Pension insecurity and wellbeing in Europe

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Abstract

This paper studies pension insecurity in a sample of non-retired individuals aged 50 years or older from 18 European countries. We relate pension insecurity with the subjective expectations on the probability that the government will reduce the pensions of the individual before retirement or will increase the statutory retirement age. We argue that changes in economic conditions and policy affect the formation of such probabilities, and through this, subjective wellbeing. In particular, we study the effects of pension insecurity on subjective wellbeing with pooled OLS models, regressions per quintiles and instrumental variables. We find a statistically significant, stable and negative association between pension insecurity and subjective wellbeing. The quintile regressions allow us to establish that pension insecurity is more salient for individuals who are poorer, who subjectively assess their life survival rate as low and who have higher cognitive abilities.

Keywords: Subjective wellbeing, pensions, uncertainty, economic insecurity, financial crisis

JEL Classification: D84, H55, I31, J14, J26

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1. Introduction

There is a flourishing literature aimed at better understanding and measuring economic insecurity. The precise concept of economic insecurity has not been agreed upon, and policy discussions use different definitions and methods to measure it. The influential report on social progress by Stiglitz *et al.* (2009) defined economic insecurity as uncertainty about the material conditions that may prevail in the future, which may generate stress and anxiety. In a more general definition, Bossert and D'Ambrosio (2013: 1018) define economic insecurity as "the anxiety produced by the possible exposure to adverse economic events and by the anticipation of the difficulty to recover from them". These authors look at the economic insecurity experienced at the individual level instead of any demographic group or country level as is usual in the policy debates. In this paper, we also look at individual insecurity, and focus our attention on a rather unexplored dimension: pension insecurity. We relate pension insecurity with the subjective expectations on the probability that the government will reduce the entitled pensions of the individual before retirement or will increase the statutory retirement age.

For this aim, we use data from waves 2 and 4 of the Survey of Health, Ageing and Retirement in Europe (SHARE), which comprises information for individuals aged 50 years or older from 18 European countries in 2007-2011. We specifically look at non-retired persons of 50 years and older who are closer to retirement and, hence, face more constraints to adapt to pre-retirement shocks than members of younger generations. The sample of non-retired individuals with no missing information amounts to 15,389. As the period of analysis includes the economic crisis of 2008 and the subsequent recession, our study also contributes to the understanding of the possible effects of the crisis on pension insecurity. Indeed, our paper is motivated by the graphs depicted in Figures 1a and 1b. These figures show a sharp difference in pension insecurity before and after the economic crisis. The distribution of the subjective probability that the government will adversely affect pension rights indicates higher pension insecurity in 2011 with respect to 2007.

2

The variation of pension insecurity during the period of analysis offers the opportunity to study the relationship between pension insecurity and subjective wellbeing. We argue that changes in economic conditions affect the formation of subjective probabilities about governmental pension regulations in the future, and through this channel, subjective wellbeing. It is expected that policies implemented after the economic crisis, such as budget cuts on social expenditures and reduction of safety nets, will also trigger the belief that the government will go further with its austerity measures and will reduce pensions and/or delay retirement. The uncertain future produces stress and anxiety, and therefore it can negatively affect subjective wellbeing. The study of wellbeing and pension insecurity is relevant in the case of the middle age population because the time to adjust to new pension regulations can be insufficient (through additional savings, for example) which may exacerbate the loss of wellbeing. A decrease in pensions can weaken the efforts to fight poverty in old age because pension income represents a large share of total old age income and significantly reduces poverty and income inequality (Marx *et al.*, 2015). This view is also perceived by European citizens. Results from the opinion survey Eurobarometer (European Commission, 2012) report a large share (57%) of Europeans that are worried that their income in old age will be insufficient to live in dignity. This share has increased from 50% in July 2009 to 57% in December 2011 in the EU-27, and shows notable differences by country. For example, in Greece, Italy and Portugal, the concern about old age income has risen from 60%-62% to 75-80% between 2009 and 2011, while in Austria, Finland and Netherlands, this has increased from 28%-32% to 36%-37%. As another goal, this paper also attempts to improve the understanding of the effects of pension insecurity and allow policy makers to better recognise and understand the demand of pension policies in their countries and offer better policy responses.

In this paper we study the relationship between pension insecurity and life satisfaction, which is a widely used measure of subjective wellbeing with well-established patterns (see e.g. Krueger and Schkade, 2008). Pooled ordinary least squares (OLS) models are employed for the total sample and for quintiles of relevant variables such as remaining time to reach retirement, income, life expectancy and cognitive abilities. We control for the usual demographics used in the empirical literature of life satisfaction and for country and year effects and their interactions. The measures of pension insecurity are the standardised subjective probabilities that the government will increase the retirement age or reduce pensions in the future, and the latent variable of both probabilities which is obtained from the first component of a principal component analysis (PCA). Our results indicate a statistically significant, stable and negative association between pension insecurity and life satisfaction. The quintile regressions allow us to establish that pension insecurity is more salient for the individuals that are poorer, that show a lower subjective life survival rate and have more cognitive abilities. Furthermore, we check that our results also hold for another measure of subjective wellbeing that is available in SHARE, which is a measure of eudemonic wellbeing related to quality of life (Hyde *et al*., 2003; Wiggins *et al.*, 2004). Finally, as an additional conformation, we show that our results hold when we implement an instrumental variables (IV) approach including the country and time specific official retirement ages and fiscal macroeconomic conditions. This approach is useful to reduce problems of omitted variable bias, reverse causality and measurement error. The paper is organized as follows. The next section provides a background on subjective wellbeing and pension reforms in Europe. Section 3 presents the data and methods. Section 4 presents and discusses the results. Finally, section 5 provides a conclusion.

2. Background

2.1. Pension reforms

In the course of the 2008 economic crisis, governments recorded a sharp increase of public budget deficits due to reduced tax revenues and increased spending on unemployed and inactive individuals (OECD, 2014). As a result, many European countries were under pressure to enact budget cuts on social expenditure and increased taxes or contributions to social systems. The sustainability of pension systems is challenged by demographic change and had been therefore under scrutiny even before the crisis. Increased life expectancy and lower fertility rates led to more pensioners, but fewer contributors. The upcoming retirement of the baby-boomer cohorts will aggravate this development. Additionally, past cohorts entered retirement under favourable conditions, which allowed them to exit the labour market quite early without high deductions.

The economic crisis accelerated the need to implement pension policy reforms as quickly as possible since pensions represent a large share of social security spending. In most European countries, austerity measures included the increase of early and normal retirement ages (see Table A1 of the Appendix). In other countries, reforms were already on the agenda and reform planning was accelerated (e.g., Germany and Netherlands). In several countries, early retirement schemes were abolished or suspended before or in the course of the crisis (Denmark, Netherlands, Poland, Ireland and Portugal). Furthermore, the pension model simulations from the OECD, which include the most recent changes in pension rules, indicated a deterioration of pension replacement rates in several countries (OECD, 2007; OECD, 2013). Figure 2 shows the magnitude of these changes between 2006 and 2012. For example, Greece is the country that has experienced the greatest fall in the pension replacement rate, with a decrease of about 30% during this time.

