

INFORMAL CARE AND THE GREAT RECESSION

Henning Øien ¹
Martin Karlsson ² Joan Costa i Font ³

¹University of Oslo and Norwegian Social Research (NOVA)

²Universität Duisburg-Essen

³London School of Economics

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CONTEXT

- ▶ LTC is health and social services designed to help chronically ill elderly maintaining quality of life
 - ▶ long-term help with practical tasks, maintaining personal hygiene, and nursing care
- ▶ Informal care is unpaid care provided by family and friends
 - ▶ Informal care is still the dominant source of LTC in most societies (Grabowski et al., 2011)
- ▶ Formal care services are provided by (paid) professional social and health care workers
 - ▶ Nursing home care and home-based care (home nursing and home help)
- ▶ In Europe, formal care is predominantly publicly funded (OECD, 2011)

RESEARCH QUESTION

- ▶ How is informal care (IC) availability affected by macroeconomic conditions?
 - ▶ (because of data availability we could not look at formal care)
- ▶ What are the potential mechanisms?:
 - ▶ Demand side (income, care needs, public provision of formal care, ...)
 - ▶ Supply side (opportunity cost of time, public support for informal carers, ...)

MOTIVATION

- ▶ A large literature looks at the relationship btw economic downturns and health outcomes and inputs (Ruhm, 2012)
 - ▶ Generally finds that health improves when the economy deteriorates (Ruhm, 2012)
 - ▶ even though health care utilization drops in bad economic times (Ruhm, 2000, 2003)
- ▶ Opportunity cost of healthy living is lower, less job-related stress, and less consumption of alcohol (Gerdtham, 2006)
 - ▶ Not directly transferable to the older (non-working) population
- ▶ Adverse health effects among elderly in the US (McInerney, 2012) and Europe (Bucher-Koenen et al., 2013)
- ▶ LTC is likely to be differently affected by recessions than health care because its dominated by informal care

PREVIEW

- ▶ We examine the association between IC and the unemployment shock caused by the Great recession (GR)
- ▶ GR is the worst global recession since W.W.II (IMF, 2009)
 - ▶ The “official” recession period for the EU is Q1.2008-Q2.2009 (EC, 2010)
- ▶ We use three waves of SHARE-data (two waves before and one wave after the GR) from 11 European countries
- ▶ Main finding: the proportions receiving and providing IC increase when the economy deteriorates
 - ▶ The increase is stronger in Northern Europe
 - ▶ Mainly driven by changes in extra-residential IC
 - ▶ Small increase in care needs and decrease in formal health care utilization

EMPIRICAL APPROACH

- ▶ To estimate the relationship btw recession severity and IC we estimate the following linear probability model:

$$IC_{ijt} = \alpha_j + \lambda_t + X_{itj}\beta + \gamma(E_j \times d_t) + \epsilon_{ijt}$$

- ▶ IC_{ijt} is an indicator of either receipt or provision of IC by individual i in country j at wave t
- ▶ α_j and λ_t are country and wave fixed effects
- ▶ X_{itj} is a vector of individual covariates (age, education, number of children, ...)
- ▶ E_j is a measure of recession severity times a dummy, d_t , for observations after the GR (SHARE wave 4)
- ▶ Extension: individual-specific effects and regional-specific linear time trends

CRISIS MEASURE/SEVERITY

- ▶ We follow previous literature and use changes in unemployment to measure macroeconomic fluctuations (Ruhm, 2000, 2004; Cawley, 2005, 2015)
- ▶ Recession severity: we define a recessionary period for each country and calculate the increase in unemployment (E_j)
- ▶ Recession: at least two consecutive quarters of negative quarter-on-quarter growth in real GDP
- ▶ Recession period: last quarter of growth (peak) to last quarter of negative growth (trough)
- ▶ Robustness: absolute decrease in GDP, linear unemployment and real GDP
- ▶ Source: quarterly unemployment and real GDP growth from Eurostat

TABLE: Crisis impact by country.

