



Work and well-being of informal caregivers in Europe

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Motivation

- Increasing need for long-term care [▶ Details](#)
- The majority of care is provided informally
 - ▶ personal care: dressing, bathing or showering, eating, getting in or out of bed
 - ▶ practical household help: home repairs, gardening, transportation, shopping
- Increased female labour force participation, increased mobility, and changing social values reduce the number of informal caregivers
- Policies aim to encourage informal caregiving to limit increase in public health care expenditures (e.g. tax benefits, caregiver allowances)

Research question and contribution

How does caregiving to an elderly parent affect informal caregivers' labour market outcomes, cognitive ability, and health?

- Develop theoretical framework, which conceptualizes the trade-off between work, leisure, and caregiving (WP)
- Consider differences in the caregiving intensity due to the frequency of care and the caregiving context
 - ▶ **daily, weekly, and any frequency** of caregiving
 - ▶ caregiving in **family care countries** vs. **formal care countries**
- Address (time-constant) individual heterogeneity and (time-varying) endogeneity of caregiving

Pathways and relevance

1. Labour market outcomes

- Time commitment of caregiving (Heitmueller and Inglis, 2007) ↓
- Respite from caregiving activities; need for additional income (Carmichael and Charles, 1998, 2003) ↑
- Concerns: Productivity of the workforce, financial vulnerability of caregivers

Mixed evidence on labour market outcomes

- ▶ Carmichael and Charles (1998, 2003), Heitmueller and Michaud (2006), Heitmueller (2007), van Houtven et al. (2013), King and Pickard (2013), Bolin et al. (2008), Crespo and Mira (2010)

Pathways and relevance

2. Health outcomes and cognitive ability

- Stress and social isolation (Aneshensel, 1995; Vitaliano et al., 2007) ↓
- Cognitive stimulation and increased physical activity (Fredman et al., 2008) ↑
- Concerns: Health care expenditures in the long run, quality of care

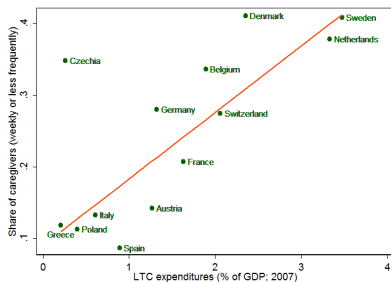
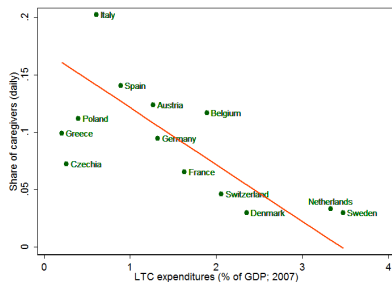
Mixed evidence on health outcomes

- ▶ Aneshensel (1995), Piquart and Sørensen (2003, 2005), Fredman et al. (2008), Coe and van Houtven (2009), Brown et al. (2009)

Little knowledge about cognitive effects

- ▶ Caswell et al. (2003), Vitaliano et al. (2005, 2007, 2011), de Vugt et al. (2006), Lee et al (2004), Buyck et al. (2011), Bertrand et al. (2012)

Caregiving rates and LTC expenditures



- Formal care options are used to **complement** infrequent informal care but are used as **substitutes** for frequent or more involved informal care (Bonsang, 2009)

Institutional characteristics and social values

	Public LTC exp. (% of GDP) ^a	Public health exp. (% of total) ^b	Nursing home beds (per 1000 pop 65+) ^c	Caregiver allowance ^d	Elderly care state responsibility ^e	Old age dep. ratio ^f
Countries with predominantly family based LTC						
Poland	0.70	70.28	17.10	0	2.34	19.40
Czechia	0.80	84.18	43.30	0	2.45	23.40
Spain	0.80	73.05	29.30	0	2.86	25.80
Germany	1.40	76.45	50.30	1	2.76	31.20
Greece	1.40	65.05	1.40	0	2.30	29.90
Austria	1.60	67.83	38.70	0	2.93	26.20
Italy	1.90	77.84	16.60	0	2.75	31.60
Average	1.23	73.53	28.10	0.14	2.64	26.79
Countries with strong formal LTC						
Switzerland	2.16	64.89	68.90	1	3.00	25.30
France	2.20	76.75	51.80	0	3.42	26.60
Belgium	2.30	75.91	70.80	1	3.23	26.40
Netherlands	3.80	85.60	68.40	1	3.58	24.40
Sweden	3.90	81.62	80.40	1	3.74	29.20
Denmark	4.50	85.31	52.30	1	4.14	26.70
Average	3.14	78.35	65.43	0.83	3.52	26.43

