Social Inequality and Wellbeing in Old Age.

Results from the Survey of Health, Ageing and Retirement in Europe.

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Abstract: It is well known, that sufficient financial resources influence individual wellbeing positively – but what happens when these resources diminish in old age? As most pension systems face great pressure it is an important question how the financial redistribution between young and old will be (re-) organized in future and how this may affect the wellbeing of retirees. The second wave of the Survey of Health, Ageing and Retirement in Europe (SHARE) includes societies on different stages of population ageing and with different pension systems. This allows us to assess the influences of financial resources on wellbeing under very different societal circumstances. We will examine the financial resources of people 65+ in 13 different European countries and welfare regimes, and focus the interrelation between micro and macro social inequalities and individual wellbeing in old age.

Keywords: Wellbeing, aging, inequality, Europe, life-satisfaction, health, income, depression

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Introduction

Europe is ageing, and there will be ever more old and less younger people in families and in society. One reason for this is the consistently low birth rate in Western Europe (e.g., Lanzieri 2008). The second reason is a higher life-expectancy combined with more healthy life-years (see e.g., Fries 2000). As a consequence European welfare states are under pressure. For example, most pension systems are based on redistribution, and the population at working age funds the pensions for the retirees. This system, however, is based on an age pyramid, and the expected beanpole with evenly distributed age-groups challenges its success. It is this scenario which raises the interest in aging research. Surveys that mainly focus on the older population like the German Ageing Survey (DEAS), the English Longitudinal Study of Ageing (ELSA), the Health and Retirement Study (HRS), the Survey of Health, Ageing and Retirement in Europe (SHARE), but also new aging surveys, e.g. in Mexico (MHAS), China (CHARLS), South-Korea (KLoSA), India (LASI) and Japan (JSTAR), signal this worldwide interest (Börsch-Supan et al. 2009; Lee 2010).

Apart from the question how societies and welfare systems might be affected by population aging, individual aging and the changing life circumstances of elders are of great research interest. Terms like *active* or *successful* aging are very prominent in the geriatric literature. Active aging concentrates on the societal involvement of the older population (e.g., Avramov and Maskova 2003; Hank 2010). Successful aging is an influential concept which combines different aspects of aging, like being disease free, being actively involved in social networks, etc. (e.g., Rowe and Kahn 1997; Hank 2011). Both concepts are however not unobjectionable: whereas active aging concentrates on one aspect of aging only, successful aging to the contrary is a catch-all indicator making it very hard to distinguish between different mechanisms. We will therefore follow an another approach by analyzing different dimensions of wellbeing in old age separately.

The concept of "wellbeing" considers the self-evaluation of different aspects of life. Therefore, life satisfaction (e.g., Argyle 2001; Diener et al. 1999) or quality of life (Knesebeck et al. 2007) are used as an indication of overall subjective wellbeing. Additionally, concepts like depression, self reported health (George 2010), or subjective financial wellbeing (Pudney 2010) are considered as account for satisfaction with different areas of life. To capture all these different dimensions, we apply a broad concept and will focus several components of wellbeing in our analyses, namely: life satisfaction for *general wellbeing*, financial satisfaction for *financial wellbeing*, health for *physical wellbeing* and depression for *mental wellbeing*.

In the following we assess how inequality is interrelated with wellbeing of the 50plus in Europe. There are different ways to measure social inequality. Occupational status, income related measures or education are often used as indicators for individual inequalities. We measure inequality in old age by pension income since it is a reliable measure of past and present inequality, reflecting the previous career. The same argument holds for accumulated wealth in older age, which will be used as the second inequality measure. Last but not least, education as "starting point" for life long inequality will be included in the analyses.

Apart from these individual level components we are also interested in country level effects. Wellbeing encompasses an evaluation process where societal circumstances play an important role. How inequality on a macro level is related to individual wellbeing is therefore our second research question.

In the following we provide theoretical arguments and empirical evidence for our research before we describe our dataset and the empirical strategy. After describing our analyses the paper concludes with a short discussion.

