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Do Public Pension Rights Matter for Health and Well-being Among Retired Persons? Basic and Income Security Pensions across 13 Western European Countries

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Abstract: Mortality rates have decreased dramatically in the advanced welfare democracies during the past century. This is also reflected in improved health among the elderly even if there is no perfect correlation. In this study the link between public pensions and self-reported health and well-being among retired persons in 13 OECD-countries around 2000 is analysed. It is argued that public pension institutions have a potential to affect health and well-being in its capacity as a significant constituent of household income. From a social rights perspective, new institutional data on public pension entitlements allow for a multidimensional analysis of pensions variables that capture different dimensions of old age security. Some indicators relate to basic security and others to income security (less or more related to a persons work history respectively). For improved cross-national comparison relative measures of health and well-being were constructed to account for cultural bias in responses to the survey questions, as well as beterogeneity among countries in the general level of population health. Results show how better (relative) health and well-being is found in countries with more generous pensions. Income security pensions matter more than basic security pensions. These results are to some extent congruent with the analysis of pensions and mortality differences among the elderly. Cross-sectional data do not permit causal inferences.

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Dramatically decreased mortality rates in the advanced welfare democracies in the last century, coinciding with economic growth and expansion of public social security, has brought an entirely new stage to the life-course, where elderly enjoy greatly improved income and health. In this perspective a 'democratization' of ageing can be said to have taken place, where retired persons in their 'third age' today may better described as "the young old, who retire early enough and in sufficiently good health to enjoy an unprecedented period of cultivation, creativity and leisure" (Troyansky 1997:50).

Yet, in parallel with democratization of ageing, there is also differentiation. Societal inequalities not only reproduce, but amplify with old age (Vincent 1995:23-24). In many countries poverty as well as low incomes still persist among older people, and in comparative perspective the ageing trend is also characterized by wide cross-national variations in pensioners' living standards where differentiation relates closely to how pension policy solutions have been differentially successful in reducing poverty (Higgs 1997:122; Kangas and Palme 2000; Korpi and Palme 1998; Quadagno and Reid 1999; Vincent 1995:28) and in particular gender-based and generational inequalities (see e.g. Daly 2001; Ginn *et al.* 2001; Walker and Maltby 1997:53).

At the individual level it is well-established how individuals' health status is predicted by demographic factors such as age, gender and household composition (see e.g. Lahelma and Arber 1994), as well as by social factors of socio-economic nature, such as social capital (Poortinga 2006), education, social class and income (Knesebeck *et al.* 2006; Åberg Yngwe *et al.* 2001). As socioeconomic stratification processes in significant ways are influenced by welfare state institutions, we may expect individuals' health to be related to welfare state provision in general, and the health of retired persons to the provision of public pension specifically. The potential of public pensions to influential elderly's health follows from how more generous pension benefits provide a higher income among the elderly, thus more resources that can be invested in products and activities that enhance health. Furthermore, a more generous pension system may also has a redistributive impact, which reduces income differences in society, particularly among the elderly (Korpi and Palme 1998; Palme 2006). Previous research suggests a strong association between income differences and health, i.e. lower income differences are associated with better health, although the link to mortality is weak (see e.g. Smith *et al.* 1990; Wilkinson 1992). Insofaras public pensions provide for poverty alleviation they can also be expected to reduce the negative effects on health of low income.

The purpose of this study is to analyse the link between public pensions and self-rated health and well-being among retired persons in 13 West European countries around 2000. New institutional data on pension rights allow for a multidimensional analysis of old-age pensions. These indicators capture different dimensions of old age security, where some relate to basic security and others to income security (less or more related to a persons work history respectively). The multi-level approach allows examination of institutional effects on health and well-being once individual and compositional effects are controlled for, as well as countries' level of economic development (at the macro-level).

Previous research - individual-level factors

Strong demographical predictors include age, sex and household conditions. More recently there is a growing literature on comparing social determinants of health (Lahelma and Arber 1994; Rahkonen *et al.* 2000; Åberg Yngwe *et al.* 2001). In general, predictive factors relate to individuals' structural positions in terms of education, social class, employment status and material living standards as well as family roles within the household. The importance of such factors may differ across countries (see e.g. Lahelma and Arber 1994; Young and Grundy 2006), for example in relation to education (Huisman *et al.* 2003; Knesebeck *et al.* 2006), social occupational class (Åberg Yngwe *et al.* 2001) or income (Åberg Yngwe *et al.* 2001). The important role of education has been specifically stressed as it is a "key" to a person's position in the stratification system, as it is related to occupational class, income level and the likelihood of being unemployed (Knesebeck *et al.* 2006:1345). Also, socio-economic position, especially education, is crucial as it has been seen to structure unhealthy lifestyles (Lantz et al. 2001), access to and quality of health care (Van der Meer 1998), exposure to material deprivation (Blanc, Bartley and Davey-Smith 1997) and stressful psychosocial environments (Marmot and Siegrist 2004).

At the same time, the importance of education for predicting health varies distinctly across countries (Cavelaars *et al.* 1998; Huisman *et al.* 2003; Knesebeck *et al.* 2006). A comparison of 22 European countries (drawing on the same data used in this study) found small educational health differences in Norway, Sweden and the UK, whereas inequalities were large in Hungary, Poland and Portugal. Furthermore such differences were less pronounced among older persons (Knesebeck *et al.* 2006).