^aEuropean Commission (2012) and Eurostat; 2010 values. ^bOECD Health Data 2013; 2011 or nearest year available.

^cOECD Health Data 2012 - Long-Term Care Data; 2009; Greece: 2000. ^dColombo et al. 2011. ^eSHARE; Average of the SHARE respondents' answers to the questions who - the family (1) or the state (5) - should bear the responsibility for help with household chores/personal care for older persons. N=2,181. ^fEurostat; 2012 values.

Preview of results

- Large decrease in employment rates in family care countries but no effect in formal care countries
- Increase in depressive symptoms independent of the caregiving context
- Mixed findings with respect to physical health and cognitive ability
- Results are robust to choices and assumptions regarding covariates and instruments

Survey of Health, Ageing and Retirement in Europe (SHARE)

- First cross-national panel study to examine socioeconomic status and social and family networks of people aged 50+ in Europe
- Data collected in 2004, 2006, 2008 (SHARELIFE), and 2011/2012
- Sample Selection:
 - ▶ Women aged 50 to 70 with at least one living parent at the time of the first interview and at least two interviews in wave 1, 2, and 4
 - ▶ 13 European countries
 - Scandinavia (DK, SE),
 - Western Europe (AT, DE, NL, FR, CH, BE),
 - Eastern Europe (CZ, PL),
 - the Mediterranean (ES, IT, GR)
 - ▶ 7,591 person-wave observations from 3,309 individuals

Descriptive statistics for outcomes by caregiver status

	Never caregivers		Ever caregivers		Diff.	Sig.
	Mean	N	Mean	N		
Labour force participation						
Employed (%)	0.47	1,649	0.51	1,653	0.04	
Weekly hours worked (if hours>0)	34.82	806	34.54	916	-0.28	
Cognitive ability						
Verbal fluency (0-100)	19.73	1,636	21.85	1,649	2.12	1%
Short-term word recall (0-10)	5.31	1,641	5.71	1,652	0.40	1%
Long-term word recall (0-10)	3.90	1,642	4.40	1,652	0.50	1%
Numeracy (1-5)	3.29	1,651	3.48	1,654	0.19	1%
Health						
Depression (EURO-D; 0-12)	2.91	1,631	2.67	1,648	-0.24	5%
Self perceived health (1-5)	2.92	1,653	2.69	1,656	-0.23	1%
Grip strength (kg)	28.99	1,551	30.15	1,617	1.16	1%

Weighted values based on individuals' first observation. N=3,309

Sample size and caregiving rates by country

Country	Sample size	Caregiving rates		
		Any	Weekly	Daily
Poland	112	0.20	0.16	0.11
Italy	285	0.26	0.22	0.14
Austria	132	0.27	0.21	0.12
Greece	275	0.27	0.21	0.13
Spain	213	0.29	0.20	0.18
France	404	0.29	0.17	0.07
Switzerland	175	0.37	0.20	0.06
Germany	276	0.40	0.25	0.08
Denmark	247	0.40	0.19	0.02
Czechia	113	0.43	0.27	0.05
Sweden	377	0.44	0.17	0.03
Netherlands	312	0.45	0.29	0.05
Belgium	388	0.46	0.35	0.14
Total	3,309	0.33	0.21	0.10
Family care countries	1,406	0.31	0.22	0.12
Formal care countries	1,903	0.35	0.20	0.07

Countries ordered by caregiving rates (any frequency).

Weighted values based on individuals' first observation.

