Financing long-term care through housing in Europe

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1. Introduction

The proportion of people aged 80 and over in the European Union is expected to double (from 5% in 2013 to 12% in 2060) according to population projections (Europop2013). This population aging puts increasing financial pressure on public systems and elderly will probably need to consider private financing arrangements for long-term care (LTC) expenses. Given that public pension replacement rates are decreasing in most European countries (OCDE 2013, European Commission 2015) and that the private market for long-term care insurance is very small due to both supply-side and demand-side failures (see for example Brown and Finkelstein 2007; Brown and Finkelstein 2009), one way of financing long-term care periods could be to extract equity from housing. Indeed, housing dominates the structure of elderly wealth (Laferrère 2011) and may be particularly useful for *house rich-cash poor* individuals. It is even underlined in the literature that home equity may substitute for long-term care insurance (Davidoff 2010; Davidoff 2009).

Different ways to extract equity from housing could be considered. First, owners could downsize their home by selling it in order to buy a smaller house or to become renters. However, the literature suggests that, contrary to the predictions of the life-cycle model, individuals do not use their housing wealth to support consumption at old age. They do not downsize their home, except sometimes when precipitating shocks occur (such as the death of one spouse or nursing home entry) (Venti and Wise 2001; Angelini and Laferrère 2012). Other solutions to extract housing equity are French sales in *viager.* It guarantees a capital, an annuity and the right to stay in the home till death but the house property is transferred to the buyer. However, this type of sale arrangement is very rarely used (see Masson (2015) for some reasons of this lack of success). Finally, reverse mortgages products, which have existed for many years in the US and the UK, have been gaining increasing attention in Europe in

recent years. A reverse mortgage is a loan secured by the borrower's residence. As long as the borrower lives in the home he or she is not required to make any monthly payments towards the loan balance. The interests are paid to the bank at the end of the contract (death, sale of the house or move out). It is a means to use illiquid housing wealth while aging in place, since individuals remain in their home. At the end of the contract, the family can reimburse the bank and keep the house. In this research, we do not consider downsizing nor sales in *viager* and focus on reverse mortgages (RM). Venti and Wise (1990) and Sinai and Souleles (2007) show on US data that such products may be particularly interesting at old age. This is confirmed by (Moscarola et al. 2015) who simulate reverse mortgages on European data (SHARE) and show that it could represent a powerful tool against poverty in old age. Since the available loan amount generally increases with age, such products may be interesting to finance long-term care expenditures.

The general objective of our work is to investigate to what extent individuals are able to pay for their periods of long-term care needs, depending on their income, financial assets and housing assets. To do so, we will assume that a long-term care reverse mortgage is available, that is a reverse mortgage people could subscribe to as soon as they become dependent. We will study in details to what extent home ownership is an insurance against the risk of LTC expenses, by simulating the lump-sum payments that could be extracted from reverse mortgages. Little has been done so far on the relationship between housing and the financing of long-term care. Stucki (2006), on US data, is one of the rare papers that studies how reverse mortgages could be used to manage the financial risk of long-term care. Mayhew et al. (2010) use UK data (ELSA) and stress that few households are able to pay for LTC based on income and savings but the number increases if housing assets are included. However, they assume that everyone will have to finance 1, 3 or 5 years of LTC needs and do not take into

account the potential differences in the risk of being dependent according to gender and the socioeconomic status. Indeed, Bockarjova et al. (2014) show that individuals with higher wealth have a lower incidence rate of using LTC. Thus, RM products may not be adequate for those with the higher needs.

2. Method

2.1. Data

We use the Survey of Health Aging and Retirement in Europe (SHARE). These data are of particular interest because they provide both information on limitations with instrumental and basic activities of daily living, which allow measuring the risk of needing long-term care, and precise information on income, financial and housing assets. In addition, the survey follows individuals when they enter nursing home and when they die (exit interview with a proxy respondent). We focus on individuals aged 65 and over in the 5th wave (2013) of the survey (23,769 observations) and on 9 countries (Austria, Germany, Sweden, Netherlands, Spain, Italy, France, Denmark, and Belgium). Table 1 provides some descriptive statistics on these individuals.

