Eligibility and inclusiveness of Long-Term Care Institutional frameworks in Europe

A cross-country comparison

A working paper by

Ludovico Carrino
(Ph.D. candidate)

Cristina Orso, Ph.D.
(Post-doc researcher)

Department of Economics, Ca'Foscari University of Venice

Outline and research questions

A. Comprehensive picture of how the status of vulnerability is defined and measured in main European LTC programmes
B. Proxy of inclusiveness of LTC systems in Europe
   - Comparison of assessment scales and eligibility rules through a simulation on the European elderly population interviewed in S.H.A.R.E.
C. Access to formal care and potential systems' failures: empirical analysis among eligible and non-eligible population

Main findings

- Significant heterogeneities exist with respect to:
  - assessments-of-need (dimensions of vulnerability)
  - eligibility conditions (minimum degree of vulnerability that gives access to LTC benefits)
  - inclusiveness (coverage) of LTC programmes
- Determinants of formal-care utilization differ between eligible and non-eligible individuals. Education effect: lower schooling increases risk of not receiving any formal care although being entitled to it.

Background: the concept of Vulnerability

- Vulnerability-risk is a crucial target of LTC programmes.
- Lack of a unique definition:
  - Different conceptual models and methods to identify vulnerable individuals.
  - Frailty, disability/dependency, co-morbidity.
  - Clegg et al. (2013), Rodríguez-Mañas et al. (2013), De Vries et al. (2011), Pel-Littel et al. (2009), Rockwood & Mitnitski (2007), Fried et al. (2004).
- Widely adopted tools for functional assessment:
  - ADL: bathing, dressing, toileting, transferring, continence, and feeding (Katz et al.,1970)
  - iADL: using the telephone, shopping, food preparation, housework, doing laundry, moving outdoor, performing own medications, handling finances (Lawton & Brody, 1969).
- Vulnerability in empirical analyses (Health Economics)
  - E.g., individuals' health-care utilization: functional- (mobility, ADL, iADL), cognitive-, subjective health- status, adopted as proxies of latent vulnerability-risk. Kalwij et al. (2014), Bonsang (2009), Bolin et al. (2008), Van Houtven & Norton (2004).

FOCUS ON THE INSTITUTIONAL SETTINGS

- Review of LTC institutional frameworks
  - OECD (2011, 2013), Colombo & Mercier (2012), de Meijer et al. (2011), Costa-Font et al. (2008), Pickard et al. (2007), Riedel and Kraus (2011) and Kraus et al. (2010), Da Roit and Le Bihan (2010), Ranci and Pavolini (2012).
  - Standardisation of needs-assessment; tailoring of care; adopting clinical guidelines.
- We focus on two specific and crucial aspects of LTC regulations:
  - Assessment-of-vulnerability methods
  - Eligibility rules: identifying "the" objectively-vulnerable individual
- For empirical purposes, our analysis is limited to LTC programmes characterized by:
  - an assessment-of-need based on medical conditions (functional/cognitive)
  - a set of clear-cut eligibility rules (i.e. a well-defined minimum level of vulnerability)

Country	Programme	In-cash / in-kind	Main legislative references
AUSTRIA	Pflegegeld	*C*	BGBl. 110/93, 37/99 (II)
BELGIUM	Vlaamse zorgverzekering *(Flanders & Brussells)*	*C*	R.D 30/03/99, B.S. 28/05/99
	APA	*C*	R.D. 5/03/90 B.S. 5/04/90
	Home-care INAMI/RIZIV	*K*	L 14/07/94, B.S. 27/08/94
CZECH REP.	Příspěvek na péči	*C*	Act.366/2011, act 108/2006
FRANCE	Allocation Personnalisée d'Autonomie	*K*	CFAS L.232-3/7 R. 232-7/14
	Action Sociale	*K*	CFAS, CNAV circ. 2013-52
GERMANY	Pflegeversicherung	*C/K*	SGB XI, 5. SGB XI-ÄndG
ITALY	Contributo Aiuto Familiare *(Friuli-Venezia Giulia)*	*C*	L.R. FVG 6/2006
	Progetto di Assistenza Continua *(Toscana)*	*C/K*	D.G.R. n.370/2010
SPAIN	Promoción de la Autonomía Personal	*C/K*	Ley 39/2006, R.D. 179/2011