-Figure 2 about here-

Most of the pension measures have been introduced to maintain financial sustainability, but sometimes at loss of income adequacy in old age provisions (OECD, 2014). Among other European countries, especially in Eastern Europe, the third pillar was reinforced after the recession to overcome funding gaps in transitional systems like the Pay-As-You-Go system (Drahokoupil and Domonkos, 2012). The same applies for South European countries (Natali and Stamati, 2014). The reinforcement of the private second and third tier of pension systems is not necessarily fostering old age inequality. It is the mixture that is crucial for income adequacy in old age (Ebbinghaus and Neugschwender, 2011). However, persons at risk of old age poverty are those with a non-standard employment career, low-income households and women, as they might not be able accumulate resources and invest in private pensions or other ways of savings. Furthermore, while younger cohorts have more time to adapt to new pension systems and/or accumulate other types of savings, individuals that will retire in a foreseeable future are at risk to work longer and receive less generous retirement benefits.

2.2. Pension plans and subjective wellbeing

Some studies show that retirement behaviour has changed after the economic crisis. For example, Szinovacz *et al.* (2014) look at pre- and post-crisis waves of the Health and Retirement Survey (HRS) and find that older workers expect to work longer regardless whether unemployment rates are higher or social security benefits are expected to drop. Hurd and Rohwedder (2011) also find that American older workers expect to postpone their retirement after the economic crisis. Similarly, Parker *et al.* (2013) report that expecting lower pension benefits is associated with plans to retire later instead of opting for early retirement. Interestingly, this last paper relates pension plan decisions to the level of individual cognitive abilities and finds that individuals with better cognitive abilities tend to retire later. Contrary to these studies,

Munnell and Rutledge (2013) show a more pessimistic description of retirement paths of Americans by pointing out that intentions to postpone retirement could not be fulfilled because of adverse conditions in the labour market for older workers. They report that more older workers were laid off in the 2008 economic crisis and subsequent Great Recession than in previous recessions, and they faced more difficulties in getting a new job. As a consequence, individuals speeded up their claiming of social security benefits and even disability benefits when the individuals experienced long spells of unemployment.

In the case of Europe, the analysis of the SHARE dataset reveals that the economic crisis is associated with a lower likelihood of retirement of the European older workers (Meschi *et al.*, 2013) and a deterioration of their health (Bucher-Koenen and Mazzona, 2013). Furthermore, Meschi *et al.* (2013) find that the direct transition from unemployment to retirement has notably increased in the period 2008-2011 (post-crisis) compared with to the period 2004-2006 (pre-crisis).

Changes in pension regulations may have visible and strong effects in middle age workers. For example, considering the 2006 Dutch pension reform as a natural experiment and exploiting the exogenous variation of changes in pension rights for some cohorts, some studies present robust evidence for strong and negative effects of regulatory changes on job satisfaction and mental health (De Grip et al., 2012; Montizaan and Vendrik, 2014). In a sample drawn from the HRS, Falba *et al.* (2009) also find that those workers that had to deviate from their expected retirement plans report more depressive symptoms. Similarly, Clarke et al. (2012) have found that deviations from expected retirement plans have led to a decrease in life satisfaction of older American males.

All these findings suggest that older workers have revised or are in the process of revising their plans concerning retirement. It seems clear that the economic crisis has prompted a reduction in the expected social security benefits by means of regulations aimed at reducing pension amounts and/or increasing the retirement age. It could also be the case that changes on

pension policies are not yet in place in some countries, but the individuals are anticipating the implementation of public policies that will cut old age expenditures. In any case, the evidence presented above is clear about the negative effects of changes in retirement plans on the wellbeing of older workers. In general, different forms of economic insecurity have a negative effect on subjective wellbeing. In this regard, job insecurity is a well-studied type of economic insecurity. It has been found that job insecurity leads to lower life satisfaction (Carr and Chung, 2014; Silla *et al.*, 2009), lower job satisfaction (Artz and Kaya, 2014; Lange, 2013), more mental health complaints (Hellgren and Sverke, 2003; Modrek *et al.*, 2015; László *et al.* 2010) and more depression (Burgard *et al.*, 2012; Meltzer *et al.*, 2010). Coile *et al.* (2014) show that experiencing a recession in one's 50s reduces longevity. Although there are studies that analyse the effects of changes in social security regulations, there is a lack of studies investigating pension insecurity and its effects on the wellbeing of older workers. By tackling this question, our study contributes to the literature of economic insecurity and subjective wellbeing.

Regarding the effects of changes of macro variables on subjective wellbeing, Deaton (2012) has documented that life satisfaction in U.S. was closely related to the evolution of stock market indices during and after the economic crisis. This was particularly significant for individuals close to retirement and participating in funded pension systems because the crisis affected their expected old age income. Using the European Social Survey, Hershey et al. (2010) find that income inequality and a higher expected old age dependency ratio are associated with elevated worries about retirement income. Lübke & Erlinghagen (2014) show for 19 European countries that individual job insecurity is related to economic situation and country specific context, being particularly high in Ireland and Greece after the crisis. In Europe, macro fluctuations can also affect the confidence of the individuals in the future of their pensions. Figures 3a-3d show a high correlation between changes (before and after the crisis) in relevant macro outcomes and changes in perceptions about the confidence in the future of pensions in the country. For example, those countries where the decrease of the employment growth rate was

larger also experienced a larger increase in the variation of the share of individuals that reported being unconfident about the future of their pensions[1].

-Figure 3a-3d about here-

3. Data and methods

3.1. The data

We use the second and fourth wave of the Survey of Health, Ageing and Retirement in Europe[2]. This dataset is composed of representative surveys and comparable information for individuals aged 50 years or older in European countries and Israel. Our sample is composed of 18 European countries: Austria, Germany, Belgium, Czech Republic, Denmark, Estonia, France, Greece, Hungary, Ireland, Italy, Netherlands, Poland, Portugal, Slovenia, Spain, Sweden and Switzerland. Wave 2 was collected in 2006/2007 and wave 4 in 2011/2012. The sample of observations with no missing data is formed by 15,389 individuals who are not yet retired and are 50 years of age or older.

As we are interested in finding the predictors of life satisfaction, the dependent variable employed in our regression analyses is drawn from the question "On a scale from 0 to 10 where 0 means completely dissatisfied and 10 means completely satisfied, how satisfied are you with your life?" Our variables for pension insecurity are obtained from the questions "What are the chances that before you retire the government will reduce the pension which you are entitled to?" and "What are the chances that before you retire the government will raise your retirement age?" In both questions, the individual must indicate a number between 0 and 100. Given that

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[1] The figures about the confidence in pensions are drawn from the question which is asked only in the Eurobarometer rounds of 2006 and 2009: "At the moment, when you think of the future of your pension, would you say that you are...? very confident / somewhat confident / not very confident / not at all confident".
[2] We use the releases 2.5.0 and 1.1.1 for waves 2 and 4, respectively. Detailed information about SHARE and its methodology can be found in: http://www.share-project.org/.

these two variables are closely related (correlation = 0.49) we perform a principal component analysis of both variables and predict the first component as a single latent factor. The first component explains 74.5% of the variance and the eigenvalues are 1.49 and 0.51. This variable, that we call pension insecurity, is then adjusted to range between 0 and 1.

Other variables that will be used as controls are age, sex, married or living with partner, the number of chronic diseases[3], years of education, labour status (working), house ownership and income. The income corresponds to the log of reported household income equivalised with the square root of the number of members in the household and adjusted by purchasing power parity and prices of the year 2011. House ownership is included as a proxy for wealth. Table 1 reports the descriptive statistics of the assessed variables.

