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A Longitudinal Study of Well-being of Older Europeans: Does Retirement Matter?

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Abstract

We examine determinants of financial and subjective well-being, in particular poverty and depression, among older individuals in Europe. We do so using the 2004, 2006, and 2010 waves of the Survey of Health Ageing and Retirement in Europe and estimating dynamic panel data and binary choice transition models. We find a number of common effects across financial and subjective well-being. Unemployment, disabilities, serious health conditions, lower education, being female, and not being married increase the probability of poverty or depression. Conversely, healthy individuals, those with higher levels of education, males, and married individuals have higher probabilities of exiting poverty or depression. The effect of retirement is of special policy interest. It turns out to be crucial to control for endogeneity (i.e. the possibility of reverse causality) of retirement. If we don't control for endogeneity, retirement appears to increase both the risk of poverty and of depression. Once we control for endogeneity using instrumental variables, these negative effects disappear and point to weak evidence that retirement induced through eligibility for retirement pensions may be protective against poverty and depression.

Keywords

retirement; poverty; depression; well-being; elderly

1. Introduction

Economic indicators of well-being, such as income and poverty rates, suggest significant cross-country variations in the financial well-being of Europeans, particularly among older adults. It is, however, increasingly understood that traditional economic measures are necessary, but not sufficient, to measure societal progress (Townsend (1962), Allardt (1978), Mack and Lansley (1985), Sen (1973, 1997) and Stiglitz, Sen, & Fitoussi, 2009 among others). Accordingly, there has been rising interest in the OECD countries and around the world in assessing subjective well-being to monitor societal progress and evaluate policy. In this paper, we examine cross-country variations in both financial and subjective well-being of older Europeans.

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Retirement is one of the key transitions in old age that could explain country and age differences in well-being. In most European countries, the aged are vulnerable to spells of poverty (OECD, 2008). Most developed countries devote a substantial portion of their national resources to the protection of well-being after retirement by providing old-age pensions. Yet policy variations exist, including differences in official retirement ages as well as in generosity of pension benefits and other retirement incentives (OECD, 2011). For example, full pension eligibility ages are typically 65 but are as low as 60 in France for both men and women, and for women in Austria. There is still further variation in early retirement ages. By comparing countries with different pension entitlement ages as well as exploiting within-country variation in pension eligibility, we evaluate the causal effects of retirement on financial and subjective well-being.

In this paper we use longitudinal survey data on nationally representative samples of older individuals in the Survey of Health, Ageing and Retirement in Europe (SHARE) to study the role of retirement on both financial and subjective wellbeing of older individuals. We use relative poverty status and depressive symptoms as our key measures of financial and subjective well-being. Our cross-national perspective, which would not have been possible a few years ago because of the lack of comparable longitudinal micro data, allows us to use the exogenous variation in retirement policies to explore causal effects of retirement. This is an improvement relative to a case study of a single country where identification of causal effects of retirement would have to rely on comparisons of respondents who are above or below the eligibility age of retirement in that given country. In such a case one cannot distinguish between the effect of retirement eligibility and age, as everyone who is eligible by construction has to be older than those who are not eligible. Since eligibility ages vary across countries we are able to observe individuals of equal age who are eligible for retirement in one country, but not in another one.

The remainder of the paper is organized as follows. We first discuss briefly the literature on well-being and retirement. We then introduce the data and present descriptive statistics on cross-country differences in financial and subjective well-being among the elderly. Our analysis section examines both financial and subjective well-being over time, studying transitions into and out of poverty and depression. We conclude with what our analysis implies for the effect of retirement on financial and subjective well-being.

2. Literature on Well-being and Retirement

Several branches of the extensive literature on poverty are relevant for this study, including an emerging literature on subjective well-being measures that seeks to understand the roles of pensions and other public institutions in protecting financial and subjective well-being. For many, retirement from the labor force marks a shift from earnings to government or private pensions as the main source of income (Hoff, 2008). An important part of the literature on income and poverty among the elderly therefore focuses on their economic well-being in relation to pension systems. Zaidi, Grech, and Fuchs (2006), in a study of the impacts of pension policies on poverty in the European Union between 1995 and 2005, find that annual public-pension retirement incomes have been decreasing because of parametric and systemic pension reforms potentially increasing the risk of poverty among older individuals. In his study of data from the European Social Survey, Ogg (2005) finds a link between developed welfare systems and subjective well-being through its relation with social exclusion in old age.⁶ In the United States, Engelhardt and Gruber (2004) also highlight the important role Social Security has played in reducing U.S. poverty rates. Using data from the 1968 – 2001 Current Population Surveys, they find that the generosity of

⁶Social exclusion is often defined as the lack of opportunities and resources such as housing, employment or health care (Sen, 2000).

Social Security benefits are closely tied to poverty rates among the elderly and suggest that reductions in Social Security benefits would significantly increase poverty among the elderly. Similarly, Engelhardt, Gruber and Perry (2005) predict that a cut in Social Security benefits would cause an increase in shared living arrangements for elderly households, with ambiguous implications for wellbeing. This is so because although the loss of privacy, a valued good, could have negative effects, it could also reduce the risk of loneliness in old age

The very old, minorities, and elderly women heading their own household may be particularly vulnerable to old-age poverty (Hoff, 2008). As Rupp, Strand and Davies (2003) emphasize, poverty among older women has remained twice that for older men in the United States, despite decreases in the overall poverty rate among the elderly in the last 30 years. Elderly single individuals represent a large share of the long-term poor in Canada, Germany, the Netherlands, Sweden, the United Kingdom and the United States (Oxley, Dang, and Antolin, 2000) while their poverty also tends to be more permanent than for other groups in society (Ahn, 2005; Hurd and Wise, 1991; Sandell and Iams, 1997). Similarly, the elderly in the United Kingdom who are divorced, single, or widowed are more likely to be poor than those who are married or cohabitating (Gjonca, Tabassum, and Breeze, 2006).

