Does Retirement Induced through Social Security Pension Eligibility Influence Subjective Well-being? A Cross-Country Comparison

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Introduction

It is increasingly understood that traditional economic measures are necessary, but not sufficient, to measure societal progress (Stiglitz, Sen, & Fitoussi, 2009). Accordingly, there has been rising interest in the U.S. and around the world in assessing subjective well-being to monitor societal progress and evaluate policy.

Subjective well-being measures are found to vary by country and age. For example, Deaton (2008) noted that for most of the world, life satisfaction declines with age, except for some developed countries, namely the U.S., the U.K., Canada, Australia, New Zealand, Europe and South Africa where life satisfaction is U-shaped with age.

Retirement is one of the key transitions in old age that could explain these country and age differences in well-being. Most developed countries devote a substantial portion of their national resources to the protection of well-being after retirement by providing old-age pensions, but policy variations exist, including differences in official retirement ages, generosity of pension benefits and other retirement incentives (OECD, 2011). For example, full pension eligibility ages are typically 65 among our analysis countries, but exceptions include age 60 in Austria (women only) and France. Additional variation exists when looking at early retirement ages. In many cases, there is moreover within-country institutional variation during our sample period due to recent pension reforms. For example, the normal retirement age in the U.S. is currently rising from 65 to 67 for successive birth cohorts. Austria, Germany and Italy are also phasing in increases in their retirement ages.

Evidence is mixed about how retirement might affect subjective wellbeing. In the U.S. both positive (Charles, 2004) and negative (Dave, Rashad, & Spasojevic, 2008; Szinovacz & Davey, 2004) retirement effects have been found. In contrast, consistently positive effects are found in England (Johnston & Lee, 2009; Mein et al., 2004) and Finland (Okasanen et al., 2011; Salokangas & Joukamaa, 1991), while no effect is found in the Republic of Korea or continental Europe for depression measures (Lee & Smith,

2009; Coe & Zamarro, 2011), suggesting potential cross-country variations in retirement effects on subjective well-being.[1]

Continued improvements in life expectancy and fiscal insolvency of public pensions have led to an increase in pension entitlement ages in several countries, but its consequences for subjective well-being are largely unknown.[2] As subjective well-being is known to influence health, if retirement has positive effects on subjective well-being, it is plausible that the fiscal savings created by delaying retirement may be at least partly offset by increased health expenditures driven by worsened subjective well-being.

In this paper, we examine the effect of retirement on subjective well-being within 12 countries, using panel data from the U.S. Health and Retirement Study (HRS) and the Survey of Health, Ageing, and Retirement in Europe (SHARE)[3]. By comparing countries with different pension entitlement ages, we evaluate the retirement effects on subjective well-being, while controlling for age, birth-cohorts, and other risk factors. Subjective well-being observed at retirement may reflect age or birth-cohort differences

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[1] Several of these studies have tried to circumvent endogeneity problems by using an instrumental variables approach. For example, Charles (2004), Johnson and Lee (2009), and Coe and Zamarro (2011) used pension entitlement age as an instrument; Dave, Rashad, and Spasojevic (2008) used spouse's retirement status; and Lee and Smith (2009) used mandatory retirement policy as instruments. However, to this point there is no cross-country comparative study of the effect of retirement on an array of well-being measures, while addressing the potential endogeneity of retirement choices.

[2] An exception is Grip et al. (2009) who found a strong and persistent negative effect on psychological well-being from a change in the Dutch civil servants' pension system that affected the pension age eligibility of some cohorts but not of others.

(Butterworth et al., 2006), and therefore, it is important to separate out retirement effects from age and cohort effects. In estimating retirement effects, we account for potential reverse causation of poor subjective well-being on r etirement, using an instrumental variables approach. This exploits variations in public pension eligibility due to country and cohort specific retirement ages (early and full entitlement ages).

The rest of the paper is organized as follows. Section 2 reviews the literature on well-being and retirement. Section 3 describes the data that is used for analysis. S ection 4 presents the econometric methods and model specification used and Section 5 presents the results. Finally, Section 6 concludes that retirement induced by eligibility for public pensions does not have overall a negative effect on w ell-being for the countries considered.

Literature on Wellbeing and Retirement

Several branches of the extensive literature on wellbeing are relevant for this study, including an emerging literature on depression and other subjective well-being measures aimed at understanding the roles played by pensions and other public institutions in protecting financial and subjective well-being in both national and cross-national settings.

