The Effect of Informal Caregiving on Labor Market Outcomes in South Korea

February 26, 2009

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Acknowledgements: I thank Edward Norton, Sally Stearns, Courtney Van Houtven, Michelle Mayer, Peggye Dilworth-Anderson, and Karen Eggleston for their guidance and help. The Korea Labor Institute provided data, funding, and useful comments.
Demographic transition in S. Korea: 1960-2050

Old-age Dependency Ratio

14.8% (2008)  48.9% (2036)  72% (2050)

Source: Korea National Statistical Office (2009)
Some refinements, and Research question

Disability rate ↓

Labor force participation (LFP) rate ↑
\[ \text{LaborMarketOutcome} = \beta \text{InformalCare} + \gamma \text{Coresidence} + \delta X + \epsilon \]
Overview of methods

• Test for endogeneity between *ex ante* co-residence and LFP
  – Bivariate probit model
  – IVs: # brothers, # sisters, eldest son
  – Is co-residence jointly decided with LFP?
    • Yes for Younger Adult Child (25-44)
    • No for Midlife Adult Child & Respondent (45-64)

• IV approach for main models
  – Separate analysis Younger Adult Child by co-/extra-
  – Probit or OLS vs. IV probit or IV-2SLS
  – IVs: functional limitations of family members
Data: KLoSA


- Internationally comparable
  - to US Health and Retirement Study (HRS)
- Nationally representative
  - Community-dwelling adults 45+ ($N=10,254$)
- Detailed information on respondents as well as their parents, adult children, and siblings (informal care, intergenerational transfers)
Sample construction

Potential Caregiver & Worker: “Respondent”

Potential Caregiver & Worker: “Adult Child”

R’s parent

Respondent

R’s child

Introduction

Methods & Data

Results & Summary

M: 2,728
F: 3,366

M: 5,776
F: 5,370

M: 2,910
F: 2,726
Variables

• Dependent variable: Labor market outcomes
  - *Labor force participation* [Adult Child sample only]
  - *Any market work* (employed + self-employed + unpaid work for family business)
    - If yes, *weekly hours worked*
  - *Any employed work* (employed)
    - If yes, *hourly wage rate*

• Main independent variable: Informal care intensity
  - Continuous: \( \log(1 + \text{weekly hours of care}) \)
  - Dummy: (No informal care), *Less intensive care*, *More intensive care*

• Other explanatory variables
  - Own characteristics
  - Parent characteristics
## Results (1) (Adult Child sample)

- Dependent var.: Labor force participation (1 vs. 0)
- Key independent var.: log(1+weekly hours of care)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Younger</td>
<td>Midlife</td>
</tr>
<tr>
<td>Extra-residential</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Probit</td>
<td>+0.082*</td>
<td></td>
</tr>
<tr>
<td>(n.s.)</td>
<td>IV Probit</td>
<td>Standard Probit</td>
</tr>
<tr>
<td>Co-residential</td>
<td>−0.015 (n.s.)</td>
<td>cf. Probit</td>
</tr>
<tr>
<td>Standard Probit</td>
<td>−0.015 (n.s.)</td>
<td></td>
</tr>
<tr>
<td>(n.s.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* $p < 0.05$
Results (2) (Respondent sample, All standard models)

<table>
<thead>
<tr>
<th>Weekly care hours</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>= 0</td>
<td>Reference</td>
<td>Reference</td>
</tr>
<tr>
<td>0 &lt; Weekly care hours &lt; 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pr(Any market work)</td>
<td>0.010</td>
<td>0.060</td>
</tr>
<tr>
<td>$E(\text{weekly hours worked} \mid \text{hours} &gt; 0)$</td>
<td>5.458</td>
<td>−12.230</td>
</tr>
<tr>
<td>Pr(Any employed work)</td>
<td>−0.025</td>
<td>0.060</td>
</tr>
<tr>
<td>$E(\text{hourly wage rate} \mid \text{wage} &gt; 0)$</td>
<td>0.415</td>
<td>−0.034</td>
</tr>
<tr>
<td>Weekly care hours ≥ 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pr(Any market work)</td>
<td>−0.117</td>
<td>−0.152*</td>
</tr>
<tr>
<td>$E(\text{weekly hours worked} \mid \text{hours} &gt; 0)$</td>
<td>−1.437</td>
<td>−0.833</td>
</tr>
<tr>
<td>Pr(Any employed work)</td>
<td>0.004</td>
<td>−0.082*</td>
</tr>
<tr>
<td>$E(\text{hourly wage rate} \mid \text{wage} &gt; 0)$</td>
<td>0.367</td>
<td>−0.165*</td>
</tr>
</tbody>
</table>