<i>Region</i> Country	Pre-crisis (2007)		Crisis impact		
	GDP per capita (€)	Unemployment Percent	Duration Quarters	GDP Percent	Unemployment Percent
<i>North</i>					
Denmark	30,600	3.9	5	8.0	2.8
Sweden	31,200	6.4	6	7.6	1.3
<i>Central</i>					
Austria	30,900	4.4	6	5.1	0.9
Belgium	28,900	7.8	4	4.4	0.8
France	26,900	8.4	6	4.0	1.9
Germany	28,800	9.0	5	6.9	-0.4
Netherlands	33,000	3.9	6	4.9	0.4
<i>South</i>					
Italy	26,000	5.9	6	7.2	1.0
Spain	26,200	8.0	6	4.6	8.6
<i>East</i>					
Czech Republic	20,600	5.9	4	5.5	2.2
Poland	13,600	10.8	0	.	.

The Table shows the impact of the Great Recession for the countries listed in Column (1). Column (2) and (3) show real GDP per capita and unemployment rate in the last quarter before the beginning of the crisis (i.e. the peak quarter). Column (4) lists the duration of the crisis in quarters, while the last two Columns show the percentage decline (absolute value) in real GDP and percentage point change in the unemployment rate from output peak-to-through respectively.

DATA

- ▶ Survey of Health, Ageing and Retirement in Europe (SHARE)
 - ▶ Detailed information on health, SES, and informal and formal care use of Europeans aged 50 and over
- ▶ Two waves before (2004/05; 2006/7) and one wave (2010/11) after the GR.
- ▶ 11 countries have participated in waves before and after the GR
- ▶ Geographic regions: Sweden and Denmark (North); Germany, France, Netherlands, Austria and Belgium (Central); Spain and Italy (South); and Poland and Czech Republic (East)
- ▶ North-south gradient: moving from the South to the North, filial norms become weaker, more formal LTC, and higher labor force participation for women (Kotsadam, 2011)

DEPENDENT VARIABLES

- ▶ External IC: have you received any informal care from someone *outside* the household
 - ▶ Personal care and practical help
- ▶ Internal IC: have you received any informal care from someone *whitin* the household
 - ▶ Only personal care
- ▶ Same for provision of IC
- ▶ Other outcomes: income, wealth, dependency level (ADL), formal (health) care (doctor visits, hospital stay and nursing home stay)

TABLE: Descriptive statistics for the key outcome variables

	mean	sd	count
<i>Informal Care Receipt</i>			
Overall (=1)	0.21	0.41	77,858
Internal (=1)	0.05	0.21	77,858
External (=1)	0.18	0.39	77,900
<i>Informal Care Provision</i>			
Overall (=1)	0.35	0.48	88,459
Internal (=1)	0.06	0.24	88,459
External (=1)	0.31	0.46	88,553

External informal care receipt is an indicator of whether a subject received informal care from someone *outside* the household, internal informal care receipt is an indicator of receiving informal care from someone *within* the household, and overall informal care receipt indicates whether one or both types of informal care were received/provided. The same categories applies to informal care provision.

TABLE: Descriptive statistics for additional outcomes and control variables

	mean	sd	count
<i>Crisis measure</i>			
Unemployment change from output peak-to-trough	0.85	1.74	77,900
<i>Formal care usage</i>			
Number of doctor visits	7.80	9.94	77,900
Hospital stay (=1)	0.16	0.37	77,900
Nursing Home Stay (=1)	0.01	0.08	77,900
<i>Economic Wellbeing</i>			
Household gross income (wave 1) in constant Euro (1000)	43.19	47.82	20,369
Household net income (wave 1 and 2) in constant Euro (1000)	29.89	36.85	57,531
Household net wealth in constant Euro (1000)	246.71	606.50	77,900
Some or great difficulty in making ends meet (=1)	0.36	0.48	77,900
<i>Employment</i>			
Employed (=1)	0.28	0.45	88,553
Unemployed (=1)	0.03	0.17	88,553
<i>Health status</i>			
Self-reported health (1, excellent; 5, bad)	3.16	1.06	77,900
Number of problems with adl out of 10 listed	0.39	1.30	77,900
Number of chronic diseases out of 12 listed	1.43	1.35	77,900
Number of mobility limitations out of 4 listed	0.54	0.93	77,900
<i>Education</i>			
Tertiary education (=1)	0.20	0.40	88,553
Secondary education (=1)	0.51	0.50	88,553
<i>Demographics</i>			
Age in years	65.18	10.34	88,553
Female (=1)	0.56	0.50	88,553
Living in the same household as a partner (=1)	0.75	0.44	88,553
Number of persons living in the household	2.20	1.03	88,553
Married (=1)	0.73	0.44	88,553
Number of children	2.21	1.42	88,553
Born in the country of interview (=1)	0.93	0.26	88,553