Subjective well-being is determined not only by income but also by health, social relations, and other psychological factors (Tinbergen 1991). In an analysis of Dutch and American data, Kapteyn, Smith and Van Soest (2010) find that global life satisfaction can be adequately described as a combination of satisfaction in four domains: income, job and daily activities, health, and social contacts and family life. This finding is consistent with results obtained by Van Praag, Frijters, and Ferrer-i-Carbonell (2003), and Easterlin (2005). Layard (2005) suggests a somewhat broader set of influences on happiness: family relationships, financial situation, work, community and friends, health, personal freedom, and personal values, with most of these corresponding to those studied by Van Praag et al. (2003), Easterlin (2005), and Kapteyn et al. (2010).

Beyond the economic component of retirement, evidence from the fields of social gerontology and psychology suggests that various factors might be at play with regards to the impact of retirement on well-being. Life-course influences, through the accumulation of advantages or disadvantages, whether living through historical events, or through individual decisions and opportunities, have been shown to impact well-being of older individuals (Blane, 2006; Quadagno, 2011). In particular, there is a gradient in health by the level of social disadvantage accumulated throughout one's life, such as parental social class or social conditions during childhood, adolescence, and adulthood (Blane, 2006).

While the life-course theory suggests that well-being at older ages can be understood as a result of influences throughout life, it is possible that retirement transitions can cause a sharp shift in well being. On the one hand, according to role theory, the disappearance of the work role, central to an individual's identity, can lead to a decline in well-being. In particular, the loss of a potential buffer for stress or failure in another role (for example, within the family), less opportunities for social support, and less opportunities to experience success can lead to psychological distress (Barnet and Hyde, 2001; Kim and Moen, 2002). Conversely, reducing the number of roles can be a relief, as a result of a lower burden in terms of energy, time and commitment, in particular when balancing work and family (Duxbury et al., 1994 ; Kim and Moen, 2001). Additionally, avoiding occupational stress in combination with domestic roles can be beneficial, in particular for women (Doyle and Hind, 1998). Atchley (1976) suggested a possible "honeymoon" phase following the transition to retirement resulting from less pressure, consistent with this reduced role strain hypothesis.

On the other hand, continuity theory suggests that individuals' lifestyle and self-esteem remain stable through the onset of retirement (Atchley, 1976). Hallerod et al. (2013) for instance find no substantial effect of retirement transitions on post-retirement health, suggesting that the accumulation of advantage and disadvantage over the life course, and thus the circumstances brought into retirement, are more suited to explain the health and well-being of retired individuals. Several authors have studied the link between subjective well-being, in particular depressive symptoms, and retirement. Mein et al. (2003) found that depression worsened among those continuing to work but not among those retired. However, retirement is often a choice and people with idiosyncratically low well-being or facing shocks affecting their well-being might select into retirement. Most of the previously described studies do not address this, thus they establish correlation but do not necessarily imply causation. Studies investigating causal effects of retirement on well-being include Charles (2002) who finds that the direct effect of retirement on well-being is positive once the endogeneity of retirement is accounted for. Coe and Zamarro (2011) find that for the case of Europe retirement has a positive effect on health but not a significant effect on depression. Finally, Szinovacz and Davey (2004) find that depressive symptoms increase with retirement when it is abrupt and perceived as too early or forced. We add to this literature by assessing the causal effect of retirement on the dynamics of both financial and subjective wellbeing, as measured by poverty and depression, across multiple European countries.

Our strategy for dealing with the potential endogeneity of retirement decisions to arrive at causal effects is constructing instrumental variables for retirement decisions based on country and gender specific eligibility ages for retirement pensions. For this strategy to be valid it is necessary that these statutory retirement ages change retirement behaviour. In this respect, Gruber and Wise (1999) first recognized the relationship between social security and retirement through a cross-country analysis. Specifically, they find a strong correspondence across countries between social security program incentives to retire early for a typical worker and the proportion of older persons who have left the labor force. Table 1 reports the statutory Early and Normal retirement ages in place in Europe⁷. As can be seen in this table the official retirement ages in Europe vary by country, and sometimes by gender, by as much as 8 years.

3. Data and Descriptive Statistics on Financial and Subjective Well-being

We use longitudinal survey data on nationally representative samples of older individuals in the Survey of Health, Ageing and Retirement in Europe (SHARE)⁸ for 19 European countries. SHARE collects information on topics such as health, socioeconomic status, and social and family networks for more than 40,000 individuals aged 50 or over. Respondents are followed over time, while new respondents are added periodically so the survey stays representative of those aged 50 or over. Four waves, for 2004, 2006, 2008 and 2010, are currently available, but the 2008 wave, which collected retrospective life histories, differs in content from the others. We therefore use only the 2004, 2006, and 2010 waves in our analysis.⁹

⁷The main source for this data was Coe and Zamarro (2011). The official retirement ages refer to the law that was in place when respondents in SHARE were facing retirement decisions. Although some countries have started introducing policies to increase statutory retirement ages these reforms are very recent and did not affect the cohorts in our study. The only exception is Italy, where early retirement age increased to 60 in the last wave of data.