Taking a multi-level approach, the present analysis does not focus on an evaluation of how certain micro-level factors are important in different ways within specific countries. The included individual-level factors instead compare persons across all countries e.g. of younger age to all persons in older age groups, or single person households to cohabiting persons, and so on. Such control also accounts for compositional differences across countries and facilitates analysis at the macro level of cross-national variation in health and well-being as explained by country-level characteristics.

The Pension Data and Hypotheses

In the development of pension systems during the past century, countries have followed distinctly different paths, which have led to somewhat different profiles in the level and distribution of benefits. For the analytical purpose of the present paper we focus on two different development paths and their different goals; *basic security* and *income security*. The basic security model awards (lower) basic benefits which allows for a larger role of private pensions. Income security pensions may be awarded according to a *state corporatist* model delivering earnings-related benefits separately for different segments of the labour force, or according to an *encompassing* model, which relies on a combination of universal basic benefits and earnings-related social insurance benefits in similar ways for all labour market participants.

Data on pension rights in 2000 are from the Social Citizenship Indicator Program (SCIP), which provides comparable and multidimensional information on welfare state institutions. Three indicators of public pensions are evaluated. The *total pension index* is a comprehensive generosity indicator, calculated as the total of the two pension components – basic pensions and income security pensions. Both separate pension indices refer to the average net replacement rate (in relation to the income of an average earner) for two type cases compared across countries – a single person household and a married couple household. The *basic security pension index* reflects the situation of persons with no or small earning records. The index is an average of three different components: (i) a citizenship pension which is paid without needs-testing or any requirements of previous earnings (available in five of the thirteen countries examined), (ii) a minimum pension which may include means-tested components and (iii) a worker minimum pension which requires the fulfillment of a minimum number of years of work/contribution records.¹ The *income security pension index* reflects two types of benefits; a *worker pension* which is the benefit given on the basis of 35 years

¹ Denmark, Finland, Norway, Sweden and the Netherlands.

work/contributions with average production worker earnings, and a *full worker pension* which takes into account a full contribution record but assumes average income earnings.²

Figure 1 shows the total pension index across 13 West European countries in 2000. Highest levels are found in three Nordic countries (average 1.050), which in previous research have been described as typifying the encompassing model (see e.g. Korpi and Palme 1998). High total pensions are also found in the Netherlands.³ In the fourth Nordic country, Denmark, total pensions are markedly lower, wherefore Denmark (according to its institutional constituents) is classified as a basic security country together with United Kingdom, Ireland, Switzerland and also the Netherlands (average is 0.838 excluding the Netherlands). Remaining western continental European countries, with state corporatist traditions, have medium levels of total pensions (on average 0.932), except Germany which, according to available pension measures have slightly lower levels.

[Figure 1]

How then may these cross-national differences in pensions be expected to affect health and wellbeing? The core argument of public pensions' potential to influential retired persons' health, is that higher pensions provide higher income among retirees, thus more opportunities and resources for health enhancing products and activities. A *first hypothesis* would be that more generous pensions, regardless of their type, will promote better health and well-being, i.e. better health and well-being may be expected with higher total pensions.

Yet, given that different pensions cater to different socio-economic strata, it may be more relevant to assess separate dimensions of the total pension measure. How the different pension dimensions are related to each other is assessed in Figure 2. Here, we see how the thirteen countries are dispersed in all quadrants but the lower right one. In other words, no country provides high basic pensions and low income security pensions. The opposite combination – high income security pensions and low basic pensions (upper left quadrant) – is found in Austria and Italy. These countries exempted, a reasonably strong proportional relation appears – countries providing generous income security pensions tend to also supply more generous basic security pensions (correlation is 0.656).

² For more information see Palme (2006).

³ Note on why the Dutch total pension is high.

[Figure 2]

In relation to the availability of quite different pensions across countries to different strata of income earners, the different dimensions may be expected to affect health outcomes differently. Previous research suggests that lower income differences are associated with better health and lower mortality (see e.g. Wilkinson 1992). The explanation appears to be class-related in relation to how lower socio-economic positions entail worse health (see e.g. Smith *et al.* 1990). For this reason, a *second hypothesis* may be posed according to which more generous basic security pensions are expected to matter more for the average level of health and well-being among retired persons in a country, especially in relation to women's health. This can be expected as such pensions are available to all, or most, citizens, including also those whose work histories are marked by e.g. less stable labour market attachments, interrupted work careers and lower or irregular incomes.

In relation to the supposedly positive effects of income security pensions on health and well-being, alternative consideration could be raised. Firstly as these pensions are more readily available to persons with more stable, non-interrupted and full work histories, they may be expected to be of more importance for men's rather than women's health and well-being. Secondly, as these pensions cater also to the middle classes whose better health, established during an entire (work) life, the marginal effect of relatively more generous income security pensions may be less important in relation to the average health and well-being in a country.