The wellbeing of older individuals depends on a complex number of economic, social, and health-related factors. 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 wellbeing at older ages has focused on their income and poverty rates, therefore focusing on their economic well-being in relation to pension systems. In his study based on data from the European Social Survey, Ogg (2005) provides evidence that elderly pensioners are more likely to be poor than paid workers and confirms a link between developed welfare systems and low rates of social exclusion in old age.[1] In the United States, Engelhardt and Gruber (2004) highlight the important role Social Security has played in reducing U.S. poverty rates through a roughly unitary elasticity of poverty to benefits. Similarly, Engelhardt, Gruber and Perry (2005) predict that a cut in Social Security benefits would cause an increase in shared

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[1] Social exclusion is often defined as the lack of opportunities and resources such as housing, employment or health care.

living arrangements for elderly households, with ambiguous welfare implications, as privacy is considered a valued good while living alone also bears risks for the elderly, for instance in terms of health and social isolation. Zaidi, Grech, and Fuchs (2006) study the possible impacts of pension policies on poverty among the elderly in countries of the European Union between 1995 and 2005. The authors find that annual retirement incomes drawn from public systems are declining as a result of parametric and systemic reforms, but that the overall total cumulative pension wealth may not have changed due to increases in average life spans.

The well-being of households is determined not only by income but also by other factors like psychological well-being, health, and social relations (see Tinbergen (1991)). In an analysis based on Dutch and U.S. 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; 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 factors influencing happiness: family relationships, financial situation, work, community and friends, health, personal freedom, personal values. The first five of these can be seen to correspond to the four factors considered by Van Praag et al. (2003), Easterlin (2005), and Kapteyn et al. (2008).

Finally, several papers have studied the link between subjective well-being, in particular depression symptoms, and retirement. Mein et al. (2003) found that depression worsened among those continuing to work but not among those retired. Other papers arguing causal effects of retirement on well-being and health are Szinovacz (2004), Charles (2004) and Coe and Zamarro (2011). Our paper adds to this literature by studying the effect of retirement on the dynamics of subjective wellbeing, as measured by depression and life satisfaction, across the U.S and multiple European countries.

Data

The main data sources for this paper are the Health and Retirement Study (HRS) for the U.S. and the Survey of Health, Ageing and Retirement in Europe (SHARE). Each of

these studies is a comprehensive longitudinal survey focused specifically on measuring the well-being of middle aged and older individuals.

The HRS is the pioneer of the type of studies considered in this paper with currently ten waves of data (1992 - 2010) available. In contrast with previous studies on ageing, the HRS was designed to cover a wide range of demographic, economic, and social characteristics, as well as physical, mental, and cognitive health. The first wave of HRS (1992) sampled individuals born between 1931 and 1941 (inclusive) as well as their spouses of any age. Core interviews have been conducted biannually since then. New cohorts of respondents have been added every six years to keep the sample representative of the population over age 50.

SHARE was developed having HRS as role model and with cross-country studies in mind. As a result, SHARE collects conceptually comparable data in the key domains of demographics, health, work and retirement, income and assets, family and social networks (See Lee (2007) for a detailed discussion on the comparability of the surveys at conceptual level). Currently four waves are available (2004, 2006, 2008, and 2010). However wave 3 (2008) is a retrospective life history survey with different content than the other three waves. Therefore, we use waves 1 (2004), 2 (2006) and 4 (2010) in our analysis. The first wave of SHARE included 11 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 Greece abandoned the survey. Our analysis focuses, however, on the 11 original countries for which we have longitudinal data.

Despite the intention of cross-survey comparability, creating comparable data between these datasets remains non-trivial. In this respect this paper benefits from harmonization efforts as part of the RAND Survey Meta Data Repository (https://mmicdata.rand.org/meta/).

Wellbeing Measures

This study employs two measures of wellbeing common to the two longitudinal aging surveys: 1) Depressive symptoms and, 2) Life Satisfaction. Our first measure of well-being is depressive symptoms. Table 1 presents the information that is available in the two surveys relative to this domain of wellbeing.

HRS collects information on the **Center for Epidemiologic Studies–Depression scale (CES-D)** (Radloff, 1977), which was fielded in every wave between the second and the tenth wave of data collection. The HRS version of the CES-D scale is an eight-point scale composed of eight "yes-or-no" questions about emotional health. The eight questions ask whether the respondent, during the previous week, felt depressed, felt everything was an effort, had restless sleep, felt happy, felt lonely, felt sad, could not "get going", and enjoyed life. Four questions are reverse coded so that for all items a score of 1 indicates a negative feeling. Higher values of the CES-D scale indicate higher numbers of depressive symptoms.