Theoretical arguments and empirical evidence

Inequality can have absolute and relative effects on wellbeing (Ladin et al. 2010; Wilkinson and Pickett 2007). For example, when lower education leads to less health literacy which then results in behavior that has negative effects for health, or when it leads to worse working conditions in lower classes, this can be classified as absolute deprivation (Ladin et al. 2010). Also, the ability to afford better medical treatment if the income is higher leads to absolute inequality (Ladin et al. 2010). Relative effects of social inequality on wellbeing are effects that are indirectly related to income or education, like for example "psychosocial stress" in lower classes which leads to less wellbeing (Ladin et al. 2010: 49).

Inequality on a macro level has substantial effects on wellbeing. Different living standards or different access to welfare services directly affects individual wellbeing in a country (Ladin et al. 2010). In addition, personal wellbeing is driven by the comparison with others (Diener and Oishi 2000), and thus relative to the personal surroundings (Wilkinson and Pickett 2007). Being rich or having a high education is not only in itself positive for wellbeing it is also important which social status others have. Being rich in a rich country is thus different from being rich in a poor country, and such country level factors have to be taken into account (Böhnke 2008).

This leads to our theoretical model (adapted from Ladin et al. 2010) which is displayed in Figure 1. Inequality affects wellbeing on the micro and the macro level. On the micro level it is for example stress, risk behaviors, etc. that have an effect on wellbeing. On the macro level, societal circumstances impact on wellbeing. This might be a direct effect of the standard of living in country or an indirect effect channeled through the comparison with others. Inequality on the country level will on the one hand be included in the form of poverty-rates and income inequality, and on the other the wealth of a country (GDP) and the

generosity of the welfare system. Using these four macro indicators substantial influence of societal circumstances on wellbeing can be captured.

Specifically focusing wellbeing in old age, three theories about the influence of ageing on health inequalities are discussed in the literature (Schöllgen et al 2007): accumulation, ages-as-leveller and continuity. According to accumulation theory, disadvantages accumulate over the life course, and therefore inequality is assumed to be higher in old age (e.g., Wilson et al. 2007). Age-as-leveller proposes a decline of the impact of inequality in old age due to the fact that health problems affect everyone and the differences between the groups become smaller in old age, or because more disadvantaged people don't get old (e.g., Schöllgen et al. 2007). Wilson et al. 2007 also discuss the probability that disadvantaged older people are underrepresented in surveys, which might be a reason for the empirical fact that inequality diminishes in old age. Finally the continuity theory assumes that the impact of socio-economic status on health inequalities is constant over the entire life course (Schöllgen et al. 2007).

Therefore, we will introduce individual inequalities in older age in three ways. First we capture inequality accumulated over the life course by pension income. Pension income is the result of the entire career and thus reflects the past social (work) status. Additionally, we consider household wealth, because unfavorable income can be compensated by financial assets. Like pension, wealth is often accumulated over a longer period of time and therefore also reflects past inequality. Last but not least, education signals social status but also the ability to cope with an unfavorable situation (Diener et al. 1999; Mirowsky and Ross 2003).

Apart from inequality, wellbeing is influenced by various other factors (e.g., Berg et al. 2006). It is for example not evenly distributed over the life course (e.g., Banchflower and Oswald 2008). Marriage has a positive effect on life satisfaction and reduces depression (e.g., Reneflot and Mamelund 2001), but, as Lucas et al. (2003) have shown for life satisfaction, this might be only a short time effect. Gender has been shown to be an important factor,

which every analysis has to account for (Borooah 2010; Ladin et al. 2010). We will now introduce our data and measures in more detail before discussing our analyses on the influence of individual and societal inequality on wellbeing in old age-

Data

The empirical analyses are based on the second wave of the Survey of Health, Ageing and Retirement in Europe (SHARE) which provides information about living conditions, health, social networks and the financial situation of the older population (50+) in 13 European countries (Austria, Belgium, Czech Republic, Denmark, France, Germany, Greece, Italy, the Netherlands, Poland, Spain, Sweden, Switzerland; for details see Börsch-Supan and Jürges 2005; Börsch-Supan et al. 2008) as well as comprehensive information about different indicators of wellbeing and social inequality.