We also use the longitudinal dimension of the survey (wave 1: 2004/05, wave 2: 2006/07, wave 4: 2011/12 and wave 5: 2013) to estimate disability trajectories of individuals (see subsection 2.2.2.). Finally, we use life tables from the Human Mortality Database to have information on life expectancy in each country to simulate reverse mortgages (see subsection 2.2.3)

Table 1 below shows that the resources individuals can use to finance long-term care periods differ widely in Europe: the equivalised household annual income ranges between 10,000 euros in Spain and 38,000 euros in Belgium; the value of household net financial assets varies

from 12,000 euros in Spain and 114,000 euros in Denmark. As far as housing assets are concerned, the proportion of owners of their main residence goes from 49% in Austria to 92% in Spain and is much higher in Southern Europe than in Northern Europe. Among owners, the value of the home (net of mortgages) is on average 250,000 euros.

Table 1
Descriptive statistics, wave 5.

Mean (standard deviation)	Total	Austria	Germany	Sweden	Netherlands	Spain	Italy	France	Denmark	Belgium
Age	75.152	74.874	75.125	74.356	74.211	75.650	74.982	75.519	73.904	75.229
	(7.351)	(7.285)	(6.872)	(7.310)	(7.431)	(7.634)	(7.365)	(7.713)	(7.263)	(7.505)
Female	0.572	0.577	0.562	0.553	0.544	0.579	0.573	0.590	0.540	0.572
	(0.495)	(0.494)	(0.496)	(0.497)	(0.498)	(0.494)	(0.495)	(0.492)	(0.499)	(0.495)
Couple	0.639	0.568	0.676	0.683	0.660	0.605	0.643	0.595	0.682	0.656
	(0.480)	(0.495)	(0.468)	(0.465)	(0.474)	(0.489)	(0.479)	(0.491)	(0.466)	(0.475)
Education level										
- Pre-primary/primary	0.369	0.179	0.025	0.323	0.173	0.741	0.601	0.454	0.195	0.261
	(0.483)	(0.383)	(0.156)	(0.468)	(0.378)	(0.438)	(0.490)	(0.498)	(0.397)	(0.439)
- Secondary/post-secondary	0.459	0.582	0.713	0.418	0.607	0.194	0.353	0.350	0.474	0.471
	(0.498)	(0.493)	(0.452)	(0.493)	(0.489)	(0.396)	(0.478)	(0.477)	(0.499)	(0.499)
- Tertiary	0.172	0.239	0.262	0.259	0.220	0.065	0.046	0.196	0.331	0.268
	(0.377)	(0.427)	(0.440)	(0.438)	(0.415)	(0.247)	(0.210)	(0.397)	(0.471)	(0.443)
Health status										
2+ difficulties with basic activities of daily living (dependent)	0.101	0.090	0.098	0.043	0.051	0.137	0.119	0.082	0.060	0.118
	(0.301)	(0.286)	(0.297)	(0.203)	(0.221)	(0.344)	(0.323)	(0.275)	(0.238)	(0.322)
Resources										
Equivalised annual household income	19,996	20,789	20,860	32,293	25,009	10,124	12,249	27,725	25,083	37,990
	(59,875)	(14,101)	(15,348)	(18,962)	(28,027)	(8,062)	(15,849)	(128,814)	(14,680)	(49,669)
Value of household net financial assets	44,548	22,642	35,471	94,539	109,887	12,042	14,090	80,310	113,627	89,359
	(139,807)	(54,332)	(77,780)	(138,870)	(266,438)	(25,811)	(32,111)	(236,479)	(187,053)	(145,582)
Owners (main residence)	0.724	0.490	0.582	0.527	0.589	0.921	0.817	0.779	0.672	0.742
	(0.447)	(0.500)	(0.493)	(0.499)	(0.492)	(0.270)	(0.387)	(0.415)	(0.470)	(0.438)
Value of main residence (-mortgages) if > 0	249,809	288,438	232,049	238,064	246,479	232,044	241,311	288,808	213,877	290,213
	(269,170)	(233,259)	(166,931)	(220,843)	(139,335)	(516,668)	(153,794)	(192,214)	(168,879)	(127,505)
Other real estate or land	0.179	0.131	0.121	0.307	0.063	0.223	0.171	0.245	0.226	0.193
	(0.383)	(0.338)	(0.327)	(0.461)	(0.243)	(0.416)	(0.377)	(0.430)	(0.418)	(0.395)
Value of other real estate/land, if > 0	237,510	246,054	302,679	224,919	216,820	245,300	201,016	219,711	203,710	2443,449
	(365,749)	(297,720)	(406,699)	(258,169)	(228,787)	(672,413)	(161,563)	(159,876)	(183,796)	(211,429)
Number of observations	23,769	2,417	2,624	2,907	2,206	3,717	2,700	2,435	1,986	2,777

Source: SHARE data, wave 5.
Field: Individuals aged 65 and over.
Note: The statistics presented in this table are weighted using calibrated individual weights.