Table 1. Wellbeing Measures: Depressive symptoms

Measure	HRS	SHARE
CESD	1994-2010 8-items Yes-No	2004, 2006, 2010 8-items 4-point scale (2004) Yes-No (2006, 2010)
Euro-D	N.A	2004, 2006, 2010 12-items Yes-No

Every wave of SHARE contains information about the **EURO-D depression measure** (Prince et al., 1999). This measure of depressive symptoms contains a series of 12 questions of the form: in the last month, has the respondent ever been depressed, does the respondent have any hopes for the future, would the respondent rather be dead or mention any suicidal feelings, does the respondent feel guilt or exhibit self-blame, does

the respondent have trouble sleeping, has the respondent lost interest in things, is the respondent irritable, has the respondent measured a change in appetite, has the respondent had too little energy to do the things s/he wanted, has the respondent had trouble concentrating, does the respondent report having enjoyed doing anything recently, and has the respond cried in the last month. Like the CES-D, each question is scored on a yes/no scale so that the Euro-D's range of scores is from 0 to 12. Like the HRS CES-D measure, higher scores indicate a higher number of depressive symptoms.

As shown in Table 1, SHARE also collects some information on the CES-D measure. However, the scale changed from a 4-point scale in the first wave to Yes-No questions in the last two waves making it more difficult to construct a consistent measure across waves. Therefore, we decided to focus on the Euro-D measure for SHARE.

In addition to the CES-D and Euro-D measures, we also constructed a single item indicator of depression that takes value 1 if the respondent presents more than 3 symptoms of depression as collected in the CES-D and Euro-D depression indexes. Figure 1 shows depression rates in 2004 (first wave where SHARE is available), by country, using this measure. We find quite some variation across countries in depression rates in our data. For example, Italy, France and Greece seem to be the countries with higher depression rates while the U.S is among the countries with fewest depression symptoms.

Figure 1: Depression rates by country (2004)
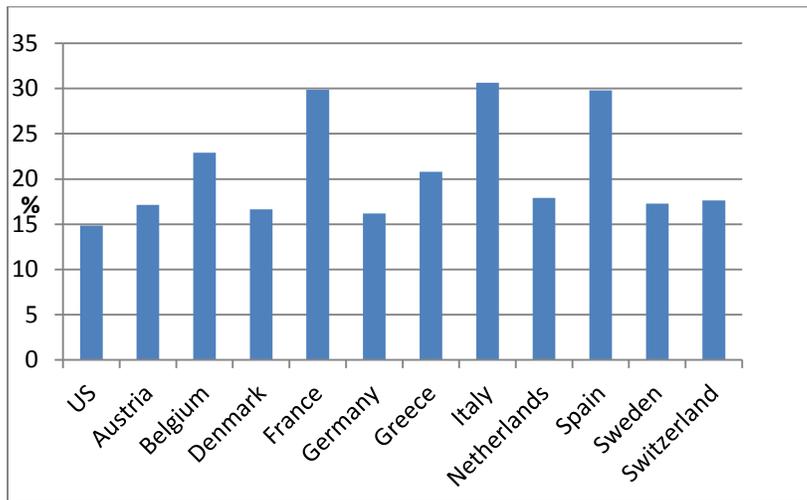
Source: HRS Wave 7 and SHARE Wave 1

7

The second domain of wellbeing that we study is life satisfaction. Table 2 presents the information that is available in the two surveys pertaining to this domain of wellbeing.

Table 2. Wellbeing Measures: Life satisfaction

Measure	HRS	SHARE
Single-item life as a whole	2008, 2010 5-point scale	2006, 2010 11-point scale
Diener SWLS (5-items)	Leave-behind 7-point scale in 2004, 2008, 2010 6-point scale in 2006	N.A

Both HRS and SHARE collect information on a single-item measure of satisfaction with life as a whole. For both surveys, however, this information is only available for two waves, 2008 and 2010 for HRS and 2006 and 2010 for SHARE. HRS evaluates this question on a 5-point scale while SHARE does it in a 11-point scale. Figure 2 shows percentage of respondents with high life satisfaction scores (i.e. 5 in HRS and 9 or 10 in SHARE) across countries for the year 2010 when this data is available in both SHARE and HRS. We even find higher cross-country variation when looking at life satisfaction measures. Older adults living in the Northern European countries (Denmark and Sweden), Austria and Swizerland have the highest rates of life satisfaction. The U.S is in the group of lowest life satisfaction with rates similar to those in France.