Since the retirement ages differ across countries, we use the recipiency of pension income to capture respondents who are retired (for an overview over European pension systems see OECD 2005). Social inequality is measured by purchase power adjusted pension income in Euros. Since a low income can be compensated with financial assets we account for purchase power adjusted household wealth in Euros. To capture the effect of income and wealth country based quintiles were used. As indicated above, another component of inequality is education. We distinguish between low (ISCED: 0-2), medium (ISCED: 3-4), and high (ISCED: 5-6) education.

On the country level we assess the effects of wealth and welfare orientations by using the gross domestic product (GDP) and the amount a state spends on social expenditure, both in US-Dollars per capita. Inequality is measured as poverty rates, namely the percent of people with a household income lower than 60 percent of the median income in a country. Furthermore income inequality is considered in the form of the Gini coefficient. The Gini

takes values between 0 and 1, where 0 means that all incomes are equal and 1 that one person has all the available income. These macro indicators were taken from the OECD and the CIA World Factbook (OECD 2007; CIA 2007). Age, gender, partnership and the existence of children enter our models as control variables.

The different dimensions of wellbeing we will assess are 1) life satisfaction (general wellbeing), 2) the ability to make ends meet (financial wellbeing), 3) health (physical wellbeing), and 4) depression (mental wellbeing).

1) Life satisfaction is measured by 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?*". 2) Financial wellbeing corresponds to the question: "*Thinking of your household's total monthly income, would you say that your household is able to make ends meet...*", with the choices between: "*With great difficulty*", "*With some difficulty*", "*Fairly easily*" or "*Easily*".

3) Physical wellbeing is measured as self-reported health using the question: "*Would you say your health is...*" with the possible answers: "*Excellent*", "*Very good*", "*Good*", "*Fair*", "*Poor*". Self-reported health was recoded ranging from poor to excellent.

4) As a measure for mental wellbeing we use the well established Euro-D scale (Prince et al. 1999), which is an additive measurement of depression symptoms. The different items are: *depression, pessimism, suicidality, guilt, sleep, interest, irritability, appetite, fatigue, concentration, enjoyment,* and *tearfulness*. Respondents with a score of zero reported no depressive symptoms, respondents with a score of twelve reported all these symptoms. Depression was recoded so that zero equals twelve depression symptoms and twelve equals zero depressive symptoms.

Although the different dependent variables are no clear interval scales we compute linear hierarchical models since they provide similar results as binary and ordered logit

control models and produce more reliable results within the multilevel framework (for multilevel modeling see Hox 2002; Rabe-Hesketh and Skrondal 2008).

Results

How is wellbeing distributed over Europe? Figure 2a) displays the mean of satisfaction for the 13 SHARE countries. First of all satisfaction is higher in more wealthy countries and lower in poorer countries. This leads to a North-South, East-West gradient, with the exception of Switzerland, which is one of the wealthiest countries, but situated in the middle of Europe. The differences between the countries are quite small, but the overall difference still reaches 1.8 on an eleven point scale. Financial wellbeing follows a similar distribution. Respondents living in Sweden, Denmark or Switzerland are able to cope with their resources best. The differences between the countries are high compared to the variation in general wellbeing with a difference of 60 percent-points between the highest and the lowest level. The picture for physical and mental wellbeing is similar, although the North-South, East-West distribution is not as clear. All in all, the geographical distribution of different wellbeing indicators supports the thesis that country level influences matter (Böhnke 2008).

The source for these country differences could be the wealth of a country, different welfare state characteristics and/or inequalities on the country level. Table 1 displays the correlations between aggregated wellbeing and different country level indicators. As proposed before, wellbeing is higher in richer countries: people are more satisfied, are better able to make ends meet, are in better physical health and show less symptoms of depression. A generous welfare state, measured by social expenditure, is also positively related to wellbeing. Inequality, measured as poverty and income inequality, is negatively related to wellbeing, but interestingly only to general and financial wellbeing. Health, both physically and mentally seems unaffected by income inequality on the country level. In the next step we look at

inequality on the micro and macro level to see if these bivariate correlations still hold when influencing micro level factors are controlled for.

Table 2 shows the results of hierarchical two level linear models for wellbeing. Individual financial resources have a significant effect on *general wellbeing*. Being in a higher pension income quintile is positively related to life satisfaction, as is the case with household wealth. Having a higher education compared to a medium education has no significant effect on general wellbeing. But respondents with a lower education are less satisfied than their counterparts.

