. These findings remain consistent irrespectively of the instrumetal variable strategy employed.

Next, we performed other placebo tests for the income of the partner and other household members. The results (Table C3 in the appendix) show that both variables do not exert a significant effect on life satisfaction. Although these results may seem somewhat surprising, estimates are actually in line with previous research (Howell and Howell, 2008; Easterlin, 2015; Kushlev et al., 2015), suggesting that objective conditions

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<sup>38</sup> Previous research has yielded inconclusive findings in this regard. While the number of siblings has been linked to improved lung function in children (Mattes et al., 1999), children with older siblings are also at higher risk of contracting whooping cough and experiencing delayed vaccination (Reading et al., 2004). Moreover, family dynamics, such as favoritism or imbalances in caregiving, can influence children's development (Adler, 1998). However, studies like that of Khodarahimi and Ogletree (2011) have noted a significant correlation between larger family size and lower life satisfaction. Additionally, research indicates that children with siblings may be less likely to trust their parents (Hesketh et al., 2003).

do not have absolute meaning and standards may vary over time and with each individual, so that an individual's subjective wellbeing depends on that of others in a specific domain (e.g., economic status) or on that of individuals themselves in the past. Therefore, rather than the income of the partner or other household members in absolute terms, we include in the individual's income relative to that of the partner or other household members. This is known as the “relative income hypothesis,” which states that what really matters is a person's income relative to that of others (Huang et al., 2016) or to the person's own income in the past (Ekici and Koydemir, 2016).

### *6.3. Alternative dataset: European Quality of Life Survey*

To test the reliability of our short-term CS estimates, we compared our estimates with the last wave of the European Quality of Life Survey (EQLS), corresponding to 2016. Appendix D explains the characteristics of the survey and the details of the estimation process. The advantage of the EQLS is that it allows disentangling between the CS of older and younger caregivers, although we cannot distinguish between co-resident and non-corresident caregivers, nor does it allow calculation of a long-term CS. Hence, we compare the CS of caregivers 50+years retrieved from two different sources of information (SHARE and EQLS), and we compare our estimates with that of previous studies (Peña-Longobardo et al., 2022) which draw only on opportunity cost methods. (See Appendix D for a detailed description.)

Table 5 reports the ratio of CS to GDP, which can be compared to the value of informal care relative to GDP (following estimates using the opportunity cost method carried out by Peña-Longobardo et al. (2022)). We find that the ratio of CS to GDP for total carers is higher than the value of informal care in all countries, between 0.21pp (Belgium) and 1.82pp (Czech Republic), although in most countries it is half a percentage point higher. The estimates of Peña-Longobardo et al. (2022) refer to all caregivers, while



our CS is only calculated for caregivers aged 50+ alone, so it is entirely consistent with our estimates. These results suggest a relatively high degree of consistency between the two methods of valuing informal caregiving and the fact that (short-term) CS is higher seems to mean that there are relevant effects that are not captured by the opportunity cost method.

**[Insert Table 5 about here]**

## **7. Conclusion**

Although informal caregiving (IC) is still the most common form of care for old age individuals in many European countries, its value is “hidden” in most estimates of long-term care spending which are instead only estimating the “observed” financial spending in care. However, estimating such hidden costs of IC is far from straightforward insofar as the provision of care can exert both negative and positive effects on individuals’ wellbeing. This paper draws on the application of the wellbeing-based estimation methods which account for both short- and long-term effects of caregiving on life satisfaction (or subjective wellbeing) of caregivers. That is, the primary contribution of the study is the application of a well-being approach to the valuation of informal care. Specifically, we estimate the equivalent income transfer required for caregivers to attain the same level of life satisfaction as non-caregivers, which we refer to as the compensating surplus (CS). We use longitudinal evidence from a number of European countries, and we draw on exogenous variation in caregiving. The latter allows us to estimate the effect of informal caregiving subjective wellbeing. Hence, the CS can in turn be compared with estimates using other methods such as replacement methods and opportunity cost estimates.

We documented the net negative effect of informal care (IC) on life satisfaction estimates to be an average of 7 percentage points (pp) or about an average 1% reduction among the entire sample, and 42pp or 6% reduction in life satisfaction among residential caregivers.<sup>39</sup> Our estimates indicate that the compensating surplus (CS) as a percentage of GDP ranges from 4.2% in France to 3.3% in Spain. On the lower end of the country distribution, we estimate a CS of 0.85% in Germany and 1.3% in Sweden. These estimates suggest *an inverse relationship between the CS estimates of IC and the share of formal long-term care spending as a share of GDP*, which suggests that although at the individual level there is not always substitution between formal and informal care, at a societal level when formal care is not available then individuals in need either receive IC or face unmet needs. The observation that the value of caregiver support (CS) is higher in the short term than in the long term does not diminish the existence of caregiver burden. Rather, it highlights that, over the course of their caregiving journey, caregivers may also experience benefits from providing care, which can positively impact their overall life satisfaction.

Finally, this paper provides novel estimates of the CS per hour of informal care across several European countries. Furthermore, the analysis used data on caregiving hours from wave 8 of SHARE to estimate the CS of one hour of informal care in several European countries. Our estimates are in line with results from the literature,<sup>40</sup> and

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<sup>39</sup> Our estimates refer to care provided in the community, although a limitation of our approach is that our dataset does not contain information of on caregiver in residential settings. Furthermore, our estimates on the cost per hour are retrieved from only one wave (wave 8) of the survey where the information was available.

<sup>40</sup> These estimates offer detailed insights and align with previous findings in the literature. Schneider and Kleindienst (2016) estimated the value of an hour of informal care across various countries (Austria, Belgium, the Czech Republic, Denmark, France, Germany, Italy, the Netherlands, Poland, Spain, Sweden, and Switzerland). Their analysis, based on data from earlier waves of SHARE where hours were censored by intervals, yielded less precise results, suggesting that providing less than 10 hours of care per week has a value of €2.54/hour. For specific conditions, the values range from 12.71 €/hour for stroke (Oliva-Moreno et al., 2013) to 18.68 €/hour for Alzheimer's disease (Peña-Longobardo and Oliva-Moreno, 2015), and 10.9 €/hour for myocardial infarction (Rabier et al., 2020).

specifically with estimates obtained using an alternative source of information (European Quality of Life Survey). We estimate the compensating surplus (CS) (PPP2020) per hour of care in Europe to be at 9.55€/hour, ranging between 22 €/hour in Switzerland and 5 €/hour in Spain.

Finally, it is important to note that our estimates are consistent with those derived from different approaches, as well as with previous studies (Peña-Longobardo et al., 2022) that use the opportunity cost method. However, valuing informal care from a societal perspective, it is essential to include the value of informal caregiving net of its potential positive effects. This paper addresses this issue by employing wellbeing methods, which suggest that as expected, caregiving results in a net welfare loss for caregivers that extends beyond income reductions. Our estimates offer valuable insights for policymakers to co ensure that the value of informal care is not overlooked or underestimated.

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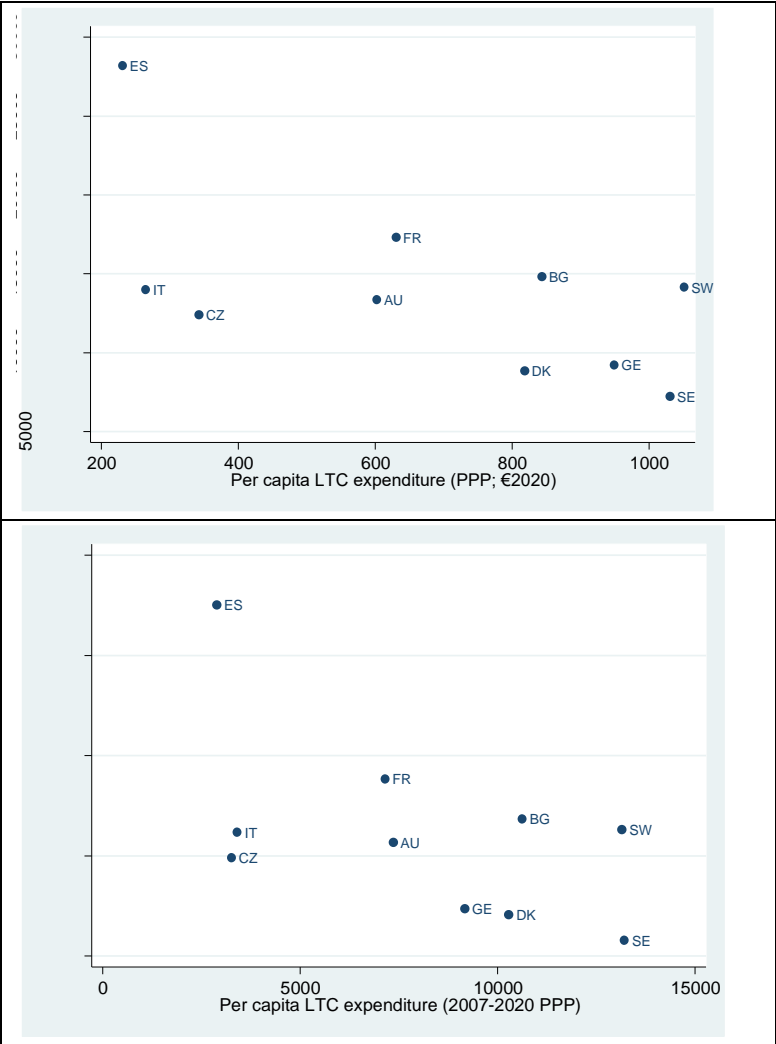
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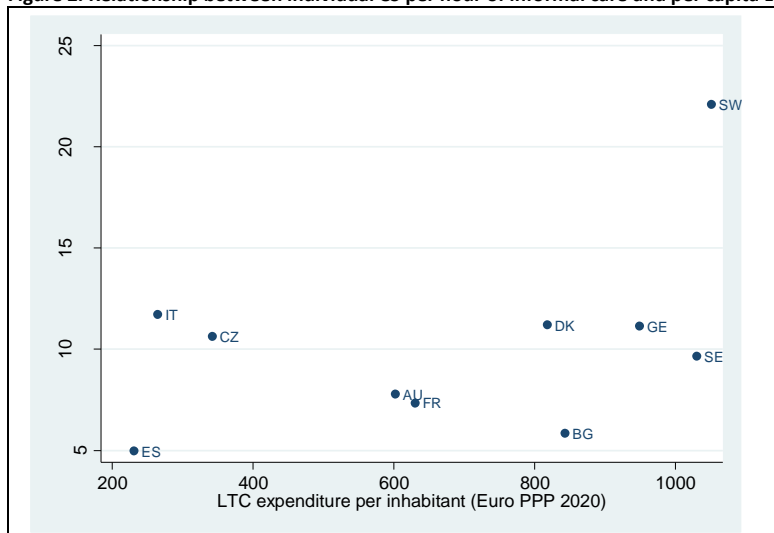
# Tables and Figures

Figure 1. Individual short-term and long-term compensating surplus (CS) and per capita long-term care expenditure.



Source: Calculations using data from our own estimates and data from Eurostat [Statistics | Eurostat \(europa.eu\)](https://ec.europa.eu/eurostat)  
AU: Austria; BG: Belgium; CZ: Czech Republic; DK: Denmark; ES: Spain; FR: France; GE: Germany; IT: Italy; SE: Sweden; SW: Switzerland.

Figure 2. Relationship between individual CS per hour of informal care and per capita LTC expenditure



Source: Calculations using data from our estimates and data from Eurostat [Statistics | Eurostat \(europa.eu\)](https://ec.europa.eu/eurostat)

AU: Austria; BG: Belgium; CZ: Czech Republic; DK: Denmark; ES: Spain; FR: France; GE: Germany; IT: Italy; SE: Sweden; SW: Switzerland.

**Table 1. Short-term compensating surplus (CS) per individual, aggregate CS, percentage of aggregate CS with respect to GDP, percentage of individual CS with respect to per capita GDP, percentage of individual CS with respect to annual average wage.**

	Total			Men			Women		
	Caregiver	Coresid. caregiver	No coresid caregiver	Caregiver	Coresid. caregiver	No coresid caregiver	Caregiver	Coresid. caregiver	No coresid caregiver
<b>Individual CS (Euros PPP 2020)</b>									
<b>Average</b>	<b>13.101</b>	<b>36.693</b>	<b>9.324</b>	<b>17.362</b>	<b>49.583</b>	<b>12.227</b>	<b>11.739</b>	<b>33.972</b>	<b>8.165</b>
Austria	13,367	35,317	8,322	21,464	66,179	11,186	11,506	28,223	7,663
Belgium	14,830	49,209	8,626	17,624	55,901	10,716	14,326	48,002	8,249
Czechia	12,394	28,131	7,941	20,091	47,368	12,372	10,216	22,687	6,687
Denmark	8,846	45,529	5,055	11,828	67,578	6,066	8,538	43,250	4,950
France	17,324	49,328	10,314	21,247	55,541	13,734	16,465	47,967	9,565
Germany	9,219	25,418	5,714	11,712	34,740	6,730	8,679	23,401	5,494
Italy	14,003	18,725	11,147	19,817	27,016	15,463	10,487	13,710	8,537
Spain	28,196	32,434	24,806	33,113	39,243	28,209	22,051	23,923	20,553
Sweden	7,230	36,635	4,189	11,755	71,897	5,535	6,762	32,988	4,050
Switzerland	14,161	34,465	11,970	18,216	23,758	17,618	13,723	35,621	11,361
<b>Aggregate CS (million € 2020)</b>									
Austria	3,756	702	3,054	1,451	210	1,242	2,304	492	1,812
Belgium	13,099	2,003	11,097	5,752	925	4,827	7,347	1,077	6,270
Czechia	6,170	1,361	4,809	2,128	441	1,687	4,042	920	3,122
Denmark	3,474	325	3,148	1,542	127	1,415	1,932	198	1,734
France	90,157	16,201	73,957	37,868	7,508	30,361	52,289	8,693	43,596
Germany	26,063	4,636	21,428	11,496	1,866	9,631	14,567	2,770	11,797
Italy	41,778	15,745	26,034	14,561	5,300	9,261	27,218	10,445	16,773
Spain	38,510	21,394	17,115	15,500	9,018	6,482	23,010	12,376	10,633
Sweden	4,820	452	4,368	1,988	142	1,846	2,832	310	2,523
Switzerland	8,736	851	7,886	3,373	281	3,092	5,364	570	4,794
<b>Percentage aggregate CS with respect to of GDP (2016)</b>									
Austria	1.12	0.21	0.91	0.43	0.06	0.37	0.69	0.15	0.54
Belgium	3.18	0.49	2.69	1.39	0.22	1.17	1.78	0.26	1.52
Czechia	2.06	0.45	1.60	0.71	0.15	0.56	1.35	0.31	1.04
Denmark	1.50	0.14	1.36	0.66	0.05	0.61	0.83	0.09	0.75
France	4.22	0.76	3.46	1.77	0.35	1.42	2.45	0.41	2.04
Germany	0.85	0.15	0.70	0.37	0.06	0.31	0.47	0.09	0.38
Italy	2.49	0.94	1.55	0.87	0.32	0.55	1.62	0.62	1.00
Spain	3.27	1.82	1.45	1.32	0.77	0.55	1.95	1.05	0.90
Sweden	1.27	0.12	1.15	0.52	0.04	0.48	0.74	0.08	0.66
Switzerland	2.11	0.21	1.90	0.81	0.07	0.75	1.30	0.14	1.16
<b>Percentage of individual CS with respect to GDP per capita (2016)</b>									
Austria	21.21	56.75	13.04	61.57	189.82	32.09	33.00	80.95	21.98
Belgium	24.45	79.97	14.43	54.57	173.10	33.18	44.36	148.64	25.54
Czechia	28.35	64.26	18.18	84.16	198.43	51.83	42.80	95.04	28.01
Denmark	14.18	75.69	7.82	33.95	193.95	17.41	24.50	124.13	14.21
France	31.90	88.75	19.44	73.26	191.52	47.36	56.78	165.40	32.98
Germany	14.97	42.08	9.10	35.25	104.55	20.25	26.12	70.42	16.53
Italy	25.00	33.17	20.06	72.29	98.55	56.40	38.25	50.01	31.14
Spain	52.35	58.90	47.12	131.21	155.51	111.78	87.38	94.80	81.45
Sweden	12.43	66.29	6.86	34.46	210.75	16.22	19.82	96.70	11.87
Switzerland	31.30	42.12	52.29	41.03	53.51	39.68	30.91	80.23	25.59
<b>Percentage of individual CS with respect to annual wage (2016)</b>									
Austria	38.57	101.90	24.01	61.93	190.95	32.28	33.20	81.44	22.11
Belgium	36.21	143.34	16.88	44.92	164.20	23.39	34.64	139.58	15.70
Czechia	52.39	118.92	33.57	84.93	200.24	52.30	43.19	95.90	28.27
Denmark	25.56	131.57	14.61	34.18	195.28	17.53	24.67	124.98	14.30
France	70.04	180.95	45.74	83.63	202.48	57.60	67.06	176.23	43.15
Germany	22.95	72.06	12.32	30.51	100.32	15.40	21.31	65.94	11.66
Italy	46.21	63.48	35.77	67.48	93.81	51.55	33.35	45.14	26.22
Spain	88.01	74.54	104.84	107.54	88.05	131.89	63.59	57.65	71.03

Sweden	21.28	107.84	12.33	34.60	211.63	16.29	19.90	97.10	11.92
Switzerland	32.05	78.00	27.09	41.22	53.76	39.87	31.06	80.61	25.71

Note: This table reports the short term compensating surplus (CS) estimated as the monetary transferred required to hold utility constant for caregivers in the short-term (one year). Annual wage (PPP2020): remuneration in cash and in kind paid to employees, as a rule at regular intervals, for time worked or work done together with remuneration for time not worked, such as annual vacation, another type of paid leave or holidays. Earnings exclude employers' contributions in respect of their employees paid to social security and pension schemes and also the benefits received by employees under these schemes. Earnings also exclude severance and termination pay.

Source: Prepared by the authors with Eurostat and ILOSTAT.

**Table 2. Long-term compensating surplus (CS) per individual, percentage of aggregate CS with respect to GDP, percentage of individual CS with respect to per capita GDP.**

	Total			Men			Women		
	Caregiver	Coresid. caregiver	No coresid caregiver	Caregiver	Coresid. caregiver	No coresid caregiver	Caregiver	Coresid. caregiver	No coresid caregiver
<b>Individual compensating surplus 2007-2020 (Euros PPP 2020)</b>									
<b>Average</b>	<b>211,365</b>	<b>586,125</b>	<b>148,935</b>	<b>277,347</b>	<b>792,031</b>	<b>195,314</b>	<b>187,516</b>	<b>542,673</b>	<b>130,427</b>
Austria	215,660	564,155	132,933	342,871	1,057,138	178,691	183,797	450,839	122,415
Belgium	239,263	786,064	137,788	281,519	892,952	171,171	228,846	766,774	131,763
Czechia	199,958	449,356	126,849	320,930	756,653	197,629	163,191	362,397	106,820
Denmark	142,718	727,276	80,745	188,947	1,079,486	96,900	136,387	690,871	79,075
France	279,499	787,961	164,753	339,391	887,204	219,389	263,015	766,222	152,784
Germany	148,735	406,023	91,278	187,088	554,932	107,510	138,641	373,808	87,766
Italy	225,916	299,107	178,064	316,553	431,560	246,998	167,513	219,000	136,373
Spain	350,367	396,255	518,100	528,941	450,603	626,864	352,243	328,320	382,146
Sweden	116,646	585,205	66,913	187,770	1,148,484	88,413	108,016	526,951	64,690
Switzerland	228,472	550,548	191,210	290,977	379,501	281,427	219,212	569,001	181,477
<b>Percentage of long-term GDP (2007-2020)</b>									
Austria	1.26	0.24	1.03	0.49	0.07	0.42	0.78	0.17	0.61
Belgium	3.66	0.56	3.10	1.61	0.26	1.35	2.05	0.30	1.75
Czechia	2.47	0.55	1.93	0.85	0.18	0.68	1.62	0.37	1.25
Denmark	1.78	0.17	1.61	0.79	0.06	0.72	0.99	0.10	0.89
France	4.73	0.85	3.88	1.99	0.39	1.59	2.74	0.46	2.29
Germany	0.97	0.17	0.80	0.43	0.07	0.36	0.54	0.10	0.44
Italy	2.55	0.96	1.59	0.89	0.32	0.57	1.66	0.64	1.03
Spain	3.29	1.83	1.46	1.32	0.77	0.55	1.96	1.06	0.91
Sweden	1.46	0.14	1.33	0.60	0.04	0.56	0.86	0.09	0.77
Switzerland	2.40	0.23	2.17	0.93	0.08	0.85	1.47	0.16	1.32
<b>Percentage of GDP per capita (2007-2020)</b>									
Austria	38.57	101.90	24.01	61.93	190.95	32.28	33.20	81.44	22.11
Belgium	46.21	153.34	26.88	54.92	174.20	33.39	44.64	149.58	25.70
Czechia	52.39	118.92	33.57	84.93	200.24	52.30	43.19	95.90	28.27
Denmark	25.56	131.57	14.61	34.18	195.28	17.53	24.67	124.98	14.30
France	60.04	170.95	35.74	73.63	192.48	47.60	57.06	166.23	33.15
Germany	27.95	77.06	17.32	35.51	105.32	20.40	26.31	70.94	16.66
Italy	51.21	68.48	40.77	72.48	98.81	56.55	38.35	50.14	31.22
Spain	112.01	98.54	128.84	131.54	112.05	155.89	87.59	81.65	95.03
Sweden	21.28	107.84	12.33	34.60	211.63	16.29	19.90	97.10	11.92
Switzerland	32.05	78.00	27.09	41.22	53.76	39.87	31.06	80.61	25.71

Note: This table reports the long term compensating surplus (CS) estimated as the monetary transferred required to hold utility constant for caregivers in the period 2007-2020. GDP per capita (2007-2020): is the sum of GDP per capita (PPP2020) discounted at the 2% interest rate for the period 2007-2020. GDP (2007-2020): is the sum of GDP (PPP2020) discounted at the 2% interest rate for the period 2007-2020.