	Program (scale)	Assessment-of-need ADL	iADL	others	Minimum eligibility threshold
AT	*Pflegegeld*	✓	✓	M, C	60h/month care-need+
BE	*APA*	p	p	C	7 points
	Home-care INAMI/RIZIV (BESADL)	✓		C	washing / dressing/ cognition
	Vlaamse zorgverzekering (BEL profielschaal)	✓	✓	C	35 points
CZ	*Příspěvek na péči*	✓	✓	C	3 (12) deficits
DE	*Pflegeversicherung*	✓	✓	M, C	90m/day care-need+
ES	*Promoción de la Autonomía Personal*	✓	✓	C	25 points
FR	*APA (AGGIR)*	✓*	**	C	2 ADL / cognition
	Action Sociale (AGGIR)	✓*	**	C	Washing/cooking/ housework
IT (FVG)	*CAF(KATZ)*	✓		C	2 ADL or cognition
IT (TO)	*PAC (MDS HC)*	✓*		C	2 ADL + cognition

C = cognitive limitations; M = advanced medication procedures; p = partial coverage

* Incontinence not included; ** iADL do not enter the algorithm for GIR classification; + Austria: at least one ADL and one iADL limitations must occur. Germany: out of the 90m of need, at least 45m must come from ADL limitations.

For Czech Republic numbers in brackets refer to old legislation.

Weighting of vulnerability-outcomes in LTC regulations

Country	Program (*scale*)	Most weighted ADL limitations	Most weighted non-ADL limitations
AT	Pflegegeld	washing dressing, WC	cooking, housetasks
BE	APA	-	-
	Home-care INAMI/RIZIV (*BESADL*)	washing / dressing	cognition
	Vlaamse zorgverzekering (*BEL profielschaal*)	-	housetasks, cognition
CZ	Příspěvek na péči	-	-
DE	Pflegeversicherung	bathing, eating, continence	cognition
ES	Promoción de la Autonomía Personal	eating, WC	-
FR	APA (*AGGIR*)	-	cognition
	Action Sociale (*AGGIR*)	washing	cooking, housetasks
IT (FVG)	CAF (*KATZ*)	-	cognition
IT (TO)	PAC (*MDS-HC*)	-	cognition

INCLUSIVENESS OF LTC PROGRAMMES

- Each LTC programme adopts a different definition for the minimum level of "objective vulnerability".
  - Scales composition is highly heterogeneous, vulnerability risk is not uniquely characterized among programmes. Within each assessment-of-need, limitations are often given un-equal weights.
- How do differences in eligibility rules affect programmes' inclusiveness (size of potentially covered population)?
- Different eligibility rules should be compared at:
  - the extensive margin: which limitations (health-outcomes) are included in the assessments-of-need?
  - the intensive margin: how many limitations are needed (among the ones included in the scale) in order to be eligible, in each regulation?
- Incidence rates for ADL, iADL and cognitive impairment must be considered: need for micro-data.

(In)directly-adjusted inclusiveness rates

- Directly-adjusted inclusiveness rates:
  - Method: simulation of each LTC eligibility rules on a standard population. Each individual in the standard-population is labelled as “eligible” or ”non-eligible” to a LTC programme, depending on whether her medical-profile satisfies the programme’s **minimum requirements**.
  - For each LTC regulation $\tilde{J}$ we obtain a share of eligible individuals (% of the standard population), that we call *inclusiveness rate* $\omega_{\tilde{J}}$.

$$\omega_{\tilde{J}} = \frac{\mathrm{E}_{\tilde{J}}}{N} = \frac{\text{eligible population under regulation } \tilde{J}}{\text{standard population}}$$

  - The inclusiveness rates are comparable across programmes.
- Indirectly-adjusted inclusiveness rates (pairwise comparison between two regulations *J* and *Z*):
  - Method: counterfactual exercise of applying LTC regulation of country *Z* on the population of country *J*.

$$\chi_{\tilde{J},\tilde{Z}|J} = \frac{\mathrm{E}_{J,\tilde{Z}}}{\mathrm{E}_{J,\tilde{J}}} = \frac{\text{eligible population in J under regulation } \tilde{\mathrm{Z}}}{\text{eligible population in J under regulation } \tilde{\mathrm{J}}}$$

Data

- SHARE wave 2, 11 european countries, 17442 individuals aged 60+
- The health-issues included in the assessments-of-need mostly consists of ADL (Katz et al. 1970), iADL (Lawton & Brody 1969) and cognitive status (see table).
- The SHARE survey provides information for all of these limitations (except for advanced medications / post-surgery conditions)