With regard to our control variables, satisfaction increases with age. Male respondents are less satisfied than women, but this effect is rather small. Having a family network, partnership and/or children is positively related to satisfaction.

Financial wellbeing is not surprisingly also positively affected by pension income and wealth. Respondents with a higher income and more financial assets are better able to make ends meet. Education is more important for financial wellbeing than it is for satisfaction. Since income is controlled for, the usual argument that education goes hand in hand with income does not hold. One possible explanation might be that better educated people are more able to adjust their expectations to their income and to deal with unfavorable situations (Diener et al. 1999).

Once again older respondents state a higher financial wellbeing and fewer men are able to make ends meet easily. Since a partner can contribute to the household income, respondents with a partner report better financial wellbeing, whereas children seem to influence financial outcomes in older age negatively, since they are a costly endeavor across the entire parental life course (child care, education, financial transfers).

The results for *physical wellbeing* with regard to income are not as convincing as for general and financial wellbeing. Being in a higher income quintile leads to a better self-reported health status, but the difference between the first and the second quintile is only

significant on the ten percent level and the overall coefficients are somewhat small. Again, living in a wealthier household and being better educated is positive for physical health. Being older often means also being in a worse health condition. Since illness is positively associated with age, this was to be expected. Interestingly, gender, partnership status, and children have no significant influence on physical wellbeing.

Respondents with a higher income, more wealth and who are better educated also are better off *mentally*. Inequality on the micro level is thus important for mental wellbeing. Depression is positively related to age: the older one is the more depressive symptoms one has. Men are less affected by depression, but the differences between the sexes are not high. Social networks have a protective function, but this holds only for having a partner, children have no significant effect on depression in older age.

The intra class correlation (ICC) indicates that between 3 and 10 percent of the variation of the dependent variables are due to country differences. In some cases the ICC increases for the basic models (without country indicators) indicating that some variation is introduced by the independent variables which vary across the countries. Table 3 displays the country-level estimates that are controlled for the just shown micro-level influences. The ICC diminishes in nearly all cases, meaning that the macro indicators introduced explain some of the variation in wellbeing between countries.

The results are similar to the correlation coefficients in Table 1. Living in a wealthier country with a more generous welfare state is positive for the individual wellbeing on all dimensions. A high poverty rate and social inequality on the other hand have negative effects on overall, financial, physical and mental wellbeing, indicating that relative deprivation is important for wellbeing: When people evaluate their own situation and more are worse off than others, this has negative effects on their life satisfaction in all dimensions measured here.

Discussion

Research on aging and on the interplay between the state and the individual are becoming more and more important (see e.g., Börsch-Supan et al. 2011). The aim of our paper was to disentangle the effect of micro and macro level inequality on wellbeing in Europe. Wellbeing is not a constant but an individual evaluation process which incorporates different aspects of life. For these reasons we measured wellbeing as consisting of life satisfaction (general wellbeing), the ability to make ends meet (financial wellbeing), self-reported health (physical wellbeing) and depression (mental wellbeing).

Several assumptions about the connection between inequality and aging do exist. Inequality can be accumulated over the life course, it might be a constant influence or it might be less important in old age (Schöllgen et al. 2010). It is thus important to apply a measure of inequality that captures the aspect of time. Pension income and wealth reflect a life time career in income and saving respectively. As such they are adequate measures for inequality in old age.

Hierarchical linear models show that pension income and wealth quintiles are positively related to individual wellbeing: being in a higher quintile results in higher wellbeing. Apart from monetary aspects respondents with higher education report also a higher wellbeing. Inequality thus matters for wellbeing also in older age. Hence, age does at least not level out inequality and its consequences completely. Unfortunately we cannot directly distinguish between continuity and accumulation of inequality over the life course, since we have no longitudinal data at our disposal. But, since pensions and wealth are in themselves accumulated over the life course our results favor the acumulation-hypothesis.