-Table 1 about here-

3.2. Empirical strategy

We run OLS regression models with the pooled data of the two waves of SHARE which includes 18 countries surveyed in the period 2006-2012. The main specification is as follows:

$$y_{ict} = \beta_0 + \beta_1 X_{ict} + \beta_2 Z_{ict} + \theta_c + \delta_t + \gamma X_{ct} + \varepsilon_{ict} \qquad (1)$$

The left-hand side variable y_{ict} indicates individual life satisfaction. The subscripts *i*, *c* and *t* represent the individual, country and year, respectively. X_{ict} is our variable of interest and measures pension insecurity as defined above. The set of variables included in Z_{ict} are controls typically used in the empirical literature of life satisfaction. We include dummies of countries and years to control for effects that are country specific and general time trends. In addition, we

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[3] A respondent is requested to list all applicable conditions in response to the question "Has a doctor ever told you that you had [Do you currently have] any of the conditions listed on this card?"

include interactions of country and time dummies to control for shocks that are country-year specific. All variables, except dummies, are previously standardised with mean equal to zero and standard deviation equal to one. Note that our results must be interpreted as associations instead of causality from pension insecurity to life satisfaction, although we will enrich our analysis by breaking down the model equations by quintiles of different and relevant variables. In this way, we are able to detect in what distinctive groups of people is life satisfaction more responsive to pension insecurity.

4. Results

4.1. Main results

The main results of the estimates for life satisfaction are shown in Table 2. The first column reports the estimates when pension insecurity is solely measured with the individual probability that the government will reduce pensions, while the second column reports the individual probability that the government will increase the retirement statutory age. The third column includes the latent variable of pension insecurity computed with those probabilities. As we noted before, there is a large correlation between both measures of pension insecurity, which can lead to large multicollinearity and inflate standard errors, and hence it is better to use a latent variable.

Recall that the units have been standardised so that these are expressed in standard deviations. In general, the covariates of each model show the usual associations with life satisfaction. Income is positively associated with life satisfaction. Approximately, the increase of one standard deviation (SD) in the log of incomes is associated with an increase of 0.06 SD in life satisfaction. Similarly, wealthier individuals –proxied by home ownership– show more satisfaction with life. One SD increase of age or educational attainment increases life satisfaction by 0.05 SD. By contrast, being affected by more chronic diseases is associated with less life satisfaction. There is a decrease of about 0.13 SD in life satisfaction for each SD increase in the

11

number of chronic diseases. Being employed shows a significant association with life satisfaction. Transiting from unemployment or an inactive labour condition to employment can increase life satisfaction by 0.27 SD. Being married or living with a partner notably increases life satisfaction by about 0.36 SD. Regarding the measures of pension insecurity, an increase of one SD in the chance that the government will reduce pensions is associated with a decrease of 0.05 SD in life satisfaction. The effect of the chance that the government will increase the statutory retirement age on life satisfaction is 0.03 SD. Finally, an increase of one SD in the latent measure of pension insecurity is associated with a reduction of 0.06 SD in life satisfaction. The results of the full sample show that the relationship between pension insecurity and life satisfaction is negative and significant.

-Table 2 about here-

4.2. Results by quintiles

In the following we will focus on the latent measure of pension insecurity. Generally, pension reforms are targeted to individuals who are not too close to retirement age in order to avoid a drastic reduction of pension rights and minimise social and political opposition. If this holds, then we can expect differential effects of pension insecurity on life satisfaction by how far the individual is from retirement age. As a consequence, individuals whose age is nearer to retirement age can feel more confident that they will not be affected by regulatory changes, while younger individuals may feel more worried. Depending on the institutional and economic conditions of the country, it is also plausible that the close-to-retirement individuals may experience insecurity and anxiety about their future pensions because they will not have enough time to adjust their savings to keep a desirable living standard in old age. This is particularly relevant in countries where retirement at legal age is compulsory, and labour beyond retirement is heavily taxed or not permitted. Furthermore, we can expect that younger individuals will be

less concerned with pension changes because either they have time to adjust their savings and labour decisions or they are myopic about the future. In any case, these conjectures can only be valued empirically, which we attempt to do with the model regressions presented in Table 3.

Table 3 reports the life satisfaction estimates of equation models resulting from categorising the sample by quintiles of years to reach retirement age. Given that our sample includes individuals aged 50 or more and that retirement age is mostly fixed at around 65 years of age, the individuals have a time period before reaching retirement of about 0-15 years. Once the individuals are categorised into quintiles of these years[4], we run the same main model regression for each quintile and report the results in Table 3. The first column corresponds to the individuals who are closer to retirement (average age is 60.7 years) while that the last column corresponds to the individuals for whom retirement will occur later (average age is 51.6 years). We observe that pension insecurity is statistically significant and negatively related to life satisfaction for every quintile except for the oldest quintile. Individuals of the third quintile are 55.2 years old on average and show the biggest association between pension insecurity and life satisfaction: an increase of one SD in pension insecurity is associated with a reduction of 0.063 SD in life satisfaction. As we postulated earlier, it is possible that the individuals who are very near to retirement are not affected by pension insecurity because the changes in pension regulations are not intended for them. Changes in age eligibility and replacement rates are in general aimed at workers that are not too close to statutory retirement ages. This is why we observe a larger effect of pension insecurity on life satisfaction among the younger individuals, with a peak for persons that will retire in a near future.

-Table 3 about here-

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[4] We have used the official retirement age in each country for every individual (figures can be consulted in the Appendix).

Income, wealth or any other proxy of economic position can mitigate or exacerbate the effect of pension insecurity on life satisfaction. Because economic resources can protect individuals from unexpected pension regulatory changes and allow to smooth consumption in old age, we expect to find a lower effect of pension insecurity on life satisfaction for wealthier individuals. The model regressions presented in Table 4 correspond to samples of individuals categorised in income quintiles. In all groups, pension insecurity is negatively associated with life satisfaction, with the effect being the largest in the poorest quintile. An increase of one SD of pension insecurity in the poorest and richest quintile is associated with a reduction of 0.073 SD and 0.03 SD in life satisfaction, respectively. Pension insecurity affects more the subjective wellbeing of the poor. Therefore, our results provide evidence for another vehicle of the negative effects of the 2008 economic crisis on subjective wellbeing outcomes, which complements a growing body of literature that looks at these effects but focuses on other outcomes.

-Table 4 about here-

It has been shown that the expectations about how long we will live play a role on decisions concerning retirement and saving and have a significant predictive power for mortality (Hurd and McGarry, 2002). In a recent paper with HRS data, Parker *et al.* (2013) report that those individuals expecting to live longer intend to retire later as well, which is consistent with the goal of trying to keep a desirable living standard during an extended length of life. In Europe, Peracchi and Perotti (2014) find that subjective survival probabilities are higher for individuals with more education, higher income and better health, which suggest that income and health are important in the formation of subjective survival evaluations. Our sample of individuals also answer a question intended to capture subjective life survival expectancy: "What are the chances that you will live to be age 75/80/85/90…?" Therefore, we are able to categorise individuals according to quintiles of subjective life survival. Respondents who are younger than 65 are asked

for their estimated chance of living up to a target age of 75, for those aged 65-69 this target age is 80, for those aged 70-74 this target age is 85 and so on. In order to take into account the differences on subjective longevity related with age, we divide the individual survival expectation by the official probability to live up to the corresponding target age from the Life Tables of Eurostat (which are age, sex, year and country specific). This means that the SHARE's subjective survival expectation has been normalized to official life tables, which is similar to the procedure Parker *et al.* (2013) followed in their analyses of American data. After this adjustment, we compute quintiles of the subjective probability of survival and run regression models for each quintile.