ADL	Non ADL
Bathing & hygiene ✓	Communication ✓
Dressing ✓	Shopping for groceries/medicines ✓
Using the toilet ✓	Cooking ✓
Transferring ✓	Housekeeping ✓
Continence ✓	Doing laundry ✓
Feeding ✓	Moving outdoor ✓
Moving indoor ✓	Responsibility for own medications ✓
Hygiene for post-surgery conditions or advanced medications ✗	Cognitive impairment ✓

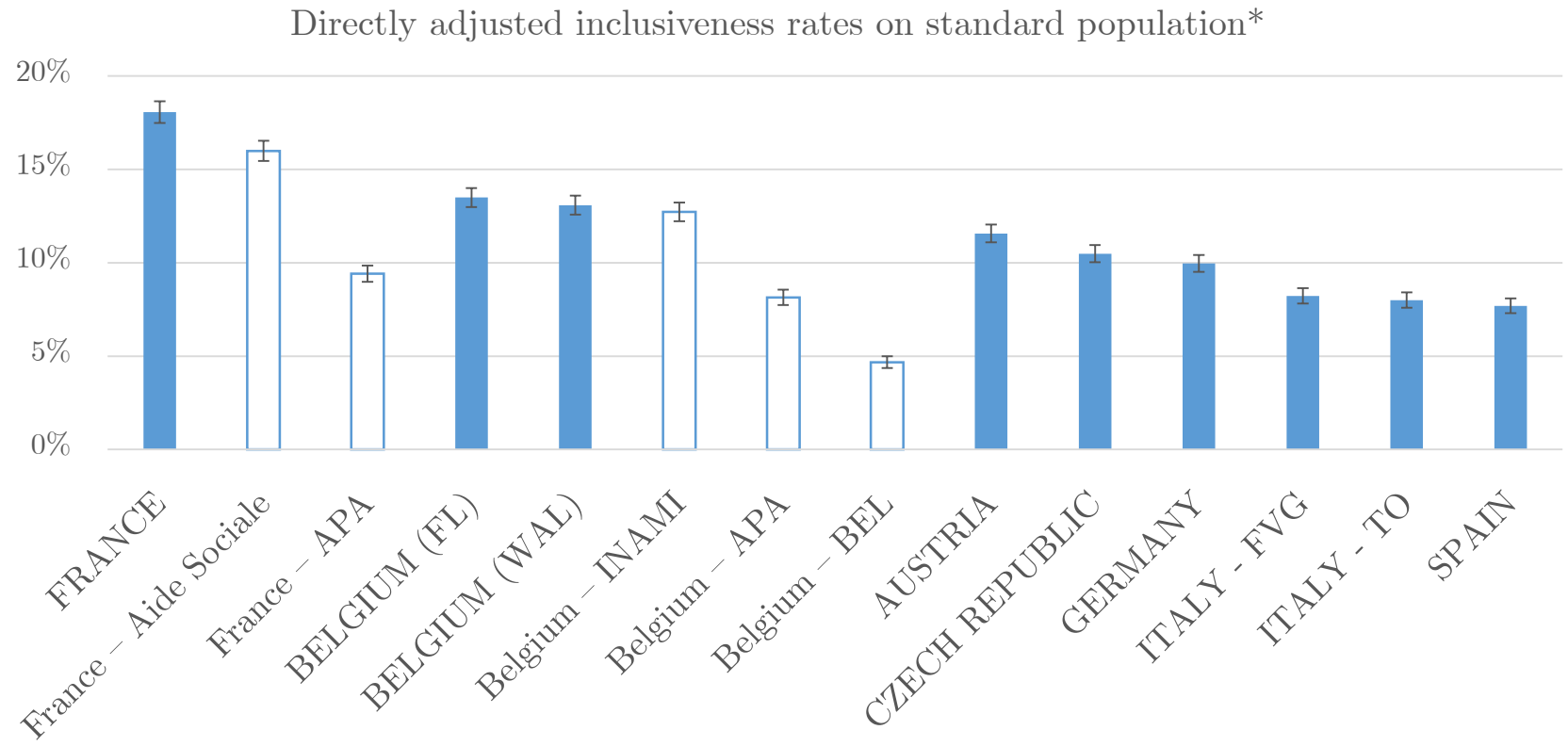
✓ = information available in SHARE; ✗ = information missing from SHARE

The underlined tasks do not belong to the Katz's ADL scale, but are treated as basic activities of daily livings in the LTC regulations that include them.