⁸This paper uses data from SHARE wave 4 release 1.1.1, as of March 28th 2013 or SHARE wave 1 and 2 release 2.5.0, as of May 24th 2011 or SHARELIFE release 1, as of November 24th 2010.

⁹SHARE retention rates with regard to the longitudinal part of the sample are about 73% and refreshment samples were drawn each wave to increase net sample size and compensate for attrition in the longitudinal sample (See e.g. Borsch-Supan et al., 2013)

The first wave of SHARE data, collected in 2004, included eleven European countries: Austria, Denmark, Belgium, France, Germany, Greece, Italy, the Netherlands, Spain, Switzerland and Sweden. The second wave added the Czech Republic, Poland, and Ireland. The fourth wave added Israel, Estonia, Hungary, Portugal and Slovenia, but did not include Greece. Whenever possible, we use data of all countries available although for some models, such as that for dynamic models of poverty and depression, we need to focus on the 11 original countries for which we have data in the initial wave and at least one subsequent wave.

Relative poverty is the most commonly used measure of poverty in Europe (OECD, 2008). A widely accepted approach has been to use 60 percent of the national median equivalised disposable income as the definition of a national poverty line (Zaidi, 2010), which we use. To identify individuals at risk of poverty, we aggregated all household members' income after tax and then divided the total net household income by the number of household members converted into equivalised adults, following the Eurostat's equivalence scale. Household heads receive a weight of 1; other household members at least 14 years of age get a weight of 0.5, and household members less than 14 years of age receive a weight of 0.3. We identified households at risk by comparing equivalised income with country-and-year-specific poverty thresholds. We report the income of countries in nominal Euros of 2010, after adjusting for purchasing power parity.

Figure 1 shows the population-level relative poverty rates in 2010 taken from Eurostat with our estimate of the relative poverty rates for individuals 50 years and older taken from SHARE data for that year. All descriptive results from the SHARE data are weighted. There is significant variation in the poverty thresholds from SHARE, ranging from €3,595 in Hungary to €20,950 in Switzerland, reflecting different standards of living. There is also significant variation in relative poverty rates for the total population, ranging from 9 percent in the Czech Republic to 21 percent in Spain. We found even greater cross-country variations in relative poverty rates for individuals 50 years and older, ranging from 17 percent in Estonia to 34 percent in Portugal. Relative poverty rates among older adults are twice that for the total population in the Czech Republic, Portugal, and Slovenia.

SHARE includes the EURO-D as a measure of subjective-well-being. The EURO-D (Prince et al., 1999) includes 12 “yes-or-no” questions about depression, pessimism, suicidality, guilt, sleep, interest, irritability, appetite, fatigue, concentration, enjoyment, and tearfulness during the last month to capture emotional health and well-being. The EURO-D is scored by summing individual items. Total scores range from 0 to 12 with a higher score indicating more depressive symptoms.

Figure 2 illustrates the relation between relative poverty and the average depression scores among the older population by country. We calculate a positive correlation at the country level of around 0.17, but this result is completely driven by the results for Portugal. When omitting Portugal, the correlation is $-.08$. Thus at the aggregate level there does not appear to be a discernible relation between poverty rates and depression rates.

Table 2 shows cross-country differences in the percentage of respondents transitioning into and out of poverty and into and out of depression. We also show the sample size and the baseline rates of poverty and depression for wave 1 for reference. As is often done in the literature, we define an individual to be depressed if presenting more than three symptoms of depression as collected in the Euro-D depression index (Dewey and Price, 2005). A respondent is considered to enter poverty or depression if in a given wave he/she was not poor or depressed respectively, but was in the subsequent wave. Similarly, a respondent is considered to exit poverty or depression if he/she was in poverty or in depression

respectively in a given wave but not in the subsequent wave. Just as Figure 2 did not show appreciable correlations at the country level between rates of poverty and rates of depression, Table 2 does not suggest a clear relation between transition rates into and out of depression and into and out of poverty: the correlation between transitions into poverty and into depression from wave 1 to wave 2 is .42, but between wave 2 and wave 4 the correlation is $-.33$; the correlation between transitions out of poverty and out of depression from wave 1 to wave 2 is .24, but between wave 2 and wave 4 the correlation is $-.24$.

We observe important differences across countries and waves in the percentage of respondents experiencing such transitions. Between 2004 and 2006, Spain shows comparatively high percentages of individuals entering and exiting poverty. In all nations but France and Italy, a higher proportion of respondents enter poverty between 2006 and 2010 than between 2004 to 2006. Possible explanations for this include the financial crisis of the later years as well as the longer time span of the second period. There is however, no marked difference between the two time periods in the number of persons exiting poverty.

Regarding depression, Table 2 shows that, except for Denmark, Italy, and the Netherlands, more persons entered depression between 2006 and 2010 than between 2004 and 2006. The differences between periods are very slight for Italy and the Netherlands, no more than 0.2 percentage points. Excluding Austria, Belgium, and Denmark, fewer persons exited depression between 2006 and 2010 than between 2004 and 2006.

