

6 Poverty and transitions in key areas of quality of life

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- ▶ Measures other than income-based poverty may be more appropriate to analyse the well-being of older people
 - ▶ We find little overlap between income-based poverty and other measures of poverty
 - ▶ We find no evidence for the effect of income-based poverty on changes in physical health and life satisfaction
 - ▶ Subjective and wealth-based poverty correlate strongly with deterioration of quality of life
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6.1 Poverty and quality of life

Poverty alleviation is one of the key objectives of socio-economic policy of most governments, not only as a direct goal, but also as an intermediate target to improve the aspects of the quality of life which are consequences of low economic standards. In early life poverty has been shown to affect health and school performance (e. g. Smith et al. 1997). There is also growing evidence for correlation of poverty with outcomes at later stages in life, in particular with physical and mental health (Dahl & Birkelund 1997, Grundy & Holt 2001, Huisman et al. 2003) as well as broader aspects such as life satisfaction and happiness. In cross-European context Kok et al. (2008) showed that low levels of wealth and education are positively correlated with outcomes such as heart attack, diabetes as well as with poor health in general. In times of rapid demographic changes, understanding the role of poverty in determining the key aspects of well-being of older people seems more important than ever. The questions gain further relevance as governments find themselves under increased pressure to search for savings in the public pension, health and welfare systems, all of which could affect the material situation of the older population in Europe nowadays and in the future.

While the question of the effect of poverty for other outcomes among older people is particularly important and has significant implications for policy, there has so far been little debate on what concept of poverty is the relevant one to use with respect to older people. Most studies on poverty in developed countries specify poverty rates among older people using the standard income based definitions of relative poverty used for the entire population and other

age groups. While using the general concept of poverty for the analysis of the older population is clearly convenient, it is by no means obvious that it is the appropriate way of approaching the analysis of the financial situation of older people, and consequently whether it is the appropriate target to consider for policy interventions. The permanent income theory raises doubts concerning the importance of current income as a determinant of quality of life of older people. Moreover, numerous other aspects such as health, mobility and social networks affect the material situation of this group of individuals. This would suggest that effective policy should target other more specific indicators of the material well-being of older people. The recent crisis in particular provides additional reasons to identify the most relevant dimensions of material circumstances of older persons, so that they can be monitored and targeted by policy.

In this chapter we analyse the role that the financial situation of the older population has on deterioration (or improvement) in their conditions by examining the nature of the relationship between poverty and well-being in twelve European countries for different concepts of poverty. For this purpose we use the SHARE longitudinal data from Waves 2, 3 and 4 collected between 2006 and 2012. The longitudinal nature of the data facilitates the examination of differences in transition probabilities from “good” to “bad” states of quality of life (hereafter referred to as good states and bad states) and *vice versa* controlling for the financial situation in the initial period.

We find that the income-based definition of poverty correlates very weakly with transitions in physical and mental health and measures of life satisfaction. However, there is very strong evidence for the correlation of subjective poverty and poverty measured with respect to wealth with transitions in all analysed measures of well-being. There is also significant correlation between the analysed outcomes with poverty indicators reflecting financial distress (as defined in Cavasso & Weber in this volume) and failure to spend on food outside of home (Angelini et al. in this volume).

These findings suggest that with respect to the analysis of the quality of life of older people it may be more appropriate to use alternative measures of poverty to the standard income-based definition. Such measures need to be more in line with the specific conditions and material needs of older persons.

6.2 Analysing poverty and transitions in well-being

The focus of our analysis is on transitions from good to bad states (*and vice versa*) in measures of health and life satisfaction, conditional on being in the good (*or the bad*) state in Wave 2 of the survey, which we treat as the initial period. We thus examine determinants of the following transition probability:

$$P(y_{w4} = 1 | y_{w2} = 0) = \beta X_{w2} + \gamma \Pi_{w2} + \varepsilon$$

where $y_{w2} = 0$ stands for being in the good state in Wave 2 and $y_{w4} = 1$ implies being in the bad state in Wave 4. X_{w2} is a vector of exogenous characteristics measured at the time of Wave 2 and Π_{w2} is the poverty measure defined at the time of Wave 2. In the case of the transition from bad to good states, the estimated probability takes the following form:

$$P(y_{w4} = 0 | y_{w2} = 1) = \beta X_{w2} + \gamma \Pi_{w2} + \nu$$

The probabilities are estimated in a logistic regression and the results in Section 6.4 are presented as odds ratios.

6.3 Measures of well-being and poverty in the SHARE data

The analysis uses data from Waves 2, 3 and 4 of the Survey of Health, Ageing and Retirement in Europe (SHARE) collected in twelve countries between 2006 and 2012. In total, the sample includes respectively 34,415 (W2), 27,975 (W3) and 59,599 (W4) individuals aged 50+ in the three waves, of which 16,153 are present (and alive) in all three waves of data and are the reference sample for the analysis. Given the incidence of missing information on some items used in the analysis, the final total sample used in the regressions includes 15,276 individuals aged 50+. The resulting sample size ranges from 487 observations for Austria to 1,806 for Belgium and Italy. There are 6,757 male and 8,519 female respondents (see Table 6.1).