Empirical model

I model the outcome of interest, y_{it} , as a function of caregiving activity, CG_{it} , individual demographic and socioeconomic characteristics, X_{it} , an individual specific error term, c_i , and an idiosyncratic error term, u_{it} .

Assuming additive separability yields the following estimation equation:

$$y_{it} = \beta_1 CG_{it}^{family} + \beta_2 CG_{it}^{formal} + \beta_3 X_{it} + c_i + u_{it} \quad (1)$$

- CG_{it} is measured by any, weekly, or daily caregiving; interacted with indicators for family and formal care countries
- Fixed effects account for time-constant individual heterogeneity
- IV approach to control for time-varying endogeneity
 - ▶ A change in parental health interacted with indicators for family and formal care countries serves as an instrument for caregiving activities
 - ▶ Assumption: A change in parental health only influences the outcome variables through its effect on caregiving behaviour

Additional control variables

Individual characteristics

- age, age squared (interacted with country dummies)
- wave dummies, married, household size, number of chronic conditions, limitations with ADL/IADL, wealth quartiles

Labour market outcomes

- reached official retirement age, within 2 years/within 5 years of official retirement age

Health outcomes and cognitive ability

- employed, other social activities
- Depression: parental loss

Changes in caregiving behaviour over time

	Number of individuals
Never caregiver	1,653
Ever caregiver	1,656
Continuous caregivers	496
Begin caregiving	504
End caregiving	795
Ever weekly caregiver	1,164
Continuous caregivers	294
Begin caregiving	417
End caregiving	551
Ever daily caregiver	550
Continuous caregivers	118
Begin caregiving	215
End caregiving	263

Estimation results: labour force participation

Frequency of care:	FE			FE-IV		
	Any	Weekly	Daily	Any	Weekly	Daily
Employed						
Caregiver	-0.028	-0.013	-0.016	-0.344**	-0.370**	-0.600**
(family care country)	(0.025)	(0.027)	(0.030)	(0.144)	(0.168)	(0.272)
Caregiver	0.042**	0.042*	-0.021	0.018	0.023	0.038
(formal care country)	(0.020)	(0.024)	(0.037)	(0.149)	(0.194)	(0.257)
Equality of effects (p-value)	0.030	0.133	0.931	0.082	0.125	0.090
Exogeneity (p-value)				0.041	0.037	0.040
AP F-Stat (family)				34.60	30.07	18.92
AP F-Stat (formal)				20.52	18.46	21.75
Hours worked						
Caregiver	2.032	0.911	1.714	2.474	1.928	2.054
(family care country)	(1.482)	(1.506)	(1.602)	(15.060)	(10.637)	(11.609)
Caregiver	0.441	0.054	0.082	2.480	5.585	5.354
(formal care country)	(0.845)	(1.095)	(2.266)	(6.748)	(15.726)	(14.489)
Equality of effects (p-value)	0.353	0.647	0.566	1.000	0.850	0.858
Exogeneity (p-value)				0.966	0.939	0.937
AP F-Stat (family)				2.05	4.51	7.25
AP F-Stat (formal)				11.39	2.76	6.68

Standard errors clustered at household level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Estimation results: cognitive ability (I)

Frequency of care:	FE			FE-IV		
	Any	Weekly	Daily	Any	Weekly	Daily
	Verbal fluency					
Caregiver	1.136***	0.845**	1.158**	3.739**	4.145*	6.405*
(family care country)	(0.389)	(0.425)	(0.504)	(1.873)	(2.149)	(3.478)
Caregiver	-0.235	0.329	-0.503	-1.132	-1.425	-1.999
(formal care country)	(0.339)	(0.421)	(0.771)	(2.340)	(2.992)	(4.051)
Equality of effects (p-value)	0.007	0.383	0.069	0.111	0.135	0.116
Exogeneity (p-value)				0.383	0.265	0.259
AP F-Stat (family)				34.30	28.79	19.29
AP F-Stat (formal)				21.02	20.24	21.16
	Sort-term word recall					
Caregiver	0.042	-0.050	-0.145	-0.352	-0.386	-0.583
(family care country)	(0.111)	(0.126)	(0.132)	(0.563)	(0.622)	(0.985)
Caregiver	0.093	0.214**	0.283**	0.452	0.579	0.797
(formal care country)	(0.088)	(0.093)	(0.134)	(0.658)	(0.817)	(1.140)
Equality of effects (p-value)	0.719	0.093	0.023	0.360	0.351	0.358
Exogeneity (p-value)				0.659	0.753	0.804
AP F-Stat (family)				34.20	28.72	19.22
AP F-Stat (formal)				21.82	20.39	21.51