The survey data and operationalizations

The survey data used is a combined dataset from the first two rounds of the European Social Surveys of 2002/3 and 2004. In relation to available institutional macro-level data thirteen West European countries were selected for comparison: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Sweden, Switzerland, and United Kingdom.

The ESS-data was gathered through face to face interviews and draws on national random samples of persons above 15 years. From this data retired persons aged 65 and over were selected for comparison. Retired persons were those persons who reported themselves to be retired as their main activity during the last seven days. The far majority of these persons (92%) also report pensions as

the main source of income in their household.⁴ For cohabiting persons, there is however no information on the number, level or sharing of pensions within the household. Unfortunately, the response rate to question on spouse's main activity (of which retired is an option) was very low (20% of cohabiting retired persons aged over 64) and even lower in relation to the question on spouse's occupation. Neither is the household income variable suitable for analyses as non-response rate is too high.⁵ The total sub-sample includes 8399 persons. Average response rate is 61%, mainly varying between 50 and 80 percent across countries, which (a part from being quite usual) in comparative attitudinal research is usually judged as acceptable.⁶

Caution in interpreting results in relation to known data limitations also concern exclusion of institutionalized retirees from sampling procedures, which may imply (gendered) under-estimations of health-inequalities, and in relation to how countries with higher non-response rates may entail higher non-responses in lower socio-economic groups that have been shown to have worse health, thus again translating into a (gendered) under-estimation of health inequalities. In addition, small country samples necessitate a general caution making generalizations.

Individual-level variables

At the individual level, analyses control for age, cohabiting status, education and social class. *Age* was recoded into three groups, comparing (supposedly) newly retired persons aged 65-69 with persons

⁴ Internal response rate to the question on main source of household income for the sub-sample of retired persons is 98.7%. Alternative sources of income are wages, salaries or income from self-employment (5.0%), other social benefits or grants (1.8%) and investments or savings (1.3%). Exceptions include the Dutch case where a lower proportion of the respondents (81%) rely on pensions and instead more households (13.2%) depend on incomes from social benefits or grants. In Italy and Ireland slightly lower proportions (85-87%) rely on pensions, while the proportions of persons still drawing on wages, salaries or income from self-employment are higher (15% and 10% respectively).

⁵ Neither does the data include information on when the person (or his/her spouse) retired. Thus it is not possible to account for health-related self-selection into earlier or later retirement. Thus, there may be country specific selection effects into the sub-samples analysed in relation to how countries' pension systems (1) promote better health in so that persons survive and live longer and (2) provide a realistic retirement opportunity for persons to actually opt for retirement. Results' robustness to the exclusion of persons (mainly women) who appear to have worked and still consider themselves to be housewives (i.e. without significant work histories, thus questionable pension incomes) was also checked.

⁶ For the Swiss and Italian cases response rates are 33.5% and 43.7% respectively, but none of the reported results were found to be sensitive to the exclusion of these countries from analysis. Response rate for the French sample (ESS2?) may also be problematically low (see e.g. Young and Grundy 2006). Missing measures of level of education also necessitated exclusion of data for the United Kingdom from the first ESS round and data for Austria from the second ESS round. Data was weighted by design weights (but not population weights) to make results nationally representative.

aged 70-79 and the oldest aged 80 and over.⁷ *Cohabitation* discriminates between persons living alone or those living with a partner (spouse or other).⁸

Socio-economic indicators include measures of education and social class. In most countries education was coded according to the International Standard Classification of Education (ISCED-97, UNESCO, 1997) on a 7-point scale. Due to some cross-national differences, three comparable groups were constructed. Lower education includes persons with primary/basic/ (in)complete or lower secondary education. Medium level education categorize those with upper secondary or postsecondary (but non-tertiary) education, and high education to those with any kind of tertiary education.9 Social class is measured through a recoding of the internationally comparable codes of occupation into a six-category EGP-classification scheme (see e.g. Erikson and Goldthorpe 1992). This scheme distinguishes between unskilled workers, skilled workers, routine non-manual employees, service classes I and II (higher- or lower-level controllers and administrators) and the self-employed.¹⁰ Due to many missing cases in the measurement of women's social class, this indicator was dropped from analyses of women's health.¹¹ Although a persons' income and ethnicity has been shown to be related to health and well-being (see e.g. Maxwell and Harding 1998; Rostila 2007; Singh and Miller 2004), these aspects were excluded from analysis. The income measure suffers from too many missing cases (28% internal non-response rate), and the number of persons aged over 64 stating their belonging to an ethnic minority was very small (approximately 150 respondents of 8399).

Dependent variables

⁷ In a few European countries legislated standard retirement age is still lower for women than for men.

⁸ Cohabitation may measure a social as well as economic dimension of subjective health, however with similar expectations. In the social dimension, following previous research, cohabiting persons are expected to fare better than non-cohabitants. Also, in the economic dimension, it may be argued, in so far as the household resources are pooled within the household (even if not equally), that cohabiting persons will fare better than non-cohabitants due to saving effects of pooled household resources, i.e. also in the case where respondent is the higher "earner".

⁹ Indicators of education level was missing for the United Kingdom in the first round of ESS and for Austria in the second round. To not lose country units in comparisons drawing only on data from the first round of ESS (all evaluations of well-being), an educational proxy was used according to number of years of full-time education, distinguishing persons with 0-9 years, 10-14 years, 15 years or more. Correlation between measures is 0.931.