Table 6.1: Sample size by country*(a) In the good state*

	Number of observations in the good state in Wave 2				
	Total sample	3+SMT	3+ADL	4+EURO-D	UNHAPPY
SE	1,091	881	917	992	1,006
DK	1,508	1,257	1,293	1,370	1,463
DE	1,206	977	970	1,074	1,083
NL	1,382	1,219	1,176	1,219	1,282
BE	1,806	1,435	1,424	1,491	1,598
FR	1,429	1,110	1,146	1,124	1,265
CH	974	860	868	876	920
AT	487	381	354	424	435
ES	1,131	874	790	830	959
IT	1,806	1,395	1,346	1,370	1,498
PL	1,278	775	740	788	1,094
CZ	1,178	878	925	1,025	1,021
Total	15,276	12,042	11,949	12,583	13,624

(b) In the bad state

	Number of observations in the bad state in Wave 2				
	Total sample	3+SMT	3+ADL	4+EURO-D	UNHAPPY
SE	1,091	210	174	99	85
DK	1,508	251	215	138	45
DE	1,206	229	236	132	123
NL	1,382	163	206	163	100
BE	1,806	371	382	315	208
FR	1,429	319	283	305	164
CH	974	114	106	98	54
AT	487	106	133	63	52
IT	1,806	411	460	436	308
ES	1,131	257	341	301	172
PL	1,178	300	253	153	157
CZ	1,278	503	538	490	184
Total	15,276	3,234	3,327	2,693	1,652

Source: SHARE Wave 2 release 2.5.0 conditional on being observed and alive in Wave 2, 3 and 4.

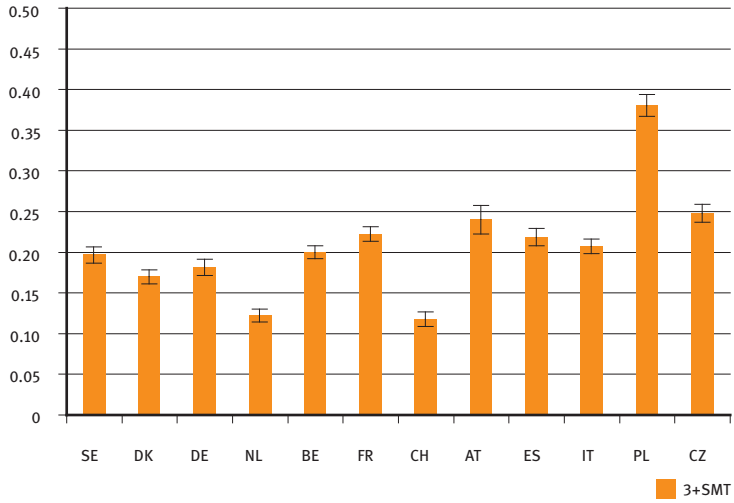
6.3.1 Measures of well-being

We examine four binary outcomes measuring well-being of the respondents – two reflecting physical health, one reflecting mental health and one measuring individuals' happiness with life. The two measures of physical health are generated with reference to the list of twelve symptoms of bad health and the list of 13 limitations in activities of daily living (ADLs). In both cases we define someone to be in a bad state if they have three or more symptoms or limitations. The two definitions are labelled as: “3+SMT” (three or more symptoms) and “3+ADL” (three or more limitations in ADLs).

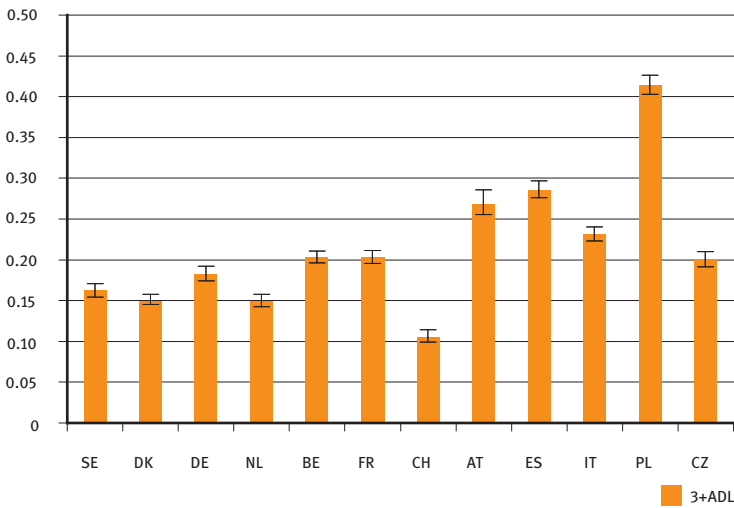
For a binomial measure of depression we refer to the EURO-D scale used extensively in the psychological literature (see e.g. Prince et al. 1999). The EURO-D scale is based on a set of twelve items such as lack of sleep, lack of concentration or feeling of guilt, and the threshold identifying depressed individuals is taken as suffering from four or more symptoms of depression (“4+EURO-D”). Additionally we also use a more general measure of happiness based on a question asking respondents how often they look back on their lives with a sense of happiness (always, often, rarely or never). Those answering rarely or never are identified as being in a bad state as far as happiness with life is concerned (“UNHAPPY”).