**Table 3. Individual short-term compensating surplus by age, place of residence and level of education**

	Total			Men			Women		
	Caregiver	Coresid. caregiver	No coresid caregiver	Caregiver	Coresid. caregiver	No coresid caregiver	Caregiver	Coresid. caregiver	No coresid caregiver
Individual short-term CS (Euros PPP 2020)									
Average	13.101	36.693	9.324	17.362	49.583	12.227	11.739	33.972	8.165
Age									
50-59	12.893	36.254	9.119	17.180	49.044	12.021	11.558	33.780	7.986
60-69	13.193	36.565	9.370	17.454	49.509	12.258	11.839	33.882	8.221
70-79	13.098	36.559	9.360	17.376	49.202	12.261	11.706	33.942	8.188
80+	13.058	36.448	9.305	17.274	49.548	12.229	11.709	33.977	8.139
Size of municipality									
Big city	13.146	36.017	9.365	17.569	49.638	12.397	11.740	32.909	8.171
Suburbs/outskirts	13.358	38.039	9.445	17.545	51.837	12.271	12.043	34.938	8.325
Large town	13.103	36.692	9.341	17.317	50.543	12.170	11.776	33.456	8.225
Small town	13.095	36.755	9.327	17.346	49.078	12.235	11.729	34.271	8.161
Rural	13.033	36.526	9.284	17.313	49.203	12.197	11.650	33.949	8.110
Education									
No studies	12.441	35.149	8.990	16.719	47.825	11.993	11.101	32.533	7.826
Elementary	12.782	36.521	9.046	17.004	50.149	11.921	11.448	33.521	7.914
Secondary	13.193	37.273	9.345	17.415	49.357	12.219	11.843	34.942	8.192
Higher	13.594	38.998	9.608	17.790	52.131	12.460	12.284	36.285	8.478
Growth rate with respect to average CS (2007-2020)									
Age									
50-59	-1,58	-1,19	-2,20	-1,05	-1,09	-1,68	-1,54	-0,56	-2,19
60-69	0,70	-0,35	0,50	0,53	-0,15	0,25	0,85	-0,26	0,68
70-79	-0,02	-0,37	0,39	0,08	-0,77	0,28	-0,28	-0,09	0,28
80+	-0,33	-0,67	-0,20	-0,51	-0,07	0,01	-0,25	0,01	-0,32
Size of municipality									
Big city	0,35	-1,84	0,44	1,19	0,11	1,39	0,01	-3,13	0,08
Suburbs/outskirts	1,96	3,67	1,30	1,05	4,55	0,36	2,59	2,84	1,96
Large town	0,02	0,00	0,18	-0,26	1,94	-0,46	0,32	-1,52	0,73
Small town	-0,05	0,17	0,04	-0,09	-1,02	0,07	-0,09	0,88	-0,05
Rural	-0,52	-0,46	-0,43	-0,29	-0,77	-0,25	-0,76	-0,07	-0,68
Education									
No studies	-5,03	-4,21	-3,58	-3,70	-3,54	-1,91	-5,43	-4,24	-4,15
Elementary	-2,43	-0,47	-2,98	-2,06	1,14	-2,50	-2,48	-1,33	-3,07
Secondary	0,71	1,58	0,22	0,30	-0,45	-0,07	0,89	2,85	0,33
Higher	3,77	6,28	3,05	2,46	5,14	1,91	4,65	6,81	3,84

Note: this table estimates the CS using estimating equation (1) restricting the sample by age, size of municipality and level of education, but including the other explanatory variables.

**Table 4. Daily caregiving hours and short-term compensating surplus (€, PPP2020). Wave 8 of SHARE.**

	Total			Men			Women		
	Caregiver	Coresid. caregiver	No coresid caregiver	Caregiver	Coresid. caregiver	No coresid caregiver	Caregiver	Coresid. caregiver	No coresid caregiver
Daily caregiving hours									
Average	3.76	4.55	3.79	3.72	5.00	3.78	3.80	4.25	3.79
Austria	4.71	7.18	5.40	6.00	13.50	7.67	3.65	3.57	3.55
Germany	3.65	4.11	3.28	3.44	4.50	3.24	3.93	3.89	3.34
Sweden	3.52	3.77	3.40	3.29	3.00	3.14	3.77	4.11	3.67
Spain	4.88	4.62	4.95	5.25	5.31	5.28	4.52	4.00	4.58
Italy	4.05	5.59	4.06	3.96	5.78	3.93	4.14	5.48	4.19
France	3.44	3.65	3.29	3.47	3.78	3.14	3.42	3.57	3.42
Denmark	3.42	3.92	3.39	3.28	3.64	3.31	3.60	4.14	3.50
Switzerland	3.50	3.20	3.54	3.40	3.17	3.40	3.60	3.25	3.67
Belgium	3.38	3.68	3.48	3.50	4.17	3.66	3.26	3.23	3.24
Czech Republic	3.65	4.89	3.52	3.61	6.00	3.50	3.70	4.50	3.55
CS per hour (Euros PPP 2020)									
Average	9.55	22.11	6.75	12.80	27.17	8.86	8.46	21.88	5.90
Austria	7.78	13.47	4.22	9.80	13.43	4.00	8.64	21.65	5.92
Germany	11.13	32.83	7.20	14.05	34.03	9.06	9.98	33.82	6.76
Sweden	9.64	20.45	6.40	16.74	43.26	10.79	7.42	15.12	5.00
Spain	4.97	27.01	2.80	6.17	34.85	3.15	5.18	29.62	2.96
Italy	11.72	24.18	6.96	14.71	26.34	9.58	10.91	23.96	6.25
France	7.34	19.07	4.76	9.24	25.19	5.87	6.96	17.95	4.40
Denmark	11.21	13.09	9.00	16.56	20.35	12.79	7.98	9.07	6.68
Switzerland	22.09	21.24	25.13	26.70	24.41	31.62	16.79	17.33	17.85
Belgium	5.85	27.27	3.30	9.20	47.27	4.14	5.68	27.97	3.42
Czech Republic	10.63	19.31	9.31	13.83	10.85	13.79	10.17	21.69	8.78

Note: This table reports the cost in euros of the daily caregiving cost per hours and the short term CS.

Source: own work using wave 8 of SHARE.

**Table 5. Comparison of compensating surplus using SHARE and European Quality of Life Survey and estimation of the value of informal care (see Appendix D for an extension of the results)**

	Compensating surplus with respect to GDP (using SHARE)		Compensating surplus with respect to GDP (2016) Age: 50+	Estimation value informal care with respect to GDP (2016) Peña-Longobardo et al. (2022)
	Short-term	Long-term		
Austria	1.12	1.26	1.02	1.90
Belgium	3.18	3.66	2.90	4.38
Czechia	2.06	2.47	1.93	2.05
Denmark	1.50	1.78	1.32	1.74
France	4.22	4.73	4.16	6.50
Germany	0.85	0.97	0.79	1.28
Italy	2.49	2.55	2.26	3.25
Spain	3.27	3.29	3.11	4.01
Sweden	1.27	1.46	1.18	1.20
Switzerland	2.11	2.40	-	-

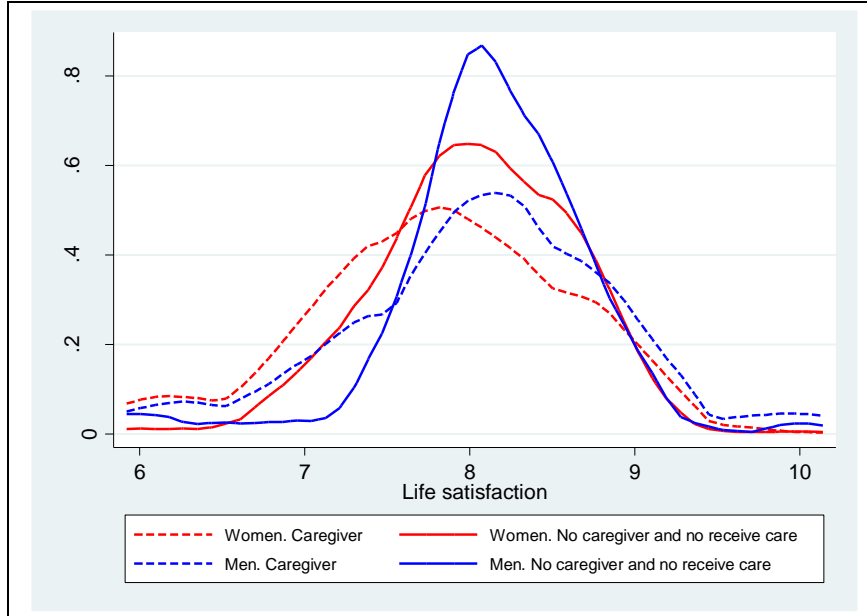
Source: own work using SHARE and EQLS (2016). Columns (1) and (2) are retrieved from Tables 1 and 2. See Appendix C for detail of the explanation of compensating surplus using European Quality of Life Survey (2016)

Estimations of the value of informal care with respect to GDP are retrieved from Peña-Longobardo et al. (2022) and refer to all informal caregivers, regardless their age. To value paid work time, they used the average gross hourly wage in purchasing power parity in each country, taking into account the caregiving hours provided by those caregivers who were employed. To value unpaid work time, they used the minimum gross hourly wage.

## Appendix for Online Publication

### Appendix A

**Figure A1. Density function for life satisfaction by sex and caregiving status.**



Source: own work using SHARE (waves 2, 4, 5, 6, 7 and 8).

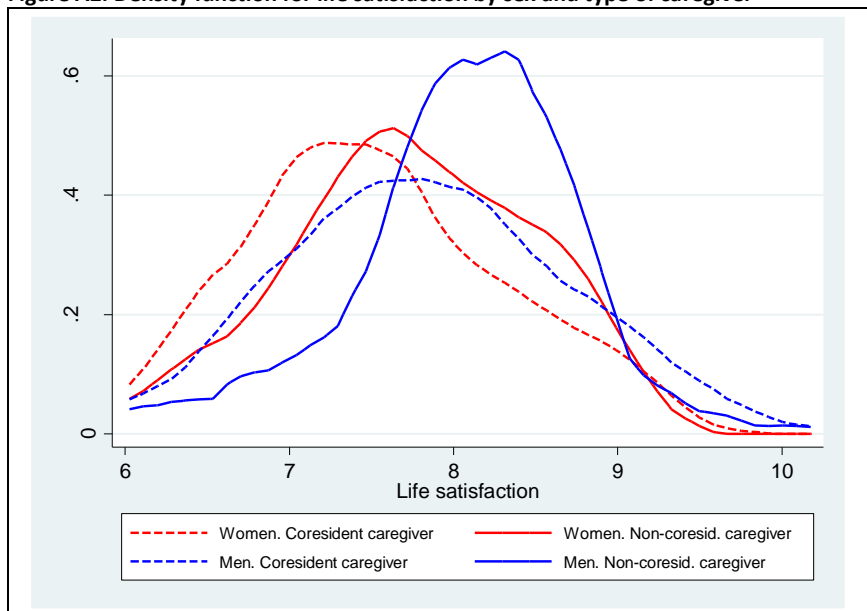
Blue straight line represents the density function of life satisfaction for men who are not informal caregivers and do not receive care.

Blue dashed line represents the density function of life satisfaction for men who are informal caregivers.

Red straight line represents the density function of life satisfaction for women who are not informal caregivers and do not receive care.

Red dashed line represents the density function of life satisfaction for women who are informal caregivers.

**Figure A2. Density function for life satisfaction by sex and type of caregiver**



Source: own work using SHARE (waves 2, 4, 5, 6, 7 and 8).

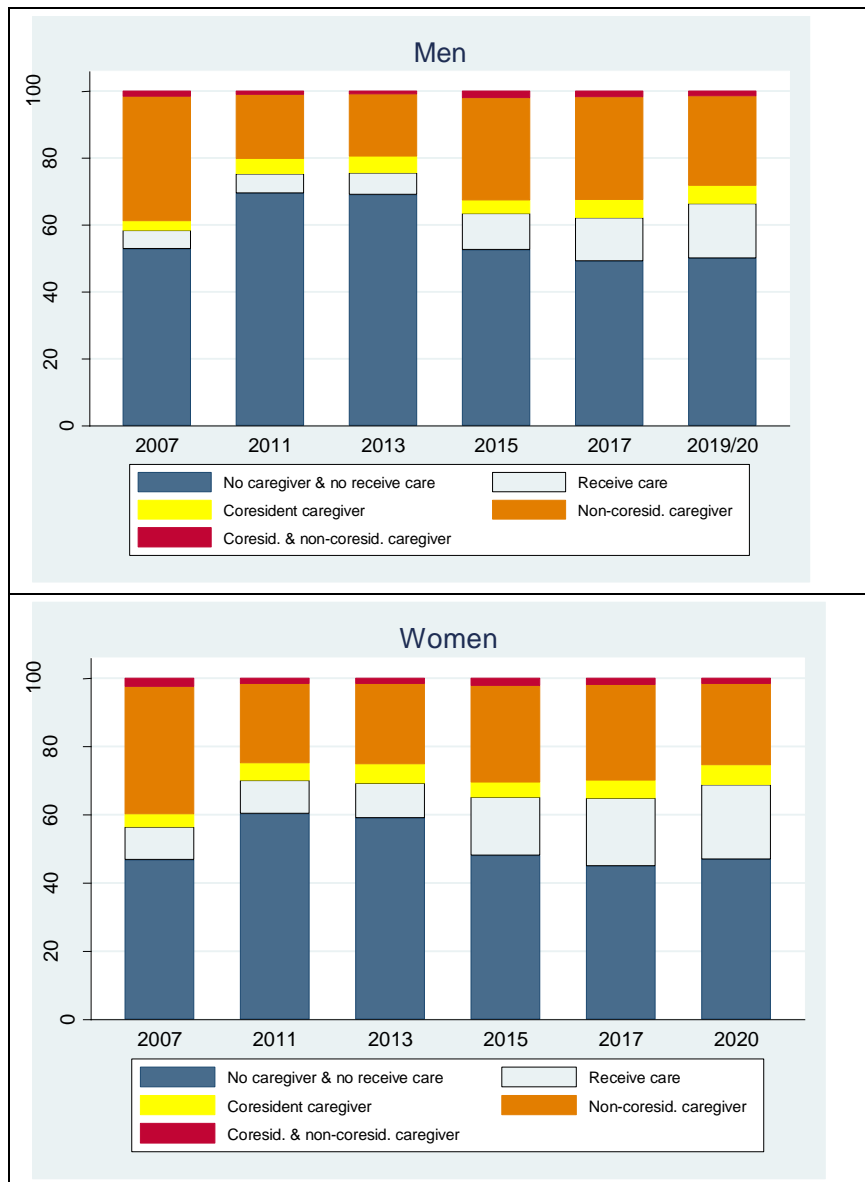
Blue straight line represents the density function of life satisfaction for men who are non-coresident caregivers

Blue dashed line represents the density function of life satisfaction for men who are coresident caregivers.

Red straight line represents the density function of life satisfaction for women who are non-coresident caregivers

Red dashed line represents the density function of life satisfaction for women who are coresident caregivers.

**Figure A3. Distribution of the sample by wave.**



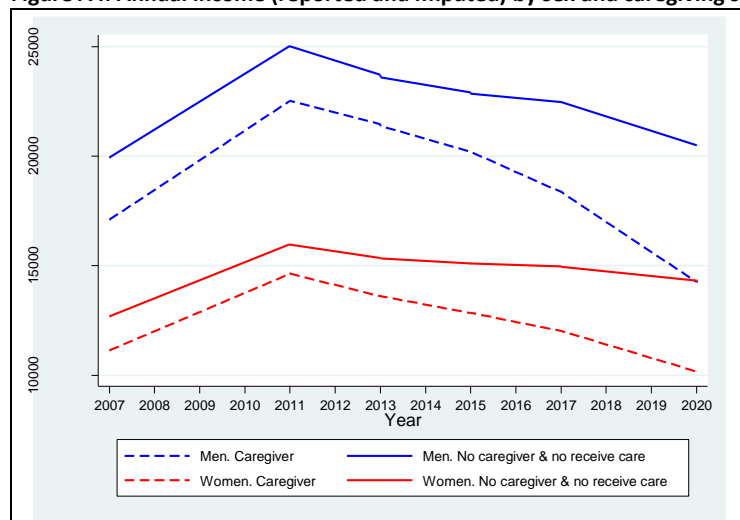
Source: own work using SHARE (waves 2, 4, 5, 6, 7 and 8).

Each bar represents the percentage distribution of the sample by wave and sex in the following groups: “not caregiver and not receive care”, “receive care”, “coresident informal caregiver (but not non-coresident caregiver)”, “non-coresident informal caregiver (but not coresident caregiver)” and “coresident and non-coresident informal caregiver”.

We observe that: (i) as expected the percentage of non-coresident caregivers (and non-coresident caregivers) decreases over time as we follow the same individuals in the period 2007-2020; (ii) similarly, the percentage receiving care increases (from 5.53% to 16.32% for men and from 9.51% to 21.89% for women); (iii) the percentage of coresident caregivers increases (from 2.73% to 5.36% for men and from 9.51% to 21.89% for women); (iv) the percentage of coresident caregivers increases (from 2.73% to 5.36% for men and from 3.8% to 5.68% for women); (iv) by the contrary, the percentage of non-coresident caregivers decreases (from 37.16% to 26.78% for men and from 37.35% to 23.87% for women); (v) the percentage of coresidents & non-coresident caregivers remains stable (below 2%) for men and decreases from 2.58% to 1.70% for women



**Figure A4. Annual income (reported and imputed) by sex and caregiving status (PPP2020).**



Source: own work using SHARE (waves 2, 4, 5, 6, 7, and 8). Total current income includes earnings, unemployment benefits, retirement benefits, disability benefits, other benefits and social assistance.

