

Informal Care and Formal Home Care Use in Europe and the United States

**Alberto Holly¹, Thomas M. Lufkin¹,
Edward. C. Norton², Courtney H. Van Houtven³**

¹Institute of Health Economics and Management (IEMS), University of Lausanne

²University of North Carolina at Chapel Hill

³Durham Veterans Affairs Medical Center and Duke University Medical Center

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Introduction

- Aging of populations in Europe and the US
- Demand for long-term care (LTC) increases with age
- LTC spending: $\sim 1\%$ of GDP in the US, between 0.5% and 3% in Europe
- Economic effects: larger
 - Labor market effects
 - Intergenerational transfers
 - Informal care value, opportunity costs

Long-term care

- Informal care (IC)
- Formal care (FC)
 - Home care
 - Assisted living facilities
 - Nursing homes
- Home care, compared to institutional care
 - Assumed to be the preferred mode
 - Less costly

Informal care

- One of the most common form of LTC
- Most often from daughters (after spouse)
- Financial support to caregivers
- Worthwhile if substitutes for FC
 - Substitutes if IC reduces FC use
 - Complements if IC reveals needs and improves access

Research question

- Are IC and FC complements or substitutes?
- Is the relationship between IC and FC the same in Europe and the USA?

Litterature

- Van Houtven & Norton (2004) studied the US setting. They used IV to instrument IC and showed that IC is a substitute for FC.
- Bolin et al. (2007) replicated Van Houtven and Norton's results in a European context.
- None of these studies looked at the reverse effect of FC on IC.

Key contribution:

Different institutional settings in Europe and the US

⇒ different models of IC and FC use

- "Who takes what as given?"
- Problem of endogeneity between IC and FC
- Empirical question

Methodology

- We build a simultaneous equations model for IC and FC.
- IC and FC have a Tobit specification with a bivariate normal distribution.
- We test the direction of the link between IC and FC separately for Europe and the USA.

Structure of the presentation

- ① Institutional setting
 - ① United States
 - ② Europe
- ② Theoretical framework
- ③ Econometric specification
- ④ Estimation and discussion
- ⑤ Conclusion

Institutional setting

United States

- Market for LTC
- Medicare: for the permanently disabled
- Medicaid: means-tested
- LTC insurance ($\sim 10\%$ of 65+)

Institutional setting

Europe

- Public supply of LTC
- Provision of care based on need
- Assessment includes access to IC
- Support for informal caregivers

Theoretical Framework

- Parent

$$\max U^P = U^P(IC, FC, C^P)$$

$$\text{s.t. } p_F FC + C^P \leq Y - S$$

- Child

$$\max U^C = U^C(IC, C^C, L)$$

$$\text{s.t. } IC + W + L \leq T$$

$$p_I IC + C^C \leq \omega W + S$$

Theoretical Framework

$$\begin{cases} IC = f_I(FC, \dots) \\ FC = f_F(IC, \dots) \end{cases}$$

- The two types of care are jointly determined
- Potential unobserved health or preferences
- IC and FC estimated simultaneously

Econometric Specification

$$\begin{cases} IC_n^* = \gamma_I^E FC_n^E + \gamma_I^U FC_n^U + \beta_I' X_{In} + u_{In} \\ FC_n^* = \gamma_F^E IC_n^E + \gamma_F^U IC_n^U + \beta_F' X_{Fn} + u_{Fn} \end{cases}$$

with

$$IC_n = \begin{cases} IC_n^* & \text{if } IC_n^* > 0 \\ 0 & \text{otherwise} \end{cases}, \quad FC_n = \begin{cases} FC_n^* & \text{if } FC_n^* > 0 \\ 0 & \text{otherwise} \end{cases}$$

and

$$\begin{pmatrix} u_{In} \\ u_{Fn} \end{pmatrix} \sim \text{i.i.d. } \mathcal{N} \left(0, \begin{pmatrix} \sigma_I^2 & \sigma_{IF} \\ \sigma_{IF} & \sigma_F^2 \end{pmatrix} \right)$$

Econometric Specification

- Simultaneous equations model with censored variables
- Allow for differences in Europe and the US
- Impose restrictions on the direction of causality to test whether
 - FC depends on IC ($\gamma_I = 0, \gamma_F \neq 0$)
 - IC depends on FC ($\gamma_I \neq 0, \gamma_F = 0$)
- Based on information criteria (AIC and BIC) and Vuong tests

Data and Variables

- Merge data from HRS and SHARE
- Sample: age ≥ 70 , single, ≥ 1 child
- Variables:
 - IC, FC
 - Demographic and socio-economic
 - Health and health behaviour
 - Children

Results

- FC and IC are substitutes (negative sign)
- Endogeneity is detected ($\rho \neq 0$). Unobserved health and/or preferences?
- Preferred specification:
 - Europe: IC \rightarrow FC
 - USA: FC \rightarrow IC
- Substitution effect stronger in the USA

	Model 1 $\gamma_F^E = \gamma_I^U = 0$	Model 2 $\gamma_I^E = \gamma_F^U = 0$	Model 3 $\gamma_I^E = \gamma_I^U = 0$	Model 4 $\gamma_F^E = \gamma_F^U = 0$
Informal care				
FC^E	-0.322*** (0.106)			-0.842*** (0.171)
FC^U		-1.345*** (0.087)		-1.226*** (0.160)
Formal care				
IC^E		-1.048*** (0.098)	-0.763*** (0.155)	
IC^U	-0.760*** (0.117)		-1.177*** (0.161)	
ρ	0.314*** (0.039)	0.715*** (0.034)	0.548*** (0.063)	0.557*** (0.064)
Log-likelihood	-7396	-7356	-7387	-7381
AIC	14935	14854	14916	14905
BIC	15396	15315	15377	15366

Note: Significant at the * 10%, ** 5%, *** 1% level

Conclusion

- The institutional setting matters for explaining informal and formal home care
- Endogeneity is an important issue in this context