The distribution of respondents into those in the good and bad states in the four analysed dimensions at the time of Wave 2 is presented in Figure 6.1 for all of the twelve countries we consider. This distribution determines the sample sizes for the estimations of transition probabilities from good to bad states and *vice versa*. In Table 6.1a we present the sample sizes conditional on being in the good state in Wave 2 by country and by the four measures of well-being. Table 6.1b shows the sample sizes for the alternative transition estimations.

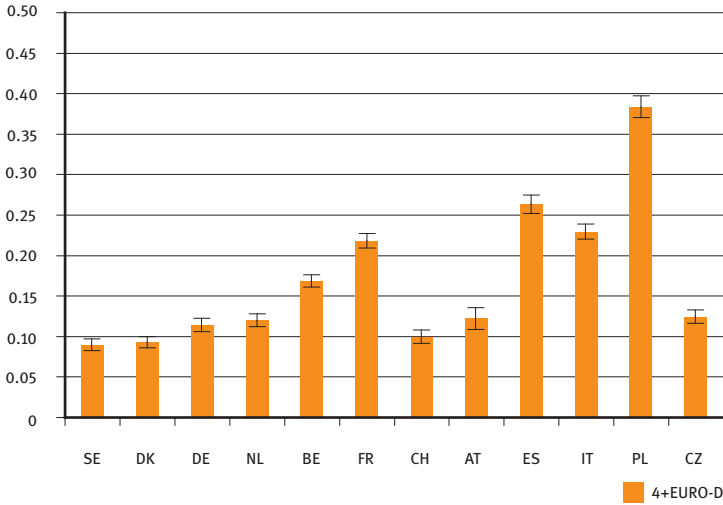
As we can see from Figure 6.1 there are important differences in the levels of well-being as reflected in the four measures. There is a similar cross-country pattern in the distribution of the two measures of physical health, with highest proportions of those identified as being in poor health in Poland (38.0 % by 3+SMT and 41.3 % by 3+ADL), and lowest in Switzerland (respectively 11.8 % and 10.6 %). Poland has also the highest proportion of individuals identified as suffering from depression on the EURO-D scale (38.4 %) with Spain, Italy and France also standing out from other countries at respectively 26.4 per cent, 23.0 per cent and 21.8 per cent. Relatively few respondents declare that they rarely or never look back on their lives with happiness. In this respect the four worst performing countries are Italy (16.4 %), Poland (15.0 %), Spain (14.3 %) and the Czech Republic (13.3 %), while in Denmark and Switzerland only 3.1 per cent and 5.4 per cent of the older people respectively declare unhappiness with their lives.



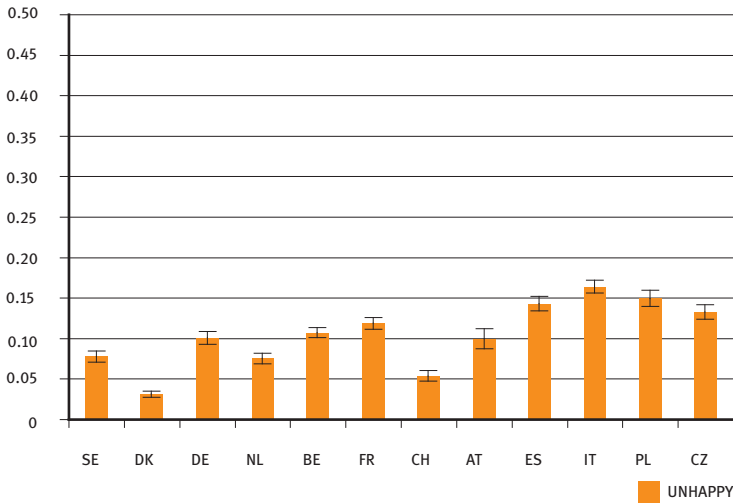
(a) 3+SMT: Three or more symptoms of poor health (n=15,276)



(b) 3+ADL: Three or more limitations in activities of daily living (n=15,276)



(c) 4+EURO-D: Four or more reported items on the EURO-D scale (n=15,276)



(d) UNHAPPY: Rarely or never look back on life with happiness (n=15,276)

Figure 6.1: Proportion of respondents in the good and bad states by country (Wave 2)
 Notes: Data weighted using Wave 2 sample weights.
 Source: Authors' calculations using SHARE data (Wave 2 release 2.5.0)

Figures 6.2 and 6.3 present raw transition rates respectively from the good to the bad states and *vice versa* for the four outcomes by country. There is high variation in these rates, with the rates of 3+SMT transitions to the bad state (Figure 6.2) ranging from 9.9 per cent in Switzerland to 25.5 per cent in the Czech Republic, and the “3+ADL” transitions varying from 9.3 per cent in Switzerland to 21.9 per cent in Spain. The highest rates of transitions to the bad state defined by the depression scale can be found in Spain (22.9%) and Poland (20.1%), though the rates are almost equally high in France (17.7%), Austria (16.3%) and Italy (17.0%). The Czech Republic, Poland, Spain and Italy have the highest transition rates to the bad states with respect to happiness with life (respectively: 15.3%, 13.3%, 14.3% and 12.3%).