2.2. 4-steps methodology

Our strategy to investigate the role of housing wealth in financing long-term care expenses consists in four steps. First, the cost of one year of LTC is estimated. Second, we simulate whether individuals in wave 5 will experience periods of LTC needs or not and how many years of disability they will have to finance. The combination of these two measures will result in an expected lifetime cost of long-term care of people aged 65 and over in 2013. Then, we simulate the lump-sum payments that could be extracted from reverse mortgages at the time when individuals become dependent. This finally allows computing the proportion of individuals in each country who are able to pay for their LTC needs.

2.2.1. LTC cost

Dependent persons in wave 5 are identified using restrictions in basic activities of daily living (ADL). We consider 6 ADLs (dressing, walking across a room, bathing, eating, getting in/out of bed and using the toilet) and assume that an individual is dependent if he reports difficulties with at least 2 of these activities. A cutoff of 2 rather than one difficulties in activities of daily living is chosen because the data provide no information on the degree of difficulties and we do not want a too broad definition of disability. In addition, in the US, the minimum level of disability which triggers Medicaid and private policies benefit payouts is 2 ADLs

In order to estimate the average cost at the country level of one year of LTC for dependent individuals in wave 5, we first compute the need for long-term care in hours per week using a conversion table relating restrictions in activities of daily living to home help needs (Pampalon et al. 1991). For instance, if someone cannot eat alone, he/she needs 14 hours of help per week. Then, the need for care is evaluated in monetary terms by applying the hourly labor cost in the human health and social work sector (upper bound of LTC cost) or in accommodation and food service activities (lower bound) in the different countries (Eurostat data, 2012). The results are summarized in table 2 below. On average, dependent individuals

in wave 5 need between 26 hours and 33 hours of help per week. The annual cost of LTC ranges between 23,000 euros in Germany and 39,000 euros in Denmark if we use labor costs in accommodation and food services. If we use labor costs in the health and social work sector, the annual LTC cost goes from 38,000 euros in Germany to 49,000 euros in Denmark.

In this work, we make the strong assumption that there is no public coverage for LTC and no informal care from the family. Public coverage and family help will be introduced in future estimations.

Table 2
Average LTC needs and LTC costs at the country level.

	Number of observations used	Average LTC needs (hours per week)	Average cost of 1 year of LTC (lower bound)	Average cost of 1 year of LTC (upper bound)
Austria	206	27.669	24,172	41,006
Germany	222	26.877	23,200	38,714
Sweden	123	28.669	37,716	51,431
Netherlands	103	26.334	24,923	44,505
Spain	454	33.477	24,023	38,820
Italy	285	28.079	26,282	41,320
France	206	26.557	31,763	40,463
Denmark	121	26.245	38,896	48,722
Belgium	294	26.872	29,764	42,619

Source: SHARE data, wave 5.
Field: Individuals aged 65 and dependent (2+ ADLs) in wave 5.
Note: The statistics presented in this table are weighted using calibrated individual weights.

2.2.2. Transition model

Using restrictions in basic activities of daily living, allows to know whether individuals are dependent in wave 5 but we have no information on the risk of needing LTC over the remaining lifetime and no information on the number of years with disability. Thus, we use microsimulation until year 2061 to get a picture of disability trajectories of individuals until they die and to study whether they are able to finance their periods of dependence.

We use the observed health status transitions (see table 3, 20,207 transitions) in SHARE data between waves 1 and 2 and waves 4 and 5 and run 2 multinomial logit models, one for non-dependent individuals (see table 4) and one for dependent individuals (table 5). We estimate

the effect of age, sex, income and education on the probabilities of transitions between 3 states: no disability (< 2 ADLs), disability (2+ ADLs) and death. It allows taking into account potential differences in the risk of being dependent between men and women and between socioeconomic status. Then, using these probabilities of transitions, we simulate disability trajectories of individuals who are 65 and older in wave 5 until they die.