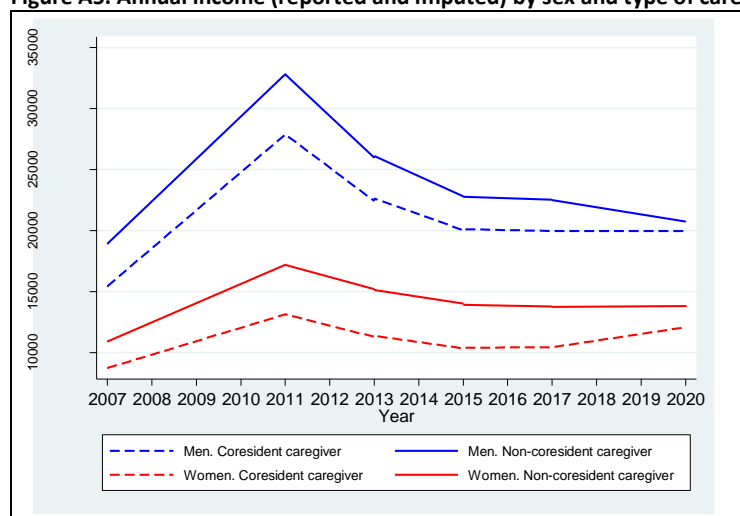
Blue straight line represents individual current income (PPP2020) for men who are not caregivers and do not receive any type of care.

Blue dashed line represents individual current income (PPP2020) for men who are caregivers.

Red straight line represents individual current income (PPP2020) for women who are not caregivers and do not receive any type of care.

Red dashed line represents individual current income (PPP2020) for women who are caregivers.

**Figure A5. Annual income (reported and imputed) by sex and type of caregiver (PPP2020).**



Source: own work using SHARE (waves 2, 4, 5, 6, 7, and 8). Total current income includes earnings, unemployment benefits, retirement benefits, disability benefits, other benefits and social assistance.

Blue straight line represents individual current income (PPP2020) for men who are non-coresident caregivers.

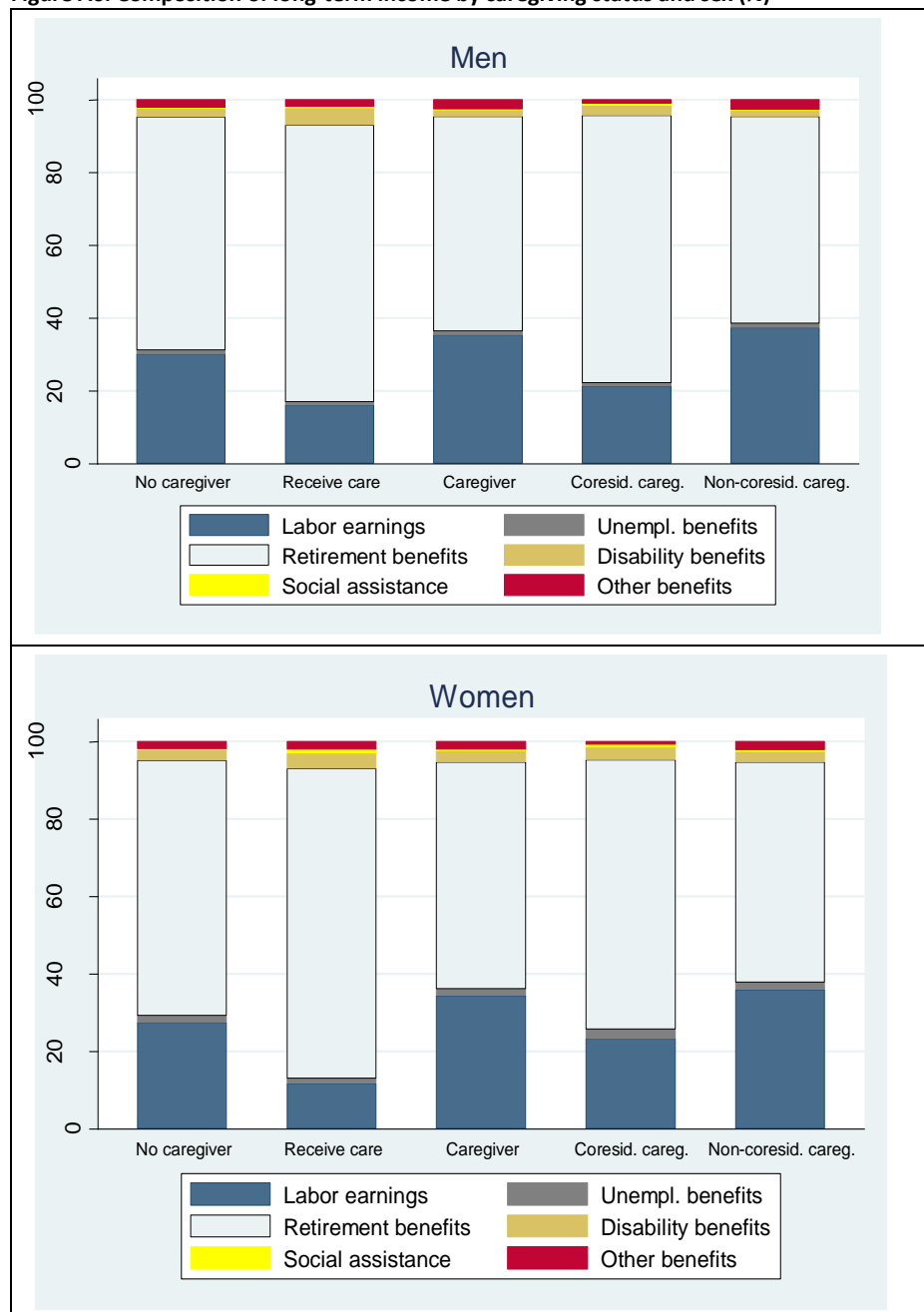
Blue dashed line represents individual current income (PPP2020) for men who are coresident caregivers.

Red straight line represents individual current income (PPP2020) for women who are non-coresident caregivers.

Red dashed line represents individual current income (PPP2020) for women who are coresident caregivers.

We observe that: (i) long-term income increases until 2011 and decreases thereafter, which is consistent with the fact that in 2007, 40% of the employed were between 56-64 years old in 2007, so that after four years, there is a high percentage reaching the normal retirement age or opting for early retirement; (ii) the income of male and female non-caregivers is higher than the income of males and female caregivers; (iii) the income of males (both caregivers and non-caregivers) is higher than the income of females (both caregivers and non-caregivers); (iv) the income of non-coresident caregivers (both males and females) is higher than the income of co-resident caregivers (both males and females).

**Figure A6. Composition of long-term income by caregiving status and sex (%)**

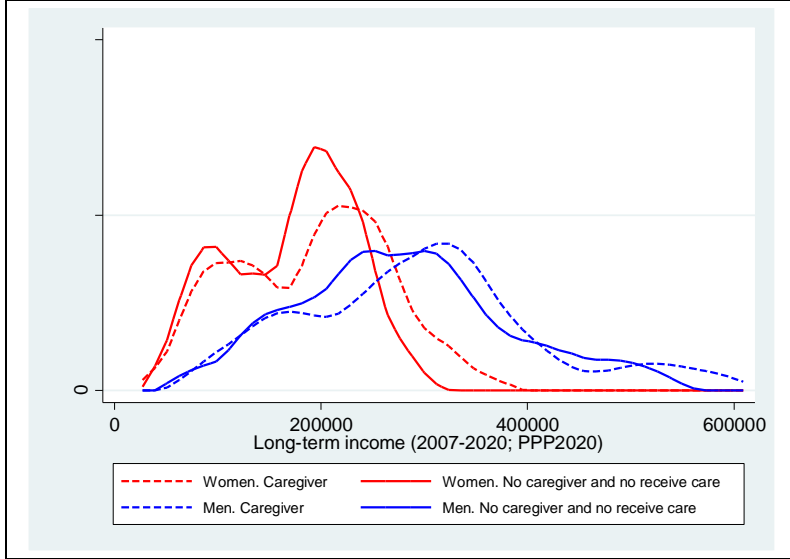


Each bar shows the percentage distribution of long-term income 2007-2020 expressed in PPP2020 and accumulated to 2020 with a discount rate of 2%.

Source: own work using SHARE (waves 2, 4, 5, 6, 7, and 8)

We observe that the percentage represented by labor earnings for coresident caregivers (21.21% for men and 23.26% for women) is lower than that of non-caregivers (30.13% and 27.57%, respectively). In contrast, the percentage represented by retirement benefits (73.45% for men and 69.50% for women) is higher than for non-caregivers (63.98% and 65.92%, respectively).

**Figure A7. Density function for long-term income (2004-2020; PPP2020) by sex and caregiving status.**



Source: own work using SHARE (waves 2, 4, 5, 6, 7 and 8).

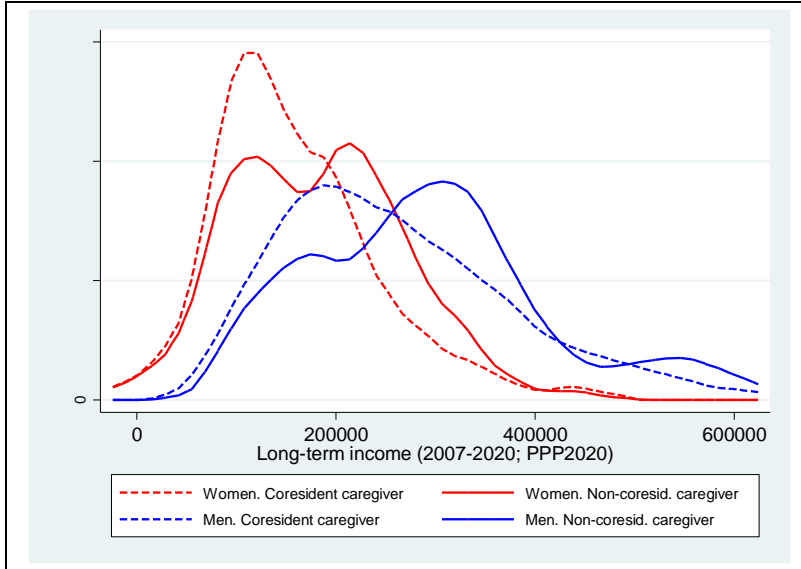
Blue straight line represents individual long-term income (2007-2020; PPP2020) for men who are not caregivers and do not receive care.

Blue dashed line represents individual long-term income (2007-2020; PPP2020) for men who are caregivers

Red straight line represents individual long-term income (2007-2020; PPP2020) for women who are not caregivers and do not receive care.

Red dashed line represents individual long-term income (2007-2020; PPP2020) for women who are caregivers.

**Figure A8. Density function for long-term income (2004-2020; PPP2020) by sex and type of caregiver**



Source: own work using SHARE (waves 2, 4, 5, 6, 7 and 8).

Blue straight line represents individual long-term income (2007-2020; PPP2020) for men who are non-coresident caregivers.

Blue dashed line represents individual long-term income (2007-2020; PPP2020) for men who are coresident caregivers.

Red straight line represents individual long-term income (2007-2020; PPP2020) for women who are non-coresident caregivers.

Red dashed line represents individual long-term income (2007-2020; PPP2020) for women who are coresident caregivers.

We observe that: (i) the long-term individual income of men is higher than that of women; (ii) the long-term income of male caregivers is higher than that of female non-caregivers (who do not receive care); (iii) the long-term income of non-coresident caregivers is higher than that of coresident caregivers; (iv) the density function of the long-term income of female coresident caregivers is considerably more shifted to the left with respect to the density function of male coresident caregivers.

**Table A1. Description of the sample**

	# individuals	# observations						
		Total	No informal caregivers			Informal caregivers		
			Total	No receive care	Receive care	Total	Coresident IC	Non-coresid. IC
Austria	278	1,668	1,149	881	268	519	97	449
Belgium	1,115	6,690	4,453	3,644	809	2,237	342	2,001
Czech Republic	668	4,008	2,734	2,097	637	1,274	281	1,106
Denmark	952	5,712	3,086	2,496	590	2,626	246	2,487
France	655	3,930	2,561	2,119	442	1,369	246	1,205
Germany	628	3,768	2,413	1,917	496	1,355	241	1,192
Italy	1,072	6,432	4,824	4,189	635	1,608	606	1,120
Spain	804	4,824	3,987	3,401	586	837	465	425
Sweden	596	3,576	2,253	1,883	370	1,323	124	1,252
Switzerland	600	3,600	2,419	2,076	343	1,181	115	1,108
Total	7.368	44.208	29.879	24.703	5.176	14.329	2.763	12.345
%			67.59	55.88	11.71	32.41	6.25	27.92

Own work using SHARE (waves 2, 4, 5, 6, 7 and 8). Netherlands was not included in wave 6.

**Table A2. Life satisfaction by country, sex and caregiving status**

	No informal caregiver	No informal caregiver & no receive care	No informal caregiver & receive care	Informal caregiver
<b>Total</b>				
Austria	8.038	8.318	7.530	8.218
Belgium	7.896	7.970	7.617	7.876
Czech Republic	7.617	7.822	6.976	7.429
Denmark	8.573	8.670	8.234	8.660
France	7.634	7.711	7.278	7.584
Germany	7.938	8.017	7.645	7.865
Italy	7.601	7.697	7.020	7.420
Spain	7.691	7.831	6.949	7.389
Sweden	8.493	8.602	7.959	8.446
Switzerland	8.455	8.495	8.219	8.420
Total	7.945	8.048	7.493	7.987
<b>Men</b>				
Austria	8.165	8.299	7.631	8.289
Belgium	7.979	8.070	7.718	8.036
Czech Republic	7.783	7.886	7.291	7.716
Denmark	8.580	8.654	8.202	8.647
France	7.819	7.850	7.593	7.746
Germany	7.880	7.966	7.503	7.862
Italy	7.748	7.811	7.231	7.586
Spain	7.936	8.022	7.208	7.719
Sweden	8.534	8.600	8.102	8.513
Switzerland	8.498	8.564	7.907	8.559
Total	8.045	8.116	7.610	8.130
<b>Women</b>				
Austria	7.973	8.331	7.498	8.176
Belgium	7.830	7.913	7.554	7.726
Czech Republic	7.509	7.774	6.854	7.273
Denmark	8.569	8.683	8.248	8.671
France	7.501	7.598	7.157	7.472
Germany	7.987	8.064	7.741	7.867
Italy	7.480	7.597	6.912	7.328
Spain	7.507	7.671	6.844	7.188
Sweden	8.465	8.604	7.893	8.397
Switzerland	8.423	8.441	8.341	8.330
Total	7.870	7.992	7.438	7.886

Own work using SHARE (waves 2, 4, 5, 6, 7 and 8)

**Table A3. Percentage of informal caregivers by co-residence, sex and country**

	N	Percentage with respect to total population		
		Coreresident caregiver	Non-coreresident caregiver	Total
<b>Total</b>				
Austria	519	5.08	27.50	32.58
Belgium	2,237	5.02	32.51	37.53
Czech Rep.	1,274	5.66	22.81	28.47
Denmark	2,626	4.10	40.75	44.84
France	1,369	5.61	30.18	35.79
Germany	1,355	5.44	30.76	36.20
Italy	1,608	8.65	18.58	27.23
Spain	837	8.82	9.77	18.59
Sweden	1,323	3.03	33.40	36.43
Switzerland	1,181	2.58	29.36	31.94
All	14,329	5.66	27.26	32.92
<b>Men</b>				
Austria	211	5.91	25.41	31.31
Belgium	973	4.91	32.90	37.81
Czech Rep.	447	6.65	24.02	30.67
Denmark	1,180	4.43	39.44	43.87
France	562	5.29	31.80	37.09
Germany	609	5.95	32.15	38.10
Italy	572	10.11	21.24	31.35
Spain	317	8.93	11.75	20.69
Sweden	559	3.36	31.98	35.34
Switzerland	463	3.15	29.59	32.75
All	5,893	5.07	26.44	31.51
<b>Women</b>				
Austria	308	3.76	30.82	34.59
Belgium	1,264	5.15	32.05	37.20
Czech Rep.	827	4.27	21.10	25.38
Denmark	1,446	3.69	42.31	46.01
France	807	6.02	28.12	34.14
Germany	746	4.86	29.14	34.00
Italy	1,036	6.79	15.18	21.97
Spain	520	8.67	7.30	15.97
Sweden	764	2.60	35.23	37.84
Switzerland	718	1.83	29.05	30.87
All	8,436	6.13	27.91	34.04

Own work using SHARE (waves 2, 4, 5, 6, 7 and 8)

Table A4. Descriptive statistics

	Men				Women			
	Total	No caregiver No receive care	Receive care	Caregiver	Total	No caregiver No receive care	Receive care	Caregiver
N	18,648	11,098	1,657	5,893	25,560	13,605	3,519	8,436
<b>Time invariant characteristics (past information from SHARELIFE)</b>								
Period during which he/she felt happier than during the rest of his/her life (%)	40.99	40.77	42.00	41.12	52.25	50.72	54.05	53.97
Age when happiness period started	28.09 (13.69)	28.31 (13.66)	27.99 (13.71)	27.71 (13.72)	26.38 (12.67)	26.33 (12.48)	26.04 (13.30)	26.59 (12.69)
Length of happiness period (years)	22.13 (17.12)	22.26 (17.24)	24.05 (18.05)	21.34 (16.56)	22.34 (16.93)	22.54 (16.94)	25.63 (18.88)	20.67 (15.80)
Period during which he/she felt under more stress than during the rest of his/her life (%)	50.80	48.04	50.94	55.96	59.79	56.41	57.63	66.13
Age when stress period started	41.74 (12.97)	41.95 (13.00)	42.26 (14.06)	41.27 (12.61)	41.67 (14.03)	41.53 (14.00)	42.74 (16.43)	41.48 (13.09)
Length of stress period (years)	7.90 (8.86)	7.85 (8.89)	9.78 (10.15)	7.50 (8.39)	8.40 (9.39)	8.31 (9.37)	10.14 (10.69)	7.89 (8.83)
Period during which health was poorer compared to the rest of his/her your life (%)	38.35	36.57	48.46	38.88	44.65	41.35	53.48	46.28
Age when poor health period started	48.40 (16.26)	49.33 (15.77)	51.43 (16.26)	45.67 (16.73)	46.25 (15.67)	46.17 (15.45)	49.87 (16.98)	44.63 (15.03)
Length of poor health period (years)	6.20 (7.91)	6.15 (7.85)	7.73 (8.73)	5.76 (7.64)	7.83 (9.61)	7.58 (9.41)	9.70 (10.95)	7.28 (9.07)
Period during which there was a distinct financial hardship (%)	31.37	30.12	33.80	33.04	35.31	32.11	38.59	39.08
Age when financial hardship started	34.46 (13.88)	34.50 (14.08)	35.64 (15.47)	34.04 (13.02)	32.86 (13.80)	32.74 (13.81)	32.57 (15.74)	33.14 (12.90)
Length of financial hardship period (years)	8.17 (10.02)	8.57 (10.71)	8.82 (11.78)	7.29 (7.99)	9.33 (10.59)	9.10 (10.32)	11.72 (12.93)	8.68 (9.73)
Period during which suffered from hunger (%)	6.92	6.77	11.71	5.85	6.17	5.70	10.49	5.14
Age when hunger period period started	8.08 (7.03)	7.46 (6.61)	8.72 (6.67)	9.09 (7.95)	10.88 (11.98)	9.81 (11.22)	11.34 (11.75)	12.40 (13.25)
Length of hunger period (years)	5.48 (4.54)	5.81 (4.64)	5.04 (4.00)	4.99 (4.55)	5.64 (4.80)	5.82 (4.75)	5.49 (4.61)	5.49 (5.06)
Ever been the victim of such persecution or discrimination	5.41	5.04	6.34	5.84	4.60	3.79	6.28	5.20
Health during childhood								
Excellent	38.16	37.13	36.93	40.44	33.31	32.61	33.13	34.51
Very good	32.88	33.61	32.77	31.55	33.03	33.68	30.18	33.17
Good	20.53	21.06	20.70	19.48	23.76	24.21	24.84	22.57
Fair	5.50	5.49	6.16	5.35	6.62	6.50	8.47	6.05
Poor	2.28	2.01	3.08	2.58	2.68	2.42	2.56	3.14
Health varied a great deal	0.55	0.59	0.30	0.53	0.54	0.45	0.82	0.57
During your childhood, ever in hospital for >=1 month	6.27	5.61	6.76	7.38	6.34	5.40	7.76	7.25
A physical injury that has led to any permanent handicap	15.25	14.31	23.05	14.83	12.46	11.30	17.79	12.11
Books in the place where lived at age 10								
None or very few (0-10 books)	39.38	42.67	44.96	31.61	37.51	39.95	43.65	31.02
Enough to fill one shelf (11-25 books)	20.40	20.46	18.53	20.80	20.80	20.98	20.60	20.59
Enough to fill one bookcase (26-100 books)	23.58	21.50	21.85	28.00	24.32	23.42	20.74	27.26
Enough to fill two bookcases (101-200 books)	7.88	7.29	6.76	9.32	8.54	7.53	7.39	10.66
Enough to fill two or more bookcases (+ 200 books)	8.75	8.07	7.91	10.27	8.83	8.12	7.62	10.47
Performance in Maths at age 10 compared to other children								
Much better	15.06	14.16	13.52	17.19	10.47	9.61	9.52	12.25
Better	28.44	27.98	26.43	29.88	23.47	23.08	21.51	24.93
About the same	43.40	43.78	43.27	42.73	48.99	49.76	48.31	48.03
Worse	8.85	9.49	9.96	7.33	11.69	11.88	12.22	11.17
Much worse	1.80	1.77	2.41	1.70	2.54	2.64	2.81	2.25
Did not go to school	2.45	2.83	4.41	1.17	2.84	3.03	5.63	1.38
Performance in Language at age 10 compared to other children								
Much better	10.14	9.45	10.74	11.25	13.40	12.30	11.51	15.98
Better	23.91	22.63	24.44	26.17	29.48	28.40	28.05	31.83
About the same	46.07	47.43	41.64	44.76	43.90	45.55	43.56	41.37
Worse	14.67	15.03	16.11	13.59	8.57	9.06	9.04	7.59
Much worse	2.16	2.08	2.23	2.27	1.27	1.12	1.62	1.36
Did not go to school	3.06	3.38	4.83	1.95	3.38	3.58	6.22	1.87
At age 10 lived with								
Biological father	89.54	89.75	88.11	89.55	88.85	89.14	86.84	89.22
Biological mother	94.72	94.53	94.68	95.35	94.01	94.20	94.68	94.29
Stepfather	1.64	1.68	1.87	1.49	1.95	1.77	2.59	1.97