Figure 2: High life satisfaction rates by country (2010)
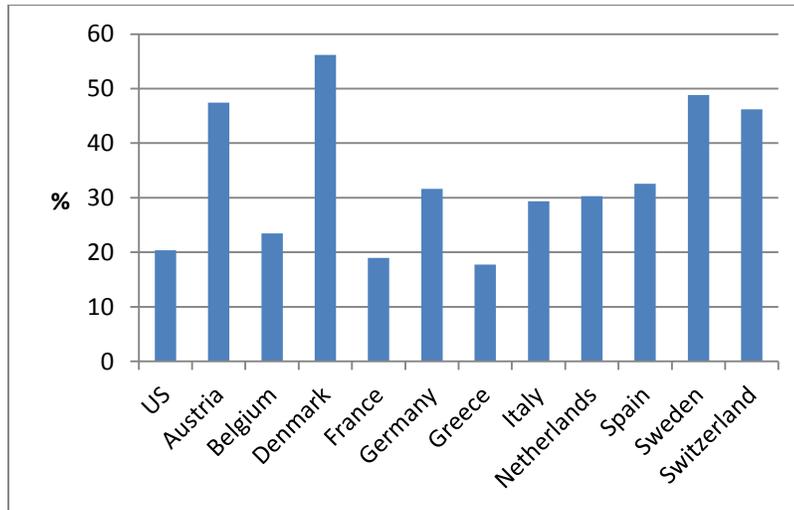
Source: HRS Wave 10 and SHARE Wave 4

HRS also collects information on the Diener Scale (Diener et al. 1985), or subjective wellbeing-life satisfaction scale (SWLS), which is a five-item measure of life satisfaction. However, this measure is only fielded in four waves, waves 7 through 10, and the scale has changed across waves between a 7-point scale and a 6-point scale. Given the difficulty of comparing across waves with different scales and the fact that the Diener scale is not available in SHARE, we focus our analysis on the single-item life satisfaction measure described above.

Sample

There are not many sample restrictions we need to impose for this analysis. We just restrict our dataset to individuals who are between 50 and 69 years old, to have a sample of respondents around retirement ages, and delete incomplete records. After doing that we have data on above 20,000 respondents in HRS and 38,000 respondents in SHARE.

Econometric Methods

We are interested in determining the effect of the binary decision of being retired (R_{ict}) on the different well-being measures (SW_{ict}). O ur estimates are based on slight variations of the following empirical model:

$$SW_{ict} = \alpha_i + \alpha_1 SW_{ict-1} + \alpha_2 X_{ict} + \alpha_3 R_{ict} + \alpha_4 cohort_{ict} + \upsilon_{ict}$$

where SW_{ict} denotes a given measure of subjective well-being (i.e. depression or life satisfaction) for individual i, in country c at time t, while R_{ict} represents the individual's retirement status. α_i is a random effect, capturing individual unobserved heterogeneity. We then fit un-weighted random effects dynamic models to analyze the determinants of subjective wellbeing. The set of explanatory variables included in the vector X_{ict} 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, a binary indicator for having any of the following major chronic diseases: cancer, stroke, heart diseases, or lung disease), and year, country and cohort controls.

In estimating the effects of retirement, we separate out unemployment, while the reference category is "currently working". To address the potential endogeneity of retirement, we instrument with two dummy variables indicating whether the respondent is eligible for full or early retirement public pensions using country and gender specific pension-eligibility ages:

$$Instrument_{ict}^{normal} = 1(age_{it} \geq Statutory\_normal\_retirement\_age_{ct}) \text{ and }$$

$$Instrument_{ict}^{early} = 1(age_{it} \geq Statutory\_early\_retirement\_age_{ct})$$

Note, these instruments vary across individuals of different ages in a given country (depending on the individual being above or below the statutory retirement age in his/her country in a particular year), across individuals residing in different countries given a particular age (as statutory retirement ages vary across countries), and, in the case of the U.S, also among different cohorts of individuals of a given age in a given country (as statutory normal retirement ages have been increasing for younger cohorts).

In order for 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 2004, Neuman 2008, Bound and Waidmann 2007, Rohwedder and Willis (2010), Angelini et al. (2009), Coe and Zamarro 2011). The first stage regression shown in the Appendix indicates that

retirement ages are important predictors for retirement behavior in our data. In addition, identification requires that there not be an independent, discontinuous change in wellbeing at the particular statutory retirement ages in place in each country. It should be pointed out that by using these instruments we are estimating the dis-continuous jump in well-being when respondents become eligible for retirement pensions for each country and then aggregate that effect across countries.

Given the differences in well-being measures shown above, so far we estimated separate models for each dataset, HRS and SHARE and include country dummies (C_i) and region dummies for the US sample to capture time-invariant country-specific characteristics.