Our research is set before the background of aging societies and changing social systems in Europe, which is why we also focus the influences of societal characteristics on ageing well. Wellbeing follows a North-South, East-West distribution over Europe. Wellbeing

is generally higher in Northern and Western Countries than in Southern and Eastern Europe. On a bivariate level, these country differences in wellbeing of older people are linked positively to the GDP and social expenditure on the one side and negatively connected to poverty rates and social inequality on the other side. Aspects of relativity play an important role here. Being in a higher or lower income quintile matters on the micro level but living in an unequal or in a poor country is generally negatively related to wellbeing. These results point to the possibility of social policy interventions. Enhancing societal conditions e.g. by poverty prevention has a positive influence on wellbeing in old age or, in other words, on aging well in a country (Wilkinson and Pickett 2009).

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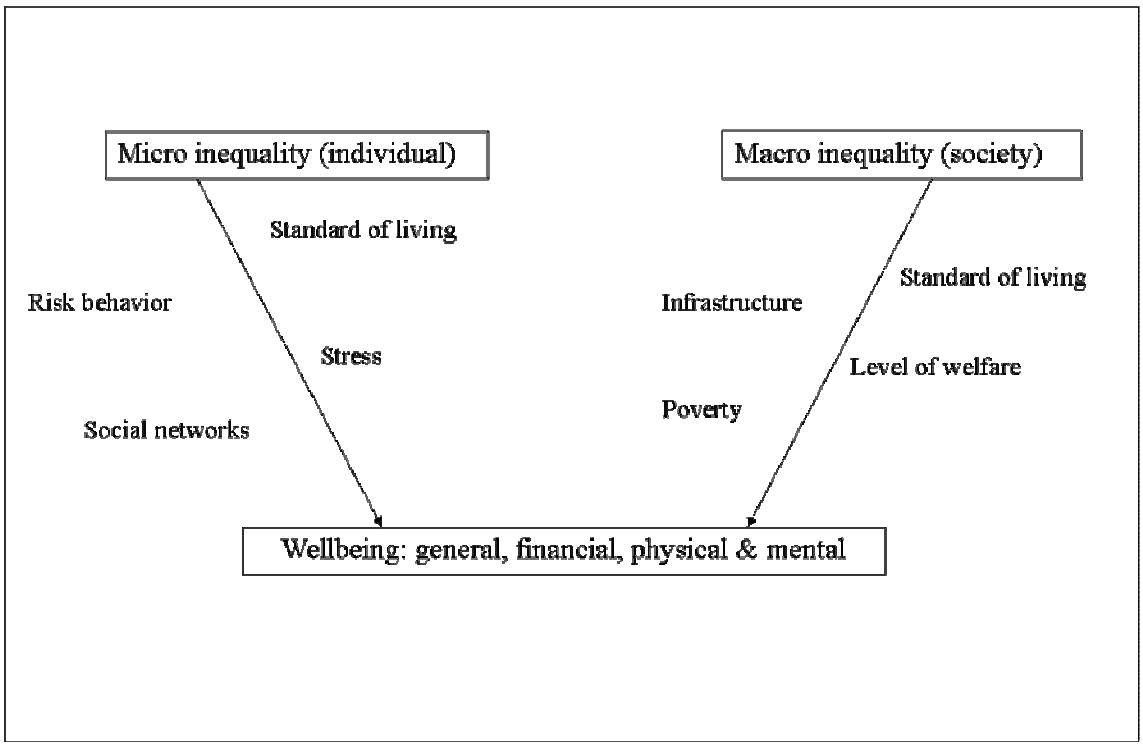
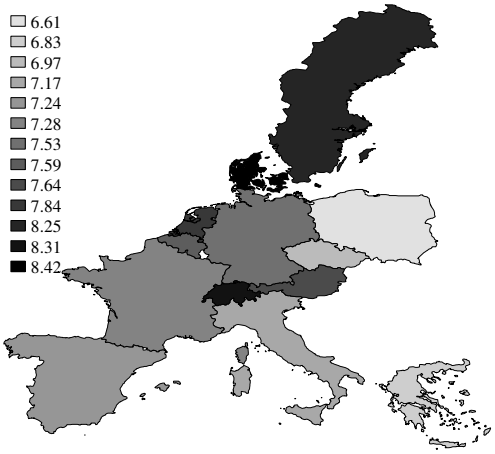
Figure 1: Wellbeing and Inequality