The raw transitions from bad to good states are presented in Figure 6.3. The recovery rates for 3+SMT vary between 33.5 per cent in France and 56.1 per cent in Switzerland. For 3+ADL the lowest recovery rates can be found in France (21.9%) and Italy (23.7%). The highest recovery rates are found in Switzerland (48.1%). France has also the lowest recovery rates for depression (42%). Improvements in life satisfaction between Waves 2 and 4 range from 59.2 per cent in the Czech Republic and 59.4 per cent in Italy to as much as 82.7 per cent in Austria.

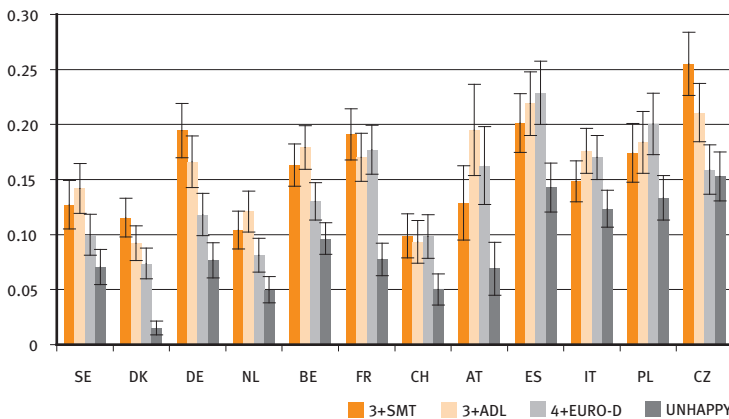


Figure 6.2: Transition rates from the good to the bad states

Notes: Data weighted using Wave 2 sample weights. N=12,042 (3+SMT); N=11,949 (3+ADL); N=12,583 (4+EURO-D); 13,624 (UNHAPPY).

Source: Authors' calculations using SHARE data (Wave 2 release 2.5.0, Wave 3 release 1, Wave 4 release 1)

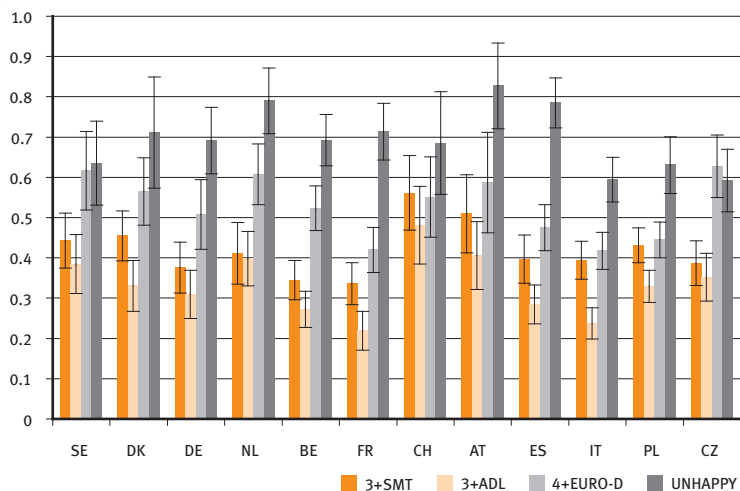


Figure 6.3: Transition rates from bad to good states

Notes: Data weighted using Wave 2 sample weights. N=3,234 (3+SMT); N=3,327 (3+ADL); N=2,693 (4+EURO-D); 1,652 (UNHAPPY).

Source: Authors' calculations using SHARE data (Wave 2 release 2.5.0, Wave 3 release 1, Wave 4 release 1)

6.3.2 Measures of poverty

Five definitions of poverty are used here to identify poor respondents. The first is the standard definition of income-based relative poverty (referred to as “*income poverty*” – *INC*), where we identify poor people with reference to the official poverty thresholds published by EUROSTAT and defined as 60 per cent of the median equivalised household net income. The second approach defines poverty with reference to the financial distress measure (“*financial distress*” – *FD*) suggested in Cavasso and Weber (in this volume), while the third using the information on consumption of food outside of home. In the latter case individuals are identified as poor if they declare no such expenditure (“*no food out*” – *NFO*), which is a measure analysed in detail by Angelini et al. (in this volume). The fourth definition of poverty is based on subjective declarations by respondents, in which case (“*subjective poverty*” – *SUB*) people are identified as poor on the basis of a question of how easily they can make ends meet. If the answer is “with some” or “with great” difficulty the individuals in the household are classified as “poor”. Finally the fifth definition refers to respondents’ wealth. Poor households defined with reference to wealth (“*wealth poverty*” – *WEALTH*) are those that belong to the bottom tertile of the wealth distribution of the sample in each

country. For this purpose households' wealth is the sum of household real assets (net of any debts) and household gross financial assets. Since a significant proportion of households' wealth is housing, a large proportion of respondents qualified as poor in this case are those who do not own their accommodation. In the three cases where we use specific amounts of financial resources of households, i. e. in the case of *INC*, *FD* and *WEALTH*, the analysis is conducted using equivalised measures based on the modified OECD scale. With respect to the financial distress measure this means we take a different approach than Cavasso and Weber (in this volume) who use per capita values, but this does not significantly affect the results.