Table 5 shows the regression results per quintile of subjective survival. The lowest quintile includes the individuals whose beliefs about their survival rates are the smallest. On average, the individuals of this quintile consider their survival rate to be only 41% of the official survival rate, while that the individuals of the highest quintile believe that their survival rate is 36% larger than their corresponding official survival rates. Pension insecurity is negatively related to life satisfaction and only significant in the first, third and fourth quintile. For the individuals in the lowest quintile, the effect of pension insecurity is considerable. An increase of one SD in pension insecurity is associated with a decrease of 0.09 SD in life satisfaction. Not surprisingly, the effect of the number of chronic diseases is the largest within this group: an increase of one SD in the number of health conditions is associated with a decrease of 0.17 SD in life satisfaction. As underestimated life expectancy may be closely related to poor health, as the results show that pension insecurity is more salient for the less healthy individuals.

-Table 5 about here-

Parker *et al.* (2013) highlight the importance and effects of cognitive abilities on sound decisions about retirement and savings. They find that individuals with better cognitive abilities

tend to retire later because they are able to better understand the negative financial consequences of early retirement on future living standards. Furthermore, less cognitively able individuals show more inconsistent retirement decisions, which calls for the need to assist with financial planning. Financial literacy is an increasingly important topic in the literature that attempts to explain poverty in general and old age poverty in particular (see e.g. Lusardi and Mitchell, 2008; van Rooij *et al.*, 2012). Given that respondents of SHARE perform certain tests to measure cognitive functioning in old age, we are in a position to construct the distribution of cognitive abilities and categorise individuals in quintiles of cognitive abilities. We reduce the scores of immediate and delayed memory recall, verbal fluency and numeracy with a PCA and obtain the first component which will be our measure of cognitive abilities to construct quintiles (eigenvalues = 2.07 and 0.86, with the first component explaining 52% of variance)[5]. Table 6 reports the differential effects of pension insecurity by quintile of cognitive ability.

-Table 6 about here-

Pension insecurity is not statistically associated with life satisfaction for the two lowest quintiles of cognitive ability but it is a significant predictor for the other quintiles. In addition, the size of the negative association between pension insecurity and life satisfaction increases for each quintile. For example, one SD increase of pension insecurity is associated with a 0.08 SD decrease in life satisfaction for the individuals in the top 20% of the cognitive ability distribution, but this effect is not different from zero for those in the bottom 40%. This finding would suggest that the individuals with higher cognitive abilities are more aware of or more able to understand the consequences of changing pension rules on their future sources of old age income, and in this way experience a decline in subjective wellbeing. The underestimation of the effects of increasing pension insecurity in the group of less cognitively able individuals leaves life

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[5] See Mazzonna and Peracchi (2012) for a detailed description of cognitive measures in SHARE.

satisfaction unaffected, but it is at least worrying that these individuals could be taking suboptimal decisions based on limited rationality. Bissonette and van Soest (2012) point out that overly optimistic beliefs may lead to under-saving in pensions. In the same way, our results for the less cognitively able individuals indicates that their decisions concerning retirement, pensions, savings and labour could be potentially misguided.

4.3. Another measure of subjective wellbeing

In a recent paper, Steptoe *et al.* (2015) study the relationship between three different measures of subjective wellbeing, health and ageing in many different countries and regions. Subjective wellbeing is distinguished into hedonic wellbeing, which comprises an evaluative aspect or general assessment (life satisfaction) and positive or negative effects of experience (feelings of happiness, sadness, anger, stress, and pain) and eudemonic wellbeing, which measures overall quality of life (Diener, 1984). Steptoe *et al.* (2015) find important effects of all these measures on health. In previous sections we have focused on the evaluation measure of life satisfaction, but SHARE also includes a measure for eudemonic wellbeing which is the CASP-12 (Control, Autonomy, Self-realization, Pleasure) (Hyde *et al.*, 2003; Wiggins *et al.*, 2004). Individuals must answer how often they experience 12 different feelings and situations on a 4-point scale. The total score ranges from 12 to 48, and a higher score means a better level of subjective wellbeing. Not surprisingly, the correlation of CASP-12 with life satisfaction is high at 0.55. In the following, we will implement the same type of regression analysis we performed in the previous section but this time we replace the dependent variable of life satisfaction by the CASP-12 variable. Table 7 summarises the results of these regressions and only reports the coefficients for pension insecurity.

-Table 7 about here-

Each cell of Table 7 represents a different regression and only shows the coefficient of pension insecurity. The first column shows a significant and negative effect of pension insecurity on eudemonic wellbeing. One SD increase of pension insecurity is associated with a 0.09 SD decrease in the score of eudemonic wellbeing, which is even larger than the effect of life satisfaction reported above (i.e., 0.05 SD). Columns 2 to 6 show the effect of pension insecurity in each quintile of different variables. Different from the results on life satisfaction, we observe that the eudemonic wellbeing levels of individuals whose age is closer to retirement age are more affected by pension insecurity than those whose age is further from retirement. Similar to before, pension insecurity is more salient to explain a deterioration of eudemonic wellbeing in the group of poorer individuals than in the group wealthier individuals. In the case of subjective life survival rate, the effect of pension insecurity is stronger for the individuals who believe their subjective survival rate is the lowest. The results obtained for the quintiles of cognition do not show a consistent pattern between pension insecurity and eudemonic wellbeing.

4.4. Instrumental variables

In the introduction, we argued that changes in contextual economic variables will affect the formation of subjective probabilities about pension policies in the future, and through this, subjective wellbeing. Low levels of economic activity, high debt and the fall of fiscal revenues experienced during the years of the economic crisis and Great Recession have also been accompanied by policy changes aimed at reducing the generosity of future pensions. Clear examples of such policies are the increase of statutory early and normal retirement ages and the reduction of pension replacement rates. A way to explore this claim and to assess the internal validity of our results is provided through the use of an instrumental variable (IV) approach. The use of IV can help us to mitigate the problems of omitted variable bias, reverse causality and measurement error. For example, one can argue that some individuals who report low subjective wellbeing can also be more prone to express pessimistic views about the future and, hence, are

more likely to report a high probability that the government will reduce the generosity of their pensions. This could be a case of reverse causality where life satisfaction impacts pension insecurity or an omitted variable problem if no control for personality traits is available. However, the omitted variable bias is difficult to correct if no panel data is available[6].

Given the availability of certain administrative information that is exogenous to subjective wellbeing, we can perform IV regressions and explore the robustness of the effect of pension insecurity on subjective wellbeing. One of the instruments will be a variable equal to the statutory retirement age of the country minus the age of the individual. The statutory ages correspond to the years 2007 and 2012 (see Table A1 in the Appendix) assessed in SHARE and are country and sex specific. Therefore, we rely on these variations as a valid instrument for pension insecurity. We expect that the individuals whose age is more distant from the official retirement age will feel more pension insecurity. The reason is that this variable is a proxy for a situation in which the statutory age has increased thus extending the length of time to work before retirement. Another IV is the government net lending position over GDP which indicates the amount of financial assets available for lending (if positive) or borrowing (if negative) to finance the government expenditures that are in excess of revenues. A high deficit will indicate problems with the sustainability of public finances. This variable was extracted from the OECD and is country and year specific. We expect that pension insecurity is negatively correlated with net lending position.

