

Informal Care and Medicare Expenditures: Testing for Heterogeneous Treatment Effects

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Informal Care

- Informal care of elderly by adult children
 - Is most common form of long-term care (LTC)
 - Is preferred to formal care
 - Reduces formal LTC use
 - Van Houtven and Norton (*JHE*, 2004)

Informal Care Defined

- *Informal care* (IC) is unpaid care provided by a child or child's family
 - Typically unskilled care
 - Help with ADLs or IADLs
- *Formal care* (FC) is paid medical or custodial care

Van Houtven & Norton *JHE* 2004

- IC is net substitute
- IC is substitute for home health and nursing home care
- IC is endogenous
- Policy simulations depend on whether caregiver works
- Need to determine how IC affects health expenditures

Informal Care

- Demographic and policy changes mean
 - Demand for IC expected to change
 - Aging of population
 - Decreasing disability
 - Nursing home use declining
 - More absolute demand for LTC
 - More reliance on publicly-financed home health care
 - Increasing life expectancy
 - Married elderly
 - Single elderly

Informal Care

- Demographic and policy changes mean
 - Supply of IC expected to change
 - More equal labor force participation between sons and daughters
 - Fractured families
 - Kids have less contact with parents (Kotlikoff, 1989)
 - More migration
 - Delayed childbearing
 - Reduced fertility

Informal Care

- Demographic and policy changes mean
 - Market for informal care is changing over time
 - If IC supply does not keep up with IC demand, may want to create effective incentives to encourage IC

State and Federal Policies

- Modest policies support caregivers in the U.S.
 - State tax credits for caregivers
 - 23 states have either tax deduction or credit
 - \$500 in 3 states for full-time caregivers
 - National Family Caregiver Support Program 2000
 - Caregiver training and respite care
 - Assistance navigating social services system
 - Medicaid Home and Community-Based Waiver
 - Pay family caregivers directly for providing care

Current Research Gap

- Does IC by adult children reduce Medicare expenditures of the single elderly?
- What about when
 - Parents are married?
 - Son is the primary caregiver?
 - Primary caregiver is not a child?

Main Hypothesis

- H1: Informal care reduces Medicare expenditures of older adults
 - IC a net substitute if $MB_{FC,IC} \leq 0$
 - Effect will vary by type of expenditures
 - Substitution effect strongest for home health expenditures skilled nursing home expenditures
 - IC is endogenous
 - Child decides how much to provide based on choice parent makes about formal care

Extensions to Hypotheses

- H2: Married parents: smaller effect
- H3: Sons and daughters: no difference
- H4: Non-children: smaller effect

Two-part Expenditure Models

- $E(\$FC) = \Pr(\$FC > 0) \times E(\$FC \mid FC > 0)$
- 5 dependent variables
 - Home health
 - Skilled nursing facility
 - Long-term care (HH + SNF + hospice)
 - Hospital (Part A)
 - Total