INFORMAL CARE RECEIPT FULL SAMPLE

	(1)	(2)	(3)	(4)
Entire population				
DID Overall	0.0055*** (0.001)	0.0057*** (0.001)	0.0063*** (0.002)	0.0064** (0.003)
ymean	0.211	0.211	0.211	0.211
r2	0.064	0.071	0.011	0.011
N	77,858	77,858	77,858	77,858
DID Internal	-0.0010** (0.000)	-0.0009** (0.000)	0.0017*** (0.000)	0.0000 (0.001)
ymean	0.047	0.047	0.047	0.047
r2	0.021	0.035	0.012	0.013
N	77,858	77,858	77,858	77,858
DID External	0.0074*** (0.001)	0.0075*** (0.001)	0.0066*** (0.002)	0.0078** (0.003)
ymean	0.182	0.182	0.182	0.182
r2	0.052	0.064	0.009	0.010
N	77,900	77,900	77,900	77,900
Year FE	✓	✓	✓	✓
Country FE	✓	✓		
Individual controls		✓	✓	✓
Individual FE			✓	✓
Regional trends				✓

TABLE: External Informal Care Receipt: Results by Region.

	(1)	(2)	(3)
North			
DID Crisis	0.0424*** (0.009)	0.0487*** (0.009)	0.0422*** (0.010)
ymean	0.201	0.201	0.201
r2	0.002	0.034	0.006
N	14,286	14,089	14,089
Central			
DID Crisis	0.0220*** (0.005)	0.0227*** (0.005)	0.0370*** (0.006)
ymean	0.168	0.168	0.168
r2	0.001	0.038	0.003
N	47,589	46,616	46,616
South			
DID Crisis	0.0022* (0.001)	0.0020 (0.001)	0.0038** (0.002)
ymean	0.122	0.122	0.122
r2	0.000	0.042	0.007
N	17,164	16,823	16,823
Eastern			
DID Crisis	0.0177** (0.008)	0.0174** (0.008)	0.0342*** (0.011)
ymean	0.236	0.236	0.236
r2	0.003	0.038	0.010
N	13,084	12,772	12,772
Year FE	✓	✓	✓
Country FE	✓	✓	
Individual controls		✓	✓
Individual FE		✓	✓

ADDITIONAL OUTCOMES

	(1)	(2)	(3)	(4)
Income				
DID Crisis	-0.9034*	-0.8430*	-0.4031	-0.0444
	(0.454)	(0.466)	(0.494)	(0.324)
ymean	29.891	29.891	29.891	29.891
r2	0.027	0.087	0.004	0.006
N	57,531	57,531	57,531	57,531
Wealth				
DID Crisis	-6.0926	-5.5602	-3.8731	-3.0190
	(5.061)	(5.121)	(5.878)	(4.931)
ymean	246.707	246.707	246.707	246.707
r2	0.010	0.030	0.016	0.019
N	77,900	77,900	77,900	77,900
ADL Limitations				
DID Crisis	0.0137***	0.0144***	0.0187***	0.0135***
	(0.004)	(0.004)	(0.004)	(0.004)
ymean	0.389	0.389	0.389	0.389
r2	0.116	0.124	0.066	0.067
N	77,900	77,900	77,900	77,900
Year FE	✓	✓	✓	✓
Country FE	✓	✓		
Individual controls		✓	✓	✓
Individual FE			✓	✓
Regional trends				✓

TABLE: Formal (Health) Care Utilization

	(1)	(2)	(3)	(4)	(5)	(6)
Doctor visits						
DID Crisis	-0.2501***	-0.2568***	-0.2178***	-0.2689***	-0.2844***	-0.2815***
	(0.055)	(0.056)	(0.048)	(0.063)	(0.059)	(0.058)
ymean	7.797	7.797	7.797	7.797	7.797	7.797
r2	0.015	0.020	0.006	0.007	0.043	0.039
N	77,900	77,900	77,900	77,900	77,900	77,900
Hospital stays						
DID Crisis	-0.0032***	-0.0032***	-0.0037***	-0.0037***	-0.0041***	-0.0042***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
ymean	0.165	0.165	0.165	0.165	0.165	0.165
r2	0.013	0.015	0.006	0.006	0.028	0.027
N	77,900	77,900	77,900	77,900	77,900	77,900
Nursing home						
DID Crisis	0.0001	0.0001	0.0002	0.0003	0.0002	0.0002
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ymean	0.007	0.007	0.007	0.007	0.007	0.007
r2	0.012	0.014	0.004	0.005	0.019	0.011
N	77,900	77,900	77,900	77,900	77,900	77,900
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓				
Individual controls		✓	✓	✓	✓	✓
Individual FE			✓	✓	✓	✓
Regional trends				✓	✓	✓
Health controls					✓	✓
Income & Wealth controls						✓