Results

Tables 3 and 4 contain the results of estimating the model described above. The first 4 columns of these tables show results for random effects and instrumental variables random effect models for the depression indexes CESD in the U.S and Euro-D in Europe, and for the single item depression indicator. For both the U.S and Europe we find that retirement is associated with higher levels of depression. However, when we use instrumental variables we find the opposite result. Retirement is found to have a positive effect, reducing depression symptoms, although only marginally significant for the U.S when considering the depression indicator.

The last two columns of tables 3 and 4 show the results of estimating our models for life satisfaction. As only two waves of life satisfaction data are available we present estimates of both OLS and IV cross-sectional models, based on the last wave of data, where we control for the values of life satisfaction in the previous wave, and random effects and IV random effects static models using both waves of data available. For the U.S we find that retirement has a negative effect on life satisfaction but the effect is not significantly different from zero. For Europe, however, we do find a significant negative correlation between retirement and life satisfaction in the OLS specification but the effect is not significant once we use our preferred IV specification.

The remainder of the variables have the expected effects in both surveys. Women report more depression symptoms than men. Marriage has a protective effect against

depression while it increases life satisfaction measures. Higher levels of education have a protective effect against depression but they do not seem to affect life satisfaction for the case of the U.S. Unemployment increases the number of depression symptoms and decreases life satisfaction. Similarly, disability and health conditions increase the number of depression symptoms and decrease life satisfaction. The effect of disability seems to be bigger and more consistent across model specifications for the case of Europe than for the case of the U.S.

Conclusion

This paper uses longitudinal data from the Health and Retirement Study in the U.S and the Survey of Health, Aging and Retirement in Europe to study the effect of retirement on subjective well-being. We present estimates of dynamic random effects models where we instrument retirement with variables indicating whether the respondent is eligible for retirement pensions in his/her country at a given wave. By doing so, we take into account the potential endogeneity of retirement, to obtain causal effects.

Continued improvements in life expectancy and fiscal insolvency of public pensions have led to an increase in pension entitlement ages in several countries, but its consequences for subjective well-being are largely unknown. As subjective well-being is known to influence health, if retirement has positive effects on subjective well-being, it is plausible that the fiscal savings created by delaying retirement may be at least partly offset by increased health expenditures driven by worsened subjective well-being. Our results so far show that retirement induced through eligibility to Social Security pensions does not have a negative effect on individual's well-being. The effect of retirement on depression rates is in fact positive, and for the case of the US marginally significant when we use instrumental variables. For Europe, even though we find a significant negative correlation between retirement and life satisfaction this effect turns out not to be significant once we use our instrumental variables approach.

One of the main limitations of our analysis is that we do not take into account that financial consequences of retirement further complicate the estimation of effects of retirement on subjective well-being. As the generosity of pensions (i.e., the replacement rates of pre-retirement income) varies greatly across countries as also does the level of

pre-retirement earnings, financial consequences of retirement vary across individuals both within and across countries. Financial circumstances, both in absolute and relative terms, may also influence subjective well-being, and therefore, the effects of retirement can be confounded by the reduction of income. At the same time, unobservable determinants of income are probably related with unobservable determinants of subjective wellbeing, making income possibly endogenous if used as a control in subjective wellbeing regressions. To address these issues, we plan to estimate a simultaneous model, explicitly modeling the dynamics of retirement, income, and subjective well-being while still using our instrumental variables approach for retirement decisions based on public pension eligibility. By doing so we will be able to get a better understanding of the effect of retirement induced through Social Security pension eligibility on subjective as well as financial well-being of the elderly.

