ORIGINAL INVESTIGATION

What drives retirement income worries in Europe? A multilevel analysis

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Abstract Nations in Europe have been developing rapidly since the formation of the European Union (EU), not only socially and demographically, but economically as well. One question a number of countries will face during this period of structural transition will be how (and how well) they are able to support their citizens in old age. A related question involves whether individuals worry about their financial future in retirement, and the extent to which they take active steps to save in order to ensure an adequate standard of living. In this study, we analyze data from the third wave of the European Social Survey, which represents 21,416 working adults from 23 countries in Europe. We used multilevel modeling to focus on the explanatory factors that underlie individual and country-level effects in worry about future retirement income and saving behavior. Findings suggest that once individual-level dimensions are taken into account, country-level predictors explain appreciable variance in worry, but not saving practices.

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Moreover, we found that retirement income worries are more severe in countries with a strong projected increase in future population aging and a high level of income inequality. Finally, pension age reforms were not found to appreciably affect retirement income worries. Results of the study are discussed in terms of not only the individual difference dimensions that precipitate future income worry and saving, but also ways in which macro-level policy initiatives could potentially alleviate some of the worries of European citizens.

One major change many Europeans will face in the coming decades has to do with the level of financial support they can expect to receive in old age, due to the shifting dynamics of pension financing systems in different countries. This is particularly true in previous Eastern Bloc nations, in which pension financing systems are being built (or rebuilt) to meet the needs of large segments of older workers nearing retirement. One predictable consequence of this change is worry on the part of the individual worker, who may not have a sense that a reasonable level of financial support is forthcoming. In this study, we focus attention on the factors predictive of future retirement income worry in Europe, and the factors predictive of saving for old age.

The broad theoretical framework that supports this study explicitly recognizes that a range of multidisciplinary influences shape individuals' financial behaviors, as well as their financially linked emotions. That being the case, in order to characterize the determinants of financial worry and saving for old age, we employ indicators drawn from the fields of psychology, sociology, and economics. By

examining data from multiple countries across Europe, our goal is to move beyond the traditional boundaries of micro-level investigations. By including both micro and macro-level predictors in the models we test, we are able establish the extent to which individual-level resources (economic, social, and psychological) and macro-level policies and circumstances are related to levels of retirement income worry. Specifically, at the macro level we focus attention on the extent to which worries covary with age-based pension reforms, anticipated country-specific changes in population aging, and differential levels of income inequality across countries.

Worry about finances and retirement

The aging of members of the baby boom generation has contributed to an expanding literature on worry about one's future retirement finances. For some, this retirement worry stems from a perceived lack of general knowledge of aging (Hayslip et al. 1997), whereas for others, more focal dimensions (health concerns, work-related issues) are the root cause of apprehension. There has been no shortage of studies to suggest the existence of a link between personal finances and worry (Christelis et al. 2009; Diefenbach et al. 2001; Grulke et al. 2006; Lindesay et al. 2006; Neukam and Hershey 2003; Skarborn and Nicki 2000; Watari and Brodbeck 2000), which is important in light of the inverse relationship between worry and life satisfaction, health, and the ability to manage one's life (Neikrug 2003; Paolini et al. 2006; Watari and Brodbeck 2000). At the very least, it is clear that for many the retirement transition is stressful (Bossé et al. 1996; Sharpley and Layton 1998), which can give rise to worry. This worry, in turn, can be partially alleviated by engaging in financial planning activities (MacEwen et al. 1995), setting aside resources for the future (Neukam and Hershey 2003), and relying on financial institutions to manage one's future pension resources (Sievers 2003).

The changing pension panorama in Europe

Most European pension systems are founded on three pillars: public schemes (so-called "Social Security" programs), occupational schemes (i.e., employer pensions), and individual pension plans that highlight the need for personal saving. Each pillar has advantages and drawbacks in terms of the provision of support, and not all three pillars are well established in all European states (Schneider 2009). That said, public programs tend to be of central importance in that they make up the lion's share of income for most European pensioners (Commission of the European Communities 2000).

European pension programs are not without their difficulties. Ways are needed to increase the sustainability of currently overburdened state-based financing schemes, and appropriate governance structures are needed to ensure the integrity of occupational pension programs (Holden 2008). Undeniably, many pension programs in Europe—whether state-based or occupational—are currently in flux and badly in need of reform (Mercer 2007). These and other concerns have lead to a lack of trust and low levels of confidence in some state-based programs (Holden 2008), which undoubtedly lead many workers to have concerns about their future pension income.

