

Formal or informal: Where do social gradients regarding the type of long-term care reception exist in Europe? A crossnational analysis of 15 countries

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1a. Introduction



▶ <u>Starting point:</u>

- Established relationship: Socio-economic status (SES) → health & disability in old age Knesebeck 2002, 2009; Bauer et al. 2008; Mackenbach et al. 2008; Jürges 2009
- Follow-up question:
 - Is there (again) an impact of SES on care outcomes (e.g. type of care)?
 - What is the moderating effect of social policy in cross-national comparison?

Literature: Care type (formal vs. informal):

- Education, income \rightarrow mixed results

Broese et al. (2006); Sarasa and Billingsley (2008); Litwin and Attias-Donfut (2009); Marcinkowska and Sowa (2011); Suanet et al. (2012); Rodrigues & Schmidt (2012)

- Partner, children \rightarrow more informal care

Broese et al. (2006), Jimenez et. al. (2011), Sole-Auro and Crimmins (2012), Suanet et al. (2012)

Deficits:

- Impact often only as fixed effect in country-pooled models
- Reference to 'old' Esping-Andersen welfare state typology (1980s!)
- Missing direct interaction with long-term care policies
- Only selective and few countries compared

1b. Definitions



- Regular instrumental support in old age
 - Regular, i.e. at least weekly services for elderly experiencing functional limitations (WHO 2005) regarding basic and instrumental activities of daily living (ADL + IADL)
- Type of regular instrumental support:
 - Formal care/help: contractual, paid, regular service by professional
 - Informal care/help : non-contractual, non-paid, regular services most often provided by family members

Social gradient:

Socio-economic resources (education, income, social capital)



Type of care/help received (informal vs. formal) 1c. Research question & theoretic model





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1c. Theoretical model: Assumed social mechanisms





1d. Research strategy: Macro & micro

- 1. <u>Country-level comparative analysis (macro)</u>
 - Care regimes (Sources: EU-Com., OECD, ANCIEN, country reports)

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7 country level indicators for "direct approach"

- 5 clusters of countries for "indirect approach"
- 2. <u>Combined macro-micro analysis</u>
 - Logistic regression analysis by care regime cluster ("indirect approach")
 - Hierarchical regression analysis (ML & MCMC) estimates random effects (e.g. income) for each country ("direct approach")



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2. Country-level comparative analysis

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Country-level comparative analysis 2a. Care regimes: Variables



Indicator	Description	Values	Sources
Generosity	Public long-term care expenditure in % of GDP (2010)	Ø 1.58 SD 1.07	OECD 2011/2013, Rodrigues et al. 2012, Lypszic et al. 2012, country reports
Coverage	Formal care reception in % of 65+	Ø 12.13 SD 6.18	Rodrigues et al. 2012
Access	Means-testing in institutional & home care	1-3	Kraus et al. 2010
Coordination	Internal & external coordination of LTC	1-5	Colombo et al. 2011, Kraus et al. 2010, country reports
Cost-sharing	Relevance of private out-of-pocket-costs	1-4	OECD 2011, Kraus et al. 2010, CP
Public services	Public expenditures of long-term care services in % of GDP (2010)	Ø 1.30 SD 1.09	Lipszyc et al. 2012
Discrete CBs	Role of discrete cash benefits	0-5	country reports/own calculation
Legal obligation	Legal obligation of instrumental and financial care for family members	0-1	EUROFAMCARE 2004, Rodrigues et al. 2012

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Country-level comparative analysis 2b. Cluster analysis: care regimes





Table 2.11: Long-term care typology

Country	Cluster	Level of resources necessary for formal care	Level of support of informal care
DK, NL, SE	1	resource-independent	none
BE, FR	2	resource-mild	limited
AT, CZ, DE	3	resource-moderate	explicit
EE, HU, SI	4	resource-intensive	limited
ES, IT, PL, PT	5	resource-intensive	explicit





3. Combined Macro-Micro Analysis



3a. Data & method

- Survey of Health, Ageing and Retirement (SHARE)
 - Mode: Face to face, CAPI + drop-off questionnaires
 - Wave/Date: 1/2004 2/2006 4/2011
 Country No.: 11 12 16
 Participants 50+: 31,115 34,415 58,489
- >> Outcome variable: Regular instrumental support
 - Daily and weekly care (ADLs) and help (IADLs) for older persons 65+
 - Support from inside and outside the household
 - Formal care and help, and intra-generational (e.g. spouse), inter-generational (e.g. children) and non-familial support (→ informal support)
- ▶ Methods
 - Single-level logistic regression model (by care regime cluster)
 - Hierarchical logistic regression model (by country)



Individual-level predictor variables

 Educational res.: low/medium/high (ISCED)
 Economic res.: Equivalised net household income (quartiles) Subjective financial distress (yes/no)
 Family res.: Cohabiting partner (yes/no) Number of children (none/one/two/3+) Cohabiting adult children (yes/no) Siblings (yes/no)

Control variables (individual level)

– Sex (male/female), urbanity (city/town/rural), age (five cat.), ADLs, IADLs

Country-level predictor variables

- Public LTC expenditure (in % of GDP, 2010)
- Level of coordination within long-term care system (2-6)
- Relevance of discrete cash benefits (0-5)

3c: Descriptives: Regular instrumental support (care + help)



Total instrumental support (absolute)



Support form: 🖉 Inside hh (daily) 🖉 Outside hh (daily) 🖉 Outside hh (weekly)

Regular instrumental support by type



Type 🖉 Informal supp. (only) 🖉 Formal supp. (only) 🖉 Mixed supp.