Next, Table 8 shows the results of the IV regressions for life satisfaction and the eudemonic wellbeing measure as well. The results of the Durbin-Wu-Hausman test at the bottom of Table 8 indicate that we can reject the null hypothesis that pension insecurity is exogenous. Therefore, the IV estimates can be rated as more efficient than the OLS estimates. The F-statistic is considerably larger than the rule of thumb of 10 (Stock *et al.*, 2002) and confirms the strength

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[6] Although the SHARE dataset is longitudinal, the variables related to pension insecurity are not measured in more than one wave, and hence we cannot use panel data methods.

of our instruments. The over-identification test assess if the instruments are invalid instruments and whether the structural equation is incorrectly specified. In both sets of dependent variables, the results of the Sargan and Barman tests (although the last one is not reported) are statistically not significant and, therefore, we cannot reject the null hypothesis that our instruments are valid. In addition, in the first stage, we find the expected results of the instruments on pension insecurity: i) the variable retirement age minus age is positively correlated with pension insecurity, and ii) a deterioration of public finances is correlated with an increase of pension insecurity. Importantly, the effect of pension insecurity on subjective wellbeing is significant and negative. This effect is -0.187 SD and -0.162 SD for the life satisfaction and the eudemonic wellbeing measure, respectively.

-Table 8 about here-

5. Conclusions

The indicator of pension insecurity explored in this paper draws on the concept of economic insecurity recently developed in the economic literature, which is aimed at measuring and understanding the effects of volatile economic environments such as the 2008 economic crisis. Pension insecurity is a form of economic insecurity that produces anxiety among older workers because the time to adjust to new pension policies can be insufficient. In particular, we investigate how pension insecurity is connected to subjective wellbeing in a European population. We claim that pension insecurity is decreasing the life satisfaction of individuals who are facing near-term retirement. We argue that this is even more pronounced under unfavourable economic conditions. Indeed, opinion survey data show that worries about pensions have increased after the economic crisis. Our results are in line with current research focussed on studying the effects of the economic crisis and the Great Recession on retirement

expectations and retirement behaviour. Furthermore, we are interested in understanding which factors moderate pension insecurity and life satisfaction of older Europeans. Our findings reveal that persons who are more affected by pension insecurity are those individuals who are further away from their retirement, have lower income, subjectively assess their life survival as low and have higher cognitive abilities. Furthermore, these results also hold with a second subjective wellbeing indicator that measures quality of life, the CASP-12. We address the lack of a panel data structure and problems of reverse causality, measurement error and omitted variable bias with IV regressions that enrich the previous results. The IV estimations allow us to exploit the external variation of pension regulations and public finance conditions per country and year, and through this channel we can claim that pension insecurity is influencing wellbeing and not the other way around. These results are robust for both wellbeing indicators.

We conclude that pension insecurity is another form of economic insecurity, which depends on the individual variation of resources as well as on economic conditions and eventually on the abilities of governments to balance these. This is salient for younger seniors today due to the recent crisis and its aftermaths, but it will be even more important for the retirement of coming cohorts. What was known for decades suddenly became an emergency situation in the course of the crisis. Funding of pension systems will be an issue for the near future, and they are under revision in many European countries. However, with the rise of private pension systems, provisions could be increasingly depend on market forces which could reinforce pension insecurity in the long run and reflect socioeconomic inequalities in the society. Therefore, it is necessary to improve the understanding of the effects of pension insecurity thus allowing policy makers to better recognise and understand the demand of pension policies in their countries and offer better policy responses.

Disclaimer

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Appendix

Table A1

Country	females				males			
	2007		2012		2007		2012	
	normal ret.	early ret.	normal ret.	early ret.	normal ret.	early ret.	normal ret.	early ret.
Austria	60.0	60.0	60.0	60.0	65.0	62.0	65.0	62.0
Germany	65.0	63.0	65.1	63.0	65.0	63.0	65.1	63.0
Sweden	65.0	61.0	65.0	61.0	65.0	61.0	65.0	61.0
Netherlands	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
Spain	65.0	61.0	65.0	63.0	65.0	61.0	65.0	63.0
Italy	60.0	57.0	62.0	62.0	65.0	60.0	66.0	62.0
France	60.0	57.0	65.0	60.0	60.0	57.0	65.0	60.0
Denmark	65.0	60.0	65.0	60.0	65.0	60.0	65.0	60.0
Greece	60.0	55.0	63.5	62.0	65.0	55.0	65.0	62.0
Switzerland	64.0	62.0	64.0	62.0	65.0	63.0	65.0	63.0
Belgium	65.0	60.0	65.0	60.0	65.0	60.0	65.0	60.0
Czech Rep.	61.0	58.0	61.0	60.0	63.0	60.0	63.0	60.0
Poland	60.0	60.0	60.0	60.0	65.0	65.0	65.0	65.0
Ireland	65.0	65.0	66.0	66.0	65.0	65.0	66.0	66.0
Hungary	62.0	57.0	63.5	59.0	62.0	60.0	63.5	60.0
Portugal	65.0	55.0	65.0	55.0	65.0	55.0	65.0	55.0
Slovenia	61.0	58.0	61.0	58.0	63.0	58.0	63.0	58.0
Estonia	60.5	57.5	61.0	58.0	63.0	60.0	63.0	60.0

Source: OECD (2007), OECD (2011), OECD (2013), OECD (2014). European Commission (2009).

Tables and Figures

Table 1. Descriptives

variable	mean	SD	min	max
life satisfaction	7.821	1.583	0.000	10.000
chance of pension reduction	0.472	0.352	0.000	1.000
chance of retirement age increase	0.489	0.372	0.000	1.000
pension insecurity	0.480	0.312	0.000	1.000
male	0.495	0.500	0.000	1.000
married or living with partner	0.808	0.394	0.000	1.000
working	0.883	0.322	0.000	1.000
years of education	12.060	4.193	0.000	25.000
age	56.229	4.320	50.000	75.000
chronic diseases	1.109	1.198	0.000	8.000
log of equivalised income	3.080	1.120	-7.537	8.652
home ownership	0.770	0.421	0.000	1.000

Table 2. OLS estimates of life satisfaction

Variables	(1)	(2)	(3)
male	0.0036	0.0029	0.0043
	(0.0262)	(0.0265)	(0.0264)
married or living with partner	0.3571***	0.3572***	0.3566***
	(0.0253)	(0.0254)	(0.0253)
working	0.2737***	0.2719***	0.2734***
	(0.0465)	(0.0467)	(0.0465)
years of education	0.0505***	0.0492***	0.0500***
	(0.0161)	(0.0158)	(0.0160)
age	0.0472***	0.0530***	0.0443***
	(0.0095)	(0.0102)	(0.0106)
chronic diseases	-0.1293***	-0.1304***	-0.1296***
	(0.0151)	(0.0152)	(0.0152)
log of equivalised income	0.0638***	0.0645***	0.0641***
	(0.0131)	(0.0132)	(0.0131)
home ownership	0.1432***	0.1422***	0.1425***
	(0.0284)	(0.0284)	(0.0282)
chance of pension reduction	-0.0551***		
	(0.0142)		
chance of retirement age increase		-0.0256**	
		(0.0114)	
pension insecurity			-0.0497***
			(0.0119)
constant	-0.7735***	-0.7852***	-0.7837***
	(0.0464)	(0.0471)	(0.0463)
N	15,389	15,389	15,389
R^2	0.174	0.172	0.173