Concerns that stem from the stability of transitional state-based pension systems—particularly those developing in former Eastern bloc countries—have led to an aggregate increased level of saving across countries in Europe (Eurostat 2009a, b). Indeed, many Europeans are setting aside resources at a rate that outstrips household saving in other developed nations, including the United States (Leetmaa et al. 2009). Despite this fact, sizeable income differences exist among older individuals living in different European countries, which are in part due to differences in the generosity of state-based pensions and the egalitarian stance taken by governments seeking to compensate for income inequality (Christelis et al. 2009).

In response to the prospect of an aging society, most welfare states in Europe have taken measures to increase the sustainability of public pension systems by increasing the pension qualifying age in the (near) future (OECD 2006). An increase in the effective age of retirement can offer a double dividend to most welfare states, as it not only lengthens the time spent on the labor market, but it also shortens the pension period (Cremer and Pesitieau 2003). Of course, the tacit assumption is that an increase in the pension qualifying age is effectively transformed into work, and not into a period spent in unemployment, sickness or disability. An increase in pension age also implies a broadening of the tax base, which may help to sustain current public pension systems (cf., Bongaarts 2008).

Present investigation

In this study, we explore the extent to which Europeans worry about their future retirement income, as well as the extent to which they save for old age. Univariate data are presented to describe the degree of worry and level of saving among individuals in 23 European countries. Furthermore, inferential analyses are carried out using multilevel modeling to identify individual- and country-level determinants of retirement income worry and saving.

Ten *individual-level predictors* are included in the regression equations, we compute to predict worry and

saving. Some measures are structural variables that indicate the socio-demographic and economic position of respondents, such as age, gender, health status, education, marital status, number of children, income adequacy, and amount of time worked per week. We also include two psychological predictor variables that indicate respondents' disposition toward saving for the future: future time perspective and planning affect (i.e., the extent to which one enjoys planning). Three *country-level predictors* are also included in the multilevel regressions. These include country-specific values for: (a) the 2050 projection of the country-specific old age dependency ratio (i.e., the proportion of the population over 65 relative to individuals 15–64 years of age), (b) a country-specific measure of income inequality (i.e., the Gini coefficient), and (c) whether a country had recently enacted reforms to increase the pension qualifying age.

Retirement income worry

In terms of hypothesis development, few studies have been published that examine retirement income worry in relation to the individual-level predictors used in this investigation. Research has shown that the age-related acquisition of knowledge about late life issues can serve to reduce the anxiety brought on by the impending retirement transition (Hayslip et al. 1997), and for this reason, late life income worry levels might be expected to be higher among younger adults relative to older pre-retirees. General and financial worry levels tend to be higher in women relative to men (Grulke et al. 2006; Skarborn and Nicki 2000), partly because women tend to occupy more economically vulnerable positions, and partly because women have greater difficulties in making ends meet (Litwin and Sapir 2009). By extension, one might imagine women's retirement income-related worry would also be higher. Those in ill health are confronted by financial stressors not faced by healthy individuals (Francoeur 2001; Litwin and Sapir 2009); therefore, one might expect poor health to be related to high levels of future income worry.

We found no studies that examined the relationship between retirement income worry and educational level, but inasmuch as educational attainment is correlated with income and wealth, we expected highly educated individuals to have low levels of future income worry. Furthermore, being married or partnered could be expected to be associated with low levels of worry, as married individuals have been shown to save more for retirement (Yuh and Olson 1997). Continuing with individual-level variables, we expect future income worry to be related to the amount of time dedicated to work in a typical week, in such a way that those who work part time would likely experience higher worry levels than those employed on a full-time basis. This is because part-time workers would be less likely to have accumulated adequate pension benefits, and at the same time, they would be less likely to have discretionary savings that could be allocated to retirement savings.

As a psychological predictor variable, future time perspective, it seems, could go either way in terms of worry levels. Those with a high future time perspective (i.e., who like to think about the future) might be more mindful and worried about their future retirement income, as they could be differentially focused on events that will occur in old age. On the other hand, those with a high future time perspective have been found to be more active retirement planners and savers (Hershey et al. 2007) who expect higher replacement rates after retirement (Van Dalen et al. 2010)—financial behaviors and expectations that might be thought of as reducing income-related worry. It is unclear how the final two individual-level variables—planning affect and number of children—will be related to worry about future income levels.