In the case of three out of five definitions of poverty (*income*, *financial distress* and *wealth*) where we rely on detailed sets of financial questions, the quality of the measures substantially relies on the degree of item non-response to these questions. For example, in the case of bank account savings, depending on the country, we miss from 22 per cent to 56 per cent of specific values. Therefore the analysis is implemented using imputed values for the financial variables (Christelis 2011) with five imputations for each missing value (Rubin 1987).

As we can see in Figures 6.4 and 6.5 there is significant variation across countries in the levels of poverty as well as within countries depending on the measure of poverty used (details are also presented in Table 6.2). For example while the Czech Republic belongs to countries with one of the lowest income based poverty levels (8.7%), Czech poverty levels defined by financial distress or by the subjective measure belong to the highest in the sample (respectively 26.0% and 53.3%). Belgium on the other hand has one of the highest levels of income-based poverty (18.4%) and one of the lowest levels of poverty measured by the financial distress approach (13.3%) and by no food out expenditures (21.1%). It is interesting to note also that the distribution of the subjective measure and of poverty using the no food out approach are very similar, despite a very different nature of the questions – one being very subjective and the other a much more objective one. In Figure 6.5 we combine the four definitions of poverty shown in Figure 6.4 with the definition identifying the poor according to the country-specific wealth distribution. Thus in each country a third of the population is considered poor by the value of their (equivalised) wealth. The figure shows the overlap of this definition with other measures of poverty. Naturally, in countries where poverty rates based on income, financial distress, no food out and subjective assessment are low (e. g. Sweden, Denmark, Netherlands and Switzerland) the degree of overlap with the wealth-based measure is low. In countries with high poverty rates according to these four definitions (Italy, Spain, Czech Republic and Poland) the proportion of the 50+ population which is defined poor only using the wealth definition is very low (respectively 2.2%, 1.9%, 3.8%, 0.8%).



Figure 6.4: Poverty rates in Wave 2 data by poverty definition and country

Notes: Data weighted using Wave 2 sample weights.

Source: Authors' calculations using SHARE data (Wave 2 release 2.5.0, Wave 3 release 1, Wave 4 release 1)

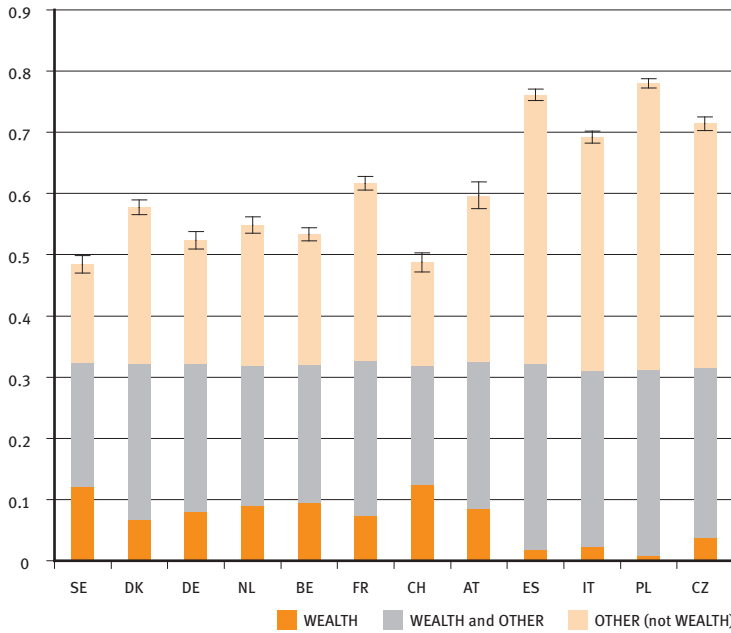


Figure 6.5: Poverty rates in Wave 2 data: wealth poverty and other measures by country

Notes: Data weighted using Wave 2 sample weights. N=15,276.

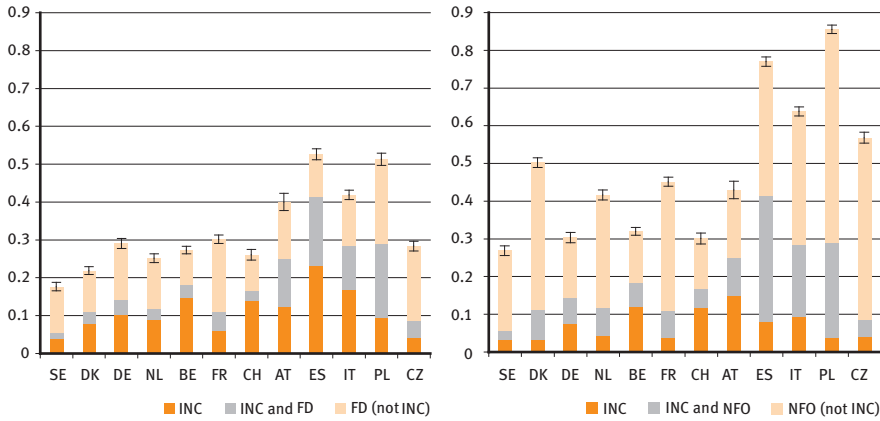
Source: Authors’ calculations using SHARE data (Wave 2 release 2.5.0, Wave 3 release 1, Wave 4 release 1)