	AT	BE			CZ	DE	FR		ES	IT		SHARE
		APA	INAMI	FL			APA	AS		FVG	TO	wave 2
Continence	20	-	1-4	0-3	-	44	-	-	-	0-1	-	✓
Dressing	20	0-3	1-4	0-3	0-1	12	0-1	0-1	11.9	0-1	0-4	✓
Washing	25		1-4	0-3	0-1	52	0-1	0-1	11.7	0-1	0-4	✓
Nutrition	30	0-3	1-4	0-3	0-1	51	0-1	0-1	16.8	0-1	0-4	✓
Use of WC	30	-	1-4	0-3	0-1	32	0-1	0-1	14.8	0-1	0-4	✓
Transferring	15	0-3	1-4	0-3	0-1	4	0-1	0-1	9.4	0-1	0-8	✓
Moving						(30)	0-1	0-1	12.3	-	0-4	✓
Communication	10	0-3	-	-	0-1	-	-	-	-	-	-	✓
Cooking	30	-	-	0-3	0-2	(60)	-	°	3.6	-	-	✓
Household tasks	20	0-3	-	0-15		(40)	-	°	1.6	-	-	✓
Laundry	10		-	0-6	-	(20)	-	-	0.8	-	-	
Shopping	10	-	-	0-3	-	(20)	-	-	2	-	-	✓
Taking medics.	3	-	-	0-3	0-1	-	-	-	2.9	-	-	✓
Med. procedures	10	-	-	-	-	12	-	-	-	-	-	✗
Mental/cognitive	25	0-3	[1-4]	0-27	0-1	+	+	-	(15.4)^	+	*	✓
Moving outdoor	10	-	-	-	-	(20)	-	-	12.2	-	-	✓
Totale	*243*	*18*	*24*	*75*	*10*	*385*	*8*	*8*	*100*	*6*	*28*	
threshold	60	7	-	35	3	90+	2	-	25	2+	8*	

Units of measurement: Austria – hours/month; Germany – minutes/day; Belgium, Czech R., France, Italy, Spain – scale score.
+ Significant cognitive impairment is sufficient for eligibility;
* Besides dependency in BADL, the regulation assesses separately cognitive impairment and mental/behavioral status, see Table 2-25.
^ Spain adopts a specific scale for cognitively impaired individuals.
German's guidelines in brackets are imputed from the Austrian regulation (originally left as "unspecified" in the legislation)

Results: directly-adjusted inclusiveness rates



* Each LTC regulation has been simulated on a population of 17,442 individuals aged 60+ from SHARE wave 2 (Austria, Belgium, Czech Republic, Denmark, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland).

- Non-comprehensive analysis: some programmes could not be included
- There might be discrepancies between regulations an actual need evaluations
- Health-information in SHARE are self-reported

Determinants of formal-care utilization

- Objective: investigating the potential determinants of formal home-care utilization in European countries, accounting for the "eligibility status" of individuals.
  - focus on the potential "failures" of LTC programmes: vulnerable individuals (entitled to home-nursing services) without actual access to any formal care.
  - Role of education (Nutbeam, 1998; Parker et al. 1995; Sun et al., 2013; Cutler & Lleras-Muney, 2012)

Data and descriptive statistics

- Data: SHARE waves 1-2, individuals aged 60+ having children (not co-residing), living in Austria, Belgium, France and Germany.

	All countries	Austria	Belgium	France	Germany
N	10100	1437	3116	2682	2865
Receive formal home care	9.9%	4.2%	12.4%	17.15%	3.14%
Eligible	10.5%	8.2%	15.3%	11.85%	5.54%
Female	55.6%	59%	54.8%	58.35%	52.11%
Age	70.65	70.1	71.01	71.4	69.75
Retired	79.5%	82.2%	74.6%	84.17%	79.22%
Years of education	9.6	7.71	9.19	7.34	12.96
Fraction of daughters	48%	50%	46.5%	47.1%	49.9%
1+ ADL	17.1%	14.6%	19.9%	18.3%	14.24%
1+ iADL	20.3%	20.2%	22.7%	22.29%	15.74%
Bad subjective health	38.3%	32.7%	32.1%	42.2%	44.4%
Limited in activities	49.5%	51.8%	45.5%	45.1%	56.8%
Having 1+ chronic diseases	82%	77.3%	83.5%	83.92%	80.66%
Diagnosed with diabetes	11.5%	10.3%	10.6%	10.8%	13.9%
Diagnosed with cancer	6%	3.6%	6.2%	6.3%	6.6%
Hip or femoral fractures	2.3%	2.4%	3.3%	1.6%	1.8%