Using a similar line of reasoning as in the case of future time perspective, high levels of positive planning affect may reduce worry, as those who enjoy planning are people who tend to be better at setting aside savings (Ameriks et al. 2003). The counterargument in this case, is that knowledge may be a mixed blessing. Planners are more likely to be aware of what lies ahead, and hence, more worried about their retirement income than those who remain (blissfully) ignorant as to what the future holds. A similar ambiguity exists when considering the relationship between children and retirement income concerns. In traditional societies, children have served as an informal social security system by taking care of their aging parents. Velladics et al. (2006) showed that individuals in former Eastern European Countries rely more on their children for old age care relative to other European countries. In that respect, children can be viewed as a capital good (Nerlove et al. 1987).

In terms of country-level variables, we expect future income-related worry levels to be higher in nations with a high old age dependency ratio. This is because in such countries there will be relatively few workers to support retirees through state-based financing programs, and the resulting psychological and financial burden to the worker will be significant. We also expect to find high levels of worry in countries with high levels of income inequality. In such countries, worry could be prevalent among individuals of limited financial means, with few personal savings and bleak prospects for an occupational pension. Finally, we expect worry levels to be lower in countries that have increased the pension qualifying age in the years leading up to the data collection (i.e., 2005). This is because the level of welfare offered by public pension systems in "reform countries" is expected to be more stable than in countries that have abstained from making reforms.

Saving for retirement

Relative to studies on income-related worry, numerous studies have been published that link retirement saving practices to demographic and individual difference variables. Indicators associated with higher saving rates include: being older (Devaney and Su 1997; Stawski et al. 2007), being male (Glass and Kilpatrick 1998; Jefferson and Preston 2005), being highly educated (Yuh and Olson 1997), being married (Rix 1990; Yuh and Olson 1997), being in good health (Johnson et al. 2008; Lum and Lightfoot 2003), having a reasonable income adequacy (Bassett et al. 1998; Poterba et al. 2007; Stawski et al. 2007; Weller 2006). Furthermore, it has been suggested that having many children should be negatively predictive of saving for old age (Galasso et al. 2008), because children are themselves considered to be a source of support. Future time perspective has been shown to be positively related to retirement saving practices (Hershey et al. 2010; Howlett et al. 2008; Jacobs-Lawson and Hershey 2005). Finally, as saving is typically the end result of financial planning, it would follow that those who generally enjoy planning (i.e., positive planning affect), might be more likely to save.

We further anticipate that projections of future old age dependency ratios will be a good marker of saving for old age. To the extent that the dependency ratio in a country is high, then saving rates should be high. That is because a high dependency ratio indicates a small worker base available to contribute to state-based pension programs (Barr and Diamond 2006). We also expect a high level of income inequality will affect savings practices, because income inequality at the country-level signals that income redistribution by the government (or collective arrangements in the form of supplementary pension contracts) is low, thereby making private savings more likely. Finally, we anticipate that the probability of saving for retirement will be lower in countries in which age-based pension reforms have been proposed, because individuals living in such countries will likely have to save less on the basis of precautionary motives. That is, in countries that have enacted reforms, pension benefits can be expected to be less uncertain than in countries that have abstained from comparable policy changes.

Method

Participants

The data in this investigation were drawn from the third (2005) wave of the European Social Survey (ESS; European Social Survey 2009). The sample in the present study contains data from 19 EU countries including: Austria, Belgium, Bulgaria, Cyprus, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom. Data were also available from four non-EU countries including: Switzerland, Ukraine, Norway and the Russian Federation, making for an overall sample of 23 nations.

A subset of 21,416 ESS respondents were selected for inclusion in this study, all of whom were engaged in employment at the time of testing, and all of whom were within the prime working age range of 18–60 years. The mean number of respondents per country was 931 (range 492–1,382); the mean age was 40.2 years (range 18–60; SD = 10.91). Roughly half (49.0%) of the sample were women, and the average educational level was in the upper to post-secondary range.

