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The Effect of Coresidence with an Adult Child on Depressive Symptoms among Older Widowed Women in South Korea: An Instrumental Variables Estimation

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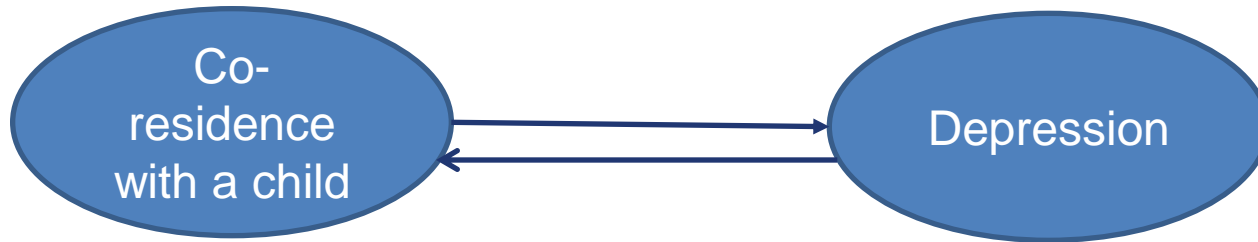
Background- South Korea

- Aging country:
 - % of elderly ≥ 65 years: from 9% (current) to 38% (in 2050)
- Life expectancy (at 65 years) for women is 21 years vs. 16.6 years for men
 - Older widowed women large and fastest growing group
- High rates of depression among widowed and among women
- Suicide – a growing problem
- Co-residence declining

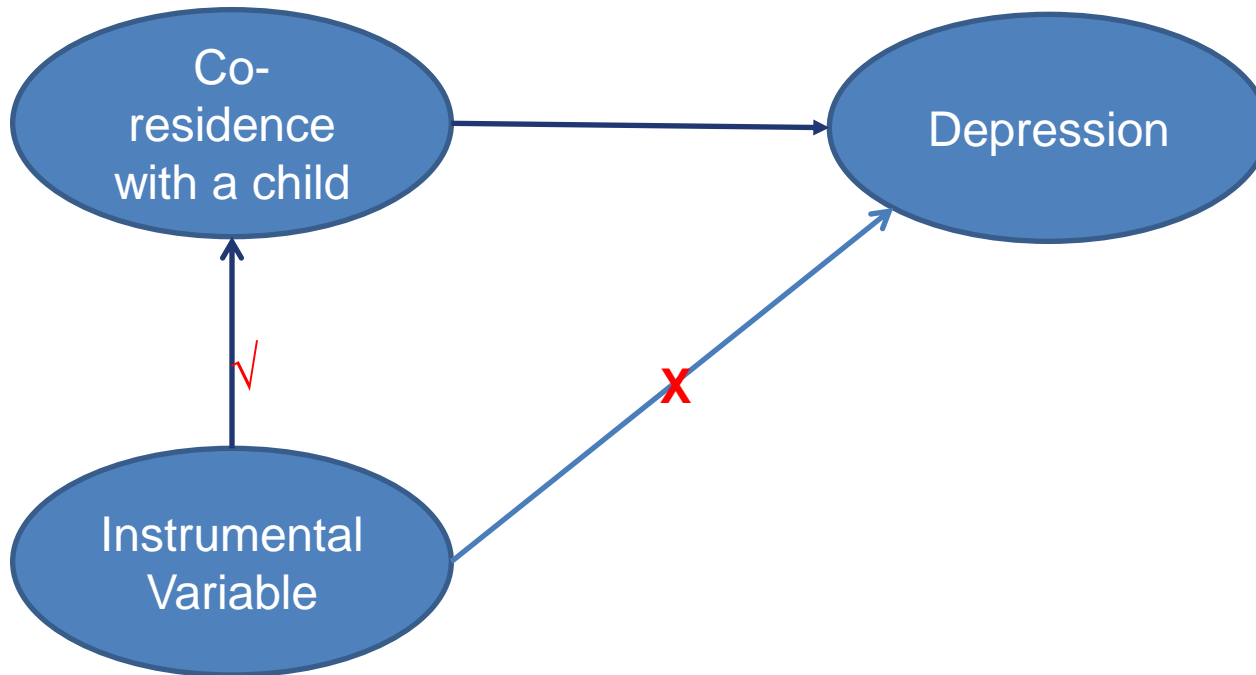
Objective

- To estimate the causal effect of coresidence with an adult child on depressive symptoms among older widowed women in South Korea.