Stepmother	2.28	2.29	1.75	2.43	2.49	2.21	2.76	2.82
Features of accommodation when age 10	37.55	35.45	30.78	43.41	38.97	38.57	28.76	43.86
Fixed bath								
Cold running water supply	72.43	70.36	62.76	79.03	72.35	71.36	62.12	78.21
Hot running water supply	36.55	34.14	26.98	43.78	38.12	37.28	25.97	44.55
Inside toilet	53.89	52.64	44.72	58.83	55.12	54.51	45.27	60.21
Central heating	23.20	20.60	17.14	29.80	23.59	21.81	16.65	29.36
Ever experienced any of these events								
Lived in a children's home	1.54	1.46	2.47	1.44	2.02	2.01	2.27	1.93
Been fostered with another family	1.71	1.51	1.93	2.00	1.88	1.65	2.39	2.03
Evacuated or relocated during a war	3.86	3.85	5.91	3.31	3.38	2.96	5.71	3.08
Lived in a prisoner of war camp	0.29	0.25	0.78	0.22	0.09	0.10	0.06	0.09
Lived in a prison	0.58	0.48	1.03	0.64	0.12	0.10	0.09	0.17
Lived in a labor camp	0.32	0.33	0.42	0.27	0.26	0.31	0.28	0.17
Lived in a concentration camp	0.00	0.00	0.00	0.00	0.14	0.11	0.00	0.17
Stayed in a psychiatric hospital	0.61	0.59	0.60	0.64	0.63	0.57	0.94	0.62
Been an inpatient in a tuberculosis institution	0.42	0.35	0.60	0.49	0.63	0.68	0.80	0.49
Been homeless for 1 month or more	0.26	0.27	0.36	0.20	0.23	0.20	0.23	0.30
<b>Other time invariant characteristics (regular SHARE waves)</b>								
Level of education	0.83	0.84	0.76	0.82	0.87	0.85	0.76	0.90
Pre-primary education and primary educ.	21.41	23.22	30.30	15.51	27.22	27.93	39.70	20.87
Lower secondary education	16.42	17.45	16.23	14.53	16.94	16.69	17.76	17.01
Upper secondary education	28.42	25.38	26.98	34.55	27.64	26.25	24.98	30.99
Postsecondary nontertiary education	3.91	3.61	3.02	4.73	3.52	3.23	2.47	4.42
First stage of tertiary education	24.51	21.73	23.05	30.15	20.17	17.69	14.89	26.36
Second stage of tertiary education	0.65	0.75	0.42	0.53	0.25	0.20	0.20	0.34
Family characteristics								
Single child	2.33	1.98	2.72	2.88	1.96	1.84	2.70	1.85
Oldest child	2.02	1.88	1.03	2.56	1.95	1.76	1.05	2.64
Youngest child	1.73	1.68	1.09	1.99	1.89	1.72	1.02	2.52
Has brothers	50.91	49.73	46.05	54.51	53.00	51.38	47.54	57.91
Has sisters	54.52	53.10	54.38	57.22	55.40	53.67	53.03	59.16
Number of brothers	1.77	1.78	1.65	1.77	1.67	1.69	1.63	1.66
	(1.14)	(1.13)	(1.00)	(1.17)	(1.06)	(1.08)	(1.06)	(1.01)
Number of sisters	1.72	1.74	1.68	1.69	1.79	1.80	1.79	1.78
	(1.07)	(1.12)	(1.04)	(1.00)	1.14	(1.14)	(1.18)	(1.13)
Born in other country	12.58	12.71	11.65	12.71	13.90	13.70	11.65	14.44
Long-term individual income (PPP2020)	324,453	313,704	308,030	352,402	200,900	187,068	308,030	222,275
	(268,332)	2(63,082)	(239,410)	(281,127)	(174,362)	(172,541)	(239,410)	(172,684)
Earnings	99,580	94,012	78,607	124,573	55,889	51,428	78,607	76,389
	(170,816)	(170,070)	(155,324)	(180,258)	(108,528)	(102,434)	(155,324)	(125,026)
Unemployment benefits	3,383	3,401	2,643	3,625	3,154	2,929	2,643	3,837
	(22,978)	(23,265)	(18,755)	(22,465)	(30,814)	(29,679)	(18,755)	(34,191)
Social assistance	678	639	1,157	484	833	513	1,157	863
	(9,743)	(11,799)	(5,617)	(5,064)	(11,266)	(6,851)	(5,617)	(16,121)
Retirement benefits	205,525	201,280	208,202	207,853	131,103	123,726	208,202	129,979
	(232,744)	(222,960)	(220,668)	(249,055)	(150,850)	(150,447)	(220,668)	(142,373)
Other benefits	7,768	7,087	6,148	9,619	4,186	3,669	6,148	4,936
	(52,190)	(48,756)	(24,046)	(63,174)	(24,376)	(21,370)	(24,046)	(27,702)
Disability benefits	7,519	7,284	11,273	6,248	5,735	4,803	11,273	6,271
	(42,642)	(44,072)	48,248)	(32,713)	(31,173)	(27,586)	(48,248)	(35,548)
Long-term income from partner (2007-2020; PPP2020)	269,043	258,047	235,585	296,103	312,955	349,090	323,342	270,984
	(264,189)	(234,644)	(157,221)	(310,785)	(277,910)	(281,547)	(135,190)	(302,988)
Long-term income from other household members (2007-2020; PPP2020)	118,560	121,132	117,793	117,331	119,137	119,488	119,635	122,711
	(57,234)	(65,797)	(35,159)	(49,183)	(88,678)	(69,052)	38,729)	(118,002)
<b>Time varying characteristics</b>								
Age (years)	69.72	69.65	75.34	68.26	69.17	68.87	75.90	66.82
	(8.70)	(8.46)	(9.41)	(8.26)	(9.42)	(9.02)	(9.86)	(8.45)
50-59	11.40	10.87	4.83	14.25	14.67	14.23	5.29	19.30
60-69	37.55	36.02	23.17	44.48	37.00	35.76	21.88	45.31
70-79	32.57	32.92	35.00	31.24	29.82	30.30	33.42	27.56
80 and +	18.47	20.19	36.99	10.03	18.51	19.71	39.41	7.84
Marital status								
Married/cohabiting	77.35	77.12	68.20	80.35	61.42	65.28	39.81	64.21
Single	5.47	4.76	8.87	5.85	4.66	3.96	5.06	5.61
Separated/divorced	6.26	5.40	6.34	7.86	9.50	7.34	10.77	12.45
Widow	6.25	4.87	16.60	5.94	20.16	15.41	44.36	17.73
Household size	2.14	2.18	1.93	2.15	1.95	2.00	1.93	1.99
	(0.83)	(0.84)	(0.76)	(0.82)	(0.87)	(0.85)	(0.76)	(0.90)
Size of municipality								
Big city	19.93	18.94	17.26	22.55	20.71	19.06	20.63	23.40
Large town	14.61	14.41	15.39	14.76	15.43	14.64	16.43	16.28
Small town	26.51	25.88	29.69	26.81	25.89	25.66	28.16	25.31
Rural area	31.29	29.83	34.22	33.23	30.31	29.28	31.17	31.63
Charlston Comorbidity Index, Items								

Item 1, A heart attack, myocardial infarction or coronary thrombosis (1 point)	11.78	10.97	18.53	11.40	8.21	6.64	16.65	7.23
Item 2, A stroke or cerebral vascular disease (1 point)	3.11	2.39	9.17	2.77	2.44	1.64	5.91	2.28
Item 3, Chronic lung disease such as chronic bronchitis or emphysema (1 point)	6.01	5.48	11.16	5.55	5.50	4.43	9.83	5.41
Item 4, Arthritis, including osteoarthritis, or rheumatism (1 point)	18.51	16.83	28.97	18.72	33.37	29.21	48.00	33.99
Item 4, Stomach or duodenal ulcer, peptic ulcer (1 point)	2.42	2.19	4.04	2.39	2.64	2.19	4.29	2.69
Item 6, Diabetes or high blood sugar (1 point)	13.25	12.70	20.94	12.12	10.64	9.75	18.16	8.94
Item 7, Cancer or malignant tumour, including leukaemia or lymphoma, but excluding minor skin cancers (2 points)	7.12	5.82	14.24	7.57	7.06	6.19	11.20	6.73
Charlston Comorbidity Index (final score)	0.62 (0.89)	0.56 (0.84)	1.07 (1.12)	0.61 (0.86)	0.70 (0.90)	0.60 (0.83)	1.14 (1.07)	0.67 (0.86)
Relation with economic activity								
Working	19.54	19.04	7.66	23.81	15.79	15.18	5.26	21.18
Retired	70.98	68.58	83.71	71.93	57.50	53.91	69.00	58.50
Unemployed	1.64	1.83	0.91	1.49	1.63	1.48	0.77	2.22
Houseworking	0.13	0.11	0.06	0.19	16.28	17.88	15.35	14.08
Health at current moment								
Excellent	8.82	8.12	3.44	11.64	7.31	6.70	3.15	10.03
Very good	21.04	19.42	11.71	26.71	18.69	18.28	10.68	22.70
Good	38.33	39.46	29.93	38.57	37.48	38.55	30.07	38.85
Fair	21.47	20.82	33.49	19.29	24.80	23.02	35.69	23.13
Poor	5.59	4.23	21.30	3.75	7.38	5.32	20.35	5.29
Noncoresident caregiver	27.42	0.00	0.00	86.76	28.29	0.00	0.00	85.73
Coresident caregiver	5.69	0.00	0.00	18.02	6.65	0.00	0.00	20.16
Current individual income (PPP2020)	20,310 (28,925)	19,134 (26,527)	18,870 (23,807)	22,929 (33,960)	12,646 (16,163)	11,430 (15,878)	13,161 (15,483)	14,392 (16,718)
Wealth adjusted by household size (PPP2020)	238,084 (309,965)	234,182 (298,253)	200,858 (252,344)	255,193 (342,333)	211,920 (295,297)	214,580 (285,803)	169,888 (281,510)	224,024 (312,856)
Current individual income (PPP2020)	20,310 (28,925)	19,134 (26,527)	19,713 (22,227)	22,929 (33,960)	12,646 (16,163)	11,430 (15,878)	19,713 (22,227)	14,392 (16,718)
Earnings	5,869 (14,165)	5,558 (14,212)	4,254 (11,731)	7,400 (15,007)	3,317 (8,705)	3,026 (8,250)	4,254 (11,731)	4,683 (10,256)
Unemployment benefits	200 (2,755)	191 (2,645)	146 (1,494)	245 (3,197)	183 (3,005)	161 (2,847)	146 (1,494)	237 (3,151)
Social assistance	44 (1,272)	31 (1,468)	103 (895)	39 (847)	55 (1,286)	22 (425)	103 (895)	53 (1,941)
Retirement benefits	13,199 (25,655)	12,466 (21,930)	13,812 (20,081)	14,199 (32,380)	8,448 (14,104)	7,711 (14,141)	13,812 (20,081)	8,649 (13,896)
Other benefits	502 (7,396)	476 (9,012)	519 (3,351)	550 (4,049)	266 (3,179)	213 (2,213)	519 (3,351)	328 (3,925)
Disability benefits	496 (4,982)	413 (4,402)	879 (6,651)	494 (4,561)	377 (3,422)	296 (2,839)	879 (6,651)	443 (4,214)
Current income from partner (PPP2020)	14,322 (28,478)	13,540 (23,660)	12,277 (14,597)	16,253 (37,543)	20,333 (25,762)	22,999 (25,909)	19,494 (12,551)	20,596 (29,333)
Current income from other household members (PPP2020)	11,162 (6,170)	11,289 (6,634)	10,499 (3,264)	11,128 (5,941)	11,205 (8,220)	11,191 (6,355)	9,617 (3,596)	11,470 (11,424)

Source: own work using SHARE (waves 1, 2, 3, 4, 5, 6, 7 and 8).

Long-term income: discounted sum of total individual income (PPP2020) for the period 2007-2020, using an interest rate of 2%.



## Appendix B

**Table B1. First step regressions for endogenous variables**

	Total	Men	Women
<b>Dependent variable: caregiver</b>			
Single child	0.1443*** (0.016)	0.0929*** (0.023)	0.1830*** (0.021)
Eldest child	0.1056*** (0.016)	0.0874*** (0.024)	0.1197*** (0.021)
Youngest child	-0.0915*** (0.017)	-0.0532** (0.026)	-0.1165*** (0.022)
Number of brothers	0.0176*** (0.002)	0.0162*** (0.003)	0.0189*** (0.003)
Number of sisters	-0.1004*** (0.003)	-0.2833*** (0.004)	-0.0822 *** (0.003)
Constant	0.3032*** (0.004)	0.3012*** (0.007)	0.3056*** (0.006)
N	44,208	18,648	25,560
R2	0.3036	0.3032	0.3045
F	319.357	119.227	232.853
p	0.0000	0.0000	0.0000
Partial R2	0.014	0.013	0.021
F-statistic of excluded instruments	1,201.23	983.09	1029.02
Anderson LR statistic (p-value)	0.0000	0.0000	0.0000
Hansen J statistic (p-value)	0.2467	0.3896	0.1468
<b>Dependent variable: coresident caregiver</b>			
Single child	0.2091*** (0.002)	0.1165*** (0.0103)	0.3032*** (0.001)
Eldest child	0.2047*** (0.002)	0.1272*** (0.002)	0.3526*** (0.001)
Youngest child	-0.0154*** (0.003)	-0.0295** (0.013)	-0.0064** (0.001)
Number of brothers	0.0026*** (0.001)	0.0025*** (0.001)	0.0027*** (0.001)
Number of sisters	-0.0142*** (0.001)	-0.0280*** (0.002)	-0.0123*** (0.002)
Constant	0.0616*** (0.002)	0.0600*** (0.003)	0.0632*** (0.003)
R2	0.2562	0.3676	0.2751
F	323.915	220.821	100.6198
p	0.0000	0.0000	0.0000
Partial R2	0.010	0.011	0.017
F-statistic of excluded instruments	1,134.98	1,035.02	912.98
Anderson LR statistic (p-value)	0.0000	0.0000	0.0000
Hansen J statistic (p-value)	0.1348	0.1467	0.1853
<b>Dependent variable: non-coresident caregiver</b>			
Single child	0.0404*** (0.015)	0.0069*** (0.010)	0.0796*** (0.022)
Eldest child	0.1144*** (0.015)	0.1007*** (0.023)	0.1249*** (0.020)
Youngest child	-0.1043*** (0.016)	-0.0769*** (0.025)	-0.1222*** (0.021)
Number of brothers	0.0165*** (0.002)	0.0149*** (0.003)	0.0179*** (0.003)
Number of sisters	0.0031*** (0.001)	-0.0051*** (0.000)	-0.0024*** (0.001)
Constant	0.2595*** (0.004)	0.2571*** (0.006)	0.2617*** (0.005)
R2	0.2440	0.4135	0.3248
F	358.690	130.807	248.456
p	0.0000	0.0000	0.0000
Partial R2	0.022	0.021	0.028
F-statistic of excluded instruments	1,267.89	1,012.67	1,187.23
Anderson LR statistic (p-value)	0.0000	0.0000	0.0000
Hansen J statistic (p-value)	0.2789	0.4137	0.4214
<b>Dependent variable: Log(current individual income PPP2020)</b>			
Log(income partner PPP2020)	0.0716*** (0.017)	0.0590*** (0.011)	0.0912*** (0.012)

Log(income other household members PPP2020)	0.0278*** (0.004)	0.0345*** (0.005)	0.0423*** (0.004)
Constant	9.2374*** (0.005)	9.1268*** (0.006)	9.3899*** (0.006)
R2	0.1923	0.1259	0.2908
F	45,430.270	15,157.025	35,070.472
p	0.0000	0.0000	0.0000
Partial R2	0.015	0.016	0.018
F-statistic of excluded instruments	986.23	914.05	1,003.11
Anderson LR statistic (p-value)	0.0000	0.0000	0.0000
Hansen J statistic (p-value)	0.1680	0.2375	0.2021
<b>Dependent variable: Log(Long-term individual income 2007-2020; PPP2020)</b>			
Log(income partner; 2007-2020, PPP2020)	0.4032*** (0.043)	0.3219*** (0.045)	0.6210*** (0.021)
Log(income other household members; 2007-2020; PPP2020)	0.0681*** (0.011)	0.0490*** (0.012)	0.0801*** (0.02)
Constant	12.0224*** (0.004)	12.2721*** (0.005)	11.8476*** (0.006)
R2	0.2207	0.2307	0.2737
F	27,995.370	26,617.574	9,160.795
p	0.0000	0.0000	0.0000
Partial R2	0.026	0.029	0.031
F-statistic of excluded instruments	984.98	782.98	1,112.87
Anderson LR statistic (p-value)	0.0000	0.0000	0.0000
Hansen J statistic (p-value)	0.2361	0.1634	0.1789

In the regressions for caregiver, coresident caregiver and non-coresident caregiver, the following are introduced as explanatory variables: age, sex, marital status, level of education, size of municipality of residence, wave fixed effects and country fixed effects. In the regressions for current individual income (PPP2020) and long-term individual income (2007-2020; PPP2020), the following are introduced as explanatory variables: age, sex, marital status, household size, level of education and country fixed effects.

Instruments for caregiver, coresident caregiver and non-coresident caregiver: number of daughters, number of sons, being the eldest child, being the youngest child and being single child.

Instruments for current individual income (PPP2020): income from partner and income from other household members (PPP2020).

Instruments for long-term individual income (2007-2020; PPP2020): long-term income from partner (2007-2020; PPP2020) and long-term income from other household members (2007-2020; PPP2020). \*\*\*denotes significance at the 99% level, \*\*at the 95% level, \*at the 90% level.