Measures

Outcome measures

The first outcome measure tapped whether individuals worry about their future retirement income. This single-item indicator was worded as follows: "*Are you worried that your income in old age will not be adequate to cover your later years?*" Ratings were made on an 11-point scale (0 = not at all worried; 10 = extremely worried). The second outcome measure was designed to assess retirement savings practices. This item read: "*Are you saving (or have you saved) in order to live comfortably in old age?*" (coded dichotomously: 0 = No; 1 = Yes).[1]

Individual-level variables

Eight individual-level variables were included in the study. These included six demographic items: *age*, *gender* (0 = male; 1 = female), *years of formal education*, *self-rated health status* (1 = very good; 5 = very bad), *marital status* (0 = non-married/partnered; 1 = married/partnered), and the respondent's *number of children*. In addition, *income adequacy* used a four-level rating scale (1 = living comfortably on present income; 4 = very difficult to live on present income) and respondents indicated the average *number of hours worked* in a typical week (0 = part-time [≤34 h], 1 = full-time [≥35 h]). Also

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[1] We were initially concerned that the dichotomously scored saving indicator might not be sufficiently sensitive to identify cross-national differences in saving practices. To establish convergent validity for the ESS measure of saving, mean household saving rates for 19 of the 23 countries used in this study were drawn from Eurostat (Leetmaa et al. 2009) and correlated with ESS country-specific mean saving scores. The Kendall's tau rank-order correlation between these two variables showed a reliable trend ($\tau = 0.29$, $p = 0.09$), which suggests that the country-specific saving rates, as measured in this study, are a reflection of actual saving practices.

measured were two psychological indicators: future time perspective and planning affect. The former was assessed using an 11-point rating scale based on the question: "*Do you plan for the future or take each day as it comes?*" (0 = take each day as it comes; 10 = plan for the future as much as possible). The latter item was based on responses to the following statement: "*I like planning and preparing for the future*" (1 = strongly disagree; 5 = strongly agree). Although the future time perspective and planning affect items appear to tap a similar construct (that is, some form of planning orientation), in this study they are measured and analyzed as separate constructs. This is because research has shown that one's planning-related affect is distinguishable from the act of financial planning for retirement (Hershey and Mowen 2000; Neukam and Hershey 2003).

Country-level variables

Three country-level variables were included in the study. They include a measure of income inequality—the *Gini coefficient* (0 = strong income equality; 100 = strong income inequality) (UNDP 2007), the projected *2050 old age dependency ratio* in the respondents' country (larger scores mean there are proportionally more individuals over 65 relative to working age individuals), and a dummy-coded indicator of whether the country had enacted age-based pension reforms in the years leading up to the data

collection, thereby implying future increases in pension qualifying age (0 = no reforms; 1 = pension age reforms enacted). The primary data source used to identify these reforms was Whitehouse (2007); for countries not included in that database (i.e., Cyprus, Slovenia, Russian Federation, Ukraine) we consulted reports from the respective countries (an overview of these reforms is available upon request).

Results

Bivariate analyses

We begin by presenting descriptive scores for the two dependent measures—future income worry and saving— averaged at the country level. The means plotted in Fig. 1 are for the worry dimension. As seen in the graph, most scores surround the scale midpoint (a score of 5), with somewhat more countries having means skewed in the worried direction. The countries in which respondents had the highest levels of future income worry were Poland, Bulgaria, Portugal, and the Russian Federation. Countries with the lowest worry levels included Norway, Denmark, and Sweden, with Norway having the lowest worry score overall. Next, we turn our attention to the analysis of self-reported saving behavior. Figure 2 shows the proportion of respondents in each country that answered "yes" to the