* $p < 0.05$
Summary

- Negative effects on female intensive caregivers’ labor force participation and wage
  - Informal care has labor market opportunity costs and therefore is already an important economic issue in South Korea.
- Effect magnitudes vary by how to define LFP.
- Co-residence jointly decided with labor market prospects among younger generations: suggests future declines in supply of informal care
Extra slides
Main methodological issue

Reverse causality
Omitted variable bias

<table>
<thead>
<tr>
<th>What really happened</th>
<th>Previous Cause</th>
<th>Not working</th>
<th>Working Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Caregiving</td>
<td></td>
<td>Caregiving</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not working</td>
<td>Not working</td>
</tr>
<tr>
<td>True effect of caregiving on employment</td>
<td>0%</td>
<td>−100%</td>
<td></td>
</tr>
<tr>
<td>Data (cross-sectional)</td>
<td>Caregiving &amp; Not working</td>
<td>Caregiving &amp; Not working</td>
<td></td>
</tr>
<tr>
<td>Estimated effect of caregiving on employment</td>
<td>−100%</td>
<td>−100%</td>
<td></td>
</tr>
</tbody>
</table>
Instrumental variable (IV) approach

Informal care

Other explanatory variables ($X$)

(education, age, ...)

Coresidence

Unobservable

(“employability,” ability, ...)

Labor market outcome

$\beta$

IV candidates
- Birth order
- # of siblings
- Parents’ (I)ADL

Estimation choice
- Standard Probit vs. IV Probit
- Standard OLS vs. IV-2SLS

IV candidates
- Birth order
- # of siblings
- Parents’ (I)ADL

Estimation choice
- Standard Probit vs. IV Probit
- Standard OLS vs. IV-2SLS
Literature

- **US (1990s): child care → “parent care”**
  - Recognize and address the issue of selection into caregivers

- **UK and other European countries**
  - Growing interest in gender & cultural/institutional differences

- **Lilly *et al*. (2007): systematic review**
  - Thirty five papers all from North America and Europe
  - List key issues and research agenda
Contributions and focus of this study

- Study from an Asian country using new data
- Account for key issues in the cultural/institutional setting
  1. *ex ante* co-residence: might matter
  2. Endogeneity of informal care: might differ, and vary by gender
  3. Large informal labor sector (self-employed, unpaid work for family business): magnitudes might differ by definition of LFP
Distribution of care hours among caregivers

Observations with care hours >0 (3.07%) in the Respondent sample (45-64)
Labor force participation rate (%) by informal care intensity and gender

Respondent sample (45-64)
Effects of caregiving on female labor market outcomes

- Wage income gap ($/yr)
- Any work (%)
- Any employed work (%)

Hours of care/wk

- 0
- 3
- 6
- 9
- 12

Wage income loss in 1 year ($)

Labor force participation (%)

Employment (%)

Wage income gap ($/yr)

Any work (%)

Any employed work (%)
Limitations

• Cross-sectional data (→ Longitudinal data)
  – Better control for individual heterogeneity
  – Long-term effects
  – Snapshot → Policy impacts and trends

• Possible heterogeneous effects
  – e.g. Married vs. unmarried
Directions for future research

• **Use longitudinal data (2006 & 2008) from KLoSA**
  – Impacts of public long-term care insurance (July 2008)

• **In-depth analysis and exploration of related issues**
  – Duration vs. Intensity
  – Married vs. unmarried
  – Trajectory: contribution to old-age poverty in women
  – Economic behavior: intergenerational transfer

• **Comparative and cross-cultural**
  – European countries (SHARE)
  – Asian Americans (?)