Table B2. Regression results for Fixed Effects Filtered Panel Models

	Total		Men		Women	
	R1	R2	R1	R2	R1	R2
<b>First-step: Fixed effects model with time varying regressors</b>						
IV(Caregiver)	-0.0780*** (0.017)		-0.0403* (0.024)		-0.1049*** (0.024)	
IV(Coresident caregiver)		-0.4322*** (0.033)		-0.3603*** (0.048)		-0.4860*** (0.046)
IV(Non-coresident caregiver)		-0.0224*** (0.008)		-0.0174*** (0.011)		-0.0273*** (0.002)
IV(log current individual income PPP2020)	0.0247*** (0.007)	0.0262*** (0.007)	0.0331*** (0.012)	0.0346*** (0.012)	0.0247*** (0.010)	0.0264*** (0.010)
Age	0.0136*** (0.001)	0.0150*** (0.001)	0.0120*** (0.002)	0.0136*** (0.002)	0.0152*** (0.002)	0.0166*** (0.002)
Married/cohabiting	0.3959*** (0.026)	0.4073*** (0.026)	0.3530*** (0.049)	0.3656*** (0.049)	0.4201*** (0.034)	0.4335*** (0.034)
Separated/divorced	-0.0360 (0.035)	-0.0401 (0.035)	0.0375 (0.064)	0.0426 (0.064)	-0.0799* (0.043)	-0.0874** (0.043)
Single	-0.0608 (0.041)	-0.0512 (0.041)	-0.1234* (0.067)	-0.1024 (0.066)	-0.0395 (0.056)	-0.0382 (0.055)
Household size	-0.0235** (0.012)	-0.0069 (0.012)	-0.0222 (0.016)	-0.0101 (0.016)	-0.0228 (0.017)	-0.0008 (0.017)
Big city	0.0819*** (0.022)	0.0799*** (0.022)	0.0227 (0.031)	0.0244 (0.031)	0.1334*** (0.031)	0.1277*** (0.031)
Large town	0.0912*** (0.024)	0.0926*** (0.024)	0.0230 (0.034)	0.0293 (0.034)	0.1529*** (0.034)	0.1498*** (0.034)
Small town	0.0765*** (0.021)	0.0750*** (0.021)	0.0511* (0.028)	0.0535* (0.028)	0.1002*** (0.029)	0.0950*** (0.029)
Charlston Comorbidity Index	-0.0573*** (0.010)	-0.0574*** (0.010)	-0.0675*** (0.014)	-0.0678*** (0.014)	-0.0508*** (0.014)	-0.0509*** (0.014)
Working	0.2270*** (0.046)	0.2177*** (0.046)	0.3115*** (0.071)	0.3080*** (0.071)	0.1834*** (0.061)	0.1694*** (0.061)
Retired	0.1519*** (0.042)	0.1447*** (0.042)	0.2554*** (0.067)	0.2478*** (0.067)	0.0931* (0.055)	0.0877 (0.055)
Unemployed	-0.2615*** (0.075)	-0.2766*** (0.075)	-0.1015*** (0.011)	-0.1092*** (0.011)	-0.3614*** (0.102)	-0.3802*** (0.101)
Homemaker	-0.0998* (0.057)	-0.1014* (0.056)	-0.0540*** (0.405)	-0.0235** (0.404)	-0.1567** (0.067)	-0.1593** (0.067)
Current health status: excellent	1.2017*** (0.260)	1.1692*** (0.259)	0.1263 (0.356)	0.0738 (0.356)	2.1148*** (0.373)	2.1023*** (0.372)
Current health status: very good	0.8358*** (0.259)	0.8048*** (0.258)	-0.2171 (0.355)	-0.2679 (0.354)	1.7221*** (0.371)	1.7108*** (0.370)
Current health status: good	0.3930 (0.259)	0.3684 (0.258)	-0.6145* (0.355)	-0.6576* (0.354)	1.2444*** (0.371)	1.2384*** (0.370)
Current health status: fair	-0.1024 (0.259)	-0.1165 (0.258)	-1.0486*** (0.355)	-1.0830*** (0.354)	0.7041* (0.371)	0.7099* (0.370)
Log (Wealth adjusted by household size PPP2020)	0.0022*** (0.000)	0.0021*** (0.000)	0.0034*** (0.000)	0.0036*** (0.000)	0.0011*** (0.000)	0.0010*** (0.000)
Constant	5.3461*** (0.294)	5.2841*** (0.293)	6.3367*** (0.415)	6.2535*** (0.414)	4.4092*** (0.420)	4.3169*** (0.419)
N	312,890	312,890	140,470	140,470	172,420	172,420
R2	0.3665	0.3704	0.3498	0.3532	0.3753	0.3797
F	249.8893	247.0370	98.8121	97.5271	146.3345	145.0108
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Second step: Between model with time-invariant regressors</b>						
IV(Log long-term individual income (PPP2020))	0.0904*** (0.010)	0.0846*** (0.010)	0.1002*** (0.015)	0.0968*** (0.015)	0.0896*** (0.015)	0.0848*** (0.015)
Man	-0.0503*** (0.011)	-0.0569*** (0.011)				
Period during which were happier than during the rest of his/her life	-0.5146*** (0.023)	-0.5098*** (0.023)	-0.5150*** (0.033)	-0.5110*** (0.033)	-0.5075*** (0.031)	-0.5024*** (0.031)
Age when happiness period started	0.0095*** (0.001)	0.0094*** (0.001)	0.0077*** (0.001)	0.0077*** (0.001)	0.0109*** (0.001)	0.0108*** (0.001)
Length of happiness period (years)	0.0067*** (0.000)	0.0067*** (0.000)	0.0072*** (0.001)	0.0073*** (0.001)	0.0063*** (0.001)	0.0063*** (0.001)

Period during which were under more stress than during the rest of his/her life	0.1323*** (0.026)	0.1266*** (0.026)	-0.0508 (0.038)	-0.0554 (0.038)	0.2396*** (0.036)	0.2326*** (0.036)
Age when stress period started	-0.0046*** (0.001)	-0.0046*** (0.001)	-0.0013* (0.001)	-0.0013* (0.001)	-0.0065*** (0.001)	-0.0064*** (0.001)
Length of stress period (years)	-0.0086*** (0.001)	-0.0083*** (0.001)	-0.0002 (0.001)	-0.0000 (0.001)	-0.0131*** (0.001)	-0.0127*** (0.001)
Period during which health was poorer compared to the rest of his/her your life	0.1525*** (0.028)	0.1564*** (0.028)	0.2200*** (0.040)	0.2257*** (0.040)	0.1349*** (0.039)	0.1362*** (0.039)
Age when poor health period started	-0.0020*** (0.001)	-0.0021*** (0.001)	-0.0030*** (0.001)	-0.0031*** (0.001)	-0.0020*** (0.001)	-0.0020*** (0.001)
Length of poor health period (years)	0.0026*** (0.001)	0.0023*** (0.001)	0.0011 (0.001)	0.0009 (0.001)	0.0045*** (0.001)	0.0042*** (0.001)
Period during which there was a distinct financial hardship	0.1651*** (0.026)	0.1636*** (0.026)	0.1247*** (0.039)	0.1189*** (0.039)	0.1667*** (0.035)	0.1691*** (0.035)
Age when financial hardship started	-0.0046*** (0.001)	-0.0046*** (0.001)	-0.0044*** (0.001)	-0.0043*** (0.001)	-0.0044*** (0.001)	-0.0044*** (0.001)
Length of financial hardship period (years)	-0.0121*** (0.001)	-0.0120*** (0.001)	-0.0081*** (0.001)	-0.0080*** (0.001)	-0.0142*** (0.001)	-0.0141*** (0.001)
Period during which suffered from hunger	0.0608 (0.040)	0.0691* (0.040)	0.0730 (0.061)	0.0864 (0.061)	-0.0356 (0.056)	-0.0305 (0.056)
Age when hunger period period started	-0.0049** (0.002)	-0.0055*** (0.002)	0.0043 (0.004)	0.0033 (0.004)	-0.0044* (0.002)	-0.0048** (0.002)
Length of hunger period (years)	-0.0180*** (0.004)	-0.0186*** (0.004)	-0.0284*** (0.006)	-0.0294*** (0.006)	-0.0047 (0.006)	-0.0049 (0.006)
Ever been the victim of such persecution or discrimination	-0.1063*** (0.023)	-0.1087*** (0.023)	-0.0178 (0.030)	-0.0202 (0.030)	-0.1506*** (0.033)	-0.1538*** (0.033)
Health during childhood: Excellent	-0.0412 (0.178)	-0.0223 (0.178)	0.1814 (0.225)	0.1977 (0.225)	-0.0978 (0.272)	-0.0904 (0.272)
Health during childhood: Very good	-0.0957 (0.178)	-0.0732 (0.178)	0.0898 (0.225)	0.1084 (0.225)	-0.1217 (0.273)	-0.1102 (0.272)
Health during childhood: Good	-0.1592 (0.178)	-0.1388 (0.178)	-0.0163 (0.225)	0.0027 (0.225)	-0.1565 (0.273)	-0.1494 (0.272)
Health during childhood: Fair	-0.1177 (0.179)	-0.1003 (0.179)	0.0348 (0.227)	0.0553 (0.227)	-0.1161 (0.274)	-0.1156 (0.273)
Health during childhood: Poor	-0.1538 (0.180)	-0.1287 (0.180)	-0.0897 (0.229)	-0.0537 (0.229)	-0.0913 (0.275)	-0.0891 (0.274)
During your childhood. ever in hospital for >=1 month	0.0042 (0.021)	0.0035 (0.021)	0.0381 (0.028)	0.0336 (0.028)	-0.0294 (0.029)	-0.0260 (0.029)
A physical injury that has led to any permanent handicap	0.0441*** (0.014)	0.0434*** (0.014)	-0.0373* (0.019)	-0.0370* (0.019)	0.0993*** (0.021)	0.0980*** (0.021)
None or very few (0-10 books)	-0.0740*** (0.021)	-0.0700*** (0.021)	-0.0363 (0.029)	-0.0327 (0.029)	-0.1081*** (0.030)	-0.1036*** (0.029)
Enough to fill one shelf (11-25 books)	-0.0816*** (0.021)	-0.0833*** (0.021)	-0.0375 (0.029)	-0.0411 (0.029)	-0.1219*** (0.029)	-0.1215*** (0.029)
Enough to fill one bookcase (26-100 books)	0.0476** (0.019)	0.0439** (0.019)	0.1593*** (0.027)	0.1518*** (0.027)	-0.0365 (0.027)	-0.0372 (0.027)
Enough to fill two bookcases (101-200 books)	0.0454* (0.023)	0.0438* (0.023)	0.1188*** (0.033)	0.1147*** (0.033)	-0.0083 (0.032)	-0.0075 (0.032)
Performance Maths: Much better	0.1437*** (0.038)	0.1378*** (0.038)	0.1122** (0.055)	0.1016* (0.055)	0.0750 (0.052)	0.0755 (0.052)
Performance Maths: Better	0.0776** (0.036)	0.0745** (0.036)	0.0386 (0.054)	0.0283 (0.054)	0.0356 (0.048)	0.0409 (0.048)
Performance Maths: About the same	0.1250*** (0.035)	0.1187*** (0.035)	0.0477 (0.053)	0.0361 (0.053)	0.1093** (0.047)	0.1102** (0.047)
Performance Maths: Worse	0.0273 (0.037)	0.0191 (0.037)	-0.1065* (0.056)	-0.1204** (0.056)	0.0570 (0.050)	0.0562 (0.049)
Performance Maths: Much worse	0.0981 (0.077)	0.0904 (0.077)	0.3334*** (0.101)	0.3215*** (0.101)	-0.1028 (0.115)	-0.0946 (0.115)
Performance Language: Much better	0.0396 (0.071)	0.0237 (0.071)	0.2886*** (0.096)	0.2775*** (0.096)	-0.1065 (0.105)	-0.1175 (0.104)
Performance Language: Better	-0.0016 (0.070)	-0.0128 (0.070)	0.2231** (0.095)	0.2172** (0.094)	-0.1321 (0.103)	-0.1387 (0.103)
Performance Language: About the same	-0.0309 (0.070)	-0.0421 (0.070)	0.2323** (0.094)	0.2259** (0.094)	-0.1766* (0.103)	-0.1836* (0.103)

Performance Language: Worse	-0.0266 (0.071)	-0.0401 (0.071)	0.2872*** (0.095)	0.2784*** (0.095)	-0.2505** (0.106)	-0.2592** (0.105)
Performance Language: Much worse	0.0635 (0.078)	0.0559 (0.078)	0.4060*** (0.100)	0.3912*** (0.100)	-0.2548** (0.119)	-0.2390** (0.119)
Age 10: lived with biological father	-0.0251 (0.027)	-0.0196 (0.027)	-0.0628* (0.038)	-0.0543 (0.038)	0.0079 (0.037)	0.0100 (0.037)
Age 10: lived with biological mother	0.0885*** (0.019)	0.0879*** (0.019)	0.1062*** (0.026)	0.1038*** (0.026)	0.0756*** (0.026)	0.0770*** (0.026)
Age 10: lived with stepfather	0.2112*** (0.042)	0.2066*** (0.042)	0.0327 (0.060)	0.0354 (0.060)	0.3387*** (0.057)	0.3258*** (0.057)
Age 10: lived with stepmother	-0.0686* (0.035)	-0.0730** (0.035)	0.0897* (0.050)	0.0852* (0.050)	-0.1440*** (0.049)	-0.1479*** (0.049)
Fixed bath	-0.0395*** (0.015)	-0.0333** (0.015)	-0.0242 (0.021)	-0.0187 (0.021)	-0.0586*** (0.021)	-0.0521** (0.021)
Cold running water supply	0.0500*** (0.014)	0.0487*** (0.014)	0.0028 (0.019)	0.0038 (0.019)	0.0811*** (0.020)	0.0781*** (0.020)
Hot running water supply	0.0376** (0.016)	0.0337** (0.016)	0.0400* (0.022)	0.0385* (0.022)	0.0414* (0.022)	0.0351 (0.022)
Inside toilet	0.0073 (0.014)	0.0069 (0.014)	0.0298 (0.019)	0.0243 (0.019)	-0.0161 (0.019)	-0.0112 (0.019)
Central heating	0.0733*** (0.015)	0.0665*** (0.015)	0.0602*** (0.021)	0.0539** (0.021)	0.0726*** (0.021)	0.0650*** (0.021)
Lived in a children's home	0.1674*** (0.037)	0.1694*** (0.037)	0.3204*** (0.056)	0.3156*** (0.056)	0.0337 (0.051)	0.0418 (0.051)
Been fostered with another family	0.1129*** (0.038)	0.1146*** (0.038)	0.0739 (0.054)	0.0603 (0.054)	0.1509*** (0.053)	0.1660*** (0.053)
Evacuated or relocated during a war	-0.0619** (0.027)	-0.0697*** (0.026)	-0.1294*** (0.035)	-0.1351*** (0.035)	0.0146 (0.039)	0.0054 (0.039)
Lived in a prisoner of war camp	0.4343*** (0.114)	0.4611*** (0.114)	0.2847** (0.128)	0.3030** (0.128)	0.6023*** (0.218)	0.6461*** (0.218)
Lived in a prison	-0.0496 (0.086)	-0.0567 (0.086)	-0.0224 (0.090)	-0.0320 (0.090)	-0.3152 (0.192)	-0.2988 (0.192)
Lived in a labor camp	0.1059 (0.091)	0.1122 (0.091)	0.3917*** (0.118)	0.3989*** (0.118)	-0.1172 (0.136)	-0.1129 (0.136)
Lived in a concentration camp	-0.7567*** (0.166)	-0.7574*** (0.166)	0.0000 (.)	0.0000 (.)	-0.7296*** (0.176)	-0.7301*** (0.175)
Been an inpatient in a tuberculosis institution	-0.0342 (0.061)	-0.0184 (0.061)	-0.1847** (0.086)	-0.1418 (0.086)	0.0931 (0.085)	0.0879 (0.084)
Stayed in a psychiatric hospital	-0.2813*** (0.067)	-0.2854*** (0.067)	-0.8318*** (0.105)	-0.8481*** (0.105)	-0.0164 (0.087)	-0.0168 (0.087)
Been homeless for 1 month or more	-0.0637 (0.097)	-0.0537 (0.097)	0.2562* (0.135)	0.2493* (0.135)	-0.2812** (0.138)	-0.2568* (0.137)
Born in other country	-0.1021*** (0.015)	-0.1009*** (0.015)	-0.0831*** (0.021)	-0.0808*** (0.021)	-0.1340*** (0.020)	-0.1332*** (0.020)
Lower secondary education	0.0175 (0.016)	0.0139 (0.016)	-0.0461** (0.022)	-0.0476** (0.022)	0.0570*** (0.022)	0.0530** (0.022)
Upper secondary education	0.0416*** (0.014)	0.0363** (0.014)	-0.0549*** (0.020)	-0.0572*** (0.020)	0.0973*** (0.020)	0.0886*** (0.020)
Postsecondary nontertiary education	0.1381*** (0.028)	0.1318*** (0.028)	0.1701*** (0.039)	0.1648*** (0.039)	0.0815** (0.040)	0.0762* (0.040)
First stage of tertiary education	0.0017 (0.017)	-0.0034 (0.017)	-0.0872*** (0.023)	-0.0911*** (0.023)	0.0643*** (0.024)	0.0569** (0.024)
Second stage of tertiary education	-0.1853** (0.075)	-0.1587** (0.075)	-0.1427* (0.085)	-0.1368 (0.085)	-0.2528* (0.134)	-0.1775 (0.134)
Constant	-0.2433 (0.188)	-0.2604 (0.188)	-0.7336*** (0.266)	-0.7501*** (0.266)	-0.0691 (0.271)	-0.0901 (0.270)
r <sup>2</sup>	0.2551	0.2539	0.2698	0.2682	0.2618	0.2600
F	380.835	372.246	221.189	215.836	245.061	237.304
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Omitted variables in the regressions for life satisfaction: widow, other relation with economic activity, living in rural area, current health status (poor). All regressions include year (wave) specific effects.

Omitted variables in the regressions for long-term individual income (2007-2020; PPP2020): Performance in Maths/Language at the age of 10 (did not go to school), self-reported health status at the age of 10 (varied from time to time), number of books at home at the age of 10 (more than 200 books), education (not completed primary education).

Caregiving is instrumented using the following variables: being the eldest child, being the youngest child, being single child, number of brothers and number of sisters.

Current individual income (PPP2020) is instrumented using income from partner and income from other household members.

Long-term individual income (s007-2020; PPP2020) is instrumented using long-term income from partner y long-term income from other household members.

Standard errors are adjusted for clustering on country and year level. \*\*\*denotes significance at the 99% level, \*\*at the 95% level, \*at the 90% level.