Fig. 1 Country specific mean scores and *standard error bars* for the retirement income worry variable
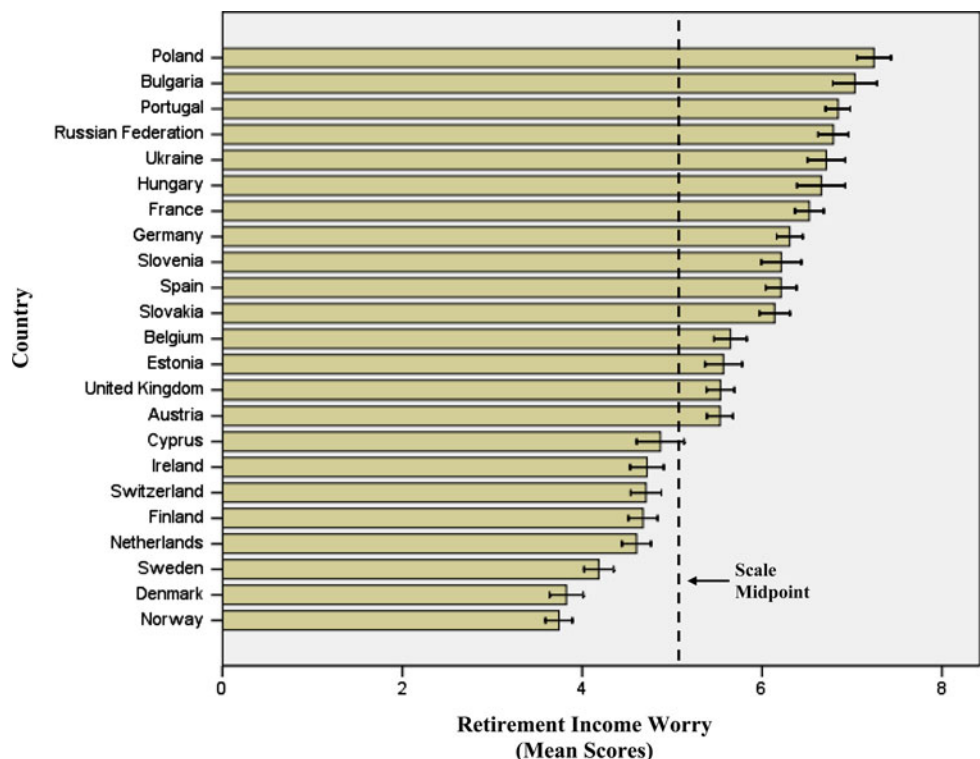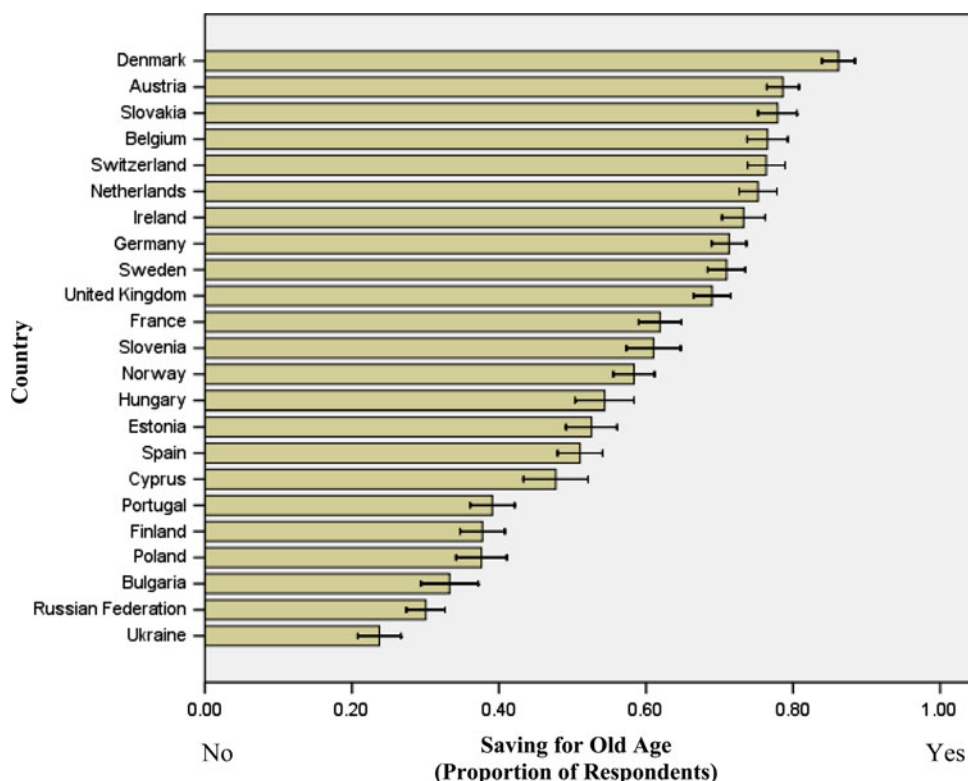
question "*Are you saving (or have you saved) in order to
live comfortably in old age?*". Thus, a country with a mean
score of 0.60 indicates that somewhat more than half of
respondents reported having saved. The countries in which
saving behavior is most common include Denmark, Austria
and Slovakia. The likelihood of having saved in these
nations approaches or surpasses 80%. Saving rates were
lowest in the Ukraine, Russian Federation, and Bulgaria—
countries in which only 25–35% of the population reported
having set aside discretionary resources.

Multilevel modeling analyses

Four separate regression analyses were calculated to test
the factors predictive of retirement income worry, and four
others were calculated to examine the factors predictive of
saving. One advantage of multilevel analysis is that it
allows one to take into account the dependency of obser-
vations between respondents from the same country. The
practical benefit of multilevel modeling is that mean scores
and standard errors of country-level variables can be esti-
mated in an unbiased fashion (Dedrick et al. 2009). Fur-
thermore, multilevel modeling allowed us to estimate the
extent to which dependent measures vary across countries,
and the degree to which variance on each criterion can be
explained by individual-level (i.e., micro) and country-
level (macro) effects.