Table 4 presents the transitions of non-dependent individuals (18,589 observations) between waves 1 and 2 and waves 4 and 5. It shows that the probability of becoming dependent and the probability of dying increase with age. Women face a bigger risk of needing long-term care and a lower risk of dying. Finally, individuals with a high socio-economic status have a higher probability of remaining non-dependent and a lower probability of becoming dependent or dying. Country dummies suggest that transitions to disability are less frequent in Sweden, Netherlands, France and Denmark.

For dependent individuals (table 5, 1,618 observations), the probability of recovery is higher for women and decreases with age. The risk of dying is lower for women and increases with age. Highly educated individuals seem to have a smaller probability of dying.

Table 3
Observed health status transitions between waves 1 (2004/05) and 2 (2006/07) and waves 4 (2011/12) and 5 (2013).

Initial health status	Final health status				
	Count	< 2 ADLs (%)	2+ ADLs (%)	Deceased (%)	Total (%)
< 2 ADLs (non-dependent)	18,589	90.285	5.487	4.228	100
2+ ADLs (dependent)	1,618	28.245	48.887	22.868	100
Total	20,207	85.317	8.962	5.721	100

Source: SHARE data, waves 1, 2, 4, 5.
Field: Individuals aged 65 and over in the initial wave.

Table 4
Transition model for non-dependent individuals.

	< 2 ADLs (Non-dependent)	2+ ADLs (Dependent)	Deceased
Age	-0.009*** (0.000)	0.005*** (0.000)	0.004*** (0.000)
Female	0.012*** (0.004)	0.014*** (0.003)	-0.026*** (0.003)
Equivalised household income (country level)			
- 1st quintile	-	-	-
- 2nd quintile	0.014** (0.006)	-0.006 (0.005)	-0.008* (0.004)
- 3rd quintile	0.023*** (0.006)	-0.012** (0.005)	-0.011** (0.004)
- 4th quintile	0.027*** (0.007)	-0.021*** (0.005)	-0.006 (0.004)
- 5th quintile	0.035*** (0.007)	-0.023*** (0.006)	-0.012** (0.005)
Education level			
- Pre-primary/primary	-	-	-
- Secondary/post-secondary	0.019*** (0.005)	-0.016*** (0.004)	-0.004 (0.004)
- Tertiary	0.032*** (0.008)	-0.026*** (0.006)	-0.007 (0.005)
Country			
- Austria	-	-	-
- Germany	-0.013 (0.010)	0.012 (0.008)	0.001 (0.007)
- Sweden	0.044*** (0.010)	-0.041*** (0.008)	-0.003 (0.006)
- Netherlands	0.046*** (0.010)	-0.034*** (0.008)	-0.013* (0.007)
- Spain	-0.012 (0.008)	0.006 (0.006)	0.006 (0.006)
- Italy	-0.001 (0.009)	0.003 (0.007)	-0.002 (0.006)
- France	0.034*** (0.008)	-0.020*** (0.006)	-0.014** (0.006)
- Denmark	0.016* (0.010)	-0.024*** (0.008)	0.008 (0.006)
- Belgium	0.020** (0.008)	-0.005 (0.006)	-0.015** (0.006)
Time between the two waves - 24 months	-0.002*** (0.001)	0.000 (0.000)	0.002*** (0.000)
Number of observations: 18,589			

Source: SHARE data, waves 1, 2, 4, 5.
Field: Individuals aged 65 and over and non-dependent (< 2 ADLs) in the initial wave.
Note: The figures given correspond to average marginal effects. Standard errors are reported in parentheses.
*: significant at the 10% level, **: 5% level, ***: 1% level.

Table 5
Transition model for dependent individuals.