All specifications include year and country dummies and their interactions. Pension insecurity is the first component of a PCA of both chances of pension changes in the future. All variables, except dummies, are standardised with mean zero and SD equal to one. Robust clustered (by country) errors are in parentheses, * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 3. OLS estimates of life satisfaction per years to reach retirement quintiles

Variables	(1) closest to retirement	(2) 2nd	(3) 3rd	(4) 4th	(5) furthest from retirement
male	0.0175	-0.0598	0.0350	0.0200	0.0147
	(0.0250)	(0.0553)	(0.0377)	(0.0462)	(0.0538)
married or living with partner	0.3197***	0.4124***	0.3869***	0.3358***	0.3895***
	(0.0337)	(0.0595)	(0.0390)	(0.0460)	(0.0356)
working	0.2052**	0.2793***	0.2246***	0.4832***	
	(0.0846)	(0.0863)	(0.0577)	(0.0820)	
years of education	0.0328	0.0647**	0.0212	0.0872***	0.0429**
	(0.0261)	(0.0260)	(0.0262)	(0.0211)	(0.0188)
age	0.0736	0.0652	0.0572	-0.0758	0.0950
	(0.0607)	(0.0626)	(0.0536)	(0.0638)	(0.0621)
chronic diseases	-0.1447***	-0.1432***	-0.1488***	-0.1150***	-0.1008***
	(0.0256)	(0.0184)	(0.0253)	(0.0202)	(0.0230)
log of equivalised income	0.0478	0.0581**	0.0546*	0.0733***	0.0873**
	(0.0375)	(0.0238)	(0.0267)	(0.0154)	(0.0352)
home ownership	0.1450**	0.1928***	0.0965**	0.0953	0.2242***
	(0.0574)	(0.0448)	(0.0431)	(0.0613)	(0.0625)
pension insecurity	-0.0219	-0.0600**	-0.0627***	-0.0491*	-0.0404**
	(0.0183)	(0.0228)	(0.0181)	(0.0250)	(0.0179)
constant	-0.8015***	-0.4231***	-0.6813***	-0.5503***	-1.6180***
	(0.0818)	(0.0727)	(0.0473)	(0.1213)	(0.0975)
N	2,937	2,970	2,937	2,864	2,902
R2	0.191	0.197	0.190	0.180	0.195

All specifications include year and country dummies and their interactions. Pension insecurity is the first component of a PCA of both chances of pension changes in the future. All variables, except dummies, are standardised with mean zero and SD equal to one. Robust clustered (by country) errors are in parentheses, * p<0.10, ** p<0.05, *** p<0.01.

Table 4. OLS estimates of life satisfaction per income quintiles

Variables	(1) poorest quintile	(2) 2nd	(3) 3rd	(4) 4th	(5) richest quintile
male	0.0309	0.0366	-0.0275	0.0197	0.0173
	(0.0593)	(0.0343)	(0.0277)	(0.0380)	(0.0310)
married or living with partner	0.3837***	0.2647***	0.2626***	0.3472***	0.3407***
	(0.1057)	(0.0398)	(0.0393)	(0.0496)	(0.0409)
working	0.4172***	0.1769**	0.2317***	0.0674	0.1966***
	(0.0492)	(0.0641)	(0.0779)	(0.0606)	(0.0616)
years of education	0.0968***	0.0042	0.0063	0.0102	0.0492**
	(0.0259)	(0.0187)	(0.0234)	(0.0286)	(0.0197)
age	0.0531*	0.0586***	0.0709***	0.0181	0.0024
	(0.0265)	(0.0189)	(0.0226)	(0.0197)	(0.0184)
chronic diseases	-0.1403***	-0.1636***	-0.1049***	-0.0887***	-0.1139***
	(0.0200)	(0.0282)	(0.0161)	(0.0232)	(0.0277)
log of equivalised income	0.0607*	0.4359***	0.4734*	0.2766**	-0.0195
	(0.0324)	(0.1377)	(0.2294)	(0.1123)	(0.0180)
home ownership	0.1364**	0.1557***	0.0886*	0.1298***	0.1338***
	(0.0498)	(0.0444)	(0.0485)	(0.0296)	(0.0318)
pension insecurity	-0.0729*	-0.0480**	-0.0558**	-0.0283	-0.0298*
	(0.0357)	(0.0190)	(0.0217)	(0.0219)	(0.0144)
constant	-0.2937**	-0.7881***	-0.0887	-0.8327***	-1.0535***
	(0.1250)	(0.1093)	(0.0697)	(0.0482)	(0.0738)
N	3,079	3,079	3,082	3,081	3,068
R2	0.122	0.132	0.124	0.136	0.183

All specifications include year and country dummies and their interactions. Pension insecurity is the first component of a PCA of both chances of pension changes in the future. All variables, except dummies, are standardised with mean zero and SD equal to one. Robust clustered (by country) errors are in parentheses, * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 5. OLS estimates of life satisfaction per subjective life survival quintiles

Variables	(1) lowest quintile	(2) 2nd	(3) 3rd	(4) 4th	(5) highest quintile
male	-0.0606*	0.0326	-0.0756*	-0.1448***	-0.0402
	(0.0330)	(0.0289)	(0.0363)	(0.0325)	(0.0384)
married or living with partner	0.3141***	0.3685***	0.4182***	0.3069***	0.3765***
	(0.0490)	(0.0378)	(0.0355)	(0.0396)	(0.0541)
working	0.2900***	0.3394***	0.2864***	0.0525	0.2736***
	(0.0771)	(0.0581)	(0.0866)	(0.0729)	(0.0806)
years of education	0.0841**	0.0431*	0.0368*	0.0512**	0.0204
	(0.0323)	(0.0208)	(0.0182)	(0.0199)	(0.0239)
age	0.0545**	0.0382*	0.0365	0.0427**	0.0379**
	(0.0196)	(0.0201)	(0.0223)	(0.0169)	(0.0179)
chronic diseases	-0.1654***	-0.0757***	-0.0922***	-0.0916***	-0.0657***
	(0.0208)	(0.0185)	(0.0220)	(0.0225)	(0.0202)
log of equivalised income	0.1093***	0.0029	0.0772**	0.0409**	0.0616**
	(0.0272)	(0.0142)	(0.0328)	(0.0180)	(0.0251)
home ownership	0.1731***	0.1310***	0.1099**	0.1134***	0.1338***
	(0.0522)	(0.0395)	(0.0485)	(0.0341)	(0.0412)
pension insecurity	-0.0852**	-0.0208	-0.0401*	-0.0604***	-0.0150
	(0.0334)	(0.0215)	(0.0222)	(0.0173)	(0.0151)
constant	-1.6462***	-1.0470***	-0.0937	-0.1445**	-0.1728*
	(0.0651)	(0.0539)	(0.0912)	(0.0609)	(0.0895)
N	3,079	3,079	3,079	3081	3,071
R^2	0.182	0.146	0.204	0.148	0.183