(n = 5,209)

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3c: Bivariate Analysis by care regime





3d. Indirect approach: Logistic regression by regime (ORs)



	DK-NL-SE	BE-FR	AT-CZ-DE	ES-IT-PT	EE-HU-SI
	OR (CI 95 %)	OR (CI 95 %)	OR (CI 95 %)	OR (CI 95 %)	OR (CI 95 %)
Edu: mid	.57 (.30, 1.04)	.95 (.65, 1.40)	1 20 (75, 1.91)	3.97*** (1.73, 8.80)	1 30 (72, 2.30)
Edu: high	.91 (.43, 1.84)	1.15 (.76, 1.74)	2.32** (1.29, 4.14)	2.50* (1.18, 5.15)	2.48* (1.21, 4.92)
Income: 2nd Quar.	.69 (.35, 1.33)	1.45* (1.02, 2.09)	.74 (.43, 1.28)	1.16 (.66, 2.04)	.86 (.48, 1.53)
Income 3rd Quar.	.91 (.45, 1.80)	1.49 (.99, 2.25)	.95 (.53, 1.69)	1 35 (76, 2.39)	.55 (.24, 1.17)
Income 4th Quar.	1.13 (.47, 2.63)	1.46 (.96, 2.23)	1.67 (.92, 3.04)	1.99* (1.12, 3.57)	.67 (30, 1.42)
Ends-meet: easily	1.23 (.62, 2.53)	1.13 (.84, 1.52)	1.21 (.80, 1.85)	1.10 (.71, 1.70)	1.86* (1.15, 3.02)
Siblings: yes	1.31 (.77, 2.23)	1.17 (.88, 1.56)	1.07 (72, 1.60)	.99 (.64, 1.55)	.81 (.50, 1.30)
Partner: yes	.60 (.32, 1.09)	.70* (.52, .95)	.30*** (.18, .49)	.66 (.42, 1.03)	<u>58 (</u> 30, 1.08)
1 child	.56 (.23, 1.34)	.79 (.48, 1.29)	.55 (.29, 1.07)	.66 (.31, 1.40)	.44* (.23, .86)
2 children	.29** (.12, .67)	.88 (.55, 1.40)	.53* (. <mark>1</mark> 9, .99)	.92 (.47, 1.83)	.43* (.22, .85)
3+ children	.35* (.16, .79)	1.13 (.72, 1.76)	.50* (. <mark>1</mark> 6, .98)	.80 (.42, 1.59)	.21*** (.08, .50)
Cohabiting child	1.94 (.45, 7.08)	.91 (.59, 1.41)	.53* (.30, .90)	.51** (.32, .80)	.47* (.23, .89)
Town	.74 (.37, 1.52)	.84 (.62, 1.14)	.64 (.39, 1.06)	1.40 (.82, 2.44)	.86 (.50, 1.48)
City	.70 (.33, 1.50)	.85 (.57, 1.25)	1.09 (.66, 1.81)	2.24** (1.26, 4.06)	.80 (.41, 1.53)
70-74	1.59 (.55, 4.80)	.69 (.40, 1.20)	1.20 (.62, 2.34)	2.96* (1.17, 8.30)	1.69 (.58, 6.15)
75-79	1.96 (.72, 5.65)	1.16 (.70, 1.94)	.95 (.48, 1.92)	2.60* (1.10, 6.95)	1.14 (.37, 4.28)
80-84	4.47** (1.77, 12.46)	1.54 (.94, 2.55)	1.25 (.65, 2.44)	3.23* (1.36, 8.69)	2.68 (.97, 9.52)
85+	3.33* (1.32, 9.24)	2.09** (1.26, 3.50)	1.35 (.70, 2.68)	3.30* (1.37, 8.99)	3.33* (1.17, 12.05)
Female	.70 (.41, 1.19)	1.27 (.94, 1.71)	.95 (.60, 1.52)	1.14 (.73, 1.82)	1.27 (.69, 2.40)
ADLs	1.01 (.81, 1.25)	1.01 (.89, 1.14)	1.30*** (1.13, 1.49)	1.13 (.99, 1.29)	1.14 (.99, 1.32)
IADLs	1.14 (.90, 1.44)	1.03 (.89, 1.18)	1.05 (.88, 1.24)	1.06 (.90, 1.24)	1.18 (.98, 1.42)
Constant	.50 (.12, 2.02)	.35** (.18, .68)	.17*** (.06, .44)	.03*** (.01, .10)	.07*** (.02, .27)
Observations	401	939	1,180	933	1,088
Log Likelihood	-201.60	-602.27	-358.70	-332.67	-265.11
Nagelkerke R-square	.158	.075	.158	.144	.158
Akaike Inf. Crit.	447.20	1,248.55	761.40	709.34	574.22
Notes:	*P < .05				
	**P < .01				