	< 2 ADLs (Non-dependent)	2+ ADLs (Dependent)	Deceased
Age	-0.014*** (0.001)	0.002 (0.002)	0.012*** (0.001)
Female	0.054** (0.023)	0.014 (0.026)	-0.069*** (0.021)
Equivalised household income (country level)			
- 1st quintile	-	-	-
- 2nd quintile	0.058* (0.030)	-0.023 (0.035)	-0.035 (0.028)
- 3rd quintile	0.009 (0.034)	0.006 (0.038)	-0.014 (0.031)
- 4th quintile	0.092*** (0.033)	-0.049 (0.039)	-0.043 (0.032)
- 5th quintile	0.033 (0.037)	-0.070* (0.042)	0.037 (0.033)
Education level			
- Pre-primary/primary	-	-	-
- Secondary/post-secondary	0.089*** (0.028)	-0.044 (0.033)	-0.045* (0.027)
- Tertiary	0.066 (0.042)	0.017 (0.049)	-0.083* (0.043)
Country			
- Austria	-	-	-
- Germany	0.027 (0.052)	-0.005 (0.062)	-0.022 (0.054)
- Sweden	0.092* (0.053)	-0.115* (0.063)	0.023 (0.050)
- Netherlands	-0.005 (0.061)	-0.083 (0.070)	0.088 (0.054)
- Spain	0.092** (0.042)	-0.094** (0.048)	0.002 (0.039)
- Italy	0.042 (0.046)	-0.049 (0.052)	0.008 (0.043)
- France	0.112*** (0.043)	-0.100** (0.050)	-0.011 (0.042)
- Denmark	-0.140** (0.070)	0.112 (0.070)	0.028 (0.055)
- Belgium	0.055 (0.041)	0.005 (0.047)	-0.060 (0.041)
Time between the two waves - 24 months	0.003 (0.003)	-0.007** (0.003)	0.004 (0.003)
Number of observations: 1,618			

Source: SHARE data, waves 1, 2, 4, 5.
Field: Individuals aged 65 and over and dependent (2+ ADLs) in the initial wave.
Note: The figures given correspond to average marginal effects. Standard errors are reported in parentheses.
*: significant at the 10% level, **: 5% level, ***: 1% level.

2.2.3. Simulation of reverse mortgages

A reverse mortgage is a loan secured by the borrower's residence. To sum up, a conversion coefficient is applied to the housing value, this conversion coefficient depending on the remaining life expectancy of the borrower, interest rate and the expected evolution of housing prices. $LS\ payment = H \times \frac{(1+g)^{life\ expectancy}}{(1+m)^{life\ expectancy}}$

Declarative data on the value of the main residence, the value of mortgages and the percentage of house owned allow simulating the amount of capital that could be extracted from reverse mortgages when individuals become dependent. The lump-sum payment increases with the net value of the home (H) and the growth rate of housing prices (g) and decreases with the interest rate of the reverse mortgage (m) and life expectancy. We use life tables from the Human Mortality Database to have information on life expectancy at each age.

We assume that the growth rate of housing prices is 0 and that the interest rate of RM is 8% (in line with the levels found in the literature). To give an example, if an individual owner of a 200,000 euros house and dependent at age 80 uses a RM, the bank will give him 92,700 euros. In the very near future, we will provide simulations for different assumptions on interest rates, maximum loan amounts and life expectancy.

2.2.4. Ability to pay for LTC needs

Once we have information on the disability trajectories of individuals, the LTC cost and RM payments, we are able to study the ability of individuals to pay for their periods of LTC needs depending on their income (net from home expenditure and food consumption), their financial assets, the value of real estate other than the main residence (holiday homes, lands), and reverse mortgages on their main residence.

Of course, income and assets are known only in wave 5 and we do not know their value when individuals become dependent. It depends on the evolution in time of inflation, labor costs, interest rates, housing prices and the marital status. We simplify the analysis by assuming that:

- The annual LTC cost remains unchanged during the simulation.
- The equivalised household income remains unchanged during the simulation; even if the individual loses his or her spouse (survivor's pensions preserve the living standards of widows and widowers).
- After one's spouse death, assets remain unchanged if the individual has no children and are divided by two if there are children.

3. Preliminary results

3.1. LTC risk

Table 6 shows that among people who are 65 and older in wave 5, 62% will experience at least one period of LTC needs and the average number of years of disability among these individuals is 5 years. The risk of long-term care is higher here than in the literature, probably because of our broad definition of disability. Women are at higher risk than men (72% *vs* 50%) and low-income individuals are at higher risk than high-income individuals (68% *vs* 56%). The duration of LTC needs seems to be less sensitive to individual characteristics. It ranges between 4.4 years for males and 5.3 years for females and between 4.4 years for the richest individuals and 5.1 years for the poorest ones. There also exist country differences: the probability of needing LTC is lower in Northern Europe (Sweden, Netherlands, Denmark).

Table 6
Simulated LTC risk and LTC duration.