All specifications include year and country dummies and their interactions. Pension insecurity is the first component of a PCA of both chances of pension changes in the future. All variables, except dummies, are standardised with mean zero and SD equal to one. Robust clustered (by country) errors are in parentheses, * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 6. OLS estimates of life satisfaction per cognitive score quintiles

Variables	(1) lowest quintile	(2) 2nd	(3) 3rd	(4) 4th	(5) highest quintile
male	0.1028*	0.0036	-0.0114	0.0218	-0.0263
	(0.0554)	(0.0479)	(0.0370)	(0.0359)	(0.0257)
married or living with partner	0.3552***	0.3304***	0.3466***	0.3579***	0.3672***
	(0.0646)	(0.0452)	(0.0388)	(0.0364)	(0.0699)
working	0.3402***	0.2898***	0.1819**	0.1863**	0.1832**
	(0.0764)	(0.0720)	(0.0739)	(0.0827)	(0.0800)
years of education	0.0184	0.0431	0.0163	0.0544***	0.0205
	(0.0246)	(0.0255)	(0.0194)	(0.0180)	(0.0226)
age	0.0392	0.0755**	0.0761***	0.0482**	0.0011
	(0.0246)	(0.0271)	(0.0193)	(0.0175)	(0.0132)
chronic diseases	-0.1518***	-0.1365***	-0.1079***	-0.0904***	-0.1218***
	(0.0230)	(0.0172)	(0.0194)	(0.0189)	(0.0273)
log of equivalised income	0.1086***	0.0436*	0.0479**	0.0432**	0.0483**
	(0.0246)	(0.0223)	(0.0197)	(0.0176)	(0.0178)
home ownership	0.1988***	0.1214**	0.1689***	0.0863*	0.1176*
	(0.0422)	(0.0441)	(0.0453)	(0.0439)	(0.0613)
pension insecurity	-0.0313	-0.0197	-0.0565***	-0.0601**	-0.0787***
	(0.0245)	(0.0291)	(0.0158)	(0.0211)	(0.0205)
constant	-0.5701***	-1.4929***	-2.2795***	0.1414	-0.3895***
	(0.0762)	(0.0749)	(0.0480)	(0.0832)	(0.0806)
N	3,086	3,070	3,076	3,077	3,077
R2	0.178	0.171	0.167	0.178	0.195

All specifications include year and country dummies and their interactions. Pension insecurity is the first component of a PCA of both chances of pension changes in the future. All variables, except dummies, are standardised with mean zero and SD equal to one. Robust clustered (by country) errors are in parentheses, * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 7. Pension insecurity estimates of eudemonic wellbeing (CASP-12)

Variable for the quintile	(1) total	(2) 1st quintile	(3) 2nd quintile	(4) 3rd quintile	(5) 4th quintile	(6) 5th quintile
total	-0.0865***					
	(0.0108)					
years to reach retirement		-0.1055***	-0.1066***	-0.0708***	-0.0848***	-0.0642***
		(0.0244)	(0.0204)	(0.0165)	(0.0275)	(0.0161)
income		-0.0886***	-0.0899**	-0.1000***	-0.0957***	-0.0451***
		(0.0209)	(0.0373)	(0.0192)	(0.0137)	(0.0126)
subjective life survival		-0.1005***	-0.0573***	-0.0733***	-0.1036***	-0.0717***
		(0.0346)	(0.0140)	(0.0135)	(0.0164)	(0.0176)
cognitive score		-0.0969***	-0.0718***	-0.0662***	-0.0939***	-0.0995***
		(0.0258)	(0.0222)	(0.0192)	(0.0136)	(0.0219)

Each cell represents a different regression of eudemonic wellbeing (CASP-12) and contains the coefficient of pension insecurity and its robust clustered (by country) standard error. All specifications include year and country dummies and their interactions. Pension insecurity is the first component of a PCA of both chances of pension changes in the future. All variables, except dummies, are standardised with mean zero and SD equal to one. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 8. Instrumental variables of subjective wellbeing

Variables	(1) 1st stage pension insecurity	(2) 2nd stage life satisfaction	(3) 1st stage pension insecurity	(4) 2nd stage eudemonic wellbeing
pension insecurity		-0.1875***		-0.1623***
		(0.0253)		(0.0214)
male	-0.0434	0.0118	-0.0434	-0.0061
	(0.0265)	(0.0236)	(0.0265)	(0.0228)
married or living with partner	-0.0258	0.3556***	-0.0258	0.1339***
	(0.0217)	(0.0247)	(0.0217)	(0.0206)
working	0.0454*	0.2699***	0.0454*	0.3121***
	(0.0221)	(0.0440)	(0.0221)	(0.0445)
years of education	0.0230*	0.0549***	0.0230*	0.0705***
	(0.0124)	(0.0157)	(0.0124)	(0.0202)
chronic diseases	0.0222**	-0.1278***	0.0222**	-0.1846***
	(0.0095)	(0.0155)	(0.0095)	(0.0145)
log of equivalised income	-0.0070	0.0643***	-0.0070	0.0610***
	(0.0084)	(0.0123)	(0.0084)	(0.0129)
home ownership	-0.0046	0.1379***	-0.0046	0.1642***
	(0.0205)	(0.0262)	(0.0205)	(0.0254)
Instruments:				
normal retirement minus age	0.0765***		0.0765***	
	(0.0055)		(0.0055)	
government net lending	-0.0982***		-0.0982***	
	(0.0272)		(0.0272)	
F-test: pension insecurity	99.295		95.603	
Durbin-Wu-Hausman test	27.300 (p = 0.0001)		5.6444 (p = 0.0295)	
Partial R^2	0.221		0.222	
Over-identification test (Sargan)	0.535 (p = 0.464)		1.47726 (p = 0.2242)	
constant	-0.7054***	-0.3320***	-0.7054***	-0.1443**
	(0.1760)	(0.1011)	(0.1760)	(0.0642)
N	15,389	15,389	15,389	15,124
R^2	0.221	0.153	0.221	0.199

Year and country dummies are included. Pension insecurity is the first component of a PCA of both chances of pension changes in the future. All variables, except dummies, are standardised with mean zero and SD equal to one. Robust clustered (by country) errors are in parentheses, * p<0.10, ** p<0.05, *** p<0.01.

Figure 1a. Predicted probability that the government will increase the retirement age in the future
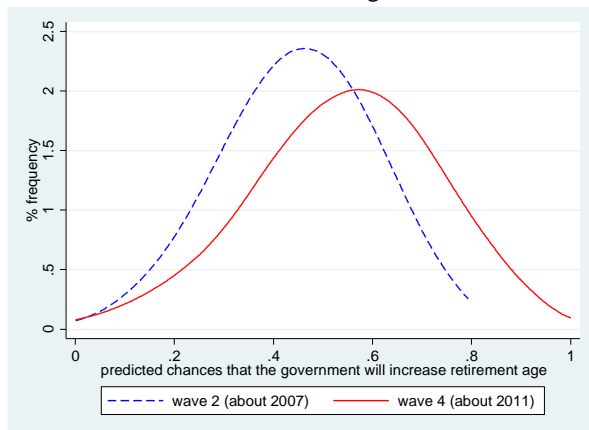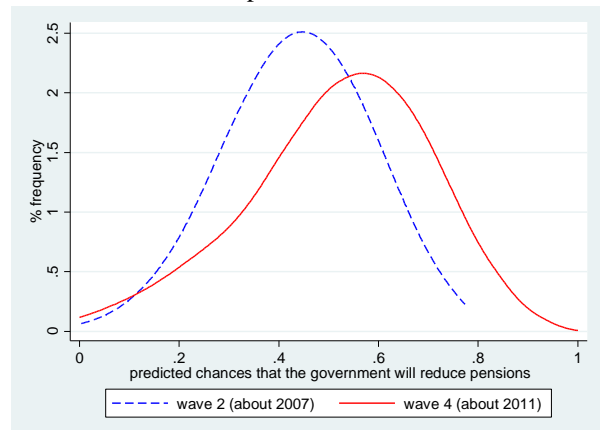
Figure 1b. Predicted probability that the government will reduce pensions in the future

Source: SHARE's waves 2 and 4.
Note: The figures represent Kernel distributions (bw=0.1) of predicted probabilities for respondents surveyed in waves 2 and 4 of SHARE. The predicted values are estimated with pooled OLS regressions that control by age, sex, years of education and dummies of countries, years and their interactions.