4. Model Specifications and Results

4.1 Explanatory Variables and the First Stage Model

The set of explanatory variables included in all our estimations are: age, age squared, marital status (a dummy variable, indicating married or living with a partner), gender, interaction of gender and marital status, education (a set of dummy variables with less than high school as a reference category), health (having at least one difficulty with activities of daily living, and a binary indicator for having any of cancer, stroke, heart diseases, or lung disease), a year dummy for 2010 capturing the effects of the great recession, and country and cohort dummies (one dummy for each birth year). Our health variables aim at capturing both continuous physical limitations as well as major health shocks that could affect both retirement and wellbeing measures. Respondents are considered to be retired if they describe themselves as retired when asked about their current work status. In estimating the effects of retirement, we separate those of unemployment, with a reference category of “currently working”.

To address the potential endogeneity of retirement, we construct instruments based on two dummy variables indicating whether the respondent is eligible for full or early retirement public pensions using country- and gender-specific pension-eligibility ages described in Table 1. In order for eligibility through reaching statutory retirement ages to be valid instruments, they must be related to actual retirement behavior. Earlier work has shown that these proposed instruments are very strong predictors of retirement behavior (see e.g. Charles 2002 Neuman 2008, Bound and Waidmann 2007, Rohwedder and Willis 2010, Angelini et al. 2009, Coe and Zamarro 2011). The linear probability model for retirement, shown in Table 3, indicates that whether or not one's age is below or above a statutory retirement age is an important predictor of retirement behavior in our data. In addition, identification requires an independent, discontinuous effect of reaching statutory retirement age on poverty or depression status.

4.2. Dynamic Models

The longitudinal nature of SHARE allows us to study transitions into and out of poverty and depression, and how retirement affects these transitions. We first examine the determinants of being in poverty, conditional on an individual's previous poverty status. We will estimate the following dynamic model for being in poverty:

$$Poverty_{it} = 1(\beta_0 + \beta_1 Poverty_{it-1} + \beta_2 Retired_{it} + \beta_3 x_{it} + \mu_i + \varepsilon_{it} > 0) \quad (1)$$

where $Poverty_{it}$ is a dummy variable that takes the value 1 if respondent i is classified as being poor in wave t . Our main variable, $Retired_{it}$, is an indicator for individual i being retired in a wave t . The set of explanatory variables (x_{it}) has been described in the previous section. μ_i is an individual random effect. The notation $1(\cdot)$ means that the left hand side variable is equal to one if the expression in parentheses is greater than zero; the left hand side is zero otherwise.

We estimate linear-probability models on the pooled dataset for waves 1, 2 and 4. The first column of Table 4 shows the results for this model if we do not control for potential endogeneity of the retirement variable. According to the linear probability model in column 1, retirement is associated with an increase in the probability of being in poverty of 5.8 percentage points. The probability of being in poverty is higher for single women and unemployed individuals. The probability of being in poverty increased 3.5% with the economic recession of 2010. The probability of being in poverty decreases with age until age 70 (the estimated quadratic relation with age has a minimum at age 70) and increases after age 70. For instance, compared to someone who is 50, a 65-year old has an eleven percentage points lower probability of being in poverty, other things being equal. Poverty is lower for individuals with higher levels of education and for married people. Finally, we find persistence in poverty dynamics: an individual being classified as poor in a given wave has a 20 percent higher probability than others of being classified as poor in the following wave. As noted, to address the potential endogeneity of retirement, we also obtained instrumental variable estimates for which we instrumented retirement with dummy variables capturing country and gender specific eligibility for retirement pensions using the pension-eligibility ages specified in Table 3.¹⁰

The second column of Table 4 shows our results using instrumental variable methods. Comparing the columns in Table 4, we observe that most coefficients are very similar, with one striking exception. The effect of retirement in column 2 becomes totally insignificant and actually changes sign. It appears therefore that retirement induced through eligibility for retirement pensions does not increase the odds of being poor, if anything it decreases the probability of being poor.

Similar to Table 4, we also estimated random-effects linear-probability dynamic models to examine the determinants of being depressed, conditional on an individual's previous depression status. An individual is defined as depressed if showing more than three symptoms of depression on the Euro-D index. The explanatory variables are the same as in Table 4. Table 5 shows the estimates. Once again, correcting for endogeneity of retirement makes a big difference. The first column suggests that retirement has a significant positive effect on the likelihood of being depressed, but once we correct for endogeneity of

¹⁰To check for the validity of the instrumented used, we report Hansen/Sargan test statistics. The Hansen/Sargan test is used to check for the validity of the instruments used in an over-identified model. In particular, this test is based on the fact that the residuals should be uncorrelated with the set of exogenous variables if the instruments are truly exogenous. If we reject this hypothesis we cast doubt on the validity of the instrument set. The hypothesis cannot be rejected for any of our models at the 99 % confidence level and only one of them, IV model for the discrete transition of exit out of depression, we can reject the null hypothesis at the 95% confidence level.

retirement, the effect becomes insignificant and changes sign. It appears then that retirement does not cause depression, but that depressed individuals are more likely to retire. The remaining variables have the expected effect. Women have higher probabilities of depression whereas higher education and being married have a protective effect. The unemployed, disabled, or respondents with serious health conditions have higher probabilities of depression. Depression is also found to be somewhat persistent, as those depressed in a given wave have about a 16% higher probability of being depressed in the following wave as well.