<Preliminary. Do not quote or cite.>

Table 3: Determinants of Subjective Wellbeing HRS

	CESD RE	CESD IV-RE	Depressed RE	Depressed IV-RE	Life Sat. OLS	Life Sat. IV	Life Sat. RE	Life Sat. IV-RE
Lag CESD	0.377***	0.464***						
	(0.004)	(0.008)						
Lag Depressed			0.273***	0.343***				
			(0.004)	(0.007)				
Lag Life Sat.					0.470***	0.470***		
					(0.012)	(0.012)		
Age	0.039	0.000	0.001	-0.007	-0.065	-0.066	0.044	-0.023
	(0.040)	(0.044)	(0.008)	(0.009)	(0.055)	(0.057)	(0.064)	(0.066)
Age squared/100	-0.004	0.032	0.004	0.012	0.059	0.061	-0.069	-0.010
	(0.031)	(0.036)	(0.006)	(0.007)	(0.044)	(0.050)	(0.051)	(0.055)
Female	0.144***	0.113***	0.029***	0.024***	-0.012	-0.012	-0.000	-0.012
	(0.027)	(0.026)	(0.005)	(0.005)	(0.035)	(0.037)	(0.030)	(0.055)
Married	-0.331***	-0.326***	-0.055***	-0.060***	0.129***	0.127**	0.267***	0.166**
	(0.026)	(0.032)	(0.005)	(0.007)	(0.035)	(0.046)	(0.028)	(0.051)
Married*Female	-0.030	0.084	-0.009	0.019	0.064	0.068	0.059	0.168**
	(0.032)	(0.063)	(0.006)	(0.012)	(0.043)	(0.077)	(0.035)	(0.064)
College	-0.523***	-0.532***	-0.082***	-0.097***	0.052	0.048	0.148***	0.065
	(0.022)	(0.048)	(0.004)	(0.010)	(0.030)	(0.076)	(0.025)	(0.082)
High School	-0.334***	-0.325***	-0.057***	-0.063***	0.009	0.007	0.057**	0.018
	(0.018)	(0.027)	(0.003)	(0.006)	(0.026)	(0.042)	(0.021)	(0.056)
Retired	**0.218*****	**-0.449**	**0.033*****	**-0.128***	**0.005**	**-0.022**	**-0.014**	**-0.712**
	(0.015)	**(0.325)**	**(0.003)**	**(0.065)**	**(0.021)**	**(0.417)**	**(0.016)**	**(0.370)**
Unemployed	0.568***	0.337**	0.092***	0.037	-0.309***	-0.318*	-0.296***	-0.370***
	(0.057)	(0.125)	(0.011)	(0.025)	(0.058)	(0.152)	(0.043)	(0.101)
Disability	1.031***	1.152***	0.181***	0.218***	-0.209***	-0.201	-0.270***	-0.026
	(0.022)	(0.077)	(0.004)	(0.016)	(0.031)	(0.121)	(0.022)	(0.036)
Health cond.	0.253***	0.291***	0.041***	0.055***	-0.065**	-0.062	-0.156***	-0.039
	(0.015)	(0.036)	(0.003)	(0.007)	(0.020)	(0.053)	(0.017)	(0.044)
Constant	0.846	1.777	0.255	0.482	3.653*	3.668*	3.205	5.206**
	(1.409)	(1.500)	(0.276)	(0.296)	(1.689)	(1.706)	(1.982)	(2.014)
Cohort Dummies	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Regional Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	63255	63255	63255	63255	5866	5866	14265	14265

Source: HRS, Waves 2 to 10. Standard errors in parentheses. * p<0.10, ** p<0.05,*** p<0.01

Table 4: Determinants of Subjective Wellbeing SHARE

	Euro-D RE	Euro-D IV-RE	Depressed RE	Depressed IV-RE	Life Sat. OLS	Life Sat. IV	Life Sat. RE	Life Sat. IV-RE
Lag Euro-D	0.294*** (0.007)	0.315*** (0.007)						
Lag Depressed			0.199*** (0.007)	0.214*** (0.007)				
Lag Life Sat.					0.380*** (0.010)	0.382*** (0.010)		
Age	-0.121 (0.076)	-0.133 (0.078)	-0.017 (0.016)	-0.018 (0.016)	0.016 (0.096)	-0.030 (0.106)	-0.075 (0.043)	-0.064 (0.047)
Age squared/100	0.086 (0.062)	0.119 (0.065)	0.010 (0.013)	0.015 (0.014)	-0.005 (0.078)	0.018 (0.081)	0.073* (0.036)	0.059 (0.042)
Female	0.533*** (0.061)	0.552*** (0.063)	0.095*** (0.013)	0.098*** (0.013)	0.007 (0.062)	-0.008 (0.064)	-0.078 (0.044)	-0.085 (0.045)
Married	-0.173** (0.054)	-0.164** (0.054)	-0.033** (0.011)	-0.032** (0.011)	0.337*** (0.055)	0.333*** (0.056)	0.560*** (0.039)	0.561*** (0.039)
Married*Female	0.002 (0.069)	0.030 (0.069)	0.000 (0.014)	0.004 (0.014)	-0.048 (0.070)	-0.059 (0.071)	0.043 (0.049)	0.036 (0.051)
College	-0.253*** (0.045)	-0.316*** (0.057)	-0.050*** (0.009)	-0.059*** (0.012)	0.092 (0.047)	0.131* (0.059)	0.338*** (0.032)	0.353*** (0.041)
High School	-0.183*** (0.038)	-0.197*** (0.038)	-0.037*** (0.008)	-0.039*** (0.008)	0.076 (0.041)	0.084* (0.041)	0.252*** (0.027)	0.256*** (0.028)
Retired	**0.189*** (0.035)**	**-0.328 (0.259)**	**0.035*** (0.007)**	**-0.033 (0.054)**	**-0.051 (0.039)**	**0.228 (0.261)**	**-0.201*** (0.024)**	**-0.088 (0.187)**
Unemployed	0.440*** (0.072)	0.191 (0.142)	0.059*** (0.015)	0.027 (0.030)	-0.593*** (0.079)	-0.463** (0.144)	-0.690*** (0.048)	-0.643*** (0.094)
Disability	1.243*** (0.057)	1.292*** (0.063)	0.225*** (0.012)	0.232*** (0.013)	-0.609*** (0.061)	-0.643*** (0.068)	-0.846*** (0.040)	-0.862*** (0.045)
Health cond.	0.601*** (0.040)	0.630*** (0.044)	0.102*** (0.008)	0.106*** (0.009)	-0.205*** (0.040)	-0.224*** (0.043)	-0.406*** (0.028)	-0.416*** (0.032)
Constant	5.203* (2.361)	5.024* (2.389)	0.727 (0.504)	0.703 (0.507)	4.337 (2.961)	6.083 (3.382)	9.313*** (1.317)	9.074*** (1.375)
Cohort Dummies	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	20440	20440	20440	20440	8222	8222	26508	26508

