

Financing long-term care through housing in Europe

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Context

■ **Introduction** ■ Data ■ Method ■ Results ■ Discussion

- Population aging: 80+ = 5% in 2013, 12% 2060
- Increasing financial pressure on public/LTC systems
 - Decreasing public pension replacement rates
 - Private LTC insurance?
 - Very small market, 10% (Brown and Finkelstein 2008)
 - **Home equity** (Davidoff 2010)
 - How to extract equity from housing?
 - Downsizing
 - Sales in *viager*
 - **Reverse mortgages**

Objective

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- Explore to what extent home ownership is an insurance against the risk of **LTC**, by simulating the LS-payments that could be extracted from **reverse mortgages**
 - RM = credit operation which consists in borrowing on the value of the home and repaying interests at the end of the contract
 - Means to access illiquid housing wealth
 - "Aging in place"
 - RM have been developed in the US and the UK + growing interest in Europe (OECD 2013)

Literature – aging and housing

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- Housing wealth not used to support consumption during retirement (Venti and Wise 2001, Angelini et al 2011)
- RM may be interesting at old age (Venti and Wise 1991, Sinai and Souleles 2007)
 - Coda Moscarola et al (2015): RM could represent a powerful tool against income vulnerability in old age

Literature – LTC and housing

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- Little has been done on LTC expenses and housing
 - Mayhew et al (2010), ELSA data:
 - "Few households are able to pay for LTC based on income and savings but the number increases if housing assets are included"
 - + Stucki (2006), Masson (forth.)
 - Bockarjova et al (2015):
 - "Individuals with higher wealth enjoy a lower incidence rate of using LTC"

Database

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- SHARE data
 - ▣ Waves 1, 2, 3, 4, 5
 - ▣ Focus on **65+**
 - ▣ 9 countries: AT, DE, SE, NL, ES, IT, FR, DK, BE
- Information on:
 - ▣ Limitations with instrumental and basic activities of daily living (IADLs and ADLs)
 - ▣ Income, financial and housing assets

Resources of 65+ in Europe

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□ SHARE data: wave 5, 65+ (23,769 obs)

	% owners	Value of main residence (if >0)	Equivalised annual hh income	Net financial assets
Austria	49	288,438	20,789	22,642
Germany	58	232,049	20,860	35,471
Sweden	53	238,064	32,293	94,539
Netherlands	59	246,479	25,009	109,887
Spain	92	232,044	10,124	12,042
Italy	82	241,311	12,249	14,090
France	78	288,808	27,725	80,310
Denmark	67	213,877	25,083	113,627
Belgium	74	290,213	37,990	89,539

Methodology

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- To answer our question, we need 4 steps:
 - ▣ 1. Estimation of the periods of LTC needs
 - ▣ 2. Estimation of LTC cost
 - ▣ 3. Simulation of reverse mortgages
 - ▣ 4. Ability to pay for LTC

1. Periods of LTC needs (1)

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- We assume that an individual is dependent if he reports **difficulties** with at least 2 ADLs
 - ▣ ADLs: dressing, walking across a room, bathing, eating, getting in/out of bed, using the toilet
 - ▣ Triggers Medicaid and private policies benefits
- LTC risk? Number of periods of LTC needs?
 - ▣ **Microsimulation → year 2053**

Periods of LTC needs (2)

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- Waves 1-2 + 2-3 + 4-5
 - ▣ Probability of dying (logit model, n=31,203)
 - ▣ X: 2+ ADLs, age, sex, education, hh income, country
- Waves 1-2 + 4-5 (focus individuals alive in both waves)
 - ▣ Probability of becoming dependent (logit, n=17,803)
 - ▣ Probability of recovery (logit, n=1,248)
 - ▣ X: age, sex, education, hh income, country
- We simulate (x10) disability trajectories of individuals who are 65+ in wave 5 until they die (n=23,769)

Observed transitions

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Freq (%)	Alive	Deceased	Total
Non-dependent	27,587 (96.1)	1,129 (3.9)	28,716
Dependent	1,906 (76.6)	581 (23.4)	2,487

Freq (%)	Non-dependent	Dependent	Total
Non-dependent	16,783 (94.3)	1,020 (5.7)	17,803