Table 6.2: Shares of individuals living in poverty in Wave 2 by country

Shares of individuals living in poverty in Wave 2						
	Total sample(N)	INC(%)	FD(%)	NFO(%)	SUB(%)	WEALTH(%)
SE	1,091	6	14	24	13	33
DK	1,508	11	15	47	12	33
DE	1,206	15	19	23	24	33
NL	1,382	12	17	37	17	33
BE	1,806	18	13	21	27	33
FR	1,429	11	25	43	30	33
CH	974	17	13	19	16	33
AT	487	26	28	29	27	33
ES	1,131	42	31	70	57	33
IT	1,806	30	27	56	59	33
PL	1,278	29	45	83	73	33
CZ	1,178	9	26	53	55	33
Total	15,276	18	22	42	34	33

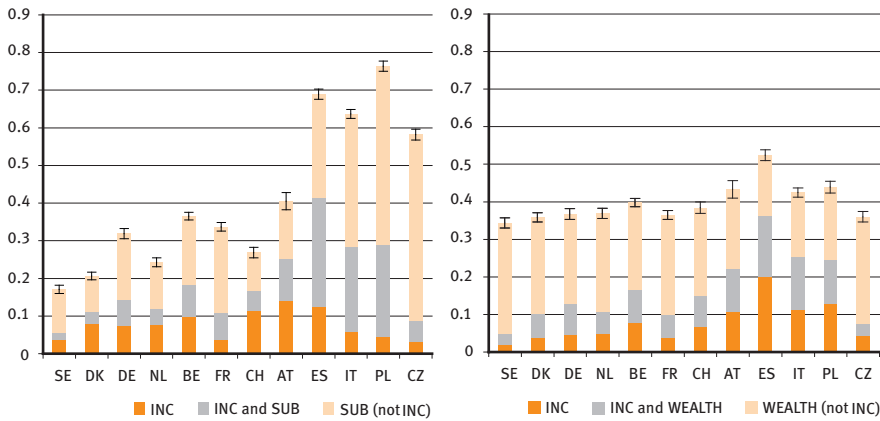
Source: SHARE Wave 2 release 2.5.0 conditional on being observed and alive in Wave 2, 3 and 4

In Figure 6.6 we demonstrate the overlap between the traditional income-based approach and the four other measures of poverty by looking at pairwise poverty prevalence. For example in Figure 6.6a we show the proportion of the sample which is poor only with respect to the income definition (*INC*), the proportion where income poverty and the second measure – in the case of 6.6a, the *FD*



(a) Income and financial distress (n=15,276)

(b) Income and no food out (n=15,276)



(c) Income and subjective poverty (n=15,276)

(d) Income and wealth (n=15,276)

Figure 6.6: Poverty rates in Wave 2 data: overlap between income poverty and other measures by country

Notes: Data weighted using Wave 2 sample weights; “INC” – income defined poverty; “FD” – poverty defined with reference to financial distress; “NFO” – poverty defined with reference to no food out consumption; “SUB” – subjective poverty; “WEALTH” – relative wealth poverty. For details of definitions see text.

Source: Authors’ calculations using SHARE data (Wave 2 release 2.5.0)

– overlap (*INC and FD*), and the proportion which is classified as poor according only to the second measure, and not income (*FD (not INC)*). The degree of overlap in different countries between the measures corresponds to the disproportions in poverty prevalence as specified by the different approaches. For example, there is very little overlap between income poverty and the subjective and no food out measures in the Czech Republic, Sweden and Denmark. On the other hand, a significant proportion of the population in Spain (33.4 %) and Poland (25.1 %) are defined as poor both with respect to income and the no food out measure, and similarly with respect to income and the subjective approach (28.9 % in Spain and 24.6 % in Poland). The general impression from Figure 6.6, however, is a low degree of overlap between income defined poverty and the four other approaches, which in itself may raise doubts concerning the value of income based poverty as an indicator of material conditions of the older population.

6.4 Specifications and results – the effects of poverty

In this section we present the results of the estimations of the transition probabilities, which have been conducted using two specifications. In Specification 1 in addition to country and poverty dummies we control for the most basic characteristics such as age, age squared, gender, education, education squared, town size and the time between the interviews in Wave 2 and 4 (in months).

In Specification 2, in addition to these basic variables, we also control for other contemporaneous characteristics which could affect the transitions. Additionally, we include variables which allow us to examine the potential role of endogeneity of poverty with respect to the initial state of the individuals in Wave 2. For this purpose we use a series of variables from the SHARELIFE interview which are likely to be correlated with poverty status in Wave 2. As we shall see below there is very little difference in the estimated results between these two specifications.