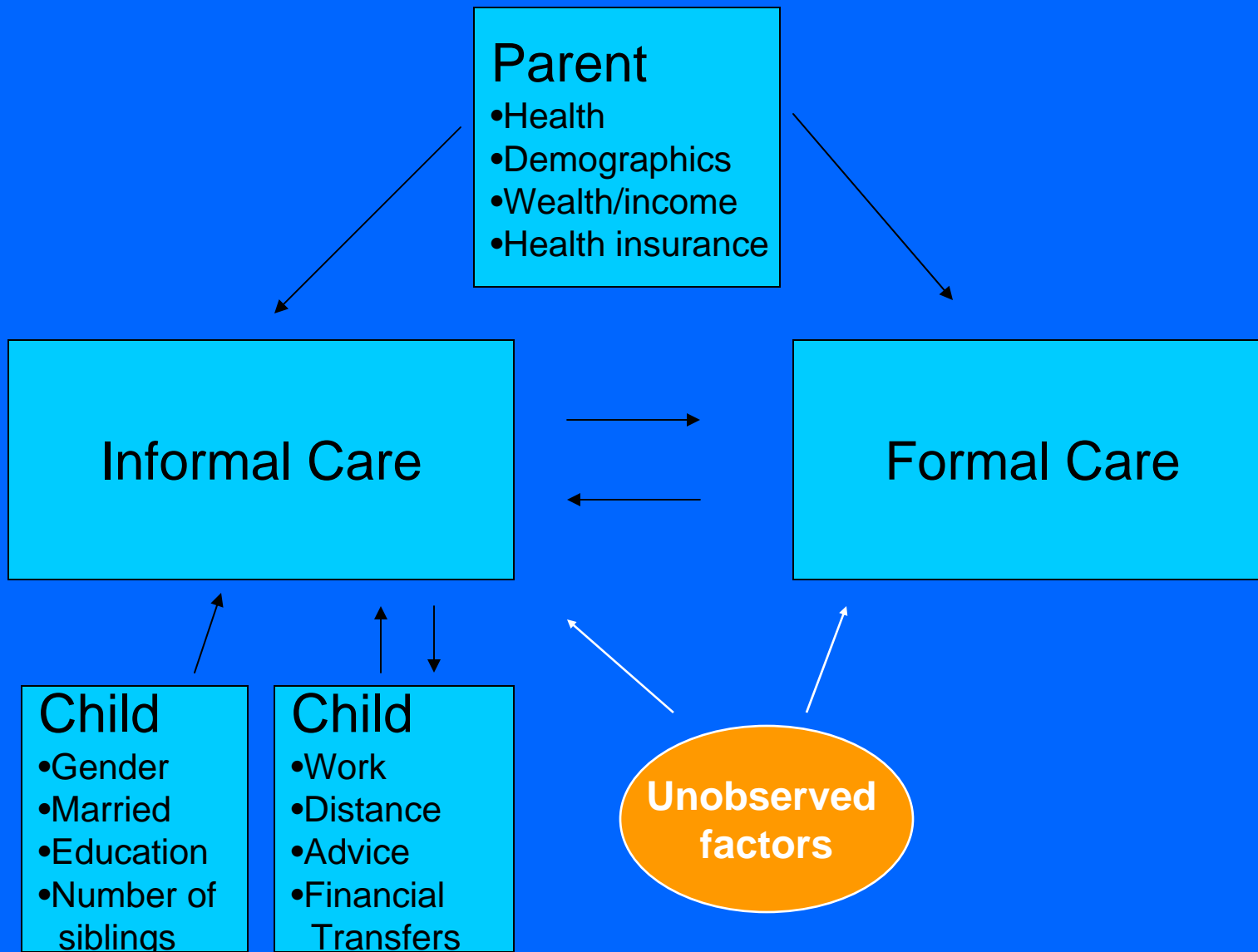
Informal Care

- Hours per month
- Aggregated from all children, their spouses, and grandchildren
- 24% received informal care
- 37 hours per month on average
- Endogenous

Endogeneity

- Decisions about informal care made jointly with decisions about formal care
- Formal care may affect informal care
 - Recover after hospitalization
 - Treatment improves ability to live alone
- Omitted variables correlated with both
 - Health status
- Many studies have shown endogeneity

Flow chart of IC-FC



Instrumental Variables (1)

- IV methods for endogeneity of IC
- Instruments:
 - Number of sons
 - Number of daughters
 - Number of adult children, < HS educ.
- IVs pass tests
 - F -test in first stage = 18.99
 - Pass over-identification tests
 - Good R -squared (.498)

Methods Details

- Continuous models have $\ln(y)$
- Full marginal effect accounts for both parts of two-part model
- Bootstrapped standard errors

Instrumental Variables (2)

- For extensions, use slightly different set of instrumental variables
 - Number of adult children, < HS educ.
 - Number of adult children not married
 - Number of step children
 - Age of the oldest child
 - Number of brothers of the parent

Data

- Asset and Health Dynamics Among the Oldest Old (HRS/AHEAD)
- Medicare claims
 - Needed Medicare ID number to be included (~80% provided their number)
- AHEAD in 1992 was nationally-representative of community-dwelling persons age 70 and above

Sample

- Waves 1 and 2
- Age 70 and above
- At least one living child
- Single elderly
 - 2,293 unique parents
 - 3,942 observations
- Married elderly
 - 2,463 unique parents
 - 4,240 observations

Table 1. Descriptive Statistics of Dependent Variables

Formal Care	Single Mean (N=3,942)	Married Mean (N=4,240)
Home Health Care (HHA)		
Any HHA expenditures	.15	.096
HHA expenditures (N=592; 407)	\$4,880	\$4,706
Skilled Nursing Facility (SNF)		
Any SNF stays	.044	.024
SNF expenditures (N=173; 102)	\$7,738	\$6,741
LTC		
Any LTC	.17	.11
LTC expenditures (N=658; 460)	\$6,558	\$6,213
Inpatient Care		
Any inpatient hospital care	.23	.20
Nights in hospital (N=924; 858)	\$10,327	\$10,534
Total		
Any	.28	.23
Amount (N=1,112; 972)	\$12,462	\$12,240

Explanatory Variables

- 80 years old
- 20% male
- 16% black, 7% Hispanic/Latino
- 1.6 IADLs and ADLs
- 34% former smoker
- Income, insurance, health status, and chronic health conditions

Main Results

- H1: IC reduces total Medicare expenditures, only some results statistically significant
- LTC: IC reduces
 - Pr(home health expenditures)
 - Pr(skilled nursing expenditures)
- Acute care: IC reduces
 - $E(\text{inpatient expenditures} | y > 0)$

Main Results

<u>Expenditure Type</u>	<u>Marginal Effect</u>	<u>A 10 % increase in IC^a →</u>
Home health	-379	\$ -38
Skilled nursing	-306	\$ -31
Total LTC	-748*	\$ -75*
Inpatient	-771	\$ -77
Total	-1,305	\$ -131

* Significant at the 5% level. Bias-corrected bootstrapped C.I.

a. Need to adjust by 4/5 to get annual savings

Results for Extensions

- Married: confirmed H2 (mostly)
 - Smaller marginal effects, less significant
- Sons v. Daughters: confirmed H3
 - No difference
- Non-children: limited support for H4
 - Right direction, little significance

Tax Policy

- Would it be fiscally prudent to create tax incentives for people to provide more IC?
- Do cost offsets from lower Medicare expenditures outweigh tax breaks?
- Back-of-envelope calculation
 - If person becomes full-time caregiver
 - Requires 1,920 hours
 - Saves \$4,638
 - Average of \$2.42 per hour

Underestimate

- Gradual increase in Medicare expenditures
 - More SNF and home health covered now
- No Medicaid expenditures
 - Results are lower bound
 - Additional Medicaid savings could be twice
- Data issues
 - Excluded observations on Wave 1 respondents who died before Wave 2
 - Too hard to deal with censoring issues
 - Some lost to follow-up if enter an nursing home

Conclusions

- IC saves Medicare money by reducing home health, skilled nursing, and inpatient care
- IC has lesser effect for married parents
- IC's effect no different by gender
- IC provided by others has weaker effect