For each dependent measure, we estimated four multi-
level models with random intercepts and slopes. In the
initial (baseline) model only individual-level predictors
(e.g., age, education, health status) were employed, taking
into account dependencies within countries. In the three
models that followed, a country-level (macro) indicator
was added to the baseline equation. The first tested for the
effect of the UN Gini coefficient, the second examined the
impact of population aging using the 2050 old age
dependency ratio estimate, and the last of the three probed
for the effect of pension age reform. These country-level
effects were tested in separate models so as to avoid esti-
mation biases that stem from multiple macro-level indi-
cators in a single multilevel model (Maas and Hox 2005).

The first set of models we calculated were for the
retirement income worry dimension. Initially, a baseline
model (Table 1) was computed using only individual-level
predictors. The omnibus test for this model proved to be
statistically significant, Wald $\chi^2(10) = 3837.86$, $p < 0.01$.
As seen in the table, each of the individual-level variables
except for marital status and number of children was a
significant predictor of worry. Those who reported being
worried were statistically more likely to be older, women,
in poor health, less educated, have a poor income ade-
quacy, a long future time perspective, a tendency not to
enjoy planning for the future, and work full time. Among
the predictors that were statistically significant in this

Table 1 Baseline multilevel regression model with individual-level variables predicting retirement income worry ($N = 21{,}416$)

Variable	b	(SE_b)
Individual predictors		
Age	0.003**	(0.001)
Gender	0.283**	(0.106)
Health status	0.221**	(0.082)
Education (years)	−0.018*	(0.008)
Marital status	−0.007	(0.009)
Number of children	−0.024	(0.016)
Income adequacy	0.870**	(0.072)
Future time perspective	0.550**	(0.009)
Planning affect	−0.349**	(0.067)
Amount worked/week	0.327*	(0.156)
Constant	2.450**	(0.416)
R^2 within	0.150	
R^2 between	0.805	
R^2 overall	0.165	
Rho	0.007	

* $p < 0.05$; ** $p < 0.01$

analysis, future time perspective was clearly the strongest, followed by income adequacy.

Three separate income worry models were then estimated in the second stage of this analysis (Table 2, models 1–3). In all three models, dependencies within countries were again taken into account and individual-level predictors were entered along with (a) the measure of income inequality (model 1), (b) the old age dependency ratio (model 2), and (c) the indicator of pension reform (model 3). The fraction of unknown variance due to country effects in each of the three models (rho) was relatively modest, ranging from 0.6 to 0.8%. As would be expected, the eight individual-level predictors that were significant in the baseline model were again significant in models 1 through 3. As for macro-level effects, worry levels tended to be higher in countries in which the Gini coefficient was higher (indicative of high income inequality; column 1), in countries in which the old age dependency ratio was high (i.e., where there are projected to be many retirees relative to workers; column 2), but worry levels did not differ in countries in which pension age reforms had been enacted (column 3). The overall explained variance in models 1 and 2 was roughly one-half of one percentage point higher than the overall explained variance in the baseline model, but little in the way of an incremental increase in variance was seen in model 3. In all three models shown in Table 2, individual-level predictors accounted for 15% of the variance in worry. In contrast, roughly 80% of the country-level variance was explained on the basis of individual- and country-level predictors.

Next, we turn our attention to the determinants of self-reported saving for old age. Given that the outcome variable for this analysis was dichotomous, multilevel logistic regression models were calculated. As seen in Table 3, the

Table 2 Multilevel regression models with individual and country variables predicting retirement income worry ($N = 21{,}416$)