Freq (%)	Non-dependent	Dependent	Total
Dependent	272 (16.8)	976 (60.3)	1,618

Probability of dying (1)

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	Average marginal effects
2+ ADLs	0.067***
Age	0.005***
Female	-0.029***
Income (country level)	
- 1st quintile	Ref
- 2 nd quintile	-0.006*
- 3rd quintile	-0.007**
- 4th quintile	-0.007*
- 5th quintile	-0.010**
Education	
- Primary	Ref
- Secondary	-0.006*
- Tertiary	-0.009**
Number of observations	31,203

Probability of dying (2)

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- Comparisons of estimated probabilities of death with life tables by country, sex and age show that SHARE underestimates the mortality
- Solution: we create a correcting factor by country, sex and age and multiply SHARE estimated probabilities by this factor

Austria	1.35
Germany	1.54
Sweden	1.57
Netherlands	1.78
Spain	1.01
Italy	1.29
France	1.54
Denmark	1.29
Belgium	1.90

Probability of becoming dependent

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	Average marginal effects
Age	0.006***
Female	0.012***
Income (country level)	
- 1st quintile	Ref
- 2 nd quintile	ns
- 3rd quintile	-0.014***
- 4th quintile	-0.023***
- 5th quintile	-0.025***
Education	
- Primary	Ref
- Secondary	-0.016***
- Tertiary	-0.027***
Number of observations	17,803

Probability of recovery

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	Average marginal effects
Age	-0.011***
Female	ns
Income (country level)	
- 1st quintile	Ref
- 2 nd quintile	ns
- 3rd quintile	ns
- 4th quintile	ns
- 5th quintile	ns
Education	
- Primary	Ref
- Secondary	0.052*
- Tertiary	ns
Number of observations	1,248

2. Estimation of LTC cost

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- We use 6 ADLs and 3 IADLs
 - ▣ LTC needs in hours (Pampalon et al 1991)
 - ▣ + Hourly labor costs (Eurostat 2015)
 - ▣ **Assumption: no public coverage, no informal care**

LTC needs (average on 65+ with limitations 2+ ADLs)

Austria	28 hours/w	41,006 €/year (v1)	24,172 €/year (v2)
Germany	27	38,714	23,200
Sweden	29	51,431	37,716
Netherlands	26	44,505	24,923
Spain	33	38,820	24,023
Italy	28	41,320	26,282
France	27	40,463	31,763
Denmark	26	48,722	38,896
Belgium	27	42,619	29,764

3. Simulation of reverse mortgages

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- $LS \text{ payment} = H \times \frac{(1+g)^{life_exp}}{(1+m)^{life_exp}}$
 - H: value of main residence owned - mortgage
 - g: growth rate of housing prices
 - Assumption = 0%
 - m: interest rate of the reverse mortgage
 - Assumption = 8%
 - Life tables from the Human Mortality Database
- Ex: if H=200,000 euros and age=80 in France (life expectancy=10 years), LS=92,710 euros today

4. Ability to pay for LTC (1)

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- We study the ability of individuals to pay for their periods of LTC needs depending on:
 - HH income – (home expenditure + food consumption)
 - + HH net financial assets
 - + Value of other real estate: holiday homes, land...
 - + Reverse mortgage

Ability to pay for LTC (2)

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- Income and assets are known in wave 5
- What about their evolution in time?
 - **Simplifying assumptions:**
 - Annual LTC cost remains unchanged during the simulation
 - Equivalised hh income remains unchanged during the simulation, even if the individual loses his/her spouse (survivor's pensions)
 - After one's spouse death, assets remain unchanged if the individual has no children and are divided by two if there are children

LTC risk and duration (weighted)