¹⁰ Original coding of occupational class of the ESS-data includes the 4-digit ISCO-code (international standard classification of occupation). Recoding syntax was available through reclassifications by Ganzeboom and Treiman (1996), available online (Ganzeboom 2007).

¹¹ There were practically no health-related effects of social class among (older) women. Also, education has some advantages as compared to other socio-economic indicators such as applicability to persons not in the active labour force (e.g. the retired) and improved comparability across countries (see e.g. Krieger, Williams, & Moss, 1997; Lahelma, 2001). See also Mackenbach (2002:431) for a discussion.

Ill-health is measured by the question: "how is your health in general", with possible responses on a 5-graded scale: very good, good, fair, bad, very bad – n.b. higher values denoting worse health. This question has been shown to be an inclusive and reliable indicator of overall health, showing an unambiguous association with ill-health and its functional consequences, consistently predicting e.g. survival chances (see e.g. Kaplan *et al.* 1988; Mackenbach *et al.* 2002; Salthouse *et al.* 1990) and mortality (see e.g. Idler and Benyamini 1997; Jylha *et al.* 1998). This holds true in studies across a wide range of countries or in two-country comparisons, e.g. for Sweden (Lundberg and Manderbacka 1996; Manderbacka 1998; Sundquist and Johansson 1997), Finland (Manderbacka 1998), the U.S. (Benjamins *et al.* 2004; Idler and Benyamini 1997), Japan (Tsuji *et al.* 1994), Australia (McCallum *et al.* 1994), Lithuania and the Netherlands (Apples *et al.* 1996), Britain as compared to Sweden (Åberg Yngwe *et al.* 2001) or Italy as compared to Finland (Jylha *et al.* 1998). It has also been found suitable, but not optimal, for broader comparative studies on health inequalities across more than 20 countries (see e.g. Cavelaars *et al.* 1998; Huisman *et al.* 2003; Knesebeck *et al.* 2005; Kunst *et al.* 1995; Young and Grundy 2006), especially somewhat differently across gender. Gender and cross-country comparisons of self-rated health need therefore to be made with caution.

The measure of subjective well-being is the so-called WHO-5 scale (see e.g. Bonsignore *et al.* 2001). Five questions are asked about how the respondent has been feeling over the last two weeks: (1) "I have felt cheerful and in good spirits", (2) "I have felt calm and relaxed", (3) "I have felt active and vigorous", (4) "I have woken up feeling fresh and rested", (5) "My daily life has been filled with things that interest me". Six responses were possible: "at no time", "some of the time", "less than half of the time", "most of the time", "all of the time".¹² The summed index was transformed to range between 0 and 100 – n.b. higher values denoting higher well-being.¹³

Two relative measures were also derived from the two indicators described above – *excess ill-health* in relation to ill-health and *relative well-being* from the WHO-5 well-being scale. These are defined as the ratio of ill-health/well-being of a person aged over 64 divided by the average ill-health/well-being of the corresponding group of men or women aged 30-59 years within each respective country. The reasons are twofold. The relative measures offer a means to account for possible culturally (country-specific) biased responses to health and well-being. Also, the heterogeneity among countries in the

¹² The internal consistency across countries (by sex) was checked and found to be acceptably high.

¹³ The items forming the WHO-5 scale were only included in the first round of ESS.

general level of population health that might distort the outcome is controlled for. Arguably, a pensioner's health will related to how it has been formed during the entire life-course within a country specific context. Focusing on the relative measure, offers opportunity to more effectively single out health effects of public pensions once a person has retired.

Although the correlations between absolute and relative measures are quite high (in the span r=0.963 0.981), these differences, as we shall see, bring out different effects of pensions measures on health/well-being at the macro-level.¹⁴

Overview of ill-health in thirteen countries

In the following an overview of the health variations among retired persons aged over 64 across 13 European countries is presented. Firstly, measures of ill-health and excess ill-health are shown in Figures 3-4. Countries are ordered by the ranking of men's health within regime clusters. Figure 3 shows how on average around 50% of all persons report ill-health. With few exceptions the proportion of women is somewhat larger as compared to men (on average 54% and 46% respectively). Small and/or insignificant differences are found in Belgium, Ireland and the United Kingdom. Comparing country clusters, ill-health is on average somewhat lower within basic security welfare states, whereas the level is somewhat higher in encompassing welfare states and the highest in state-corporatist welfare states – although clusters display a great deal of within country-cluster variation. Highest proportions of ill-health (above 70%) are found among women in Finland, France, Italy and Germany. In these countries we also find the largest proportions of men reporting ill-health.

When excess ill-health is examined in Figure 4, we note how the country-cluster differences have evened out somewhat, although quite substantial within-country-cluster variation still remains. Women's excess ill-health is still in general higher than men's (with the same country-exceptions as above). In three countries - Finland, Germany and Austria – however, gendered health differences are now more pronounced and women in these countries display the overall highest levels of excess ill-health.

Turning to comparisons of well-being, as seen in Figure 5, the overall picture is reasonably similar to the comparison of ill-health, although the rankings of countries within clusters is somewhat changed.