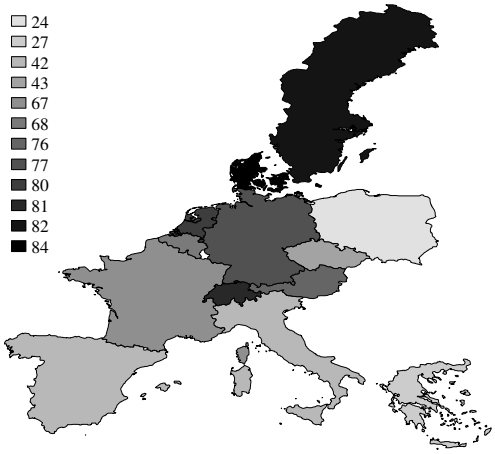


Adapted from Ladin et al. 2010

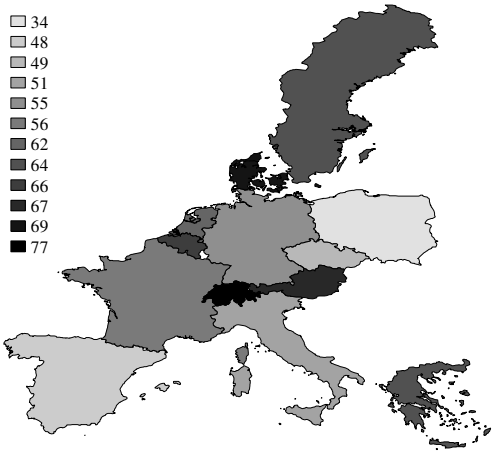
Figure 2: Wellbeing in Europe



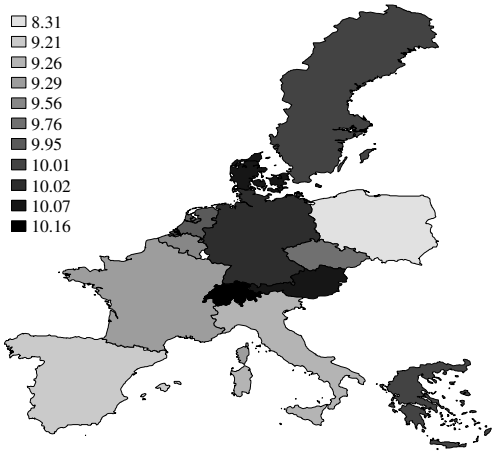
a) General wellbeing (mean, 0-11)



b) Financial wellbeing (percentage of respondents)



c) Physical wellbeing (percentage of respondents)



d) Mental wellbeing (mean, 0-12)

SHARE, wave 2 release 3

Table 1: Correlations between wellbeing and country indicators

	GDP	Social Expenditure	Poverty	Gini
General wellbeing	0.82**	0.77**	-0.52+	-0.57*
Financial wellbeing	0.82**	0.86**	-0.62*	-0.59*
Physical wellbeing	0.86**	0.68*	-0.32	-0.33
Mental wellbeing	0.77**	0.57*	-0.45	-0.42

SHARE, wave 2 release 3, CIA 2007, OECD 2007; + significant at 10%; * significant at 5%; ** significant at 1%; n=13

Table 2: Hierarchical Linear Models for Wellbeing (Micro-level effects)