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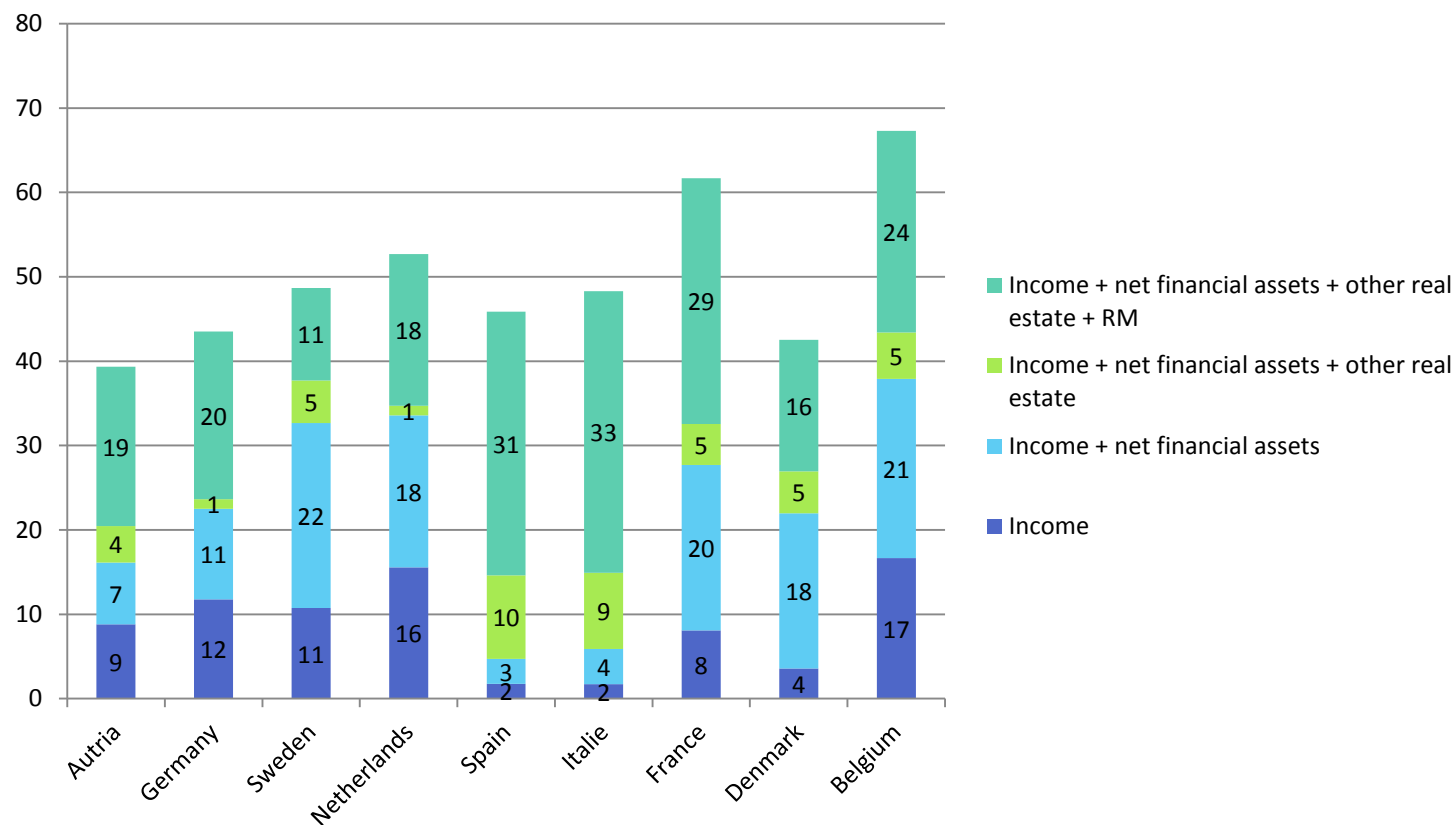
65+ in wave 5 (n=23,769)	LTC risk (%)	Duration if >0 (years)
Total	56.9	4.3
Male	45.5	3.8
Female	65.6	4.6
1st income quintile	63.2	4.2
5th income quintile	51.1	4.2
Primary education	64.0	4.5
Tertiary education	47.2	4.0
Austria	56.2	4.2
Germany	59.1	4.1
Sweden	33.9	3.4
Netherlands	33.7	3.7
Spain	67.0	4.8
Italy	62.3	4.5
France	51.1	3.8
Denmark	41.8	4.2
Belgium	55.1	4.3

LTC financing

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Ability to pay for LTC periods (% , cost v2)