Standard errors clustered at household level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Estimation results: cognitive ability (II)

Frequency of care:	FE			FE-IV		
	Any	Weekly	Daily	Any	Weekly	Daily
Long-term word recall						
Caregiver	-0.132	-0.232*	-0.264*	-0.286	-0.330	-0.545
(family care country)	(0.109)	(0.125)	(0.136)	(0.608)	(0.678)	(1.055)
Caregiver	0.120	0.168*	0.331*	-0.856	-1.097	-1.502
(formal care country)	(0.090)	(0.092)	(0.189)	(0.688)	(0.904)	(1.224)
Equality of effects (p-value)	0.074	0.010	0.010	0.540	0.499	0.552
Exogeneity (p-value)				0.330	0.343	0.294
AP F-Stat (family)				34.20	28.72	19.22
AP F-Stat (formal)				21.82	20.39	21.51
Numeracy						
Caregiver	0.014	0.034	-0.070	-0.411	-0.457	-0.708
(family care country)	(0.044)	(0.048)	(0.062)	(0.262)	(0.296)	(0.456)
Caregiver	-0.012	-0.029	-0.014	0.060	0.073	0.106
(formal care country)	(0.033)	(0.035)	(0.055)	(0.270)	(0.333)	(0.456)
Equality of effects (p-value)	0.647	0.299	0.500	0.219	0.240	0.209
Exogeneity (p-value)				0.212	0.179	0.289
AP F-Stat (family)				34.04	28.63	19.15
AP F-Stat (formal)				20.73	20.55	21.65

Standard errors clustered at household level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Estimation results: health

Frequency of care:	FE			FE-IV		
	Any	Weekly	Daily	Any	Weekly	Daily
EURO-D						
Caregiver	0.202	0.204	0.115	1.849**	1.935*	2.931*
(family care country)	(0.133)	(0.150)	(0.174)	(0.935)	(1.022)	(1.610)
Caregiver	0.104	-0.014	0.328	2.585**	3.179**	3.783**
(formal care country)	(0.110)	(0.126)	(0.313)	(1.070)	(1.278)	(1.547)
Equality of effects (p-value)	0.568	0.265	0.551	0.596	0.441	0.715
Exogeneity (p-value)				0.003	0.002	0.004
AP F-Stat (family)				31.12	28.17	19.93
AP F-Stat (formal)				19.54	18.72	21.78
Self-perceived health						
Caregiver	0.002	0.035	0.069	0.223	0.244	0.410
(family care country)	(0.053)	(0.058)	(0.065)	(0.296)	(0.319)	(0.522)
Caregiver	-0.109**	-0.111**	-0.133	0.407	0.522	0.713
(formal care country)	(0.043)	(0.051)	(0.086)	(0.398)	(0.509)	(0.705)
Equality of effects (p-value)	0.102	0.058	0.061	0.715	0.647	0.730
Exogeneity (p-value)				0.293	0.353	0.352
AP F-Stat (family)				34.32	30.08	19.07
AP F-Stat (formal)				21.80	20.38	21.51
Grip strength						
Caregiver	0.646**	0.667**	0.324	1.912	2.121	3.405
(family care country)	(0.306)	(0.335)	(0.364)	(1.533)	(1.742)	(2.927)
Caregiver	-0.343	-0.499*	-0.302	-2.246	-2.708	-3.650
(formal care country)	(0.243)	(0.289)	(0.445)	(1.560)	(1.822)	(2.465)
Equality of effects (p-value)	0.011	0.008	0.277	0.061	0.058	0.066
Exogeneity (p-value)				0.322	0.357	0.218
AP F-Stat (family)				31.68	26.04	15.77
AP F-Stat (formal)				18.67	19.58	22.14