Tab. 3: Support type received (0 = informal only, 1 = formal/mixed)

 $^{***}P < .001$

3d. Indirect approach: Logistic regression by regime (AMEs)





3d. Indirect approach: Logistic regression by regime (AMEs)





<u>4a. Direct approach:</u> Hierarchical regression model



Varying intercept only: fixed effects

Varying intercept + slope: random effects

Tab. 6: Support type received (0 = informal only, 1 = formal/mixed)

	MCMCalmm	MI	
		ML	
	(post.mean) OR (CI 95 %)	OR (CI 95 %)	
Edu: mid	1.10(.00, 1.58)	1.00 (.84, 1.33)	
Edu: high	2.19^{**} (1.54, 3.37)	1.67^{***} (1.29, 2.17)	
Income: 2nd Quar.	1.01 (.77, 1.36)	1.04 (.83, 1.30)	
ncome 3rd Quar.	1.08(.77, 1.48)	1.06(.85, 1.35)	
income 4th Quar.	1.50^{*} (1.08, 2.26)	1.41^{**} (1.09, 1.82)	
Ends-meet: easily	1.15(.87, 1.48)	1.18 (.05, 1.43)	
Siblings: yes	1.18 (.93, 1.49)	1.12(.94, 1.34)	
Partner: yes	.38 ^{**} (29,.50)	.59*** (<mark>.</mark> 49, .72)	
l child	.49** (33,.75)	$.62^{**}$ (.46, .83)	
2 children	.55** (36,.82)	$.63^{**}$ (.48, .83)	
3+ children	58** (44,.81)	.63** (.48, .83)	
Cohabiting child	.58** (44,.81)	.59*** (.47, .76)	
ľown	.91 (.70, 1.19)	1.00 (.81, 1.23)	
City	1.18(.89, 1.69)	1.20(.95, 1.52)	
70-74	1.23(.77, 2.14)	1.16(.82, 1.62)	
75-79	1.48(.95, 2.34)	1.37(.99, 1.90)	
80-84	2.44^{**} (1.58, 3.84)	1.99^{***} (1.45, 2.73)	
85+	2.45^{**} (1.65, 4.25)	2.26^{***} (1.64, 3.11)	
Female	$1.35^{*}(1.01, 1.75)$	1.12(.93, 1.36)	
ADLs	1.12^{***} (.1.04, 1.21)	1.10^{**} (1.03, 1.17)	
IADLs	1.06(.06, 1.14)	1.08(.99, 1.16)	
Intercept	.10** (.04, .24)	0.12^{***} (.07, 0.22)	
Observations	4,541	4,541	
Eff.samp	729	-	
ICC Î	-	14.72	
DIC/BIC	2492.52	3,779.48	
Notes:	*P < .05		
	**P < 01		

***P < .001



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-1.0

0.0

0.5

1.0

4b. Random effects * Country-level variables

r= -.00

3.5

4.0

3.0





Public expenditure LTC in %

Education*Preference formal care



Income*Discrete Cash Benefits



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5. Conclusion

- High (tertiary) education is positively associated with (some) formal assistance reception in Central-, Southern and Eastern European countries but not in Northwestern Europe
- A moderate effect for income (1st vs. 4th quartile) and financial distress is visible only in Southern and Eastern Europe. High income increases the probability to receive some formal assistance by 8 % in the Mediterranean and making ends meet easily accounts for a 4 % difference in Eastern Europe.
- Cohabiting children are associated with lower probability of formal assistance except for North-western Europe, whereas cohabiting partner lower the probability to receive any formal support by about 10 % only in Central and Western Europe (and Northern Europe).
- Hierarchical regression analysis shows that the effects of income and ecucation vary across countries:
 - The effect of education does correspond with popular preference for formal care arrangements. In countries where informal/familial care preference dominates, the effect of education is stronger regarding formal care reception.
 - The effect of income is uncorrelated to the overall level of public spending for long-term care but correlates strongly with **how** it is spent. The income-gradient is stronger in countries where discrete cash benefits dominate public long-term care schemes like Austria, Italy, Spain or Czech Republic.



6. Limitations

- Non-coverage institutional care, home care grey market solutions undercoverage
- Small-n (formal care usage + country sample)
 - Not possible: differentiation 'mixed' and 'formal care only' by country
 - Not possible: differentiation of formal care and help by frequency
- Difficulty measuring 'formalised' familial care



Thank you for your attention!

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