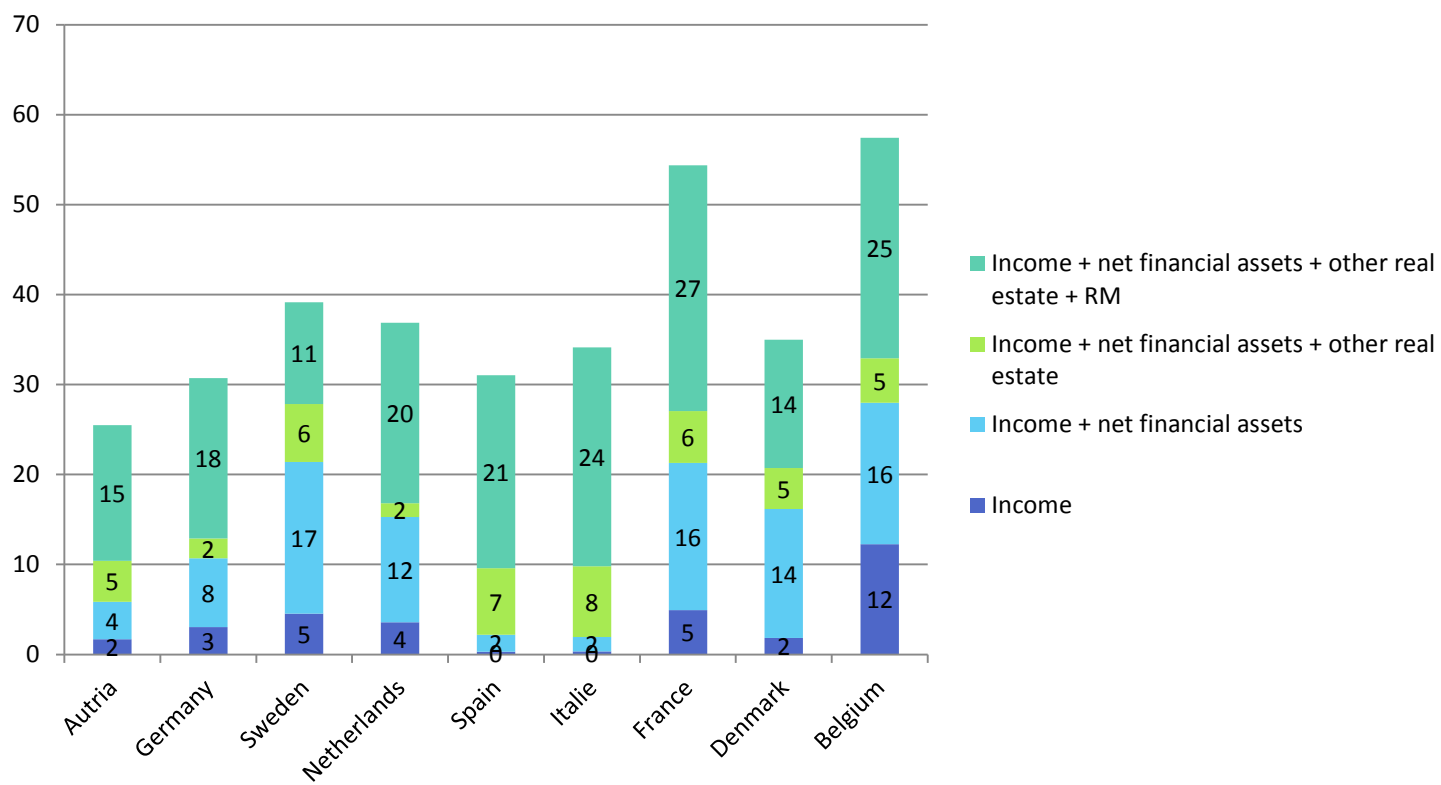
Individuals who experience at least one period of disability and who have no partner when they become dependent