Empirical strategy

- Eligible and non-eligible individuals are likely to differ in terms of accessing to and using home-care services. We need to analyze formal care utilization differentiated by the eligibility status.
  - two probit models for the probability of using formal home-care conditioning on the eligibility status of the respondents
  - eligibility is a country-specific dummy: a respondent is eligible to at least one LTC programme in one's own country if her medical profile satisfies the minimum vulnerability requirements.
- Dependent variable: dummy for receiving formal nursing/personal home-care or meals on wheels (OECD definitions).
- Explanatory variables: socio-demographic information, health-conditions, economic resources, housing location, country dummies.
- Children characteristics (fraction of daughters) as proxy for informal care provision (endogenous).

Results (1): education

Dep. var.: formal home-care utilization (dummy)	Eligible		Non-eligible		Whole sample	
	Estimates	St. Errors	Estimates	St. errors	Estimates	St. Errors
Years of education	0.012**	(0.005)	0.000	(0.590)	0.000	(0.000)
Using dummies for ISCED levels, excluding ISCED 0,1,2:						
Medium education ISCED 3,4	0.115**	(0.052)	0.009**	(0.004)	0.016***	(0.005)
High education ISCED 5,6	0.173***	(0.069)	-0.005	(0.005)	0.003	(0.006)
Country-, housing location-, income-, wealth-, wave- dummies	yes		yes		yes	
Observations	994		9106		10100	
Pseudo R2	0.191		0.216		0.28	

Results (2): health-variables

Dep. var.: formal home-care utilization (dummy)	Eligible		Non-eligible		Whole sample	
	estimates	St.errors	Estimates	St.errors	estimates	St.errors
Bad self-perceived health	0.179***	(0.046)	0.006	(0.004)	0.013**	(0.005)
Feel limited in activities	0.044	(0.064)	0.023***	(0.005)	0.030***	(0.005)
Have long-term illnesses	0.005	(0.052)	0.002	(0.004)	0.002	(0.005)
Euro-D score (1 to 12)	0.006	(0.007)	0.003***	(0.001)	0.003***	(0.001)
Orientation impaired	-0.02	(0.017)	0	(0.002)	0.004	(0.012)
# mobility limitations	0.016*	(0.009)	0.002**	(0.001)	0.004***	(0.001)
# ADL	0.044***	(0.014)	0.006	(0.004)	0.013***	(0.002)
# iADL	0.024**	(0.011)	0.010***	(0.002)	0.011***	(0.002)
1+ Chronic diseases	0.165	(0.079)	0.007	(0.005)	0.015*	(0.008)
Chronic diseases:						
Diabetes	0.069	(0.047)	0.010**	(0.005)	0.014**	(0.006)
Cancer	0.024	(0.061)	0.026***	(0.006)	0.027***	(0.007)
Fracture	0.038	(0.059)	0.018**	(0.009)	0.023***	(0.009)
Country-, housing location-, income-, wealth-, wave- dummies	yes		yes		yes	
Observations	994		9106		10100	
Pseudo R2	0.191		0.216		0.28	

Results (3): socio-demographic variables

Dep. var.: formal home-care utilization (dummy)	Eligible		Non-eligible		Whole sample	
	estimates	St.errors	Estimates	St.errors	estimates	St.errors
Age	0.012***	(0.003)	0.001***	(0)	0.002***	(0)
Retired	0.031	(0.046)	0.009**	(0.004)	0.011**	(0.005)
Female	0.068	(0.044)	-0.003	(0.004)	0.000	(0.005)
Fraction of daughters	-0.091*	(0.048)	0.005	(0.004)	0.002	(0.005)
Number of children	-0.005	(0.012)	0	(0.001)	-0.001	(0.001)
Sociability	-0.025	(0.028)	-0.002	(0.002)	-0.003	(0.002)
Seen dentist	-0.001	(0.01)	0.003***	(0.001)	0.003**	(0.001)
Country-, housing location-, income-, wealth-, wave- dummies	yes		yes		yes	
Observations	994		9106		10100	
Pseudo R2	0.191		0.216		0.28	

THANK YOU

for your attention !

ludovico@unive.it