	Probability of needing LTC	LTC duration if > 0 (years)
Total	0.624 (0.004)	5.042 (0.053)
Male	0.498 (0.010)	4.450 (0.085)
Female	0.719 (0.007)	5.349 (0.074)
Equivalised household income (country level)		
- 1st quintile	0.679 (0.014)	5.117 (0.129)
- 2nd quintile	0.674 (0.008)	5.300 (0.116)
- 3rd quintile	0.641 (0.009)	5.235 (0.084)
- 4th quintile	0.570 (0.016)	5.029 (0.161)
- 5th quintile	0.556 (0.009)	4.425 (0.085)
Education level		
- Pre-primary/primary	0.688 (0.008)	4.878 (0.064)
- Secondary/post-secondary	0.611 (0.005)	5.127 (0.072)
- Tertiary	0.524 (0.012)	5.238 (0.132)
Country		
- Austria	0.604 (0.010)	5.236 (0.057)
- Germany	0.639 (0.006)	5.629 (0.145)
- Sweden	0.424 (0.008)	4.090 (0.102)
- Netherlands	0.500 (0.016)	3.851 (0.063)
- Spain	0.642 (0.014)	4.847 (0.117)
- Italy	0.675 (0.012)	4.929 (0.144)
- France	0.607 (0.009)	4.566 (0.103)
- Denmark	0.441 (0.004)	5.577 (0.136)
- Belgium	0.666 (0.012)	5.915 (0.145)
Number of observations: 23,769		

Source: SHARE data. We simulate trajectories of wave 5 individuals, using the transition model estimated on waves 1, 2, 4 and 5 (see subsection 2.3.2.).
Field: Individuals aged 65 and over in wave 5.
Note: The figures given correspond to the means of the LTC risk and the LTC duration across 10 replications of simulations. Standard deviations between the means of the 10 replications are reported in parentheses.

3.2. Ability to pay for LTC

We focus here on individuals who experience at least one period of LTC needs and who are alone when they become dependent. That means individuals who have no partner in wave 5 and individuals whose partner dies before they become dependent. We study this population because married individuals generally receive care from their spouse and reverse mortgages are more attractive for persons who live alone.

Results (table 7 and figure 1) stress that few individuals are able to pay for their LTC expenses without RM payments. For instance in Germany, 12% of individuals can pay for their LTC needs out of their sole income, this proportion is equal to 21% when adding net financial assets, 22% if we add holiday homes and land and 38.5% with reverse mortgage payments. In addition, reverse mortgages seem particularly useful in Spain and Italy where a large proportion of individuals are cash-poor and house-rich. However, the situation is very different for high and low-income individuals. Since the poorest individuals face a bigger risk of disability and have less housing wealth, the development of reverse mortgage products, in the absence of public LTC coverage, may increase socioeconomic inequalities at old age.

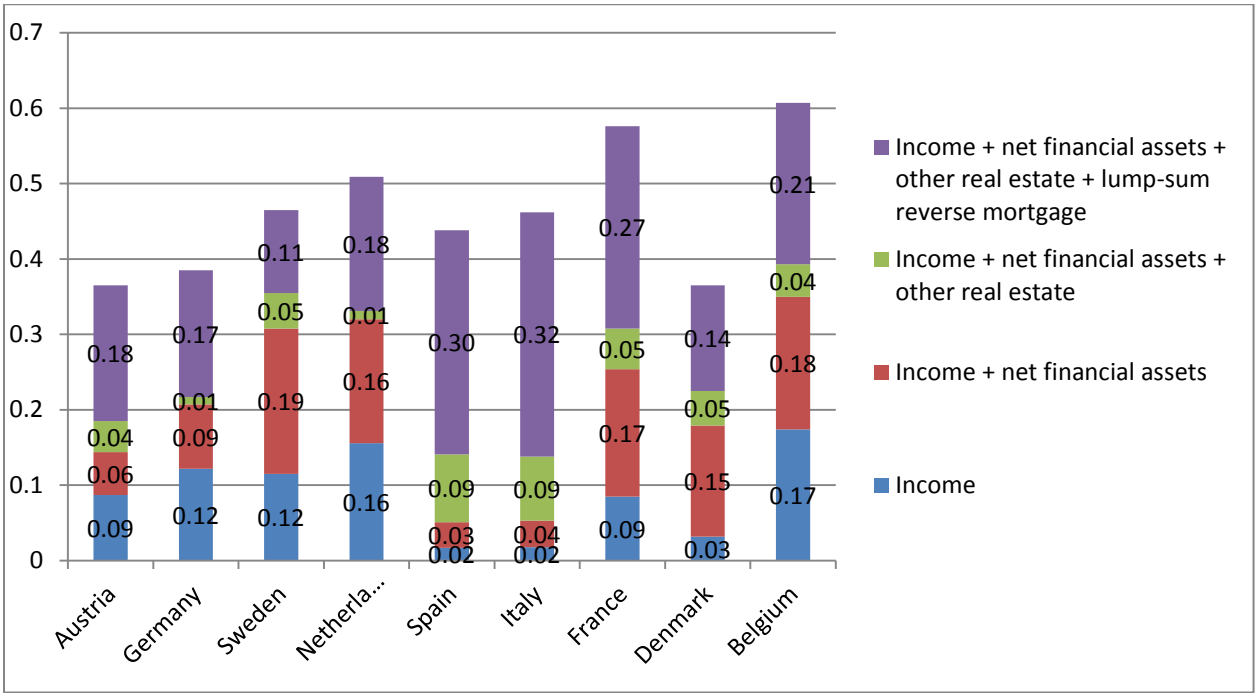
Table 7
Ability to pay for LTC needs.