**Table B3. Regression results for Fixed Effects Filtered Panel Models by country**

	Total		Men		Women	
	R1	R2	R1	R2	R1	R2
<b>Austria</b>						
<b>First-step: Fixed effects model with time varying regressors</b>						
IV(Caregiver)	-0.1739*** (0.024)		-0.0786*** (0.035)		-0.1293*** (0.025)	
IV(Coresident caregiver)		-0.3024*** (0.105)		-0.0971*** (0.021)		-0.3768*** (0.132)
IV(Non-coresident caregiver)		-0.0677*** (0.029)		-0.0556*** (0.011)		-0.1163*** (0.032)
IV(log current individual income PPP2020)	0.1217*** (0.037)	0.1123*** (0.037)	0.2002*** (0.128)	0.1103*** (0.128)	0.1123*** (0.036)	0.1083 *** (0.036)
N	1,190	1,190	447	447	743	7.3
R2	0.2416	0.2433	0.2852	0.2851	0.2556	0.2579
F	148.353	143.851	70.163	67.157	98.494	95.700
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Second step: Between model with time-invariant regressors</b>						
IV( Log long-term individual income (PPP2020))	0.1881*** (0.023)	0.1804*** (0.023)	0.2133** (0.029)	0.2116** (0.029)	0.1353*** (0.007)	0.1494*** (0.007)
R2	0.2949	0.2951	0.6072	0.6074	0.4349	0.4299
F	108.698	108.803	149.921	149.988	134.887	132.147
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Germany</b>						
<b>First-step: Fixed effects model with time varying regressors</b>						
IV(Caregiver)	-0.1304** (0.057)		-0.1445*** (0.054)		-0.1320* (0.077)	
IV(Coresident caregiver)		-0.5621*** (0.111)		-0.7671*** (0.173)		-0.4369*** (0.146)
IV(Non-coresident caregiver)		-0.0632*** (0.029)		-0.0410*** (0.017)		-0.0932*** (0.020)
IV(log current individual income PPP2020)	0.0675** (0.032)	0.0607* (0.032)	0.1546*** (0.055)	0.1497*** (0.055)	0.0156*** (0.005)	0.0115** (0.005)
N	2,885	2,885	1,356	1,356	1,529	1,529
R2	0.1925	0.1986	0.2463	0.2557	0.1674	0.1716
F	272.655	272.422	189.218	190.572	120.850	119.667
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Second step: Between model with time-invariant regressors</b>						
IV( Log long-term individual income (PPP2020))	0.1026*** (0.026)	0.1047*** (0.026)	0.1120*** (0.045)	0.1140*** (0.004)	0.0940*** (0.031)	0.0845*** (0.031)
R2	0.1689	0.1682	0.2472	0.2495	0.2269	0.2243
F	122.648	122.093	92.523	93.626	97.598	96.166
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Sweden</b>						
<b>First-step: Fixed effects model with time varying regressors</b>						
IV(Caregiver)	-0.1223** (0.051)		-0.1205* (0.071)		-0.1148*** (0.022)	
IV(Coresident caregiver)		-0.5423*** (0.130)		-0.4251** (0.194)		-0.6209*** (0.174)
IV(Non-coresident caregiver)		-0.0724*** (0.022)		-0.0699*** (0.023)		-0.0588*** (0.013)
IV(log current individual income PPP2020)	0.0415*** (0.009)	0.0317*** (0.009)	0.0810*** (0.014)	0.0686*** (0.014)	0.0095*** (0.002)	0.0053*** (0.002)
N	2,832	2,832	1,169	1,169	1,663	1,663
R2	0.1454	0.1497	0.2027	0.2048	0.1404	0.1463
F	190.912	189.953	121.181	117.762	106.937	107.826
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Second step: Between model with time-invariant regressors</b>						
IV( Log long-term individual income (PPP2020))	0.1599*** (0.043)	0.1571*** (0.043)	0.2137*** (0.061)	0.2089*** (0.061)	0.0539*** (0.018)	0.0462*** (0.017)
R2	0.1513	0.1494	0.3035	0.3011	0.2139	0.2095
F	101.013	99.535	104.566	103.408	92.469	90.090

p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Spain</b>						
<b>First-step: Fixed effects model with time varying regressors</b>						
IV(Caregiver)	-0.3119*** (0.082)		-0.2460*** (0.107)		-0.2646** (0.126)	
IV(Coresident caregiver)		-0.5458*** (0.104)		-0.6613*** (0.131)		-0.4198** (0.166)
IV(Non-coresident caregiver)		-0.0070 (0.111)		-0.1852 (0.156)		-0.1114 (0.159)
IV(log current individual income PPP2020)	0.0618** (0.027)	0.0673** (0.027)	0.0752*** (0.032)	0.0714*** (0.032)	0.0476*** (0.017)	0.0440*** (0.017)
N	2,741	2,741	1,469	1,469	1,272	1,272
R2	0.1519	0.1559	0.1251	0.1347	0.1641	0.1658
F	194.525	192.834	86.026	89.860	97.834	95.204
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Second step: Between model with time-invariant regressors</b>						
IV( Log long-term individual income (PPP2020))	0.0750** (0.023)	0.0703*** (0.022)	0.0815*** (0.030)	0.0961*** (0.030)	0.0522*** (0.017)	0.0578*** (0.017)
R2	0.1206	0.1209	0.2160	0.2084	0.1838	0.1863
F	94.284	94.554	95.214	90.976	83.057	84.423
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Italy</b>						
<b>First-step: Fixed effects model with time varying regressors</b>						
IV(Caregiver)	-0.2401*** (0.056)		-0.1057** (0.078)		-0.2948*** (0.081)	
IV(Coresident caregiver)		-0.4750*** (0.082)		-0.3700*** (0.122)		-0.5299*** (0.112)
IV(Non-coresident caregiver)		-0.1655*** (0.025)		-0.0185*** (0.068)		-0.1322 (0.096)
IV(log current individual income PPP2020)	0.0672*** (0.030)	0.0605*** (0.029)	0.0659*** (0.025)	0.0603*** (0.025)	0.0598*** (0.018)	0.0613*** (0.018)
N	3,910	3,910	1,901	1,901	2,009	2,009
R2	0.1520	0.1556	0.1189	0.1214	0.1727	0.1772
F	278.499	275.281	101.237	99.571	172.543	170.824
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Second step: Between model with time-invariant regressors</b>						
IV( Log long-term individual income (PPP2020))	0.0831*** (0.021)	0.0822*** (0.021)	0.0653*** (0.026)	0.0678*** (0.026)	0.0935*** (0.027)	0.0911*** (0.027)
R2	0.1114	0.1075	0.1648	0.1659	0.1576	0.1508
F	119.586	114.894	87.751	88.489	103.296	98.096
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>France</b>						
<b>First-step: Fixed effects model with time varying regressors</b>						
IV(Caregiver)	-0.1882*** (0.053)		-0.2284** (0.075)		-0.1614*** (0.054)	
IV(Coresident caregiver)		-0.2575** (0.103)		-0.3317** (0.137)		-0.2163*** (0.091)
IV(Non-coresident caregiver)		-0.1335** (0.056)		-0.1400*** (0.060)		-0.1158*** (0.048)
IV(log current individual income PPP2020)	0.0894*** (0.024)	0.0882*** (0.024)	0.1735*** (0.049)	0.1666*** (0.048)	0.0596** (0.029)	0.0574** (0.029)
N	3,042	3,042	1,297	1,297	1,745	1,745
r2	0.1720	0.1733	0.1451	0.1483	0.1892	0.1898
F	250.534	243.015	86.271	85.025	160.421	154.834
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Second step: Between model with time-invariant regressors</b>						
IV( Log long-term individual income (PPP2020))	0.1132*** (0.034)	0.1124*** (0.034)	0.0650*** (0.010)	0.0677*** (0.010)	0.1430*** (0.048)	0.1417*** (0.048)
R2	0.1703	0.1707	0.2890	0.2894	0.2241	0.2243
F	127.060	127.408	107.246	107.424	105.679	105.754
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Denmark</b>						
<b>First-step: Fixed effects model with time varying regressors</b>						

IV(Caregiver)	-0.1300*** (0.018)		-0.0325*** (0.006)		-0.1866*** (0.012)	
IV(Coresident caregiver)		-0.1604*** (0.070)		-0.0556*** (0.027)		-0.2735** (0.108)
IV(Non-coresident caregiver)		-0.0931** (0.039)		-0.0214*** (0.010)		-0.1098** (0.033)
IV(log current individual income PPP2020)	0.0361*** (0.012)	0.0387*** (0.012)	0.0045*** (0.011)	0.0029*** (0.010)	0.0519*** (0.014)	0.0538 *** (0.014)
N	4,509	4,509	1,956	1,956	2,553	2,553
R2	0.1448	0.1462	0.1454	0.1457	0.1646	0.1674
F	303.610	295.080	131.334	126.507	199.099	195.394
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Second step: Between model with time-invariant regressors</b>						
IV( Log long-term individual income (PPP2020))	0.1093*** (0.029)	0.1006*** (0.029)	0.1555*** (0.041)	0.1556*** (0.041)	0.0540*** (0.010)	0.0526*** (0.010)
R2	0.2108	0.2113	0.2563	0.2561	0.1400	0.1410
F	117.365	117.973	145.926	145.833	90.864	91.628
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Switzerland</b>						
<b>First-step: Fixed effects model with time varying regressors</b>						
IV(Caregiver)	-0.2575*** (0.049)		-0.0939*** (0.024)		-0.5910*** (0.066)	
IV(Coresident caregiver)		-0.4928*** (0.135)		-0.1193*** (0.025)		-0.6374*** (0.178)
IV(Non-coresident caregiver)		-0.1135** (0.051)		-0.0475*** (0.010)		-0.3041 *** (0.028)
IV(log current individual income PPP2020)	0.0466*** (0.016)	0.0459*** (0.016)	0.1136*** (0.040)	0.1138*** (0.040)	0.0070*** (0.028)	0.0060*** (0.028)
N	2,732	2,732	1,145	1,145	1,587	1,587
R2	0.1697	0.1724	0.1860	0.1864	0.1736	0.1824
F	221.294	216.790	102.283	98.506	131.125	133.882
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Second step: Between model with time-invariant regressors</b>						
IV( Log long-term individual income (PPP2020))	0.1266*** (0.023)	0.1264*** (0.023)	0.1463*** (0.035)	0.1461*** (0.035)	0.0591** (0.029)	0.0537* (0.029)
R2	0.1704	0.1717	0.3354	0.3350	0.2302	0.2371
F	114.875	115.957	117.484	117.270	103.729	107.758
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Belgium</b>						
<b>First-step: Fixed effects model with time varying regressors</b>						
IV(Caregiver)	-0.0741*** (0.017)		-0.0517*** (0.011)		-0.1113** (0.054)	
IV(Coresident caregiver)		-0.0302*** (0.010)		-0.0614*** (0.023)		-0.1487*** (0.055)
IV(Non-coresident caregiver)		-0.1047*** (0.038)		-0.0341*** (0.009)		-0.0173*** (0.006)
IV(log current individual income PPP2020)	0.0403** (0.019)	0.0404** (0.019)	0.0515*** (0.019)	0.0510*** (0.019)	0.0328*** (0.007)	0.0331*** (0.007)
N	4,324	4,324	2,120	2,120	2,204	2,204
R2	0.1473	0.1474	0.1338	0.1338	0.1503	0.1508
F	296.939	285.800	129.415	124.368	154.057	148.661
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Second step: Between model with time-invariant regressors</b>						
IV( Log long-term individual income (PPP2020))	0.0929*** (0.013)	0.0932*** (0.013)	0.0676*** (0.022)	0.0678*** (0.022)	0.1270*** (0.017)	0.1269*** (0.017)
R2	0.1457	0.1457	0.2164	0.2168	0.1692	0.1702
F	173.844	173.935	133.030	133.376	112.872	113.663
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Czech Republic</b>						
<b>First-step: Fixed effects model with time varying regressors</b>						
IV(Caregiver)	-0.2078*** (0.063)		-0.0661*** (0.002)		-0.2698*** (0.082)	
IV(Coresident caregiver)		-0.4536*** (0.112)		-0.0817*** (0.012)		-0.6355*** (0.142)
IV(Non-coresident caregiver)		-0.0703***		-0.0614***		-0.0877***



IV(log current individual income PPP2020)	0.0957** (0.041)	(0.016) 0.0912** (0.041)	0.0338** (0.014)	(0.014) 0.0353** (0.014)	0.1137** (0.054)	(0.016) 0.1097** (0.054)
N	3,124	3,124	1,187	1,187	1,937	1,937
R2	0.1419	0.1446	0.1359	0.1362	0.1572	0.1620
F	213.442	209.408	79.500	76.372	148.625	147.815
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Second step: Between model with time-invariant regressors</b>						
IV( Log long-term individual income (PPP2020))	0.2404*** (0.051)	0.2471*** (0.051)	0.1781** (0.089)	0.1780** (0.089)	0.2927*** (0.064)	0.3052*** (0.064)
R2	0.1757	0.1775	0.2249	0.2260	0.2299	0.2317
F	145.108	146.937	78.919	79.434	131.775	133.159
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Explanatory variables in the regressions for life satisfaction: same as in Table B2

Explanator variables in the regressions for long-term individual income (2007-2020; PPP2020): same as in Table B2

Omitted variables in the regressions for life satisfaction: widow, other relation with economic activity, living in rural area, current health status (poor). All regressions include year (wave) specific effects.

Omitted variables in the regressions for long-term individual income (2007-2020; PPP2020): Performance in Maths/Language at the age of 10 (did not go to school), self-reported health status at the age of 10 (varied from time to time), number of books at home at the age of 10 (more than 200 books), education (not completed primary education).

Caregiving is instrumented using the following variables: being the eldest child, being the youngest child, being single child, number of brothers and number of sisters.

Current individual income (PPP2020) is instrumented using income from partner and income from other household members.

Long-term individual income (2007-2020; PPP2020) is instrumented using long-term income from partner y long-term income from other household members.

Standard errors are adjusted for clustering on year level.

\*\*\*denotes significance at the 99% level, \*\*at the 95% level, \*at the 90% level.

Table B4. Comparison of estimations of the fixed effects filtered model with and without IV

	With IV						Without IV					
	Total		Men		Women		Total		Men		Women	
	R1	R2	R1	R1	R1	R1	R2	R2	R2	R2	R1	R2
<b>All sample</b>												
Caregiver	-0.0780*** (0.017)		-0.0403* (0.024)		-0.1049*** (0.024)		-0.0902*** (0.0164)		-0.0435*** (0.0228)		-0.1269*** (0.0228)	
Coresid. Careg.		-0.4322*** (0.033)		-0.3603*** (0.048)		-0.4860*** (0.046)		-0.4696*** (0.0308)		-0.3863*** (0.0434)		-0.5332*** (0.0418)
Non-coresid.Careg.		-0.0224*** (0.008)		-0.0174*** (0.011)		-0.0273*** (0.002)		-0.0234*** (0.0079)		-0.0180*** (0.0108)		-0.0288*** (0.0020)
Current income	0.0247*** (0.007)	0.0262*** (0.007)	0.0331*** (0.012)	0.0346*** (0.012)	0.0247*** (0.010)	0.0264*** (0.010)	0.0259*** (0.0069)	0.0276*** (0.0069)	0.0353*** (0.0116)	0.0370*** (0.0116)	0.0259*** (0.0097)	0.0278*** (0.0097)
Long-term income	0.0904*** (0.010)	0.0846*** (0.010)	0.1002*** (0.015)	0.0968*** (0.015)	0.0896*** (0.015)	0.0848*** (0.015)	0.1067*** (0.0097)	0.0989*** (0.0097)	0.1203*** (0.0143)	0.1155*** (0.0143)	0.1057*** (0.0143)	0.0992*** (0.0143)
<b>Austria</b>												
Caregiver	-0.1739*** (0.024)		-0.0786*** (0.035)		-0.1293*** (0.025)		-0.2344*** (0.0228)		-0.0910*** (0.0326)		-0.1627*** (0.0238)	
Coresid. Careg.		-0.3024*** (0.105)		-0.0971*** (0.021)		-0.3768*** (0.132)		-0.3207*** (0.0830)		-0.0990*** (0.0201)		-0.4052*** (0.0972)
Non-coresid.Careg.		-0.0677*** (0.029)		-0.0556*** (0.011)		-0.1163*** (0.032)		-0.0769*** (0.0273)		-0.0618*** (0.0108)		-0.1434*** (0.0300)
Current income	0.1217*** (0.037)	0.1123*** (0.037)	0.2002*** (0.128)	0.1103*** (0.128)	0.1123*** (0.036)	0.1083*** (0.036)	0.1513*** (0.0329)	0.1375*** (0.0329)	0.2804*** (0.0788)	0.1346*** (0.0788)	0.1375*** (0.0321)	0.1318*** (0.0321)
Long-term income	0.1881*** (0.023)	0.1804*** (0.023)	0.2133*** (0.029)	0.2116*** (0.029)	0.1353*** (0.007)	0.1494*** (0.007)	0.2589*** (0.0214)	0.2455*** (0.0214)	0.3043*** (0.0265)	0.3011*** (0.0265)	0.1719*** (0.0069)	0.1940*** (0.0069)
<b>Germany</b>												
Caregiver	-0.1304** (0.057)		-0.1445*** (0.054)		-0.1320* (0.077)		-0.1644*** (0.0505)		-0.1863*** (0.0482)		-0.1668*** (0.0651)	
Coresid. Careg.		-0.5621*** (0.111)		-0.7671*** (0.173)		-0.4369*** (0.146)		-0.6253*** (0.0864)		-0.8848*** (0.1131)		-0.4751*** (0.1034)
Non-coresid.Careg.		-0.0632*** (0.029)		-0.0410*** (0.017)		-0.0932*** (0.020)		-0.0712*** (0.0273)		-0.0444*** (0.0164)		-0.1106*** (0.0192)
Current income	0.0675** (0.032)	0.0607* (0.032)	0.1546*** (0.055)	0.1497*** (0.055)	0.0156*** (0.005)	0.0115*** (0.005)	0.0766*** (0.0289)	0.0681*** (0.0289)	0.2024*** (0.0459)	0.1945*** (0.0459)	0.0161*** (0.0049)	0.0118*** (0.0049)
Long-term income	0.1026*** (0.026)	0.1047*** (0.026)	0.1120*** (0.045)	0.1140*** (0.004)	0.0940*** (0.031)	0.0845*** (0.031)	0.1237*** (0.0240)	0.1266*** (0.0240)	0.1371*** (0.0389)	0.1400*** (0.0040)	0.1117*** (0.0281)	0.0988*** (0.0281)
<b>Sweden</b>												
Caregiver	-0.1223** (0.051)		-0.1205* (0.071)		-0.1148*** (0.022)		-0.1522*** (0.0458)		-0.1495*** (0.0609)		-0.1412*** (0.0210)	
Coresid. Careg.		-0.5423*** (0.130)		-0.4251** (0.194)		-0.6209*** (0.174)		-0.6011*** (0.0962)		-0.4612*** (0.1187)		-0.6980*** (0.1134)
Non-coresid.Careg.		-0.0724*** (0.022)		-0.0699*** (0.023)		-0.0588*** (0.013)		-0.0829*** (0.0210)		-0.0797*** (0.0219)		-0.0657*** (0.0127)
Current income	0.0415*** (0.009)	0.0317*** (0.009)	0.0810*** (0.014)	0.0686*** (0.014)	0.0095*** (0.002)	0.0053*** (0.002)	0.0449*** (0.0088)	0.0337*** (0.0088)	0.0941*** (0.0134)	0.0780*** (0.0134)	0.0097*** (0.0020)	0.0054*** (0.0018)
Long-term income	0.1599*** (0.043)	0.1571*** (0.043)	0.2137*** (0.061)	0.2089*** (0.061)	0.0539*** (0.018)	0.0462*** (0.017)	0.2110*** (0.0375)	0.2065*** (0.0375)	0.3050*** (0.0498)	0.2962*** (0.0498)	0.0597*** (0.0170)	0.0505*** (0.0161)
<b>Spain</b>												
Caregiver	-0.3119*** (0.082)		-0.2460*** (0.107)		-0.2646** (0.126)		-0.5065*** (0.0686)		-0.3670*** (0.0841)		-0.4046*** (0.0942)	
Coresid. Careg.		-0.5458*** (0.104)		-0.6613*** (0.131)		-0.4198** (0.166)		-0.6054 (0.0824)		-0.7488*** (0.0967)		-0.4550*** (0.110)9
Non-coresid.Careg.		-0.0070 (0.111)		-0.1852 (0.156)		-0.1114 (0.159)		-0.0071*** (0.0864)		-0.2538*** (0.1073)		-0.1362*** (0.1084)
Current income	0.0618** (0.027)	0.0673** (0.027)	0.0752*** (0.032)	0.0714*** (0.032)	0.0476*** (0.017)	0.0440*** (0.017)	0.0694*** (0.0248)	0.0764*** (0.0248)	0.0865*** (0.0289)	0.0816*** (0.0289)	0.0521*** (0.0161)	0.0479*** (0.0161)
Long-term income	0.0750** (0.023)	0.0703*** (0.022)	0.0815*** (0.030)	0.0961*** (0.030)	0.0522*** (0.017)	0.0578*** (0.017)	0.0863*** (0.0214)	0.0802*** (0.0205)	0.0948*** (0.0273)	0.1146*** (0.0273)	0.0576*** (0.0161)	0.0645*** (0.0161)
<b>Italy</b>												
Caregiver	-0.2401*** (0.056)		-0.1057** (0.078)		-0.2948*** (0.081)		-0.3554*** (0.0497)		-0.1280*** (0.0658)		-0.4686*** (0.0679)	
Coresid. Careg.		-0.4750*** (0.082)		-0.3700*** (0.122)		-0.5299*** (0.112)		-0.5201*** (0.0686)		-0.3974*** (0.0922)		-0.5861*** (0.0869)
Non-coresid.Careg.		-0.1655*** (0.025)		-0.0185*** (0.068)		-0.1322 (0.096)		-0.2203*** (0.0238)		-0.0192*** (0.0588)		-0.1672*** (0.0776)
Current income	0.0672*** (0.030)	0.0605*** (0.029)	0.0659*** (0.025)	0.0603*** (0.025)	0.0598*** (0.018)	0.0613*** (0.018)	0.0762*** (0.0273)	0.0678*** (0.0265)	0.0746*** (0.0231)	0.0676*** (0.0231)	0.0670*** (0.0170)	0.0688*** (0.0170)
Long-term income	0.0831*** (0.021)	0.0822*** (0.021)	0.0653*** (0.026)	0.0678*** (0.026)	0.0935*** (0.027)	0.0911*** (0.027)	0.0969*** (0.0197)	0.0957*** (0.0197)	0.0738*** (0.0240)	0.0770*** (0.0240)	0.1110*** (0.0248)	0.1077*** (0.0248)
<b>France</b>												
Caregiver	-0.1882*** (0.053)		-0.2284** (0.075)		-0.1614*** (0.054)		-0.2590*** (0.0474)		-0.3327*** (0.0638)		-0.2135*** (0.0482)	
Coresid. Careg.		-0.2575** (0.103)		-0.3317** (0.137)		-0.2163*** (0.091)		-0.2708*** (0.0818)		-0.3537*** (0.0995)		-0.2257*** (0.0744)
Non-coresid.Careg.		-0.1335** (0.056)		-0.1400*** (0.060)		-0.1158*** (0.048)		-0.1691*** (0.0497)		-0.1792*** (0.0528)		-0.1426*** (0.0434)
Current income	0.0894*** (0.024)	0.0882*** (0.024)	0.1735*** (0.049)	0.1666*** (0.048)	0.0596** (0.029)	0.0574** (0.029)	0.1054*** (0.0223)	0.1038*** (0.0223)	0.2337*** (0.0418)	0.2221*** (0.0411)	0.0667*** (0.0265)	0.0640*** (0.0265)
Long-term income	0.1132*** (0.034)	0.1124*** (0.034)	0.0650*** (0.010)	0.0677*** (0.010)	0.1430*** (0.048)	0.1417*** (0.048)	0.1388*** (0.0305)	0.1377*** (0.0305)	0.0735*** (0.0097)	0.0769*** (0.0097)	0.1839*** (0.0411)	0.1819*** (0.0411)
<b>Denmark</b>												
Caregiver	-0.1300*** (0.018)		-0.0325*** (0.006)		-0.1866*** (0.012)		-0.1638*** (0.0174)		-0.0346*** (0.0059)		-0.2562*** (0.0117)	
Coresid. Careg.		-0.1604*** (0.070)		-0.0556*** (0.027)		-0.2735** (0.108)		-0.1655*** (0.0602)		-0.0562*** (0.0255)		-0.2885*** (0.0847)
Non-coresid.Careg.		-0.0931** (0.039)		-0.0214*** (0.010)		-0.1098** (0.033)		-0.1104*** (0.0360)		-0.0223*** (0.0098)		-0.1339*** (0.0308)
Current income	0.0361*** (0.012)	0.0387*** (0.012)	0.0045*** (0.011)	0.0029*** (0.010)	0.0519*** (0.014)	0.0538*** (0.014)	0.0387*** (0.0116)	0.0417*** (0.0116)	0.0045*** v0.0106	0.0029*** (0.0097)	0.0573*** (0.0134)	0.0596*** (0.0134)
Long-term income	0.1093*** (0.029)	0.1006*** (0.029)	0.1555*** (0.041)	0.1556*** (0.041)	0.0540*** (0.010)	0.0526*** (0.010)	0.1332*** (0.0265)	0.1208*** (0.0265)	0.2039*** (0.0360)	0.2040*** (0.0360)	0.0598*** (0.0097)	0.0581*** (0.0097)
<b>Switzerland</b>												
Caregiver	-0.2575***		-0.0939***		-0.5910***		-0.3901***		-0.1115***		-1.2896***	