¹⁴ The correlations between ill-health measures and well-being is in the mid-range (r = 0.443-0.476).

Well-being among men as well as women is on average higher within encompassing and basic security welfare states as compared to countries within the state corporatist model. Within countrycluster variation is quite substantial, with the exception of rather similar (and high) levels of wellbeing among men in the three encompassing welfare states. Women's well-being is lower than men's except in Ireland. The largest differences are found in three state corporatist welfare states – Austria, Germany and Belgium.

Again, the picture changes when relative measure of well-being is compared, as shown in Figure 6. The major changes are, on average better well-being among men in encompassing welfare states and larger within cluster variation across state corporatist welfare states. Furthermore, in four countries – Italy, Belgium, Denmark and the United Kingdom – well-being is no longer distinctly gendered, in Belgium women's well-being is even higher than men's. Gendered differences are instead accentuated in Germany and the Netherlands.

Next, we turn to the examination of how these health differences may relate to the generosity of public pensions while controlling for individual-level factors as well as the level of economic development at the macro-level.

Method

For the examination of individuals' health differences as clustered within thirteen countries, multilevel regression modelling is appropriate. This approach takes into account how variables are defined at different levels and allows for analyses combining micro and macro level factors in a single statistical model (see e.g. Jones and Duncan 1998). All models are simple two-level random intercepts models, allowing average ill-health and well-being to vary across countries.¹⁵ As there are only thirteen higher-level units (countries), the number of macro-level variables are limited to include two in each model, for a reasonable accuracy of estimates. All models include one pension measure combined with the variable controlling for economic development, which was excluded in models where both pension variables are included in the same model.¹⁶ In addition, results robustness to exclusion of country outliers needs to be carefully evaluated, as in fact one single country may drive

¹⁵ All analyses were performed using software package MLWin (version 2.0).

¹⁶ The level of economic development is measured as GDP per capita, current prices(?) and adjusted purchasing parities (OECD 2007).

both the direction and significance of estimated effects. Where present, such effects are reported in tables.¹⁷

A potential (and typical) trade-off involved in multi-level modeling concerns the risk of including measures at both levels for the same phenomenon, i.e. the inclusion of micro-level indicators which may cancel out the macro-level effects of interest. In this study it could be argued that socio-economical micro-level indicators may obscure effects of macro-level pension generosity measures. At the same time, the inclusion of micro-level measures will properly account of potentially important compositional effects. To avoid false inferences, models excluding socio-economic indicators were also tested but were not found to alter the significance of estimated effects shown in tables.¹⁸

Results from multi-level analyses are presented in two steps. Firstly, effects of individual-level factors are evaluated after which country-level factors are added to the micro-level models, permitting evaluation of institutional effects once countries' individual-level factors as well as the level of economic development are controlled for. As we expect gendered health outcomes and also institutional structures to affect men and women differently, male and female sub-samples are modelled separately.

Results

Table 1 shows results from initial multi-level models that include individual-level variables only. Overall, effects do not depend on whether ill-health or well-being is measured in absolute or relative terms. Effects on health however differ from those on well-being. In the former case, effects are all in the expected direction: worse health is associated with higher age, whereas better health is related to higher socio-economic status and cohabitation, although cohabitation appears to have (significant) positive effects only on men's health, whereas the effects of education appear to be more important for women's health. Men's health is also, although more weakly, related to social class.¹⁹ Effects on well-being are quite different. Consistent effects are only found in relation to cohabitation –

¹⁷ For bivariate relationship between relative measures of ill-health and well-being plotted against public pension generosity measures (results not shown here).

¹⁸ Possibly there as one exception, check.

¹⁹ Social class did not appear to be important for women's health (not shown in table), but excluded from analyses as this variable suffers from many missing observations.

cohabiting persons fare significantly better than persons living on their own, cohabiting men somewhat more than cohabiting women. However, well-being appears to be largely age-independent – significantly affecting only the oldest women's well-being (negatively). Also, somewhat surprisingly, well-being appears not to be structured neither by education or social class within these sub-samples of retired men and women.

Table 1

In the second step of analysis, macro-level effects of contextual variables are added to the full microlevel models. Results are presented in Tables 2-5, but do not show estimates of individual-level factors and the level of economic development. Ssignificances and directions of individual-level controls however in effect remain the same (as presented in Table 1).

In Table 2 pensions' effects on ill-health are shown. Plots of full micro-level model's country level residuals (not shown) draw attention to Germany, which actually alters the direction and/or (strength of) significance of effects in almost all models (as can be seen in models including or excluding Germany as shown in Table 2).