4.3. Discrete Transition Models

Given the persistence in poverty and depression measures, we also study the determinants of durations (T) in poverty, out of poverty, in depression, and out of depression. In comparison with the models presented in 4.2, which look at the determinants of being in the state of poverty or depression in a given wave, these models will study the flow of respondents transitioning into and out of the poverty and depression states, and how they vary with the time a respondent has spent in a given state. In particular, we model the hazard function ($h(t)$) or probability of leaving a particular state in time t , given that the individual has survived in that state for at least t periods ($T \geq t$) in the following way:

$$h(t) = \Pr(T=t | T \geq t) = \Pr(\gamma_0 + \gamma_1 \text{Retired}_{it} + \gamma_2 x_{it} + \eta_i + \varepsilon_{it} > 0)$$

Here, η_i is an individual random effect and the explanatory variables are the same as before.

We estimate discrete duration models by maximum likelihood, restricting our sample to those who are classified either as poor or not poor (depressed or not depressed) in 2004, and follow whether they moved out of or into poverty (out of or into depression) in the years 2006 and 2010. We acknowledge that conditioning the sample in this way might induce selection bias, especially when we condition on those being in poverty or depressed in 2004, as we ignore how long they have been in this state. Nevertheless, we believe that this analysis can still be informative about how retirement influences transitions out of these states. For simplicity, we limit our study to first transitions out of a given state, so if respondents exit or enter poverty (depression) in the second wave (2006), they do not contribute to the durations in the next wave (2010).

We estimate the model under the assumption that the parameters (γ_i , γ_0 , γ_1 and γ_2) are constant over time, so the model reduces to a single linear-probability model for the probability of exiting a given state in any given wave, conditional on being in that state, for the pooled sample of observations in both 2006 and 2010. As before, we estimate random-effects linear-probability models with and without instrumenting retirement.

Table 6 shows the results for durations in poverty, that is, models for exiting poverty in 2006 or 2010 among those in poverty in 2004. Column 1 suggests that retirement is associated with a lower probability of exiting poverty. This does not persist, however, once we control for the endogeneity of retirement using instrumental-variable methods. Rather, we find some weak evidence suggesting a positive effect of retirement on the probability of leaving poverty. We also find that higher education increases the probability of exiting poverty earlier while having serious health conditions lowers it.

Table 7 shows the results for determinants of transitions into poverty in 2006 and 2010 among those who were not in poverty in 2004. Here, we see retirement is positively associated with moving into poverty, but that, once we control for endogeneity, retirement reduces the probability of moving into poverty. We find women have a higher probability of

becoming poor unless they are married. Marriage and education both reduce the probability of becoming poor while disability increases it.

Table 8 shows the results for determinants of transitions into depression in 2006 and 2010 among those who are not depressed in 2004. Column 1 suggests retirement is associated with a higher probability of becoming depressed, but this effect disappears in our preferred instrumental-variables specification. Women are more likely to become depressed than men. Marriage reduces the probability of entering the depression state, but more for men than for women. Higher levels of education also reduce the probability of becoming depressed, while unemployment, disability, and having serious health conditions increase the probability.

Finally, Table 9 shows the results for determinants of transitions out of depression in 2006 and 2010 among those who were in depression in 2004. Retirement reduces the likelihood of one exiting depression in our first model, but has no significant effect in our instrumental-variables model. Women are less likely to exit depression. Similarly, disabled respondents and those with serious health conditions are also less likely to leave the depression state. Higher levels of education increase the probability of exiting depression. Age effects in the IV-specification are insignificant.

5. Conclusions

Continued improvements in life expectancy and fiscal insolvency of public pensions have led to an increase in pension entitlement ages in several countries. Particularly in Europe the general trend is to further raise retirement ages, often by linking pension entitlements to life expectancy in the country. This raises numerous new issues, including the potential effect of these policies on financial and subjective well-being. In this paper we have explored the relation between retirement, poverty and depression. As subjective well-being, particularly depression, is known to influence health (Carney et al., 2003; Steffens et al., 2006), if retirement has adverse effects on subjective well-being, then the fiscal savings created by delaying retirement may be at least partly offset by increased health expenditures driven by worsened subjective well-being.

We examine the effect of retirement on the dynamics of poverty and depression among older individuals in Europe, using the 2004, 2006, and 2010 waves of the Survey of Health Ageing and Retirement in Europe. By using data for a number of different countries we are able to distinguish between the effect of retirement and possible age and cohort effects. Our results suggest that retirement may protect somewhat against poverty, at least does so in models controlling for endogeneity of retirement using retirement eligibility as an instrument. Moreover, we find that retirement does not increase depression once we control for its endogeneity. The conclusion that retirement may be protective against poverty in old age may be counter-intuitive as comparisons between older and younger cohorts typically find that the older cohorts (many of whom are retired) are more at risk of poverty, as was also illustrated in Figure 1. There are two reasons why intuition may be misleading and both are addressed by our methodology. First of all, straight comparisons of age groups (or groups that are retired and those who are not), mixes retirement and age or cohort effects, as noted above. Secondly, our analysis suggests that individuals at risk of poverty are most likely to retire. And thus the pool of retirees in the age range considered in the instrumental variables analysis is likely to have many individuals who would be at risk of poverty also if they were not retired. In other words, retirement does not „cause“ poverty, but those at risk of poverty are more likely to retire.