	Income	Income and net financial assets	Income, financial assets and other real estate	Income, financial assets, other real estate and reverse mortgage
Total	0.074 (0.003)	0.164 (0.006)	0.217 (0.007)	0.463 (0.007)
Country				
- Austria	0.087 (0.009)	0.144 (0.011)	0.185 (0.014)	0.365 (0.017)
- Germany	0.122 (0.009)	0.207 (0.015)	0.217 (0.015)	0.385 (0.014)
- Sweden	0.115 (0.006)	0.308 (0.019)	0.355 (0.019)	0.465 (0.022)
- Netherlands	0.156 (0.006)	0.320 (0.011)	0.331 (0.014)	0.509 (0.013)
- Spain	0.017 (0.005)	0.051 (0.007)	0.141 (0.018)	0.438 (0.018)
- Italy	0.018 (0.003)	0.053 (0.006)	0.138 (0.010)	0.462 (0.015)
- France	0.085 (0.008)	0.254 (0.015)	0.308 (0.017)	0.576 (0.011)
- Denmark	0.032 (0.006)	0.179 (0.012)	0.225 (0.016)	0.365 (0.017)
- Belgium	0.174 (0.007)	0.350 (0.014)	0.393 (0.013)	0.607 (0.007)

Number of observations: between 7,255 and 7,409 depending on the simulation.

Source: SHARE data. We simulate trajectories of wave 5 individuals, using the transition model estimated on waves 1, 2, 4 and 5 (see subsection 2.3.2.).
Field: Individuals aged 65 and over in wave 5 and who have no partner when they become dependent.
Note: The figures given correspond to the mean ability to pay across 10 replications of simulations. Standard deviations between the means of the 10 replications are reported in parentheses. We use the lower bound of the LTC cost.

Figure 1
Ability to pay for LTC needs.



Source: SHARE data. We simulate trajectories of wave 5 individuals, using the transition model estimated on waves 1, 2, 4 and 5 (see subsection 2.3.2.).
Field: Individuals aged 65 and over in wave 5 and who have no partner when they become dependent.
Note: In Autria, 9% of people on average can pay for LTC needs with their income. The proportion goes to 15% (0.09+0.06) if we add financial assets, to 19% (0.09+0.06+0.04) if we take into account holiday homes and lands and to 37% (0.09+0.06+0.04+0.18) if we add lump-sum reverse mortgages on the main residence of individuals.

4. Work in progress

We are currently working to improve this paper in three main directions:

- Robustness tests have shown that the follow-up of mortality in SHARE data is quite imperfect (underestimation of deaths). Thus, we are working on a new transition model that uses probabilities of death from the Human Mortality Database combined with surmortality risks estimated with SHARE.
- Since SHARE data provides information on children and their location, we plan to include informal care from the family in our model to study to what extent it decreases the cost of LTC needs.
- Last, we intend to simulate the effect of public LTC coverage on the ability of individuals to finance their periods of disability and on social inequalities.

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