Source: SHARE, Wave 4, Release 1.0.0; Wave 2, Release 2.5.0; Wave 1, Release 2.5.0. Standard errors in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$

APPENDIX: First Stage Regressions for Retirement Decisions

	HRS	SHARE
Above Full Retirement	0.024**	0.109***
	(0.008)	(0.007)
Above Early Retirement	0.085***	0.111***
	(0.006)	(0.006)
Age	-0.033**	0.006
	(0.011)	(0.010)
Age squared/100	0.031***	0.025**
	(0.009)	(0.009)
Female	-0.016**	0.044***
	(0.006)	(0.008)
Married	-0.085***	-0.019**
	(0.005)	(0.007)
Married*Female	0.176***	0.078***
	(0.007)	(0.009)
College	-0.150***	-0.143***
	(0.004)	(0.006)
High School	-0.078***	-0.042***
	(0.004)	(0.005)
Unemployed	-0.309***	-0.417***
	(0.012)	(0.009)
Disability	0.286***	0.147***
	(0.005)	(0.008)
Health cond.	0.115***	0.096***
	(0.003)	(0.005)
Constant	1.409***	-0.728*
	(0.376)	(0.301)
N	89753	44068

Source: SHARE (Wave 4, Wave 2 and Wave 1) and HRS (Waves 2 to 10). Models control for country (region in the HRS), year and birth cohort effects. Standard errors in parentheses. * $p<0.10$, ** $p<0.05$,*** $p<0.01$

References

Angelini, Viola, Agar Brugiavini, and Guglielmo Weber. 2009. "Ageing and Unused Capacity in Europe: Is There an Early Retirement Trap?" *Economic Policy* 59: 463-508.

Bound, John and Timothy Waidmann. 2007. "Estimating the Health Effects of Retirement." Working Paper 2007-168. Ann Arbor, Michigan: University of Michigan Retirement Research Center.

Butterworth, Peter, Sarah C. Gill, Bryan Rodgers, Kaarin J. Anstey, Elena Villamil, and David Melzer. 2006. "Retirement and Mental Health: Analysis of the Australian National Survey of Mental Health and Well-Being." *Social Science & Medicine* 62 (5): 1179-1191.

Charles, Kerwin Kofi. 2004. "Is Retirement Depressing?: Labor Force Inactivity and Psychological Well-Being in Later Life" *Research in Labor Economics* 23: 269 - 299.

Coe, Norma B. and Gema Zamarro. 2011. "Retirement Effects on Health in Europe." *Journal of Health Economics* 30: 77-86.

Dave, Dhaval, Inas Rashad, and Jasmina Spasojevic. 2008. "The Effects of Retirement on Physical and Mental Health Outcomes." *Southern Economic Journal* 75: 497 - 523.

Deaton, Angus. 2008. "Income, Health, and Well-Being Around the World: Evidence from the Gallup World Poll." *Journal of Economic Perspectives* 22(2): 53 -72.

Diener, Ed, Robert A. Emmons, Randy J. Larsen, and Sharon Griffin. 1985. The Satisfaction With Life Scale." *Journal of Personality Assessment* 49(1): 71 – 75.

Easterlin, Richard A. 2005. "Feeding the Illusion of Growth and Happiness: A Reply to Hagerty and Veenhoven." *Social Indicators Research* 74(3): 429-443.