Interestingly, although at the macro level there is no discernible relation between poverty at older ages and depression, the micro-level analyses show that the effects of explanatory variables on the probability of being in poverty or entering poverty are very similar to their

effects on the probability of being depressed or entering depression. Higher levels of education and being married reduce the probability of entering poverty. Females are more likely to enter poverty, unless they are married. Being married does not protect females against entering depression however. Unemployment, disabilities, or serious health conditions increase the likelihood of entering poverty or depression. Conversely, healthy individuals and those with higher education are more likely to exit poverty or depression, while retirement does not affect the probability of doing so.

An important caveat is in order. The use of statutory retirement ages (both early and normal retirement ages) as the base for our instruments restricts the age range over which our conclusions are valid. These statutory retirement ages vary between 55 and 65 in our data, so that strictly speaking the effects we study pertain to retirement effects induced through eligibility for retirement pensions in that age range. Although one might be willing to surmise that the results would not change dramatically if one were to consider statutory retirement ages that extend to 66 or 67 for instance, extrapolation to higher retirement ages can only be done on the basis of untested assumptions.

Keeping this caveat in mind, one may ask what the implications are for policy. Once we control for endogeneity we find that retirement induced through eligibility for retirement pensions does not seem to have a negative effect on poverty or depression. In fact, we find weak evidence that retirement may be protective against poverty and depression. Therefore it is plausible that fiscal savings created by delaying retirement may be at least partly offset by increased health expenditures driven by worsened well-being, although the evidence is weak. It should be stressed that we are only able to estimate the causal effect of planned retirement as pension eligibility ages are usually known and people plan their retirement accordingly. Unexpected retirement transitions may have different impacts on financial and subjective well-being.

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Figure 1.

Relative Poverty Rates in SHARE Countries

Source: Relative poverty rates for population are drawn from Eurostat data (online data code: ilc_peps01, ilc_li01 and ilc_li02). Relative poverty rates for age 50+ are from SHARE Wave 4, release 1. SHARE sample size is 55,447. AT: Austria; BE: Belgium; CH: Switzerland; CZ: Czech Republic; DE: Germany; DK: Denmark; EE: Estonia; ES: Spain; FR: France; HU: Hungary; IT: Italy; NL: Netherlands; PL: Poland; PT: Portugal; SE: Sweden; SI: Slovenia

Figure 2.

Average Depression Scores (EURO-D) among 50+ by country

Source: SHARE Wave 4, release 1. N=54,903. Correlation at the country level (ρ) = 0.17;

For country codes see legend of Figure 1.

Table 1

Early and Normal Statutory Retirement Ages Across SHARE Countries

	Males		Females	
	Early	Normal	Early	Normal
Austria	60	65	55	60
Belgium	60	65	60	65
Denmark	65	65	65	65
France	56	60	56	60
Germany	63	65	63	65
Greece	62	65	57	60
Italy	57	65	57	60
Netherlands	65	65	65	65
Spain	60	65	60	65
Sweden	61	65	61	65
Switzerland	63	65	62	64
Czech Republic	60	63	58	62
Poland	65	60	65	60

Table 2

Poverty and Depression rates Wave 1 and Poverty and Depression Transitions from SHARE Wave 1 to Wave 2 and Wave 2 to Wave 4

Table 2a	W1	Relative Poverty Transitions			
		W1-W2		W2-W4	
	Baseline levels	Into Poverty	Out of Poverty	Into Poverty	Out of Poverty
Austria	19.85% 1 803	9.9%	226	17.3%	53.8% 106
Belgium	15.62% 3 581	9.5%	382	18.3%	55.9% 284
Denmark	26.18% 1 577	10.2%	298	16.4%	51.7% 243
France	19.65% 2 989	13.1%	49.2%	10.9%	45.4% 329
Germany	20.57% 2 901	12.1%	240	17.2%	56.5% 230
Greece	19.37% 2 566	10.0%	39.8%	n.a.	n.a.
Italy	22.05% 2 419	12.7%	308	11.8%	58.5% 298
Netherlands	19.32% 2 812	13.5%	54.9%	17.0%	51.1% 279
Spain	20.79% 2 281	15.3%	60.2%	19.3%	52.7% 232
Sweden	18.24% 2 923	9.1%	54.5%	17.9%	53.8% 161
Switzerland	28.39% 927	13.8%	57.4%	20.1%	56.4% 209
Czech Republic	n.a.	n.a.	n.a.	15.8%	74.2% 97
Poland	n.a.	n.a.	n.a.	17.1%	48.7%

Table 2a	Relative Poverty Transitions				
	W1	W1-W2		W2-W4	
	Baseline levels	Into Poverty	Out of Poverty	Into Poverty	Out of Poverty
	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	1 088	326

Table 2b	EURO-D Transitions					
	W1	W1-W2		W2-W4		
	Baseline levels	Into Depression	Out of Depression	Into Depression	Out of Depression	
Austria	19.87%	13.2%	50.5%	17.1%	53.0%	
	1 839	967	235	516	112	
Belgium	25.66%	14.7%	42.6%	19.3%	43.6%	
	3 617	2 042	642	1 559	489	
Denmark	18.10%	12.6%	52.4%	11.3%	60.3%	
	1 596	985	185	1 373	238	
France	31.90%	15.9%	40.6%	24.6%	33.1%	
	3 020	1 287	613	1 197	485	
Germany	20.37%	14.0%	53.1%	19.2%	45.2%	
	2 920	1 237	279	1 081	242	
Greece	24.08%	5.5%	46.1%	n.a.	n.a.	
	2 643	1 570	523	n.a.	n.a.	
Italy	35.36%	20.9%	34.3%	20.7%	33.6%	
	2 492	1 127	587	1 317	596	
Netherlands	20.70%	12.4%	54.8%	12.3%	53.0%	
	2 830	1 394	317	1 329	251	
Spain	34.36%	19.3%	47.1%	25.1%	40.6%	
	2 330	832	510	921	394	
Sweden	20.38%	11.0%	54.7%	14.4%	45.1%	
	2 984	1 624	342	1 312	226	
Switzerland	18.99%	10.5%	64.3%	14.5%	48.5%	
	929	545	118	851	158	
Czech Republic	n.a.	n.a.	n.a.	18.5%	47.4%	