Variable	Model 1		Model 2		Model 3	
	b	(SE_b)	b	(SE_b)	b	(SE_b)
Individual predictors						
Age	0.003**	(0.001)	0.003**	(0.001)	0.003**	(0.001)
Gender	0.284**	(0.106)	0.283**	(0.106)	0.282**	(0.106)
Health status	0.218**	(0.082)	0.221**	(0.082)	0.219**	(0.082)
Education (years)	−0.018*	(0.008)	−0.018*	(0.008)	−0.018*	(0.008)
Marital status	−0.006	(0.009)	−0.007	(0.009)	−0.007	(0.009)
Number of children	−0.024	(0.016)	−0.025	(0.016)	−0.024	(0.016)
Income adequacy	0.873**	(0.072)	0.869**	(0.072)	0.864**	(0.072)
Future time perspective	0.550**	(0.009)	0.550**	(0.009)	0.550**	(0.009)
Planning affect	−0.345**	(0.067)	−0.351**	(0.067)	−0.350**	(0.067)
Amount worked/week	0.342*	(0.155)	0.325*	(0.156)	0.319*	(0.156)
Country predictors						
Gini coefficient	0.127**	(0.036)				
Old age dep. ratio (2050 projection)			0.067**	(0.022)		
Pension reform					0.321	(0.377)
Constant	−1.499	(1.184)	−0.737	(1.097)	2.370**	(0.434)
R^2 within	0.150		0.150		0.150	
R^2 between	0.805		0.795		0.783	
R^2 overall	0.169		0.168		0.166	
Rho	0.006		0.006		0.008	

* $p < 0.05$; ** $p < 0.01$

Table 3 Baseline multilevel logistic regression model with individual-level variables predicting self-reported saving for old age (N = 21,416)

Variable	b	(SE_b)
Individual predictors		
Age	0.001**	(0.000)
Gender	−0.027	(0.028)
Health status	0.018	(0.021)
Education (years)	0.007**	(0.002)
Marital status	0.004	(0.002)
Number of children	0.022**	(0.006)
Income adequacy	−0.435**	(0.020)
Future time perspective	0.026**	(0.003)
Planning affect	0.234**	(0.017)
Amount worked/week	0.215**	(0.039)
Constant	−0.109	(0.181)
Wald χ^2 (10 df)	912.11**	

* $p < 0.05$; ** $p < 0.01$

Wald chi-square for the baseline configuration was significant, $\chi^2(10) = 912.11$, $p < 0.01$, with age, education, number of children, income adequacy, future time perspective, planning affect, and amount of time worked per week all emerging as significant predictors. Gender, health status, and marital status all failed to emerge. Those who reported saving tended to be older, more highly educated, have more children, have a higher income adequacy, a longer future time perspective, a more positive attitude

toward planning, and they were more likely to be employed on a full-time basis. Among this set of variables, household income adequacy was found to be the most potent predictor of saving, followed by planning affect.

The overall fit for the saving models shown in Table 4 also proved to be statistically significant (all Wald χ^2 values < 0.01), yet none of the three country-level variables (Gini, old-age dependency ratio, pension age reform) emerged as significant. One degree of freedom log-likelihood comparisons between the baseline model and each of the three subsequent saving models verified that the addition of country-level variables failed to have reliable incremental effects (model 1, $\chi^2_{\text{diff}}[1] = 1.60$, ns; model 2, $\chi^2_{\text{diff}}[1] = 0.78$, ns; model 3, $\chi^2_{\text{diff}}[1] = 0.00$, ns).

Discussion

In this investigation, we studied future income-related worry and saving behavior among European citizens in an international comparative context. Our findings show clear differences across nations in the amount of retirement worry that takes place, as well as differences in the propensity to save for the future. Whereas Scandinavian countries and the Netherlands are characterized by relatively low levels of worry, individuals living in Eastern European countries reported high worry levels.

Our analyses revealed that high income-related worry levels are associated with individuals' current economic,

Table 4 Multilevel logistic regression models with individual and country variables predicting self-reported saving for old age (N = 21,416)

Variable	Model 1		Model 2		Model 3	
	b	(SE_b)	b	(SE_b)	b	(SE_b)
Individual predictors						
Age	0.001**	(0.000)	0.001**	(0.000)	0.001**	(0.000)
Gender	−0.027	(0.028)	−0.027	(0.028)	−0.027	(0.028)
Health status	0.018	(0.021)	0.018	(0.021)	0.018	(0.021)
Education (years)	0.007**	(0.002)	0.007**	(0.002)	0.007**	(0.002)
Marital status	0.004	(0.002)	0.004	(0.002)	0.004	(0.002)
Number of children	0.022**	(0.006)	0.022**	(0.006)	0.022**	(0.006)
Income adequacy	−0.435**	(0.020)	−0.435**	(0.020)	−0.435**	(0.019)
Future time perspective	0.026**	(0.003)	0.026**	(0.003)	0.026**	(0.003)
Planning affect	0.234**	(0.017)	0.234**	(0.017)	0.234**	(0.017)
Amount worked/week	0.215**	(0.039)	0.215**	(0.039)	0.215**	(0.039)
Country predictors						
Gini coefficient	−0.040	(0.034)				
Old age dep. ratio (2050 projection)			−0.017	(0.020)		
Pension reform					0.043	(0.320)
Constant	1.140	(1.074)	0.693	(0.994)	−0.123	(0.212)
Wald χ^2 (11 df)	913.71**		912.89**		912.11**	

