The effects of physical health and aging on financial needs after retirement

an empirical analysis across Europe

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Introduction

What is an adequate pension?

How do our expenditure needs develop during retirement?

Fernandez-Villaverde and Krueger (2007)  
Van Ooijen, De Bresser en Knoef (2016)
Introduction

Health and expenditures

Health problems

(1) → lower possibilities to consume (e.g. traveling)

(2) → increase need to ‘outsource’ home production tasks

(3) → medical expenditures
Research goal

- What are the effects of aging and physical impairment in old age on financial needs?
- Can physical health problems explain the declining expenditures after retirement?
Introduction

Contribution

- Longitudinal analysis of ‘making ends meet’ to investigate the effect of health on financial needs
- European countries
- Analyze role of informal care and cognitive functioning
Empirical evidence

Aging

- Expenditure needs decrease with age (Soede, 2012 and Dudel, 2016)
  But what is the role of health?
Empirical evidence

Aging
• Expenditure needs decrease with age (Soede, 2012 and Dudel, 2016)
  But what is the role of health?

Health
• Mixed evidence
  Finkelstein et al. 2013 -, Lillard and Weiss 1998 +,
  De Nardi et al. 2009 ±
Literature

Mixed evidence

- Method
  - LCM, observed change in utility
Mixed evidence

- Method
  - LCM, observed change in utility

- Context
  - Sample matters: heterogeneities wrt age
    → we focus on retirees
Literature

Mixed evidence

• Method
  • LCM, observed change in utility

• Context
  • Sample matters: heterogeneities wrt age
    → we focus on retirees
  • Broad definition of health (major health conditions)
    → we focus on physical health problems
  • Institutions: health care costs, informal care
    → tests/controls
Survey of Health, Ageing, and Retirement in Europe

- 50+
- 4 waves (2004-2013)
- 20 countries
- Select 65+ retirees
  → health shock does not affect budget through labor supply
Data

Financial satisfaction: making ends meet

Thinking of your household’s total monthly income would you say your household is able to make ends meet?

1. With great difficulty (9%)
2. With some difficulty (26%)
3. Fairly easily (34%)
4. Easily (31%)
Limitations: activities of daily living

Data
Data

First impression

![Graph showing the relationship between income decile and the ability to make ends meet for sick and healthy individuals, categorized by age group.](image)
Method

Intuition

How does the ability to make ends meet change after a health change?

How does the ability to make ends meet change when one becomes one year older?

+ expenditure needs decline
- expenditure needs increase
Model

\[ z_{it}^* = x_{it} \beta + \eta_i + \epsilon_{it} \]

where

\[ z_{it} = \begin{cases} 
1 & \text{if } z_{it}^* \leq \delta_1 \\
2 & \text{if } \delta_1 < z_{it}^* \leq \delta_2 \\
\vdots \\
K & \text{if } \delta_{K-1} < h_{it}^* 
\end{cases} \]

\[ \eta_i = \bar{x}_i \delta + \xi_i \]

\( z \): making ends meet
\( x \): health, age, permanent income, negative/positive affect, gender, partner, education level, homeownership, country dummies, etc.
Method

Answering styles

- Individual specific answering styles cancel out (tendency to use upper or lower end of the scale)
Method

Answering styles

- Individual specific answering styles cancel out (tendency to use upper or lower end of the scale)

- Time varying optimism/pessimism
  - measures of positive/negative affect
    (+) positive expectations, concentration, enjoyment;
    (-) sadness, guilt and irritation.
Method

‘Third factors’ and reverse causality

Socio-economic status and time preferences may influence both physical health and the ability to make ends meet

- Variation within individuals
Method

‘Third factors’ and reverse causality

Socio-economic status and time preferences may influence both physical health and the ability to make ends meet

• Variation within individuals

People who face difficulties in making ends meet have more stress and this may affect health negatively

• Long term stress may cause ADL problems -> within effects
Method

‘Third factors’ and reverse causality

Socio-economic status and time preferences may influence both physical health and the ability to make ends meet

- Variation within individuals

People who face difficulties in making ends meet have more stress and this may affect health negatively

- Long term stress may cause ADL problems -> within effects

When people face difficulties to make ends meet, they may be unable to pay for customary medical interventions

- Health insurance/government
- Sensitivity check: exclude poorest 25%
Results

Limitations *increase* financial needs

<table>
<thead>
<tr>
<th>A. Parameter estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>limited ($\beta_1$)</td>
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Results

Limitations *increase* financial needs

**A. Parameter estimates**

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<td>limited ($\beta_1$)</td>
<td>-0.0902**</td>
<td>0.0363</td>
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<td>age ($\beta_2$)</td>
<td>0.0295***</td>
<td>0.00714</td>
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<tr>
<td>ln(perm. inc.) ($\beta_3$)</td>
<td>0.862***</td>
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Relative income change needed for ability to make ends meet to remain the same

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<td>1 year older</td>
<td>-0.034***</td>
<td>0.0081</td>
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<tr>
<td>1 or more limitations</td>
<td>0.11**</td>
<td>0.0469</td>
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Heterogeneous age effects

Results
## (Daily) informal care

Spouse vs outside household

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## Results

### (Daily) informal care

**Spouse vs outside household**

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### Relative income change needed:

- **1 year older**: -0.034*** (0.008)
- **1 or more limitations**: 0.142*** (0.0496)
- **daily informal care (between)**: -0.351*** (0.1032)
- **daily informal care (within)**: -0.272** (0.119)
Cognitive functioning

Results

Taking initiatives
Planning
Organizing

Anxiety
## Results

### Cognitive functioning

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<td>limited ($\beta_1$)</td>
<td>-0.0907**</td>
<td>(0.0367)</td>
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<tr>
<td>age ($\beta_2$)</td>
<td>0.0320***</td>
<td>(0.00720)</td>
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<tr>
<td>ln(perm. inc.) ($\beta_3$)</td>
<td>0.874***</td>
<td>(0.0302)</td>
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<td>cognitive disfunctioning ($\beta_4$)</td>
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Results

Cognitive functioning

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Relative income change needed:

- 1 year older: -0.036*** (0.008)
- 1 or more limitations: 0.109** (0.0468)
- 1 word less recalled: -0.027*** (0.0081)
Results

Other results and checks

No significant differences between north, central and south/east European countries
Results

Other results and checks

No significant differences between north, central and south/east European countries

Alternative measures of limitations
→ IADL (shopping, preparing a meal, gardening, etc.) +11.5%
→ mobility (walking 100m, climbing stairs, etc.) + 13.8%
Results

Other results and checks

No significant differences between north, central and south/east European countries

Alternative measures of limitations
→ IADL (shopping, preparing a meal, gardening, etc.) +11.5%
→ mobility (walking 100m, climbing stairs, etc.) +13.8%

Weekly informal care

Alternative instruments: distance children, fraction female children
Conclusion

Health, aging, and financial needs

• Financial needs decline with age, though not due to physical limitations

• Limitations *increase* financial needs (not driven by health care costs)
Conclusion

Health, aging, and financial needs

• Financial needs decline with age (-3%), though not due to physical limitations

• Limitations *increase* financial needs (+11%, not driven by medical costs)

• Informal care decreases financial needs

• Cognitive impairments lower financial needs
Policy implications

• The onset of physical limitations is heterogeneous → variation in expenditure needs after retirement

• Default pension declining with age (at least for high income earners), combined with a “disability insurance”? 