Table 2b	EURO-D Transitions				
	W1	W1-W2		W2-W4	
	Baseline levels	Into Depression	Out of Depression	Into Depression	Out of Depression
	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	1 020	235
Poland	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	23.9%	39.8%
	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	758	665

Source: SHARE, Wave 4, Release 1.0.0; Wave 2, Release 2.5.0; Wave 1, Release 2.5.0. Weighted data. Number of observations in italics.

Table 3**Explaining Retirement Decisions (Linear Probability Model)**

Above Full Retirement Age	0.172 *** (0.005)
Above Early Retirement Age	0.151 *** (0.005)
Age	0.107 *** (0.003)
Age squared/100	-0.067 *** (0.002)
Female	0.022 *** (0.005)
Married	-0.015 *** (0.004)
Married * Female	0.064 *** (0.005)
College	-0.104 *** (0.004)
High School	-0.023 *** (0.003)
Unemployed	-0.420 *** (0.007)
Disability	0.058 *** (0.004)
Health condition	0.057 *** (0.003)
N	73810

Source: SHARE, Wave 4, Release 1.0.0; Wave 2, Release 2.5.0; Wave 1, Release 2.5.0. Models control for country and birth cohort effects. Standard errors in parentheses.

*
p<0.10,

**
p<0.05,

p<0.01

Table 4

Linear Probability Model (LMP) for Poverty Dynamics

	LPM [†]	IV-LPM ^{††}
Lagged poverty	0.204 *** (0.006)	0.221 *** (0.006)
2010	0.036 *** (0.005)	0.034 *** (0.005)
Age	-0.037 *** (0.005)	-0.020 * (0.008)
Age squared/100	0.026 *** (0.004)	0.016 ** (0.006)
Female	0.059 *** (0.009)	0.060 *** (0.009)
Married	-0.039 *** (0.009)	-0.039 *** (0.008)
Married * Female	-0.063 *** (0.011)	-0.056 *** (0.011)
College	-0.150 *** (0.007)	-0.154 *** (0.008)
High School	-0.095 *** (0.006)	-0.094 *** (0.006)
Retired	0.058 *** (0.007)	-0.025 (0.034)
Unemployed	0.166 *** (0.015)	0.124 *** (0.022)
Disability	0.027 ** (0.008)	0.030 *** (0.008)
Health cond.	0.000 (0.006)	0.003 (0.006)
Constant	1.264 *** (0.192)	0.702 * (0.288)
N	32852	32852
Hansen test for IV models (see footnote 10)	$\chi^2 = 2.655$	P-value = 0.1032

Source: SHARE, Wave 4, Release 1.0.0; Wave 2, Release 2.5.0; Wave 1, Release 2.5.0. Models control for country and birth cohort effects. Standard errors in parentheses.

*
p<0.10,

**
p<0.05,

p<0.01;

[†]
LPM: Linear Probability Model;

^{††}
Linear Probability Model, with retirement instrumented

Table 5

Linear Probability Model (LPM) for Depression Dynamics

	LPM[†]	IV-LPM^{††}
Lagged depression	0.128 *** (0.005)	0.158 *** (0.005)
2010	0.009 * (0.005)	0.005 (0.005)
Age	-0.035 *** (0.004)	-0.023 *** (0.006)
Age squared/100	0.025 *** (0.003)	0.018 *** (0.004)
Female	0.099 *** (0.008)	0.098 *** (0.008)
Married	-0.051 *** (0.008)	-0.050 *** (0.008)
Married * Female	0.017 (0.01)	0.021 * (0.01)
College	-0.061 *** (0.007)	-0.066 *** (0.007)
High School	-0.051 *** (0.005)	-0.051 *** (0.005)
Retired	0.042 *** (0.006)	-0.028 (0.028)
Unemployed	0.088 *** (0.012)	0.056 ** (0.017)
Disability	0.179 *** (0.008)	0.177 *** (0.007)
Health cond.	0.124 *** (0.005)	0.127 *** (0.005)
Constant	1.160 *** (0.161)	0.769 *** (0.22)
N	48169	48169
Hansen test for IV models (see footnote 10)	$\chi^2 = 0.010$	P-value = 0.9215

Source: SHARE, Wave 4, Release 1.0.0; Wave 2, Release 2.5.0; Wave 1, Release 2.5.0. Models control for country, wave, and birth cohort effects. Standard errors in parentheses.