The following variables from Waves 2 and 3 are used in Specification 2:

Wave 2 variables: extent of engagement in physical activities; current smoking and drinking; living together with a partner, controls for the number of children and grandchildren (see e. g. Cattell 2001, Litwin 2009, Litwin & Stoeckel 2013).

Wave 3 (SHARELIFE) variables: information relating to the situation at home at the age of ten: number of books at home, facilities in the household, occupation of main breadwinner; parental behaviour (smoking, drinking and mental problems); hospital stays in childhood, ever having been disabled or seriously injured.

6.4.1 Results – poverty and transitions in key aspects of quality of life

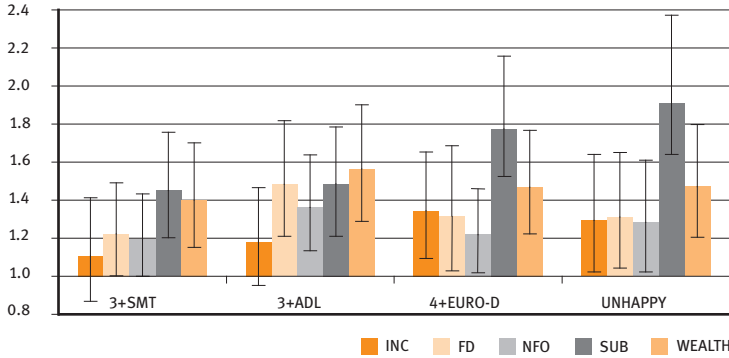
Since, in total, we run 80 separate regressions (four outcomes, five poverty measures, two specifications and two transitions in each), the results reported in this section focus on the odds ratios related to the respective estimated poverty dummies. These ratios are presented in Figure 6.7 for the transition from good to bad states and in Figure 6.8 for the transitions from bad to good states (95% confidence intervals are included in the figures).

All signs of the estimated coefficients on poverty indicators in all regressions and the resulting values of the odds ratios presented in Figures 6.7 and 6.8 indicate the negative effect of poverty on the changes in the four measures of well-being. Poverty increases the probability of moving into the poor physical health status and reduces the probability of health improvements as indicated by our measures. The same conclusions apply to depression and to the measure of happiness with life. It is interesting to note that the estimated effects of poverty on transitions from good to bad states and *vice versa* are mirror images both in terms of the direction of the effect and in terms of its statistical significance.

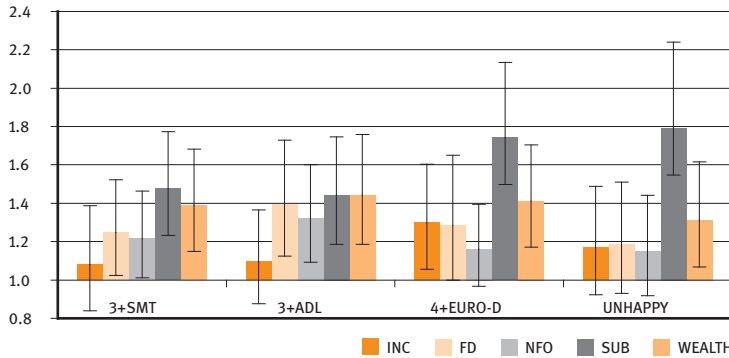
As we can see from Figures 6.7 and 6.8, conclusions concerning the magnitude and in particular statistical significance of the effect of poverty on transitions in well-being differ depending on the measure of poverty used in the analysis. In particular in both specifications, poverty measured by relative income is insignificant as determinant of transitions in physical health in both directions. Additionally in Specification 2 income poverty is also insignificant as a determinant of changes in declared happiness with life. Physical health strongly correlates with poverty measured by financial distress and no food out, but in these cases there is no effect in the case of transitions in depression or happiness.

In contrast to these measures, if poverty is identified with reference to wealth or subjective declarations, all estimates in both specifications are statistically significantly different from zero. The magnitudes of the estimated poverty odds ratios are also in most cases much greater compared to the ratios using income, financial distress or no food out measures.

According to our results in Specification 2, poor individuals by the subjective poverty definition, are about 45 per cent more likely to become ill in Wave 4 (according to both measures we use), they are 74 per cent more likely to start suffering from depression and they are 79 per cent more likely to declare that they rarely or never look back on their lives with happiness. These values for those identified as poor using relative wealth are respectively: 39 per cent, 45 per cent, 41 per cent and 31 per cent. For respondents identified as being in the bad state in Wave 2 subjective and wealth poverty significantly reduce the probability of