Table 2

An overview of results in Table 2 shows how pensions are associated to men's and women's illhealth in quite similar ways. The models that include the total pension index measure show that effects, contrary to the expected, are positive, i.e. indicating more ill-health in countries with higher total pension (significant effects only in the models that exclude Germany). When the measure of total pensions is divided into its two separate pension dimensions and these are included one by one in each model (models 2-3, 5-6, 10-11 and 13-14), the effect of total pensions appears to have been driven by countries' income security pensions, which show significant positive effects on ill-health, whereas effects of basic security pensions are non-significant, also switching from negative to positive estimates in relation to the exclusion of Germany. When both basic security and income security pensions are included in the same model, effects alter somewhat. Health appears still to be worse in countries with higher income security pensions (although estimate is not significant in relation to men's health when all countries are compared (model 3). Effects of basic pensions are here consistently negative – indicating *better* health in countries with more generous basic pensions, but without significant estimates in models that exclude Germany. Clearly, pension dimensions appear to hold different implications for health, supposedly in relation to how they cater to different strata of the population. Next we examine how results change when these absolute health measures were made relative to the health of working aged persons through the measure of excess ill-health.

As can be seen in Table 3, a quite different pattern appears in relation to excess ill-health. Plots of full micro-level model's country level residuals (not reported) here show how Austria needs to be treated as a significant outlier case.

Table 3

Effects of the total pension index are now consistently negative, indicating less ill-health in countries with higher pensions, although effects are only significant in relation to men's health. Overall, effects in relation to excess ill-health show a more gendered pattern. When the two pension dimensions are examined separately (see models 2-3, 5-6, 10-11 and 13-14), we see how, for men's excess ill-health, income security pensions are still more important, but notable so in the opposite way. Effects are negative and significant when Austria is excluded from analyses meaning that excess ill-health is lower in countries with more generous income security pensions. Generous basic security pensions have the same, although slightly weaker effect on men's health. Women's excess ill-health is instead more strongly associated with the generosity of basic pension, indicating better health in countries with higher basic pensions, although negative estimates are not significant in the model that excludes Austria. These effects are largely confirmed when both pension measures are included in the same models (models 7-8 and 15-16). The effect of income security pensions on men's health is still stronger than the effect of basic security pensions, although no longer significant. By this comparison effects of basic pensions on women's excess ill-health are even more pronounced. We also note, somewhat surprisingly, that the effects of income security pensions are now positive, although not significant when Austria is excluded.

Table 4

We now direct our attention to subjective well-being, and firstly to pension effects in relation to the absolute measure of well-being as shown in the left panel of Table 4. In this case plots did not reveal any significant outliers. To begin with, the total pension index is not significantly related to either men's or women's well-being. But as the separate pension dimensions are examined, significant gendered effects turn up. Effects of basic pensions are consistently positive, i.e. related to higher

well-being, although the effect is non-significant in the model where its separate effect is evaluated for women's health. The opposite holds for income security pensions, where effects are consistently negative – well-being is lower in countries with higher income security pensions, although the separate effect of this variable on men's well-being is non-significant. Overall, basic security pensions are more important for men's well-being, whereas income security pensions matter more for women's well-being. Strange as these results may be, they are quite similar to the above examined pension effects on absolute ill-health (shown in Table 2).

Once again the pattern of effects changes decidedly when the relative measure of well-being is examined, shown in the right panel of Table 4. Results are now also strongly influenced by two outliers cases – Austria and Italy.²⁰ When the two country outliers are excluded, we find positive effects of both pension measures. Opposite to the comparison of absolute well-being, the effects of income security pensions are now stronger than those of basic security pensions, although only in relation to men's well-being – effects that parallel results in relation to excess ill-health. For women's well-being, no pension measure appears to be particularly important.

To sum up, the following may be concluded if we focus on the *relative measures* of health and wellbeing, under the assumption that these are better cross-national measures (and also acknowledging the sensitivity of analysis to significant country outliers). Not only do the relative measures take into account the general level of ill-health in each country, but arguably they also adjust for potential cultural differences in how people answer this survey question (i.e. as long as such cultural bias is not systematically related to age). First of all it stands clear that the character of pensions need to be taken into account in analyses since pension measures capture different dimensions of old age security, which cater to different strata of the population. Their different effects on health and wellbeing are here shown to be extensively gendered. For men both higher basic and income security pensions are associated with better health and higher well-being, where income security pensions appear to matter more. For women, it is instead basic pensions that are more important – where higher basic pensions are associated with better health. Pensions were however not found to be important for women's (relative) well-being.

²⁰ Austria and Italy are somewhat less distinct outliers within the female sub-sample.

Discussion

The purpose of this study was to analyse the link between public pension institutions and self-rated health and well-being among the elderly in the 13 OECD-countries around 2000. Firstly, it needs to be pointed out how comparing self-rated health and well-being across countries calls for comparative caution. Although self-rated health in many studies has been shown to be an inclusive and effective within-country measure and predictor of "real" health outcomes in terms of e.g. life-expectancy and mortality, a comparative perspective challenges the measure in various ways.

Cultural differences prevail. People across countries to some extent perceive their health and interpret questions about health and well-being differently and appear prone to respond systematically differently to this question. Also, a pensioner's health is arguably quite closely related to how it has been formed during the life-course within a country specific context, wherefore the heterogeneity among countries in the general level of population health that might distort the outcome needs to be controlled for. In this study this was dealt with by ways of constructing relative measures of ill-health (excess ill-health) and well-being – measures that relate older retired persons' health and well-being to the health and well-being of younger persons by country and gender.