Coresid. Careg.	(0.049)	-0.4928*** (0.135)	(0.024)	-0.1193*** (0.025)	(0.066)	-0.6374*** (0.178)	(0.0442)	-0.5414*** (0.0986)	(0.0228)	-0.1221*** (0.0238)	(0.0573)	-0.7187*** (0.1146)
Non-coresid.Careg.		-0.1135*** (0.051)		-0.0475*** (0.010)		-0.3041*** (0.028)		-0.1393*** (0.0458)		-0.0520*** (0.0098)		-0.4891*** (0.0264)
Current income	0.0466*** (0.016)	0.0459*** (0.016)	0.1136*** (0.040)	0.1138*** (0.040)	0.0070*** (0.028)	0.0060*** (0.028)	0.0509*** (0.0152)	0.0501*** (0.0152)	0.1394*** (0.0352)	0.1397*** (0.0352)	0.0071*** (0.0256)	0.0061*** (0.0256)
Long-term income	0.1266*** (0.023)	0.1264*** (0.023)	0.1463*** (0.035)	0.1461*** (0.035)	0.0591*** (0.029)	0.0537*** (0.029)	0.1587*** (0.0214)	0.1584*** (0.0214)	0.1891*** (0.0313)	0.1888*** (0.0313)	0.0661*** (0.0265)	0.0595*** (0.0265)
<b>Belgium</b> Caregiver	-0.0741*** (0.017)		-0.0517*** (0.011)		-0.1113*** (0.054)		-0.0851*** (0.0164)		-0.0570*** (0.0108)		-0.1361*** (0.0482)	
Coresid. Careg.		-0.0302*** (0.010)		-0.0614*** (0.023)		-0.1487*** (0.055)		-0.0304*** (0.0098)		-0.0622*** (0.0219)		-0.1531*** (0.0490)
Non-coresid.Careg.		-0.1047*** (0.038)		-0.0341*** (0.009)		-0.0173*** (0.006)		-0.1266*** (0.0351)		-0.0364*** (0.0088)		-0.0179*** (0.0059)
Current income	0.0403*** (0.019)	0.0404*** (0.019)	0.0515*** (0.019)	0.0510*** (0.019)	0.0328*** (0.007)	0.0331*** (0.007)	0.0435*** (0.0179)	0.0437*** (0.0179)	0.0568*** (0.0179)	0.0562*** (0.0179)	0.0350*** (0.0069)	0.0353*** (0.0069)
Long-term income	0.0929*** (0.013)	0.0932*** (0.013)	0.0676*** (0.022)	0.0678*** (0.022)	0.1270*** (0.017)	0.1269*** (0.017)	0.1102*** (0.0125)	0.1106*** (0.0125)	0.0767*** (0.0205)	0.0770*** (0.0205)	0.1593*** (0.0161)	0.1591*** (0.0161)
<b>Czech Republic</b> Caregiver	-0.2078*** (0.063)		-0.0661*** (0.002)		-0.2698*** (0.082)		-0.2942*** (0.0551)		-0.0748*** (0.0020)		-0.3426*** (0.0753)	
Coresid. Careg.		-0.4536*** (0.112)		-0.0817*** (0.012)		-0.6355*** (0.142)		-0.4948*** (0.0869)		-0.0830*** (0.0117)		-0.7163*** (0.1017)
Non-coresid.Careg.		-0.0703*** (0.041)		-0.0614*** (0.014)		-0.0877*** (0.054)		-0.0802*** (0.0376)		-0.0689*** (0.0136)		-0.1031*** (0.0482)
Current income	0.0957*** (0.041)	0.0912*** (0.041)	0.0338*** (0.014)	0.0353*** (0.014)	0.1137*** (0.054)	0.1097*** (0.054)	0.1140*** (0.0360)	0.1078*** (0.0360)	0.0361*** (0.0134)	0.0378*** (0.0134)	0.1396*** (0.0453)	0.1338*** (0.0453)
Long-term income	0.2404*** (0.051)	0.2471*** (0.051)	0.1781*** (0.089)	0.1780*** (0.089)	0.2927*** (0.064)	0.3052*** (0.064)	0.3560*** (0.0432)	0.3692*** (0.0432)	0.2415*** (0.0652)	0.2414*** (0.0652)	0.4640*** (0.0517)	0.4915*** (0.0517)

The left part of the table shows the estimated coefficients of the FEF model without using instrumental variables (Table 1 for the total sample and Table B2 for each of the countries). The right side shows the results of the FEF without using instrumental variables (explanatory variables in the regressions for life satisfaction: same as in Table B2; explanator variables in the regressions for long-term individual income (2007-2020; PPP2020): same as in Table B2).

Caregiving is instrumented using the following variables: being the eldest child, being the youngest child, being single child, number of brothers and number of sisters.

Current individual income (PPP2020) is instrumented using income from partner and income from other household members.

Long-term individual income (s007-2020; PPP2020) is instrumented using long-term income from partner y long-term income from other household members.

Standard errors are adjusted for clustering on year level.

\*\*\*denotes significance at the 99% level, \*\*at the 95% level, \*at the 90% level.

**Table B5. Effect of long-term care expenditure over life satisfaction**

	All sample			Noncaregivers			Informal caregivers		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
LTC expenditure (1000€; PPP2020)	0.04686*** (0.005)	0.02245*** (0.008)	0.06452*** (0.007)	0.04126*** (0.007)	0.01658* (0.010)	0.05911*** (0.009)	0.06451*** (0.009)	0.04175*** (0.013)	0.08096*** (0.013)
N	540.800	223.700	317.100	366.300	148.300	218	174.500	75.400	99.100
R2	0.14884	0.13810	0.15799	0.14475	0.13324	0.15693	0.17304	0.17443	0.18072
F	5.235.208	2.091.499	3.480.108	3.426.340	1.324.669	2.367.322	2.006.500	914.710	1.262.542
p	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Explanatory variables: age, marital status, level of education, size of municipality, Charlston Comorbidity Index, relation with economic activity, current health status, log (Wealth adjusted by household size PPP2020), period during which were happier than during the rest of his/her life, age when happiness period started, length of happiness period (years),period during which were under more stress than during the rest of his/her life, age when stress period started, length of stress period (years),period during which health was poorer compared to the rest of his/her your life ,age when poor health period started, length of poor health period (years),period during which there was a distinct financial hardship ,age when financial hardship started, length of financial hardship period (years),period during which suffered from hunger ,age when hunger period started, length of hunger period (years),ever been the victim of such persecution or discrimination, health during childhood, during your childhood. ever in hospital at least one month,a physical injury that has led to any permanent handicap, number of books at home age age 10, performance in maths at the age of 10, performance in language at the age of 10, lived with biological father, lived with biological mother, lived with stepfather, lived with stepmother, fixed bath, cold running water supply, hot running water supply, inside toilet, central heating, lived in a children's home, been fostered with another family, evacuated or relocated during a war, lived in a prisoner of war camp, lived in a prison, lived in a labor camp, lived in a concentration camp, been an inpatient in a tuberculosis institution, stayed in a psychiatric hospital, been homeless for 1 month or more, born in other country, country and year fixed effects. \*\*\*denotes significance at the 99% level, \*\*at the 95% level, \*at the 90% level.

**Table B6. Classification of long-term care regimes**

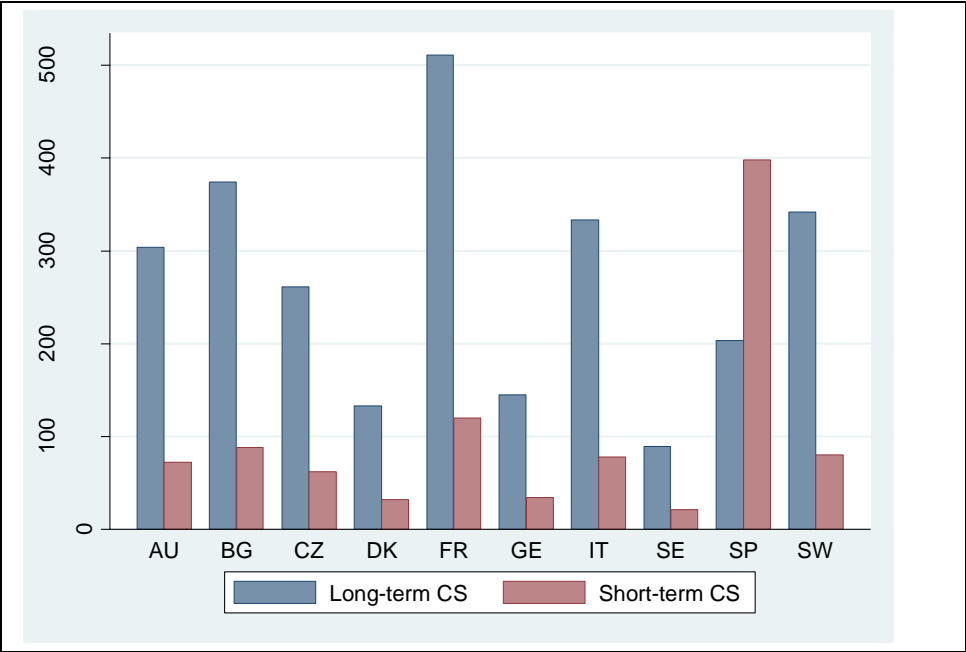
	Demand for care	Provision of informal care	Provision of formal care	Countries
Standard care mix	High	Medium/low	Medium	<b>Belgium, Germany, Austria, France, Switzerland</b>
Universal Nordic	Medium	Low	High	<b>Sweden</b>
Family based	High	High	Low	<b>Spain, Italy</b>
Transition	Medium	High	Medium/low	<b>Czech Republic</b>

Source: own work using Ilinca et al., (2015, 2022), Jiménez-Martín and Vilaplana-Prieto (2015).

Low, intermediate and high spending levels correspond to the terciles of long-term care spending as a percentage of GDP.

**Appendix C**

**Figure C1. Difference between short-term and long-term compensating surplus using Bartik instrument and using the initial instruments for short-term and long-term individual income**



Blue bars: individual long-term CS using Bartik instrument minus individual long-term CS using initial instruments for income

Red bars: individual short-term CS using Bartik instrument minus individual short-term CS using initial instruments for income

**Table C1. Individual short and long-term compensating surplus using Bartik instrument**

	Total			Men			Women		
	Caregiver	Coresid. caregiver	No coresid caregiver	Caregiver	Coresid. caregiver	No coresid caregiver	Caregiver	Coresid. caregiver	No coresid caregiver
<b>Individual short-term CS (Euros PPP 2020)</b>									
Austria	13,439	35,816	8,350	21,649	66,354	11,236	11,559	28,542	7,687
Belgium	14,918	50,178	8,656	17,748	56,026	10,762	14,408	48,923	8,276
Czechia	12,456	28,447	7,966	20,252	47,458	12,433	10,258	22,893	6,705
Denmark	8,878	46,358	5,065	11,884	67,761	6,081	8,567	43,998	4,960
France	17,444	50,301	10,356	21,427	55,664	13,810	16,574	48,887	9,601
Germany	9,253	25,676	5,727	11,767	34,788	6,748	8,709	23,620	5,506
Italy	14,081	18,865	11,197	19,974	27,046	15,558	10,531	13,785	8,566
Spain	28,594	25,114	32,960	33,661	28,606	40,013	22,294	20,765	24,209
Sweden	7,251	37,172	4,196	11,810	72,104	5,547	6,780	33,423	4,056
Switzerland	14,241	34,941	12,027	18,348	23,780	17,742	13,798	36,128	11,412
<b>Individual long-term CS (2007-2020)</b>									
Austria	213,831	565,428	133,051	343,655	1,057,883	178,904	184,022	452,194	122,515
Belgium	237,273	788,536	137,915	282,047	893,483	171,366	229,195	770,693	131,879
Czechia	198,244	450,164	126,957	321,617	757,035	197,889	163,369	363,272	106,896
Denmark	141,444	729,392	80,788	189,185	1,080,263	96,963	136,511	694,053	79,116
France	277,250	790,445	164,934	340,159	887,729	219,710	263,476	770,136	152,940
Germany	147,403	406,682	91,333	187,322	555,137	107,587	138,770	374,740	87,817
Italy	224,014	299,465	178,275	317,221	431,684	247,405	167,700	219,320	136,497
Spain	450,611	396,412	518,369	529,221	450,806	627,257	352,367	328,428	382,292
Sweden	115,580	586,575	66,943	188,005	1,149,363	88,466	108,094	528,803	64,718
Switzerland	226,542	551,761	191,454	291,541	379,597	281,955	219,533	571,159	181,697

CS long-term: increase of money necessary to hold utility constant for caregivers in the period 2007-2020.

**Table C2. Effect of instruments for informal care on life satisfaction**

	All sample		
	Total	Men	Women
Number of brothers	0.026* (0.014)	0.012 (0.009)	0.034* (0.0018)
Number of sisters	-0.003 (0.008)	0.011 (0.012)	-0.012 (0.010)
Single child	-0.055 (0.048)	-0.087 (0.067)	-0.027 (0.068)
Eldest child	0.047 (0.051)	0.020 (0.073)	0.060 (0.070)
Youngest child	-0.043 (0.053)	0.012 (0.078)	-0.067 (0.071)
N	42,248	17,777	24,471
R2	0.201	0.190	0.213
F	101.231	40.353	63.588
p	0.000	0.000	0.000
	Informal caregivers		
	Total	Men	Women
Number of brothers	0.018 (0.012)	-0.007 (0.014)	0.013 (0.014)
Number of sisters	0.018 (0.013)	0.018 (0.021)	0.018 (0.017)
Single child	0.032 (0.078)	-0.017 (0.103)	0.084 (0.116)
Eldest child	0.022 (0.075)	0.034 (0.111)	-0.002 (0.101)
Youngest child	-0.101 (0.080)	0.006 (0.125)	-0.145 (0.104)
N	14,329	5,893	8,436
R2	0.232	0.229	0.246
F	40.886	16.698	26.371
p	0.000	0.000	0.000
	Non-caregivers		
	Total	Men	Women
Number of brothers	0.012* (0.007)	0.024 (0.015)	0.024** (0.013)
Number of sisters	-0.015 (0.010)	0.007 (0.014)	-0.027** (0.013)
Single child	-0.098 (0.061)	-0.123 (0.087)	-0.079 (0.084)
Eldest child	0.072 (0.068)	0.015 (0.097)	0.120 (0.095)
Youngest child	0.002 (0.070)	0.020 (0.101)	0.002 (0.096)
N	27,919	11,884	16,035
R2	0.194	0.182	0.210
F	63.654	25.378	40.658
p	0.000	0.000	0.000

Explanatory variables: age, marital status, level of education, size of municipality, Charlston Comorbidity Index, relation with economic activity, current health status, log (Wealth adjusted by household size PPP2020), period during which were happier than during the rest of his/her life, age when happiness period started, length of happiness period (years), period during which were under more stress than during the rest of his/her life, age when stress period started, length of stress period (years), period during which health was poorer compared to the rest of his/her your life, age when poor health period started, length of poor health period (years), period during which there was a distinct financial hardship, age when financial hardship started, length of financial hardship period (years), period during which suffered from hunger, age when hunger period started, length of hunger period (years), ever been the victim of such persecution or discrimination, health during childhood, during your childhood, ever in hospital at least one month, a physical injury that has led to any permanent handicap, number of books at home, age age 10, performance in maths at the age of 10, performance in language at the age of 10, lived with biological father, lived with biological mother, lived with stepfather, lived with stepmother, fixed bath, cold running water supply, hot running water supply, inside toilet, central heating, lived in a children's home, been fostered with another family, evacuated or relocated during a war, lived in a prisoner of war camp, lived in a prison, lived in a labor camp, lived in a concentration camp, been an inpatient in a tuberculosis institution, stayed in a psychiatric hospital, been homeless for 1 month or more, born in other country, country and year fixed effects. \*\*\*denotes significance at the 99% level, \*\*at the 95% level, \*at the 90% level.