	General wellbeing		Financial wellbeing		Physical wellbeing		Mental wellbeing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Income (pension)								
1. Quintile		*ref*		*ref*		*ref*		*ref*
2. Quintile		0.18**		0.06**		0.05+		0.23**
		(3.78)		(2.61)		(1.72)		(3.80)
3. Quintile		0.26**		0.15**		0.06*		0.34**
		(5.49)		(6.36)		(2.20)		(5.70)
4. Quintile		0.33**		0.30**		0.11**		0.42**
		(6.89)		(12.95)		(3.77)		(6.92)
5. Quintile		0.48**		0.46**		0.21**		0.51**
		(9.49)		(19.30)		(7.27)		(7.97)
Wealth								
1. Quintile		*ref*		*ref*		*ref*		*ref*
2. Quintile		0.15**		0.22**		0.12**		0.25**
		(3.22)		(9.68)		(4.47)		(4.24)
3. Quintile		0.29**		0.38**		0.23**		0.36**
		(6.01)		(16.46)		(8.09)		(5.96)
4. Quintile		0.42**		0.49**		0.29**		0.46**
		(8.63)		(21.11)		(9.98)		(7.51)
5. Quintile		0.63**		0.71**		0.41**		0.61**
		(12.49)		(29.39)		(13.74)		(9.52)
Education								
High		0.01		0.09**		0.16**		0.00
		(0.21)		(4.20)		(5.64)		(0.06)
Medium		*ref*		*ref*		*ref*		*ref*
Low		-0.12**		-0.11**		-0.15**		-0.09*
		(3.38)		(6.39)		(7.14)		(2.01)
Age		0.01**		0.01**		-0.01**		-0.01**
		(4.64)		(17.44)		(9.07)		(2.95)
Gender (male)		-0.07*		-0.07**		-0.00		0.63**
		(2.04)		(4.16)		(0.00)		(14.93)
Partnership (no/yes)		0.44**		0.16**		0.03		0.31**
		(12.60)		(9.49)		(1.34)		(6.92)
Children (no/yes)		0.23**		-0.06**		0.03		0.04
		(4.83)		(2.82)		(1.16)		(0.60)
Constant	7.36**	5.86**	2.48**	1.26**	2.72**	3.09**	9.14**	9.12**
	(472.51)	(44.25)	(279.94)	(19.99)	(300.69)	(39.77)	(344.77)	(54.48)
Variance (level 1)	2.97	2.81	0.75	0.64	1.03	0.96	4.78	4.46
Standard error	0.04	0.04	0.01	0.01	0.01	0.01	0.06	0.06
Variance (level 2)	0.11	0.32	0.07	0.23	0.12	0.15	0.29	0.25
Standard error	0.01	0.02	0.00	0.01	0.01	0.01	0.02	0.02
ICC (level 2)	0.03	0.10	0.09	0.27	0.10	0.13	0.06	0.05

SHARE, wave 2 release 3; absolute value of z statistics in parentheses; + significant at 10%; * significant at 5%;
** significant at 1%; n (persons) = 12671, n (countries) = 13

Table 3: Hierarchical Linear Models for Wellbeing (Country-level effects)

	General wellbeing				Financial wellbeing				Physical wellbeing				Mental wellbeing			
GDP	0.08**				0.05**				0.04**				0.06**			
	(33.22)				(42.76)				(24.09)				(19.29)			
Social Expenditure		0.18**				0.16**				0.12**				0.14**		
		(24.12)				(48.12)				(26.97)				(15.00)		
Poverty			-0.05**				-0.08**				-0.00				-0.05**	
			(10.44)				(39.62)				(1.13)				(9.40)	
Gini				-0.06**				-0.11**				-0.04**				-0.07**
				(16.12)				(53.46)				(17.39)				(15.00)
Constant	3.37**	4.81**	6.63**	7.93**	-0.48**	0.18**	2.15**	3.53**	1.65**	2.44**	2.72**	4.20**	6.78**	7.91**	9.75**	10.76**
	(22.90)	(34.74)	(44.57)	(46.06)	(6.86)	(2.85)	(31.19)	(42.85)	(17.91)	(30.40)	(31.16)	(41.49)	(36.84)	(45.58)	(53.78)	(49.49)
Variance (level 1)	2.80	2.80	2.80	2.80	0.62	0.62	0.62	0.63	0.96	0.96	0.96	0.96	4.44	4.45	4.45	4.45
s.e.	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.06	0.06	0.06	0.06
Variance (level 2)	0.05	0.10	0.17	0.29	0.16	0.05	0.08	0.17	0.02	0.01	0.14	0.06	0.16	0.21	0.19	0.26
s.e.	0.01	0.01	0.01	0.02	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.02	0.02	0.02	0.02
ICC (level 2)	0.02	0.03	0.06	0.10	0.21	0.08	0.12	0.22	0.02	0.02	0.13	0.06	0.04	0.05	0.04	0.06

SHARE, wave 2 release 3, CIA 2007, OECD 2007; absolute value of z statistics in parentheses; + significant at 10%; * significant at 5%; ** significant at 1%; n (persons) = 12671, n (countries) = 13