* $p < 0.05$; ** $p < 0.01$

social, and psychological resources. As such, this is a clear indication that multidisciplinary influences shape individuals' financially linked emotions. Respondents who reported higher worry levels tended to be older, female, in poor health, poorly educated, they tended to have a low income adequacy and they worked more hours per week. As such, future retirement income worry tended to be highest among those who find themselves in a particularly vulnerable socioeconomic position. With respect to the psychological dimensions, we found worry levels were higher among those with a long future time perspective and those not predisposed to like planning for the future. The analysis of saving for old age revealed similar findings with respect to individual-level predictors. Those who had saved tended to be older, more educated, they had more children, a higher income adequacy, and they worked more hours per week, on average. In terms of the psychological dimensions, savers had a longer future time perspective and they tended to like planning.

At the country level, worry was associated with high degrees of income inequality and a high future old age dependency ratio in the country of residence. The observed impact of the old age dependency ratio on income-related worry seems to suggest that respondents may have a good idea as to the effect of socio-economic and demographic developments on the sustainability of their pension system. Worry tends to be endemic in nations where the dependency ratio is expected to increase to high levels in the coming decades. Interestingly, a low level of income inequality in a country is associated with low levels of future income worry. One possible interpretation for this finding is that a high level of income redistribution by the government or collective arrangements (in the form of supplementary pension contracts) can provide citizens with a greater sense of future income security, while reducing the perceived risk of poverty in old age. Enacting age-based pension reforms, however, does not seem to affect retirement income worry in any appreciable manner. Although public policy makers have sent a clear message in defense of retirement age increases (viz., to keep public pension programs sustainable) they have apparently had difficulties in effectively bringing that message across. Public support for raising the retirement age has, for the most part, been relatively weak (Velladics et al. 2006).

To some extent, the non-significant impact of the pension reform variable should offer food for thought for policy makers. It suggests that the calculus of pension reform is either beyond the grasp of the average citizen, or the distrust of the general public is so great that these reforms are not seen as credible solutions.

As opposed to the clear country-based effects observed with respect to worry, country-level variables failed to account for appreciable variation in saving behavior. This finding—that aggregate country-level predictors provided no additional explanatory power when it comes to saving—suggests that saving behavior is mainly determined by an individual's access to the resources that tend to covary with factors such as one's age, educational level, and income adequacy. In other words, the unique opportunity structures (Ekerdt et al. 1996) associated with these individual-level dimensions facilitate saving practices. One reason for the lack of country-level effects seen for the saving indicator may have had to do with the dichotomous nature of this measure. Macro-level effects might have emerged had a more sensitive (continuous) indicator of saving been used. In short, differences may appear if one looks at the level of saving and not whether individuals have saved or not. The absence of country-level effects may also have stemmed from the fact that a rich set of individual-level predictors were used in the baseline model (including economic, psychological, and sociological markers), which could have served to control for composition effects when it came to country-level differences in saving.

The present study is not without limitations. One limitation has to do with the nature of some of the scales and variables employed. For example, single-item indicators were used to assess perceived financial worry and whether people had saved for retirement. In future studies it would be beneficial to expand these measures into multiple-item scales, and examine these constructs in relation to more traditional econometric indicators of saving. A second limitation is that it is unclear whether systematic cross-national perceptual biases are associated with either perceived pension savings or worry levels, and if they do exist, how they may have affected the findings. A third limitation is that only employed individuals were included in this study. The fact that the sampling frame did not extend to unemployed and non-employed persons—such as stay-at-home partners and spouses—could have resulted in some degree of response bias.

Europe is on the brink of an unprecedented aging of the population (Eurostat 2009a, b). The demographic shifts that are now taking place will undoubtedly present unique challenges to the sustainability of pension systems in each and every European nation. The findings from this study have revealed the existence of diverse retirement income worry levels across European populations, and the extent to which these worries are rooted in individual access to resources (i.e., those that covary with one's health, income and education). Moreover, our findings reveal that certain country-level factors—such as inequalities in the distribution of income and shifting demographic profiles—are also critically important in determining individuals' perceptions of their financial future.

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