Results in relation to excess ill-health and well-being by and large confirm hypothesized effects of pension variables. Better health and well-being is found in countries with more generous pensions. Whereas income security pensions seem to be more important than basic security pensions for men's health and well-being, women's better health is only associated with higher basic security pensions. These results are to some extent congruent with the analysis of pensions and mortality differences among the elderly (Norström and Palme 2007; Lundberg *et al.* 2008). Lastly, the limitation of drawing causal inferences from cross-sectional data from one point in time, should be acknowledged.



Figure 1 Total pension index across 13 West European countries in 2000.



Figure 2 Generosity of pensions along two dimensions in 13 countries 2000. Yearly benefits as a percentage of an average production workers' wage net of taxation.







Figure 3 Ill-health (rated as fair, bad or very bad) as proportions of retired persons aged over 64, 13 European countries in 2002.

Figure 4 *Excess ill-health among retired persons aged over 64 (as ratio to ill-health of persons 30-59),* 13 European countries in 2002.



Source: ISSP 2002.



Figure 5 Subjective wellbeing (who-5 scale 0-100) of retired persons aged over 64, 13 European countries in 2002.

Source: ISSP 2002.

Figure 6 Relative subjective wellbeing (who-5 scale 0-100) of retired persons aged over 64, 13 European countries in 2002.



Source: ISSP 2002.

		Ill-health		Excess ill-h	nealth	Subjective (WHO-5)	well-being	Relative subjective well- being (WHO-5)	
		Men	Women	Men	Women	Men	Women	Men	Women
VARIABLES									
(reference category	Intercept	2.518***	2.583***	12.622***	12.685***	62.809***	68.280***	9.689***	10,028
within parenthesis)	-	(0.069)	(0.076)	(0.283)	(0.255)	(2.688)	(2.061)	(0.371)	(0,266)
Age group	70-79	0.140***	0.078 * *	0.679***	0.392*	-1.181	-1.536	-0.187	-0,247
(65-69)		(0.021)	(0.027)	(0.095)	(0.141)	(1.501)	(1.190)	(0.230)	(0,194)
	80+	0.220***	0.252***	1.091***	1.187***	-2.703	-4.496*	-0.439	-0,704*
		(0.042)	(0.054)	(0.219)	(0.225)	(1.826)	(2.076)	(0.281)	(0,348)
Cohabiting status	Cohabiting	-0.090*	-0.041	-0.467**	-0.220	4.779***	1.865°	0.740***	0 , 300°
(single)	(with spouse/partner)	(0.036)	(0.047)	(0.177)	(0.229)	(0.954)	(1.004)	(0.146)	(0,161)
Education	Secondary	-0.103*	-0.184***	-0.455°	-0.876***	1.370	1.840	0.209	0,299
(low/ no primary)		(0.053)	(0.031)	(0.259)	(0.162)	(1.304)	(1.621)	(0.195)	(0,264)
	Tertiary	-0.159*	-0.320***	-0.774*	-1.567***	2.404	2.069	0.342	0,371
		(0.065)	(0.059)	(0.318)	(0.286)	(1.952)	(1.814)	(0.284)	(0,306)
Social class (EGP)	Skilled manual	0.031		0.130		0.554		0.114	
(unskilled worker)		(0.041)		(0.201)		(1.807)		(0.286)	
	Routine non-manual	-0.067		-0.385		1.551		0.260	
	а : н	(0.061)		(0.303)		(1.812)		(0.287)	
	Service II	-0.134°		-0.689*		1.920		0.330	
	с : т	(0.0/1)		(0.344)		(1.813)		(0.270)	
	Service I	-0.193*		-1.003**		3.042		0.529	
		(0.059)		(0.299)		(2.088)		(0.333)	
	Self-employed	-0.063		-0.518		-0.150		-0.010	
LZ (DL (DICE		(0.054)	0.070	(0.267)	0.471	(1.670)	21.015	(0.246)	0.201
V ARLANCE	Country level	(0.045)	0.068	0.141	0.4/1	22.332 (10.57()	51.815	0.304	0,391
	T., J'., J., 11	(0.013)	(0.019)	(0.071)	(0.100)	(10.570)	(9.055)	(0.1550)	(0,121)
	muividual level	0.043	(0.047)	10.220 (1.275)	14.421 (1.229)	331.081	(22.410)	0.303 (0.540)	(0, 727)
No observations		(0.037) 3400	(0.047)	(1.2/3) 3400	(1.328)	(14.108) 1909	(22.450)	(0.540)	(0, 121)
ino. Observations		ンサンン	4032	3422	4034	1020	4499	1020	4499

TABLE 2 Micro-level determinants for ill-health, excess ill-health, subjective well-being and relative subjective well-being among retired persons aged over 64, 13 countries in 2002/3 (standard errors within parentheses).

°/*/**/*** significant at 10/ 5/ 1/ 0.1%-level respectively. Source: ESS 2002/3.