LTC financing

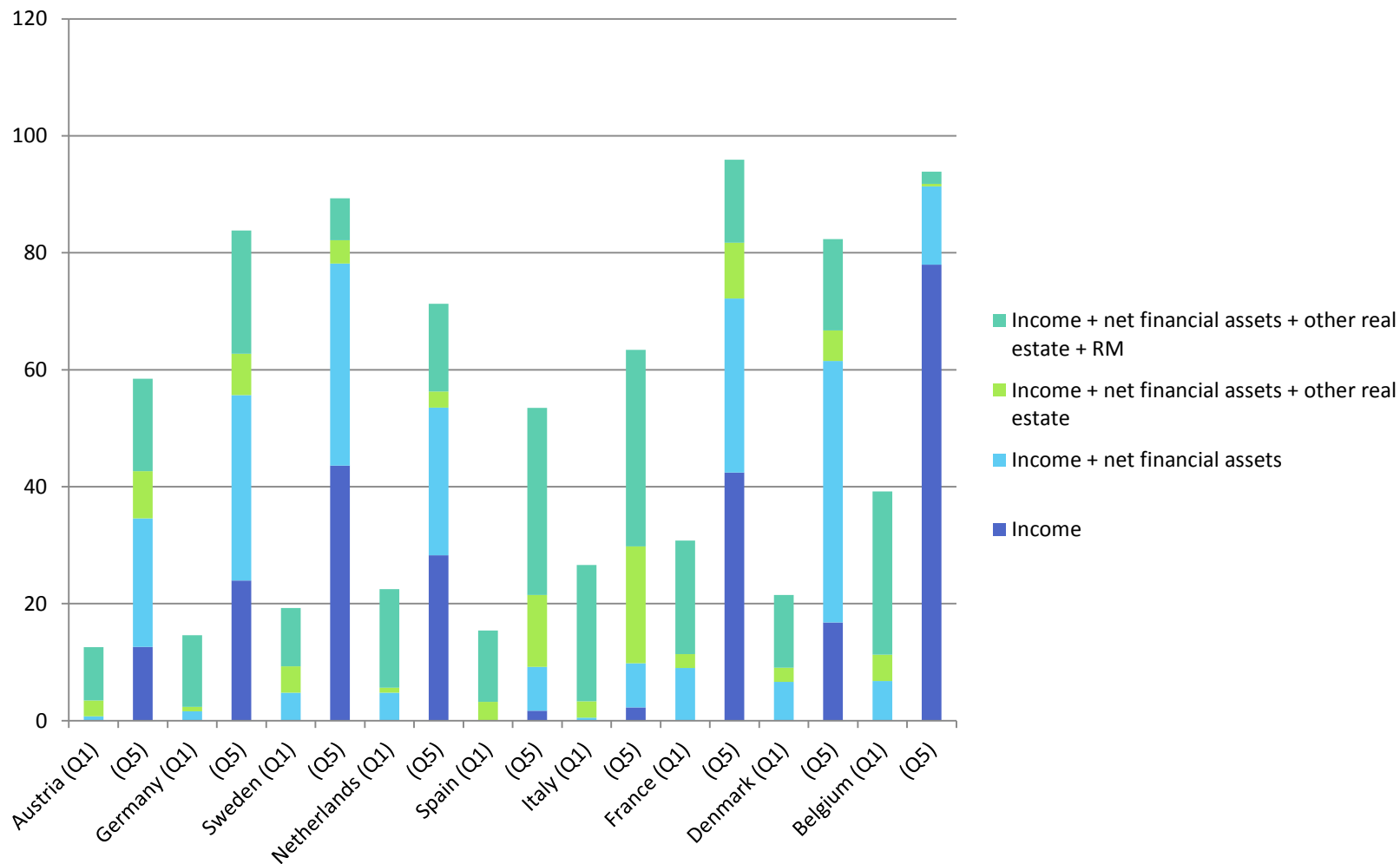
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Ability to pay for LTC periods (% , cost v1)



Low vs high incomes

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Conclusion

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- RM increase the proportion of individuals able to pay for LTC
- Low-income individuals face a higher risk of disability → RM products may not be adequate for those with the highest needs
 - Design of public policies?
- On average, 63% (51% if v2) of individuals cannot pay for LTC even if they use all their income and assets
 - Need for public coverage

Discussion

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- Further work remains to be done
 - ▣ Some assumptions can be relaxed
 - Introduction of informal care
 - Introduction of public coverage
 - RM on a fraction of the home (bequest motive)
 - ▣ Sensitivity tests
 - Different interest rates
 - Life expectancy

Thanks for your attention!