Background: Problems in study design



Background: Instrumental variables



Instrumental Variable mimics random assignment of co-residence

Methods: Data and Variables

- *Data-Korea Longitudinal Study of Ageing*
- Nationally representative study – two waves
- Analytical sample: widowed women ≥ 65 years with at least 1 living child
 - N=2446:1279 (first wave) and 1167 (second wave)
- *Outcome*: Depressive symptoms: 10-item CES-D
- *Main predictor*: Co-residence with an adult child

Methods: Statistical analysis

- Ordinary least squares (OLS) model; IV two stage least-squares (2SLS) regression
- 2 waves treated as repeated cross-sectional surveys, adjusting for clustering at individual level
- IVs –
 - number of sons (continuous variable)
 - whether eldest child is a daughter (dummy variable)

Table 1: Summary statistics

Variables	Total n=2,446 %	Coresiding with an adult child n=1,416 %	Not coresiding with an adult child n=1,030 %
Mean Depressive symptom score (0–30)	10.00	9.59	10.56
Coresidence with an adult child	57.9	100.0	-
<i>Instrumental variables</i>			
Number of sons	2.07	2.13	1.98
Eldest child is daughter	35.8	37.2	33.8

Those co-residing with a child were older, richer, and more likely to have ADL limitations compared to those not co-residing with a child

Table 2: Ordinary least squares (OLS) and instrumental variable two-stage least squares (IV-2SLS) regression of CES-D score

Variables	OLS (N=2446)		IV-2SLS (N=2446)	
	Coefficient	(95% C.I.) ^a	Coefficient	(95% C.I.) ^a
Coresidence with an adult child	-0.700**	(-1.196, -0.204)	-7.749*	(-14.092, -1.407)

** $p < 0.01$, * $p < 0.05$

Discussion and conclusion

- Limitations:
 - Did not measure type and quality of actual or perceived support from adult children
 - Possible differences may exist by coresidence type
 - Limited to community-dwelling widows
- Methodological contribution to the literature by accounting for endogeneity
- Implication: Decreasing rates of coresidence with children is of public health concern among older widowed women in South Korea



Thank you

Korean Longitudinal Study of Ageing

- First wave(2006):10,254 adults \geq 45 years in 6171 households
- Second wave (2008): re-interviews with 8,688 respondents from first wave
- Analytical sample: widowed women \geq 65 years with at least 1 living child (N=2446, including 1279 (first wave) and 1167 (second wave))

Table 1: Summary statistics

Variables	Total n=2,446 %	Coresiding with an adult child n=1,416 %	Not coresiding with an adult child n=1,030 %
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<i>Instrumental variables</i>			
Number of sons	2.07	2.13	1.98
Eldest child is daughter	35.8	37.2	33.8
<i>Demographic</i>			
Mean Age	76.16	77.46	74.37
Education level			
Elementary school	91.7	91.9	91.6
Middle school	4.3	4.4	4.1
High school	3.1	2.8	3.7
College	0.8	0.9	0.7
Total assets quintile in 1st wave			
1 (poorest)	29.7	21.6	40.8
2	30.8	23.2	41.4
3	14.8	17.6	10.9
4	11.5	16.9	4.0
5 (richest)	13.2	20.7	3.0
Residence area			
Seoul	28.4	28.8	27.9
Other metropolitan area	54.9	52.0	58.9
Province (rural)	16.6	19.1	13.2

Table 1: Summary statistics (contd.)

Variables	Total n=2,446 %	Coresiding with an adult child n=1,416 %	Not coresiding with an adult child n=1,030 %
<i>Health variables</i>			
Any ADL/IADL limitations	28.0	34.3	19.4
<i>Self-reported health</i>			
Very good	0.9	1.1	0.6
Good	12.1	13.2	10.5
Fair	32.3	34.0	29.9
Poor	42.6	40.7	45.2
Very poor	12.2	11.0	13.8
<i>Disease indicator</i>			
Hypertension	45.1	43.1	48.0
Diabetes	17.7	16.7	19.0
Cancer	2.2	1.6	2.9
Chronic lung disease	3.1	3.3	2.9
Liver disease	0.9	0.8	1.1
Heart disease	8.6	6.4	11.7
Stroke	3.3	4.0	2.4
Arthritis	39.7	38.2	41.7
Injury due to traffic accident	8.2	8.5	7.7
Fall in the past two years	11.9	11.0	13.1
Urinary incontinence	27.6	26.6	28.9
<i>Survey year</i>			
2006	52.3	54.7	49.0
2008	47.7	45.3	51.0

- Testing of IV assumptions:
 - Test of instrument strength
 - Statistical significance of IV in first-stage regression
 - Weak identification test
 - Overidentification test

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Variables	OLS (N=2446)		IV-2SLS (N=2446)	
	Coefficient	(95% C.I.) ^a	Coefficient	(95% C.I.) ^a
Coresidence with an adult child	-0.700**	(-1.196, -0.204)	-7.749*	(-14.092, -1.407)
Test of overidentification ^b , χ^2 (d.f.=1)			0.001	$p = 0.9721$
Test of endogeneity, $F(1, 1420)$			7.247	$p = 0.0072$

** $p < 0.01$, * $p < 0.05$. ^a Confidence intervals are based on cluster-robust standard errors. ^b Hansen-Sargan statistic.