Figure 2. Net pension replacement rates
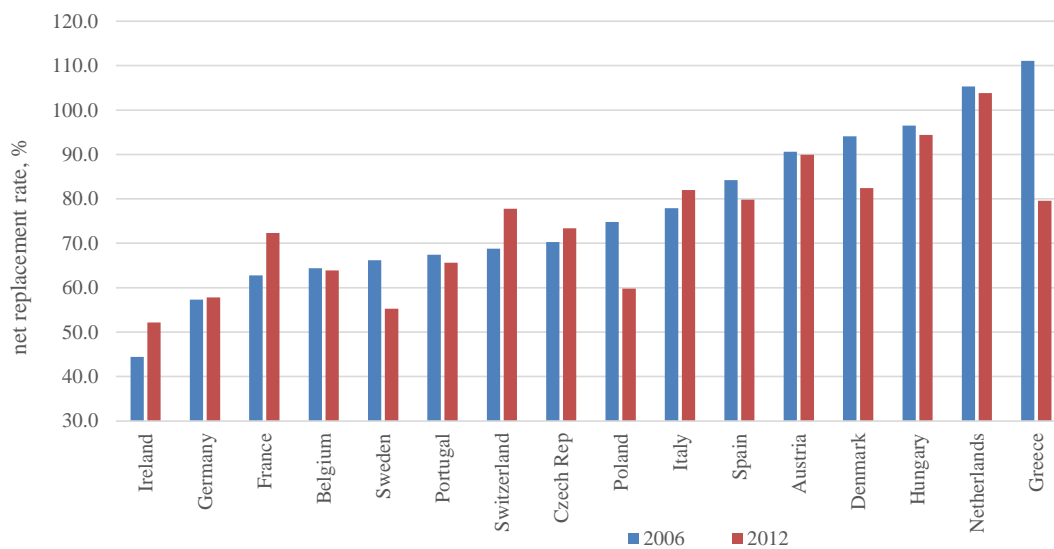
Sources: OECD (2007) and OECD (2013).

Figure 3a. Unconfident about the future of pensions and GDP growth rate (variation 2006-2009)
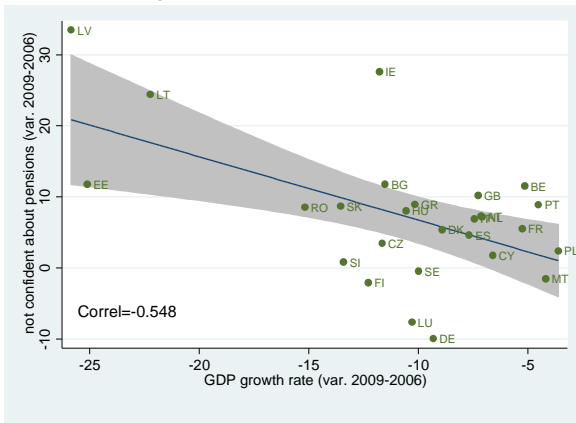
Figure 3b. Unconfident about the future of pensions and employment growth rate (variation 2006-2009)
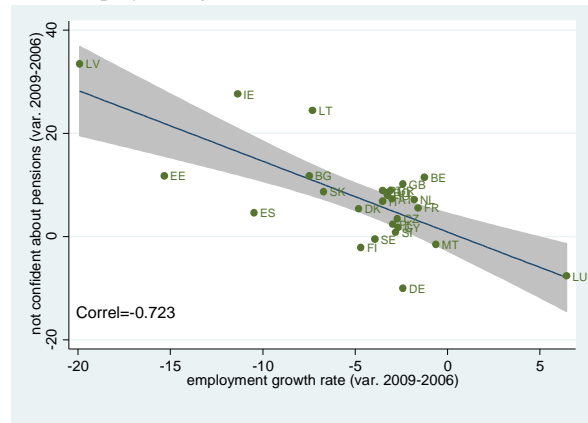

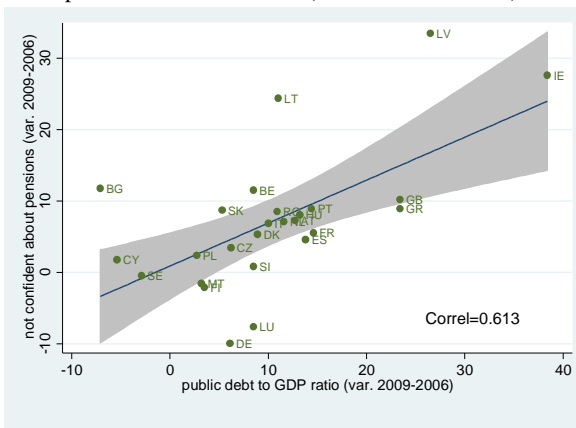Figure 3c. Unconfident about the future of pensions and public debt to GDP ratio (variation 2006-2009)
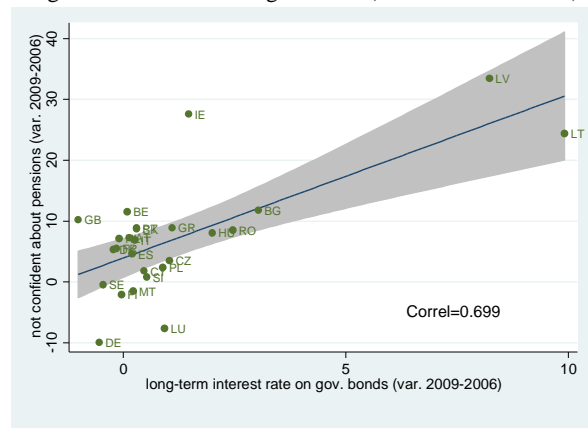

Figure 3d. Unconfident about the future of pensions and long-term interest rate on gov. bond (variation 2006-2009)

Source: Eurobarometer 66.3 and 71.3 for subjective variables and Eurostat for the macro variables.
Note: The y-axis reports the difference in the percentage of individuals (50+ and non-retired) that has no confidence (not very confident or not at all confident) about the future of their pensions between 2006 and 2009 for each country. The question used from the Eurobarometer is: "At the moment, when you think of the future of your pension, would you say that you are...? very confident / somewhat confident / not very confident / not at all confident". The x-axis reports the percentage differences in the macro variables between 2006 and 2009 for each country.