Standard errors clustered at household level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

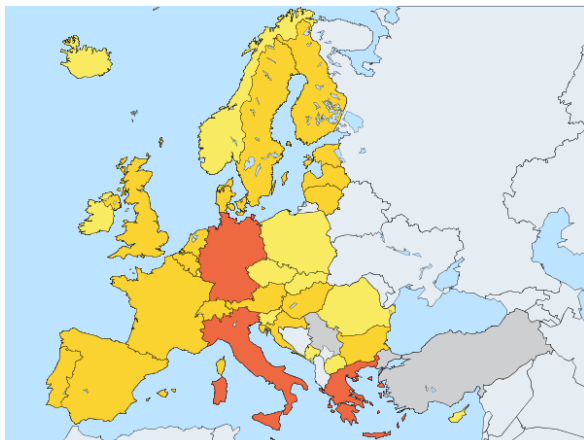
Summary of results

- Caregiving reduces employment rates in family care countries
 - ▶ Consequences for productivity and the financial situation of caregivers
 - ▶ Formal care alternatives allow caregivers to combine care and employment
- Potential to preserve cognitive ability and physical health
 - ▶ Effects differ based on the difficulty of the cognitive skill
 - ▶ Potential problems with self-assessed health measures
- Strong negative consequences for mental health
 - ▶ Formal care options do not reduce negative effects of caregiving
 - ▶ Other solutions needed to reduce mental burden of caregivers

Conclusion

- A growing share of mature daughters will face the decision whether to provide care for their elderly parents
- At the same time: efforts to increase female labour force participation
- This study provides a comprehensive analysis of the effects of parental caregiving on caregivers to show the many dimensions of the effects of caregiving
- Both frequency of care and the institutional caregiving context influence the effects of caregiving
- Further directions: Including male caregivers and studying long-term effects of caregiving

Old age dependency ratio (% 2013), Eurostat



Legend

■ < 25.0

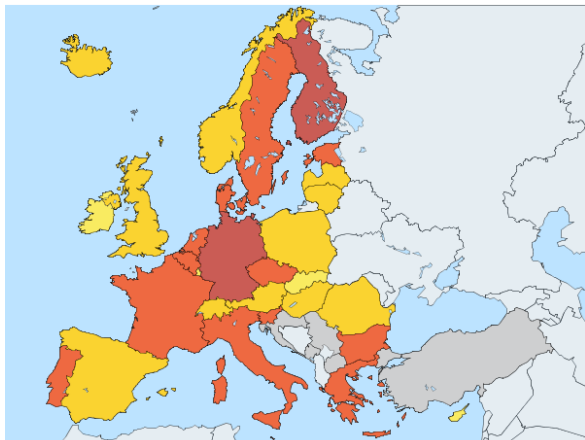
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Old age dependency ratio (% 2020), Eurostat



Legend

■ - 25.0

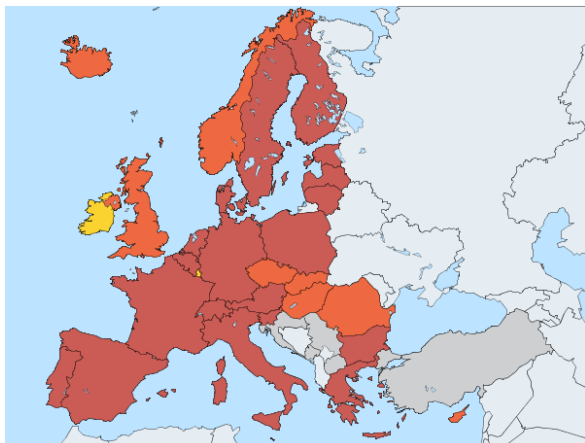
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■ 35.0 -

■ Not available

Old age dependency ratio (% 2030), Eurostat



Legend

■ - 25.0

■ 25.0 - 30.0

■ 30.0 - 35.0

■ 35.0 -

■ Not available

▶ Back