Englehardt, Gary V. and Jonathan Gruber. 2004. "Social Security and the Evolution of Elderly Poverty." Working Paper 10466. Cambridge, Mass.: National Bureau of Economic Research.

Englehardt, Gary V., Jonathan Gruber, and Cynthia D. Perry. 2005. "Social Security and Elderly Living Arrangements: Evidence from the Social Security Notch." *The Journal of Human Resources* 40(2): 354-7.

Grip, Andries D, Maarten Lindeboom, and Raymond Montizaan. 2009. "Shattered Dreams: the Effects of Changing the Pension System Late in the Game." IZA Discussion Paper 4034. Bonn, Germany: Institute for the Study of Labor.

Hoff, Andreas. 2008. "Tackling Poverty and Social Exclusion of Older People – Lessons from Europe." Working Paper 308. Oxford, England: Oxford Institute of Ageing.

Johnston, David W., and Wang-Sheng Lee. (2009). "Retiring to the Good Life? The Short-Term Effects of Retirement on Health*." Economics Letters* 103(1): 8-11.

Kapteyn, Arie, James P. Smith, and Arthur Van Soest. 2010. "Life Satisfaction." In *International Differences in Well-Being*, edited by Ed Diener, John F. Helliwell, and Daniel Kahneman, 70-104. Oxford, England: Oxford University Press.

Layard, Richard. 2005. "Rethinking Public Economics: The Implications of Rivalry and Habit." In *Economics and Happiness*, edited by Luigino Bruni and Pier Luigi Porta, 147-169. Oxford, England: Oxford University Press.

Lee, Jinkook. 2007. "Harmonization of Ageing Surveys and Cross-National Studies of Ageing." Meeting Report. Chiang Mai, Thailand: National Institute on Aging Scientific Meeting.

Lee, Jinkook, and James P. Smith. 2009. "Work, Retirement, and Depression." *Journal of Population and Aging* 2: 57 - 71.

Mein, Gill, Pekka Martikainen, Harry Hemingway, Stephen Stansfeld, and Michael Marmot. (2003). "Is Retirement Good or Bad for Mental and Physical Health Functioning? Whitehall II Longitudinal Study of Civil Servants*." Journal of Epidemiology And Community Health* 57(1): 46-49.

Neuman, Kevin. 2008. "Quit Your Job and Live Longer? The Effect of Retirement on Health." *Journal of Labor Research* 29(2): 177-201.

OECD, Organization for Economic Cooperation and Development. 2011. "*Pensions at a Glance*." Paris, France: OECD.

Ogg, Jim. 2005. "Social Exclusion and Insecurity Among Older Europeans: the Influence of Welfare Regimes." *Ageing and Society* 25: 69-90.

Okasanen, Tuula, Jussi Vahtera, Hugo Westerlund, Jaana Pentti, Noora Sjösten, Marianna Virtanen, Ichiro Kawachi, and Mika Kivimäki. 2011. "Is Retirement Beneficial for Mental Health? Antidepressant Use Before and After Retirement." *Epidemiology* 22(4): 553-559.

Radloff, Lenore Sawyer. 1977. "The CES-D Scale: A Self-Report Depression Scale for Research in the General Population." *Applied Psychological Measurement* 1(3): 385-401.

Rohwedder, Susann and Robert J. Willis. 2010. "Mental Retirement." *Journal of Economic Perspectives* 24(1): 119-38.

Salokangas, R.K.R., and Matti Joukamaa. 1991. "Physical and Mental Health Changes in Retirement Age." *Psychotherapy and Phychosomatics* 55 (2 – 4): 100 – 107.

Stiglitz, Joseph E., Amartya Sen, and Jean-Paul Fitoussi. 2009. "Report by the Commission on the Measurement of Economic Performance and Social Progress." Commission on the Measurement of Economic Performance and Social Progress.

Szinovacz, Maximiliane E. and Adam Davey. 2004. "Retirement Transitions and Spouse Disability: Effects on Depressive Symptoms." *Journal of Gerontology B: Psychol*ogy 59(6): S333-42.

Tinbergen, Jan. 1991. "On the Measurement of Welfare." *Journal of Economics* 50(1): 7-13.

Van Praag, Bernard M. S., Paul Frijters, and Ada Ferrer-i-Carbonell. 2003. "The Anatomy of Subjective Well-Being." *Journal of Economic Behavior and Organization* 51(1): 29-49.

Zaidi, Asghard, Aaron George Grech, and Michael Fuchs. 2006. "Pension Policy in EU25 and its Possible Impact on Elderly Poverty." Working Paper 116. Londong, England: Centre for Analysis of Social Exclusion.