**Table C3. Effect of instruments for income instruments on life satisfaction**

	All sample		
	Total	Men	Women
Log(income partner PPP2020)	0.036 (0.036)	0.037 (0.064)	0.021 (0.049)
Log(income other household members PPP2020)	0.024 (0.037)	0.079 (0.058)	0.085 (0.052)
N	42,248	17,777	24,471
R2	0.366	0.470	0.506
F	3,509.23	1,923.73	3,167.75
p	0.000	0.000	0.000
	Informal caregivers		
	Total	Men	Women
Log(income partner PPP2020)	0.022 (0.056)	0.010 (0.114)	0.038 (0.091)
Log(income other household members PPP2020)	0.093 (0.063)	0.092 (0.093)	0.097 (0.087)
N	14,329	5,893	8,436
R2	0.501	0.746	0.697
F	2,565.49	2,102.99	2,488.03
p	0.000	0.000	0.000
	Noncaregivers		
	Total	Men	Women
Log(income partner PPP2020)	0.044 (0.065)	0.094 (0.110)	0.024 (0.077)
Log(income other household members PPP2020)	0.088 (0.079)	0.108 (0.105)	0.081 (0.089)
N	27,919	11,884	16,035
R2	0.480	0.755	0.644
F	2,340.71	1,831.54	1,990.34
p	0.000	0.000	0.000

Explanatory variables: age, marital status, level of education, size of municipality, Charlston Comorbidity Index, relation with economic activity, current health status, log (Wealth adjusted by household size PPP2020), period during which were happier than during the rest of his/her life, age when happiness period started, length of happiness period (years), period during which were under more stress than during the rest of his/her life, age when stress period started, length of stress period (years), period during which health was poorer compared to the rest of his/her your life, age when poor health period started, length of poor health period (years), period during which there was a distinct financial hardship, age when financial hardship started, length of financial hardship period (years), period during which suffered from hunger, age when hunger period started, length of hunger period (years), ever been the victim of such persecution or discrimination, health during childhood, during your childhood. ever in hospital at least one month, a physical injury that has led to any permanent handicap, number of books at home age age 10, performance in maths at the age of 10, performance in language at the age of 10, lived with biological father, lived with biological mother, lived with stepfather, lived with stepmother, fixed bath, cold running water supply, hot running water supply, inside toilet, central heating, lived in a children's home, been fostered with another family, evacuated or relocated during a war, lived in a prisoner of war camp, lived in a prison, lived in a labor camp, lived in a concentration camp, been an inpatient in a tuberculosis institution, stayed in a psychiatric hospital, been homeless for 1 month or more, born in other country, country and year fixed effects. \*\*\*denotes significance at the 99% level, \*\*at the 95% level, \*at the 90% level.



## Appendix D

The aim of this annex is to contrast the estimates of the compensating surplus of informal care using an alternative source of information, the European Quality of Life Survey.

The European Quality of Life Survey (EQLS) is a monitoring tool to capture quality of life in multiple dimensions. Carried out in 2003, 2007, 2011 and 2016, the EQLS documents the living conditions and social situation of European citizens. It includes subjective and objective measures, reported attitudes and preferences, as well as resources and experiences. The fourth EQLS was carried out from September 2016 to March 2017 in all EU Member States and the five candidate countries (Albania, the former Yugoslav Republic of Macedonia, Montenegro, Serbia and Turkey). It was coordinated by Kantar Public, with local partners interviewing a total of nearly 37,000 people in the 33 different countries, with sample sizes ranging from 1,000 to 2,000 per country. High standards of quality assurance were applied to all stages of the survey's implementation, and include an external quality assessment (Eurofund, 2017).

The main disadvantages of the EQLS are that: (i) it does not allow to distinguish between coresident and non-coresident informal caregivers; (ii) we cannot estimate the long-term income and (iii) Switzerland has not been included in the sample.

However, we consider that from the EQLS we can estimate the compensating surplus for all caregivers and also differentiating by age (under 50 and 50 and over) and sex. In this way we can perform a double comparison: (i) comparison of the compensating surplus for caregivers (men and women) aged 50 and over between SHARE and EQLS; (ii) comparison of the compensating surplus for the whole population with estimates of the value of informal care using the opportunity cost method (Peña-Longobardo et al., 2022).

To estimate the compensating surplus associated with informal care with the EQLS, a process similar to that used for SHARE has been followed, with the exception that we have a single cross-section and not a panel data sample. It should be noted that the instruments used for estimation with instrumental variables are different. For "informal caregiver" we have used the number of daughters and sons, and for "income" we have used the relationship with the economic activity of the partner and the number of working hours of the partner.

Table D1 shows the description of the EQLS(2016) sample for the nine countries that match those analysed in SHARE. Table D2 shows the descriptive statistics and Table C3 describes the characteristics of caregivers (by age and sex), and compares the percentage of caregivers aged 50 and over in SHARE and EQLS. There is a high degree of consistency between both surveys.

**Table D1. Description of the sample**

	Total	Age		Men	Women	Percentage of informal caregivers aged 50 and older		
		Younger than 50 years	50+			Total	Men	Women
Austria	3,067	1,255	1,812	1,261	1,806	46.82	40.98	50.00
Belgium	3,115	1,553	1,562	1,481	1,634	58.99	57.47	60.29
Czechia	2,914	1,549	1,365	1,257	1,657	54.50	61.33	50.00
Denmark	3,466	1,845	1,621	1,641	1,825	60.91	62.86	59.28
France	4,902	2,248	2,654	2,160	2,742	48.04	49.20	47.15
Germany	6,117	3,272	2,845	2,747	3,370	55.06	54.17	55.63
Italy	4,237	2,114	2,123	1,613	2,624	59.34	63.53	57.10
Spain	2,766	1,290	1,476	1,264	1,502	56.08	50.91	59.14
Sweden	3,658	1,952	1,706	1,776	1,882	67.94	64.43	71.08

Source: own work using EQLS(2016)

**Table D2. Descriptive statistics**

	Total	Non informal caregivers	Informal caregivers
N	45,688	43,011	2,677
Men	43.59	43.73	41.35
Women	56.41	56.27	58.65
Age	49.88	49.76	51.79
	(17.54)	(17.63)	(15.87)
Life satisfaction			
Very dissatisfied	1.4	1.39	1.46
2	1.29	1.31	0.97
3	2.54	2.56	2.09
4	3.18	3.21	2.76
5	8.88	8.84	9.6
6	9.96	9.87	11.47
7	19.4	19.27	21.48
8	26.75	26.81	25.78
9	14.06	14.17	12.33
Very satisfied	12.54	12.57	12.07
Income (OECD equivalized scale; PPP€ 2020)	1409.83	1668.42	1391.49
	(1654.41)	(1449.59)	(1666.48)
Size of municipality			
Large town	32.37	31.15	32.08
Small or middle sized town	38.08	36.02	40.41
Rural area or village	29.55	32.83	27.51
Education			
Lower secondary	30.78	31.11	26.58
Upper secondary or	45.17	45.55	40.34
Tertiary	24.05	23.34	33.07
Marital status			
Never married	26.32	26.79	24.84
Married	49.19	47.98	52.97
Separated	3.96	3.88	4.22
Widowed	9.9	10.58	7.77
Divorced	10.41	10.53	10.05
Don't know	0.02	0.01	0.04
Refusal	0.2	0.23	0.11
Self-reported health status			
Very good	22.14	22.18	21.67
Good	44.97	44.87	46.17
Fair	25.24	25.17	26.22
Bad	6.08	6.15	5.27
Very bad	1.41	1.46	0.67
Don't know	0.08	0.09	
Refusal	0.08	0.09	
Chronic illness	27.82	27.55	31.19
Permanet limitation	20.75	21.05	17.37
Number of adults at household			
1	28.6	28.63	28.17
2	53.25	53.16	54.69
3	12.46	12.45	12.63
4	4.67	4.73	3.7
5	0.81	0.82	0.67
6	0.15	0.15	0.11
7 or more	0.06	0.06	0.04
Number of children at household			
1	64.19	63.93	68.23
2	17.04	17.18	14.79
3	14.28	14.34	13.39
4	3.51	3.58	2.45
5	0.73	0.73	0.85
6	0.20	0.19	0.25
7 or more	0.04	0.03	0.05

Source: own work using EQLS(2016)

**Table D3. Percentage of informal caregivers (EQLS) and comparison with SHARE**

	EQLS (2016)									SHARE (waves 2, 4, 5, 6, 7 and 8)
	Total			Age: younger than 50 years			Age: 50+			Caregivers Age: 50+
	Total	Men	Women	Total	Men	Women	Total	Men	Women	
Austria	4.06	3.46	4.50	3.66	3.59	3.70	4.66	3.28	5.74	5.82
Belgium	9.37	9.26	9.46	7.64	7.95	7.38	11.11	10.55	11.61	5.11
Czechia	4.47	4.12	4.73	4.07	3.22	4.70	4.86	5.00	4.76	7.01
Denmark	7.60	7.54	7.64	6.67	6.40	6.90	8.33	8.43	8.25	4.31
France	7.18	7.16	7.21	7.06	6.83	7.24	7.32	7.52	7.16	6.26
Germany	3.19	2.80	3.50	3.11	2.97	3.21	3.26	2.67	3.78	6.40
Italy	7.21	6.63	7.56	5.45	4.56	5.99	9.24	8.96	9.42	9.42
Spain	3.27	2.68	3.75	2.68	2.36	2.95	3.95	3.09	4.59	9.64
Sweden	7.73	7.67	7.79	5.34	5.83	4.88	9.82	9.29	10.29	3.47

Source: own work using EQLS(2016) and SHARE (waves 2, 4, 5, 6, 7 and 8)

Table D4 shows the estimated coefficients for informal care and income in the regressions for life satisfaction.

**Table D4. Estimated coefficients for the life satisfaction model.**

	AT	BG	CZ	DK	FR	GE	IT	SE	SW
<b>Total sample</b>									
Informal care	-0.921*** (0.183)	-0.447*** (0.117)	-0.617*** (0.224)	-0.345*** (0.118)	-0.488*** (0.122)	-0.214*** (0.061)	-0.647*** (0.105)	-2.624*** (0.218)	-0.283*** (0.103)
Income (PPP)	2.236*** (0.136)	1.496*** (0.110)	1.727*** (0.131)	2.134*** (0.190)	1.021*** (0.169)	0.755 (0.109)	1.755*** (0.057)	2.110*** (0.157)	2.051*** (0.054)
N	690	619	443	585	646	896	1.239	534	728
R <sup>2</sup>	0.204	0.243	0.193	0.323	0.260	0.198	0.165	0.288	0.288
F	5.097	6.069	3.162	7.721	6.948	6.453	7.229	6.553	8.773
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Men.</b>									
Informal care	-0.467*** (0.107)	-0.273*** (0.053)	-0.506*** (0.098)	-0.141*** (0.118)	-0.189*** (0.051)	-0.154*** (0.046)	-0.244*** (0.057)	-1.053*** (0.107)	-0.153*** (0.063)
Income (PPP)	0.832*** (0.160)	0.787*** (0.138)	1.236*** (0.227)	1.132*** (0.130)	0.517*** (0.078)	0.428*** (0.137)	0.925*** (0.176)	1.222*** (0.201)	1.207*** (0.085)
N	461	323	238	301	396	448	616	281	299
R <sup>2</sup>	0.257	0.343	0.302	0.380	0.290	0.242	0.253	0.352	0.383
F	5.135	5.710	3.360	4.955	5.347	4.295	6.169	4.522	5.995
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Women</b>									
Informal care	-0.454*** (0.054)	-0.174*** (0.046)	-0.111*** (0.040)	-0.204*** (0.050)	-0.299*** (0.102)	-0.060*** (0.017)	-0.403*** (0.103)	-1.571*** (0.116)	-0.131*** (0.065)
Income (PPP)	1.404*** (0.259)	0.709*** (0.185)	0.491*** (0.172)	1.002*** (0.127)	0.503*** (0.143)	0.327*** (0.075)	0.832*** (0.088)	0.888*** (0.253)	0.844*** (0.069)
N	229	296	205	284	250	448	623	253	429
R <sup>2</sup>	0.261	0.215	0.184	0.367	0.374	0.202	0.125	0.352	0.291
F	2.516	2.716	2.548	5.504	4.906	3.398	3.017	4.529	5.652
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total. Less 50 years.</b>									
cuidador	-0.463*** (0.109)	-0.257*** (0.067)	-0.091*** (0.026)	-0.193*** (0.056)	-0.173*** (0.055)	-0.099*** (0.025)	-0.331*** (0.111)	-0.938*** (0.128)	-0.141*** (0.056)
lnincome_2020	1.096*** (0.188)	0.964*** (0.134)	0.465*** (0.046)	1.208*** (0.111)	0.372*** (0.024)	0.249*** (0.039)	0.829*** (0.095)	1.413*** (0.239)	1.153*** (0.068)
N	262	319	201	304	286	394	514	244	399
r <sup>2</sup>	0.266	0.299	0.319	0.406	0.334	0.241	0.237	0.454	0.365
F	2.788	4.091	2.879	6.975	4.421	3.841	4.989	6.662	6.562
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Men. Less 50 years.</b>									
Informal care	-0.331*** (0.083)	-0.192*** (0.072)	-0.046*** (0.011)	-0.112*** (0.054)	-0.051*** (0.013)	-0.081*** (0.035)	-0.119*** (0.054)	-0.228*** (0.040)	-0.076*** (0.024)
Income (PPP)	0.453*** (0.141)	0.508*** (0.061)	0.199*** (0.046)	0.918*** (0.167)	0.115*** (0.045)	0.088*** (0.024)	0.461*** (0.143)	0.639*** (0.138)	0.622*** (0.028)
N	158	150	91	149	164	170	217	122	149
R <sup>2</sup>	0.379	0.464	0.303	0.513	0.342	0.214	0.363	0.575	0.537
F	2.944	4.293	1.344	4.946	2.743	1.650	3.981	5.198	4.963
p	0.000	0.000	0.177	0.000	0.000	0.038	0.000	0.000	0.000
<b>Women. Less 50 years.</b>									
Informal care	-0.132*** (0.048)	-0.065*** (0.027)	-0.044*** (0.010)	-0.081*** (0.021)	-0.122*** (0.041)	-0.0183*** (0.002)	-0.212*** (0.086)	-0.711*** (0.061)	-0.065*** (0.026)
Income (PPP)	0.643***	0.456***	0.266***	0.291***	0.257***	0.161***	0.368***	0.774***	0.531***

	(0.119)	(0.121)	(0.060)	(0.112)	(0.107)	(0.067)	(0.117)	(0.184)	(0.019)
N	104	169	110	155	122	224	297	122	250
R <sup>2</sup>	0.307	0.313	0.372	0.450	0.462	0.299	0.252	0.508	0.345
F	1.632	2.492	2.094	4.229	3.303	3.227	3.356	3.968	4.325
p	0.059	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total. 50+</b>									
Informal care	-0.458*** (0.046)	-0.191*** (0.033)	-0.527*** (0.124)	-0.152*** (0.063)	-0.315*** (0.060)	-0.115*** (0.042)	-0.316*** (0.032)	-1.686*** (0.287)	-0.142*** (0.062)
Income (PPP)	1.141*** (0.203)	0.532*** (0.100)	1.262*** (0.223)	0.926*** (0.164)	0.648*** (0.086)	0.506*** (0.155)	0.926*** (0.072)	0.697*** (0.207)	0.898*** (0.040)
N	428	300	242	281	360	502	725	290	329
R <sup>2</sup>	0.197	0.277	0.231	0.363	0.310	0.206	0.183	0.311	0.296
F	3.035	3.558	2.382	4.270	5.119	4.077	4.854	3.890	4.692
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Men. 50+</b>									
Informal care	-0.136*** (0.013)	-0.081*** (0.021)	-0.462*** (0.100)	-0.029*** (0.025)	-0.138*** (0.023)	-0.073*** (0.028)	-0.125*** (0.018)	-0.825*** (0.191)	-0.077*** (0.027)
Income (PPP)	0.379*** (0.126)	0.279*** (0.2024)	1.037*** (0.289)	0.214*** (0.073)	0.402*** (0.079)	0.342*** (0.118)	0.464*** (0.096)	0.583*** (0.164)	0.585*** (0.023)
N	303	173	147	152	232	278	399	159	150
R <sup>2</sup>	0.229	0.400	0.402	0.421	0.337	0.331	0.251	0.306	0.396
F	2.901	3.585	3.255	2.931	3.833	4.391	4.253	2.140	3.248
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000
<b>Women. 50+</b>									
Informal care	-0.322*** (0.031)	-0.109*** (0.026)	-0.067*** (0.017)	-0.123*** (0.044)	-0.177*** (0.029)	-0.042*** (0.014)	-0.191*** (0.018)	-0.861*** (0.108)	-0.065*** (0.018)
Income (PPP)	0.761*** (0.132)	0.253*** (0.051)	0.225*** (0.049)	0.712*** (0.179)	0.246*** (0.106)	0.166*** (0.042)	0.462*** (0.115)	0.114*** (0.038)	0.313*** (0.013)
N	125	127	95	129	128	224	326	131	179
R <sup>2</sup>	0.313	0.237	0.273	0.439	0.516	0.181	0.149	0.507	0.339
F	4.633	4.252	5.231	6.229	4.574	5.475	5.934	4.915	3.289
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000

AT: Austria; BG: Belgium; CZ: Czech Republic; DK: Denmark; FR: France; GE: Germany; IT: Italy; SE: Spain; SW: Sweden.

Other explanatory variables: age, marital status, household size, size of municipality, relation with economic activity, current health status, having any permanent limitation and country fixed effects.

Caregiving is instrumented using the following variables: number of daughters and number of sons.

Current individual income (PPP2020) is instrumented using partner's relation with economic activity and partner's working hours.

\*\*\*denotes significance at the 99% level, \*\*at the 95% level, \*at the 90% level.

Table D5 shows the compensating surplus (PPP €; 2020), the percentage of the compensating surplus (individual) to GDP per capita, the percentage of the compensating surplus (aggregated for all carers) to the GDP of the country. Finally, the percentage of the compensating surplus relative to the annual salary is also shown (in this case, the annual salary is different for men and women).

**Table D5. Compensating surplus, percentage of compensating surplus with respect to GDP, GDP per capita and annual wage.**

	Total			Age: younger than 50 years			Age: 50+		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
<b>Compensating surplus (Euros PPP 2020)</b>									
Austria	13.372	16.992	10.950	13.670	19.616	7.600	13.082	12.680	13.294
Belgium	10.594	12.964	8.306	9.152	12.524	5.108	12.728	12.018	13.292
Czechia	11.246	10.680	8.332	6.706	7.652	5.890	12.598	10.242	11.228
Denmark	6.636	5.276	8.090	6.184	5.080	9.774	6.986	5.768	7.422
France	14.448	11.778	16.868	12.678	11.192	13.702	16.290	13.520	20.090
Germany	10.112	12.624	6.796	12.800	22.226	4.326	8.672	8.904	9.040
Italy	10.214	7.744	12.682	10.198	7.390	13.250	9.986	8.010	11.820
Spain	18.284	14.692	21.434	13.120	8.558	15.686	22.404	17.204	25.606
Sweden	5.820	5.588	6.216	5.146	5.092	5.200	6.638	5.972	8.026

Source: own work using EQLS (2016), Eurostat and ILOSTAT.

Table D6 compares the ratio of CS to GDP with the value of informal care to GDP, (following estimates using the opportunity cost method carried out by Peña-Longobardo et al. (2022)). The ratio of CS to GDP for total carers is higher than the value of informal care in all countries, between 0.21pp (Belgium) and 1.82pp (Czech Republic), although in most countries it is half a percentage point higher. These results can be interpreted in two ways: (i) there is a relatively high degree of consistency between the two methods of valuing informal carers and (ii) the fact that (short-term) CS is higher seems to mean that there are feelings and costs (associated with carer burden) that are not captured by the opportunity cost method.

**Table D6. Comparison of compensating surplus with respect to GDP and value of informal care with respect to GDP (using the opportunity cost method)**

	Compensating surplus with respect to GDP (2016)			Estimation value informal care with respect to GDP (2016)
	All caregivers	Caregivers: younger than 50 years	Caregivers: 50+	
Austria	2.12	1.11	1.02	1.90
Belgium	4.59	1.89	2.90	4.38
Czechia	3.87	1.28	1.93	2.05
Denmark	2.26	0.93	1.32	1.74
France	7.08	3.13	4.16	6.50
Germany	1.83	1.16	0.79	1.28
Italy	3.90	1.59	2.26	3.25
Spain	4.42	1.36	3.11	4.01
Sweden	1.98	0.80	1.18	1.20

Source: own work using EQLS (2016). Estimations of the value of informal care with respect to GDP are retrieved from Peña-Lonbgobardo et al. (2022). To value paid work time, they used the average gross hourly wage in purchasing power parity in each country, taking into account the caregiving hours provided by those caregivers who were employed. To value unpaid work time, they used the minimum gross hourly wage.