	Men				WOMEN			
Model	1-3 One pension variable in each mod	4-6 n el	7 Two pension variables i same model	8 n	9-11 One pension variable in each model	12-14	15 Two pension variables in same model	16
Outliers exclud	ded	Germany		Germany		Germany		Germany
PENSION VARIABLES								
Total pension standard error of estimate variance (country level)	0.065 (0.249) 0.065	0.354* (0.175) 0.009			0.186 (0.332) 0.042	0.553* (0.228) 0.020		
Basic security pension standard error of estimate variance (country level)	-0.145 (0.299) 0.023	0.217 (0.284) 0.012	-0.575° (0.348) 0.035	-0.195 (0.237) 0.022	-0.213 (0.380) 0.042	0.182 (0.395) 0.029	-0.755° (0.427) 0.043	-0.304 (0.273) 0.025
Income security pension standard error of estimate variance (country level)	0.484° (0.288) 0.021	0.746** (0.211) 0.008	0.679 (0.451) same	0.839* (0.342) same	1.008* (0.394) 0.032	1.332*** (0.313) 0.011	1.267* (0.536) same	1.463** (0.419) same
Number of observations	3499	-DE	3499	-DE	4032	-DE	4032	-DE

TABLE 3 Effects of macro-level variables on ill-health among retired persons aged over 64 in 13 welfare states, 2002/3.

°/*/** significant at 10/ 5/ 1%-level respectively. Notes: Not reported in table: estimates of full micro-level variables (see Table 2) and GDP-level.

	Men				WOMEN	⁷ OMEN			
Model	1-3 One pension variable in each mode	4-6	7 Two pension variables i same model	8 n	9-11 One pension variable in each model	12-14	15 Two pension variables in same model	16	
Outliers exclud	ed	Austria		Austria		Austria		Austria	
PENSION VARIABLES									
Total pension standard error of estimate variance (country level)	-1.221* (0.408) 0.076	-1.081* (0.403) 0.038			-0.897 (0.798) 0.423	-0.869 (0.809) 0.272			
Basic security pension standard error of estimate variance (country level)	-1.909** (0.674) 0.068	-1.491* (0.674) 0.048	-1.680° (0.863) 0.075	-0.874 (0.930) 0.038	-2.539* (1.196) 0.337	-1.646 (1.172) 0.255	-2.914* (0.977) 0.284	-2.062* (1.011) 0.251	
Income security pension standard error of estimate variance (country level)	-0.509 (1.329) 0.132	-1.976* (0.830) 0.050	0.190 (1.066) same	-1.264 (1.030) same	1.451 (1.986) 0.446	-0.675 (1.339) 0.297	2.500° (1.362) same	0.954 (1.317) same	
Number of observations	3499	-AT	3499	-AT	4032	-AT	4032	-AT	

TABLE 4 Effects of macro-level variables on excess ill-health among retired persons aged over 64 in 13 welfare states, 2002/3.21

°/*/** significant at 10/ 5/ 1%-level respectively.

Notes: Not reported in table: estimates of full micro-level variables (see Table 2) and GDP-level.

²¹ Excess ill-health is the ratio of the retired person's self-rated ill-health to the average ill-health of men or women in the age-group 30-59 years, higher values denoting worse health.

	Subjecti	SUBJECTIVE WELL-BEING				RELATIVE SUBJECTIVE WELL-BEING ²²							
	Men		Women		Men				WOMEN				
Model	1-3 One pension variable in each model	4-6 Two pension variables in same model	7-9 One pension variable in each model	10-12 Two pension variables in same model	13-15 One pension variable in each model	16-18	19 Two pension variables in same model	20	21-23 One pension variable in each model	24-26	27 Two pension variables in same model	28	
Outliers exclude	d					AT & IT		AT & IT		AT & IT		AT & IT	
PENSION VARIABLES													
Total pension s.e of estimate Variance	3.076 (2.076) 6.479		-2.877 (4.125) 15.084		0.940 (0.575) 0.238	1.169* (0.429) 0.039			0.142 (0.537) 0.371	0.333 (0.623) 0.184			
Basic security pension s.e of estimate Variance	12.113*** (2.776) 2.896	22.788** (6.874) 8.161	9.030 (6.965) 13.546	23.020* (8.036) 12.719	1.886* (0.769) 0.204	1.250* (0.628) 0.066	2.144* (0.867) 0.203	0.301 (0.488) 0.005	1.408 (1.089) 0.333	0.329 (1.131) 0.187	2.089* (1.066) 0.279	0.151 (1.623) 0.188	
Income security pens. s.e of estimate Variance	-11.485 (8.298) 5.921	-19.504° (10.907) same	-25.682** (8.192) 8.803	-34.074** (9.457) same	-0.155 (1.750) 0.286	3.418** (0.852) 0.006	-0.823 (1.459) same	3.759*** (0.945) Same	-2.046 (1.665) 0.345	1.026 (0.945) 0.181	-2.752* (1.145) same	0.949 (1.548) same	
No. of observations	1898	1898	2235	2235	1898	-AT, IT	1898	-AT, IT	2235	-AT, IT	2235	-AT, IT	

TABLE 5 Effects of macro-level variables on subjective well-being (WHO5-scale) among retired persons aged over 64 in 13 welfare states, 2002/3.

°/*/ ** significant at 10/ 5/ 1%-level respectively.

Notes: Not reported in table: estimates of full micro-level variables (see Table 2) and GDP-level.

²² Relative subjective well-being is the ratio of the retired person's well-being to the average well-being of men or women in the age-group 30-59 years (higher values denoting higher welll-being).

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