(a) Specification 1



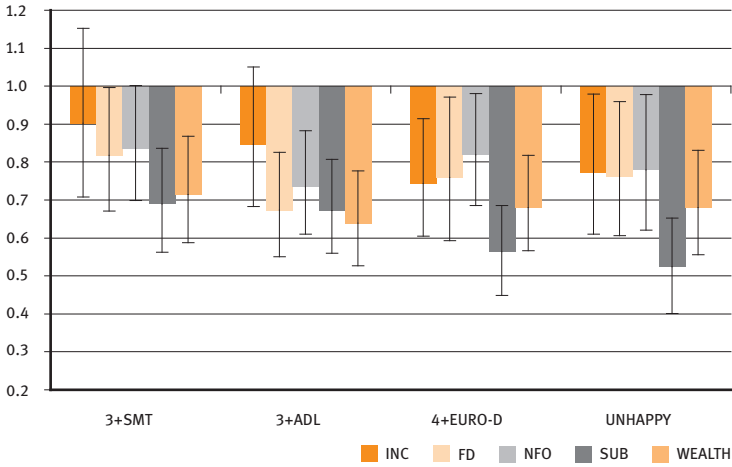
(b) Specification 2

Figure 6.7: Poverty and transitions from good to bad states

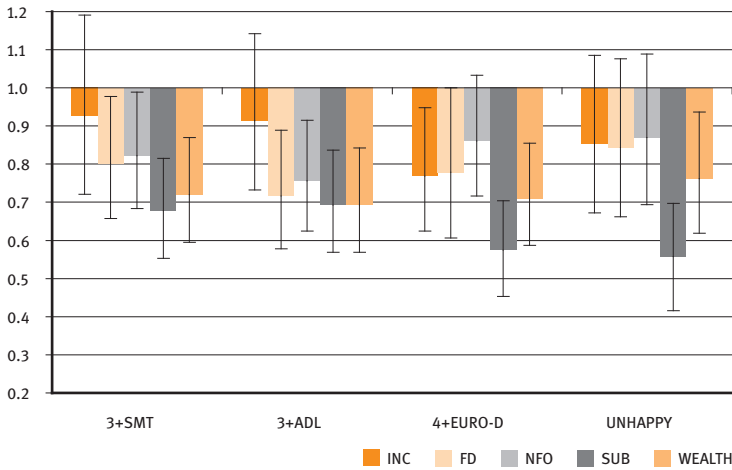
Notes: Data weighted using Wave 2 sample weights. N=12,042 (3+SMT); N=11,949 (3+ADL); N=12,583 (4+EURO-D); 13,624 (UNHAPPY).

Source: Authors' calculations using SHARE data (Wave 2 release 2.5.0, Wave 3 release 1, Wave 4 release 1)

moving out of these states, with the probabilities being reduced by about 25 per cent to 30 per cent in the case of wealth poverty, and by 30 per cent to 40 per cent in the case of subjective poverty.



(a) Specification 1



(b) Specification 2

Figure 6.8: Poverty and transitions from bad to good states

Notes: Data weighted using Wave 2 sample weights. N=3,234 (3+SMT); N=3,327 (3+ADL); N=2,693 (4+EURO-D); 1,652 (UNHAPPY).

Source: Authors' calculations using SHARE data (Wave 2 release 2.5.0, Wave 3 release 1, Wave 4 release 1)

6.5 The role of material conditions for health and life satisfaction of the elderly

Conclusions concerning the role of the financial situation on the development of well-being of the older persons significantly depend on the measure of material well-being used in the analysis. In this chapter we defined poverty with respect to income, financial distress, food consumption outside of home, subjective assessment and relative wealth. Of those five, wealth-defined poverty and subjective assessment of the material well-being strongly correlate with deterioration and improvements in physical and mental health as well as overall life satisfaction. Poverty defined by financial distress and consumption of food outside of home is significantly related to changes in physical health but there is no evidence for the effects of these measures of poverty with mental health and life satisfaction.

Levels of old-age poverty significantly differ across the SHARE countries, but both the level of poverty and ranking of countries strongly depend on the definition of poverty used in the analysis. While in the case of some countries poverty is consistently low on measures based on income, no food out and subjective assessment (e. g. Sweden, or Switzerland), in others like France or the Czech Republic, income based poverty levels are among the lowest from among the twelve analysed countries, but both the no food out measure and subjective poverty are either at the upper end (CZ) or in the middle of the country rankings (FR).

Most importantly however, we found little evidence for the role of relative income poverty on changes in the well-being of older people. While income poverty significantly relates to the onset of depression, increasing its probability by about 30 per cent in the space of four years, we find no effect of the most common measure of poverty on changes in physical health or overall life satisfaction of older people. This suggests that the traditional income measure of household material situation may not be appropriate as a proxy for the welfare of older populations, and may perform badly as a measure of improvements in their quality of life and thus as a target for old-age policies.

As studies of Cavasso and Weber and Angelini et al. in this volume demonstrate, the recent financial crisis has had a significant effect on the current material situation of older people in many European countries. Our results suggest that the wealth reduction due to the crisis may have long-lasting consequences on health and life satisfaction of older people. The analysis also points out that if indicators of the material situation are to be valid measures to monitor the post-crisis developments in the quality of life of the older people they should cover broader aspects of the financial well-being than income poverty. Such measures

could incorporate aspects of wealth and the subjective assessment of the material situation as well as indicators more specifically focused on the consumption basket of the older population.

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