*
p<0.10,

**
p<0.05,

p<0.01;

[†]
LPM: Linear Probability Model;

^{††}
Linear Probability Model, with retirement instrumented

Table 6

Discrete Transition Models for Exit out of Poverty

	Exit [†]	IV-Exit ^{††}
Age	0.052 ** (0.02)	-0.018 (0.036)
Age squared/100	-0.031 * (0.014)	0.015 (0.024)
Female	-0.032 (0.033)	-0.054 (0.037)
Married	0.051 (0.034)	0.054 (0.036)
Married * Female	0.042 (0.04)	0.024 (0.044)
College	0.191 *** (0.036)	0.245 *** (0.043)
High School	0.142 *** (0.021)	0.164 *** (0.024)
Retired	-0.098 ** (0.031)	0.498 * (0.24)
Unemployment	-0.305 *** (0.053)	0.065 (0.158)
Disability	0.033 (0.029)	0.011 (0.032)
Health Condition	-0.045 * (0.022)	-0.068 ** (0.025)
Constant	-1.673 * (0.686)	0.267 (1.128)
N	3748	3748
Hansen test for IV models (see footnote 10)	$\chi^2 = 0.2324$	P-value = 0.6298

Source: SHARE, Wave 4, Release 1.0.0; Wave 2, Release 2.5.0; Wave 1, Release 2.5.0. Models control for country, wave, and birth cohort effects. Standard errors in parentheses.

* p<0.10,

** p<0.05,

*** p<0.01;

[†] Exit: discrete transition model;

^{††} IV- Exit: discrete transition model with retirement instrumented

Table 7

Discrete Transition Models for Entry into Poverty

	Entry [†]	IV-Entry ^{††}
Age	-0.025*** (0.006)	0.003 (0.009)
Age squared/100	0.022*** (0.004)	0.004 (0.006)
Female	0.044*** (0.01)	0.046*** (0.01)
Married	-0.039*** (0.009)	-0.040*** (0.009)
Married * Female	-0.047*** (0.011)	-0.038** (0.011)
College	-0.118*** (0.007)	-0.130*** (0.008)
High School	-0.066*** (0.006)	-0.068*** (0.006)
Retired	0.043*** (0.007)	-0.095** (0.035)
Unemployed	0.125*** (0.018)	0.056* (0.025)
Disability	0.051*** (0.009)	0.057*** (0.009)
Health cond.	-0.007 (0.006)	-0.001 (0.006)
Constant	0.483* (0.194)	-0.416 (0.294)
N	22647	22647
Hansen test for IV models (see footnote 10)	$\chi^2 = 2.707$	P-value = 0.0999

Source: SHARE, Wave 4, Release 1.0.0; Wave 2, Release 2.5.0; Wave 1, Release 2.5.0. Models control for country, wave, and birth cohort effects. Standard errors in parentheses.

*
p<0.10,

**
p<0.05,

p<0.01;

[†]
Entry: discrete transition model;

^{††}
IV-Entry: discrete transition model with retirement instrumented

Table 8

Discrete Transition Models for Entry into Depression

	Entry [†]	IV-Entry ^{††}
Age	-0.032*** (0.005)	-0.024*** (0.007)
Age squared/100	0.024*** (0.004)	0.020*** (0.005)
Female	0.074*** (0.009)	0.075*** (0.009)
Married	-0.043*** (0.008)	-0.044*** (0.008)
Married * Female	0.02 (0.01)	0.023* (0.01)
College	-0.034*** (0.007)	-0.039*** (0.007)
High School	-0.025*** (0.006)	-0.026*** (0.006)
Retired	0.038*** (0.006)	-0.011 (0.029)
Unemployed	0.075*** (0.014)	0.054** (0.018)
Disability	0.164*** (0.009)	0.166*** (0.01)
Health cond.	0.113*** (0.006)	0.115*** (0.006)
Constant	0.808*** (0.164)	0.551* (0.221)
N	33873	33873
Hansen test for IV models (see footnote 10)	$\chi^2 = 0.002$	P-value = 0.9683

Source: SHARE, Wave 4, Release 1.0.0; Wave 2, Release 2.5.0; Wave 1, Release 2.5.0. Models control for country, wave, and birth cohort effects. Standard errors in parentheses.

*
p<0.10,

**
p<0.05,

p<0.01;

[†]Entry: discrete transition model;

^{††}IV-Entry: discrete transition model with retirement instrumented

Table 9

Discrete Transition Models for Exit out of Depression

	Exit [†]	IV-Exit ^{††}
Age	0.036* (0.014)	0.007 (0.023)
Age squared/100	-0.025* (0.01)	-0.007 (0.015)
Female	-0.102*** (0.026)	-0.109*** (0.027)
Married	0.014 (0.027)	0.012 (0.027)
Married* Female	-0.022 (0.031)	-0.028 (0.032)
College	0.083*** (0.022)	0.110*** (0.029)
High School	0.067*** (0.016)	0.072*** (0.016)
Retired	-0.063** (0.021)	0.148 (0.142)
Unemployed	-0.108** (0.042)	0.015 (0.092)
Disability	-0.098*** (0.017)	-0.108*** (0.019)
Health cond.	-0.127*** (0.015)	-0.136*** (0.016)
Constant	-0.288 (0.47)	0.561 (0.733)
N	6728	6728
Hansen test for IV models (see footnote 10)	$\chi^2 = 4.687$	P-value = 0.0304

Source: SHARE, Wave 4, Release 1.0.0; Wave 2, Release 2.5.0; Wave 1, Release 2.5.0. Models control for country, wave, and birth cohort effects. Standard errors in parentheses.

*
p<0.10,

**
p<0.05,

p<0.01;

[†]
Entry: discrete transition model;

^{††}
IV-Entry: discrete transition model with retirement instrumented