EXTERNAL INFORMAL CARE RECEIPT: ADDITIONAL CONTROLS.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
All							
DID Crisis	0.0074*** (0.001)	0.0075*** (0.001)	0.0066*** (0.002)	0.0084*** (0.003)	0.0074** (0.003)	0.0075** (0.003)	0.0080** (0.003)
ymean	0.182	0.182	0.182	0.182	0.182	0.182	0.182
r2	0.052	0.065	0.009	0.003	0.021	0.022	0.025
N	77,900	77,900	77,900	77,900	77,900	77,900	77,900
Year FE	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓					
Individual controls		✓	✓	✓	✓	✓	✓
Individual FE			✓	✓	✓	✓	✓
Regional trends				✓	✓	✓	✓
Health Controls					✓	✓	✓
Income & Wealth controls						✓	✓
Formal care controls							✓

RESULTS RECAP: INFORMAL CARE RECEIPT

- ▶ A one-percentage point increase in recession unemployment is associated with
 - ▶ a 0.74 percentage point increase in the probability of receiving informal care (4.3 percent of the sample mean)
 - ▶ This association is much larger in the North than in the South of Europe
 - ▶ 1/100 increase in ADL limitations
 - ▶ Can roughly explain 10 percent of the increase in informal care
 - ▶ 1/4 decrease in doctor visits
 - ▶ small decrease in the probability of hospital stay

TABLE: Informal Care Provision: Results in Subgroups and Overall

	(1)	(2)	(3)	(4)	(5)	(6)
Entire population						
DID Overall	0.0038*** (0.001)	0.0041*** (0.001)	0.0083*** (0.002)	0.0024 (0.002)	0.0023 (0.002)	0.0024 (0.003)
ymean	0.352	0.352	0.352	0.352	0.352	0.352
r2	0.031	0.036	0.011	0.012	0.012	0.013
N	88,459	88,459	88,459	88,459	88,459	87,524
Working wave 2						
DID Overall	0.0108** (0.005)	0.0109** (0.004)	0.0124*** (0.004)	0.0082* (0.004)	0.0082* (0.004)	0.0078* (0.004)
ymean	0.458	0.458	0.458	0.458	0.458	0.458
r2	0.011	0.019	0.016	0.016	0.018	0.020
N	15,988	15,988	15,988	15,988	15,988	15,859
Not working wave 2						
DID Overall	0.0020** (0.001)	0.0023** (0.001)	0.0073*** (0.002)	0.0009 (0.002)	0.0009 (0.002)	0.0009 (0.002)
ymean	0.329	0.329	0.329	0.329	0.329	0.329
r2	0.028	0.034	0.010	0.011	0.012	0.012
N	72,471	72,471	72,471	72,471	72,471	71,665
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓				
Individual controls		✓	✓	✓	✓	✓
Individual FE			✓	✓	✓	✓
Regional trends				✓	✓	✓
Health controls					✓	✓
Income & Wealth controls						✓

SENSITIVITY ANALYSES

- ▶ Robust to different crisis measures: absolute fall in GDP; linear model using unemployment and GDP
- ▶ The results are robust to demographic trends (the results become somewhat stronger when controlling for the share of the population who are elderly)
- ▶ Robust to linear country-specific trends in age

CONCLUDING REMARKS

- ▶ The GR is associated with an increase of informal care receipt
- ▶ The association is stronger in Northern compared to southern Europe
- ▶ Mechanisms: small effect on care needs and formal care (hospital and doctor visits)
- ▶ Increase in informal care provision which seems to be driven by lower opportunity cost of time
- ▶ A caveat is that we only have 11 countries/clusters
 - ▶ Standard errors are biased downwards if there is serial correlation over time
 - ▶ A possible solution is to do the analysis at regional (nuts) level

Thank you!