

## Informal parental care and female labor supply in Japan

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### Abstract

Using the Japanese Study of Aging and Retirement (JSTAR), Japan's first globally comparable panel survey of the elderly, we estimate the effect on female employment in Japan due to the provision of informal parental care. We observe that informal parental care has little impact on female employment, after controlling for endogeneity of informal care or individual unobserved time-invariant heterogeneity. This finding is consistent with those observed in Europe and the U.S., underscoring a limited association between care and work in Japan, which is facing aging at the fastest pace among advanced economies.

**Keywords:** Informal care, Caregiving, Employment, Japan

**JEL Classification:** J22, J14, I12.

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\*We would like to thank Hidehiko Ichimura and Tsunao Okumura for their helpful comments.

This work was supported by the JSPS under Grant numbers 26245039, 15H03339, and 15H05692.

## **1. Introduction**

In Europe and the U.S., many studies have found that the effect of parental caregiving on female labor force participation is limited, despite the observed prevalence of a combination of parental caregiving and low levels of employment (Bauer and Sausa-Poza, 2015). A limited association between caregiving and work has been found by instrumental variable methods, which control for the endogeneity of caregiving, as well as by fixed-effects models, which control for individual time-invariant attributes. In this study, we examine the validity of this well-established view by using the same methods and a Japanese dataset comparable with those used in preceding studies in Europe and the U.S. (e.g. Crespo and Mira, 2014; Van Houtven et al., 2013). Japan is facing the fastest pace of aging among advanced economies, but the association between care and work has not been studied sufficiently.

## **2. Data**

We use data from the Japanese Study of Aging and Retirement (JSTAR), which is Japan's first globally comparable panel survey of the elderly (Ichimura, Hashimoto, and Shimizutani, 2009). Its design is similar to that of the Survey of Health, Ageing and Retirement in Europe (SHARE) and Health and Retirement Study (HRS) in the U.S. We concentrate on female

respondents aged 50–59 who have at least one parent or parent-in-law alive at the time of the survey.

We construct two samples, A and B. Sample A consists of daughters with at least one parent alive ( $N = 229$ ), following Crespo and Mira (2014), who use the SHARE. Sample B consists of daughters with at least one parent or parent-in-law alive ( $N = 241$ ), following Van Houtven et al. (2013), who use the HRS. JSTAR asks the respondents about their involvement in the care for parents and parents-in-law separately. Sample A consists of the data from the 2009 and 2011 waves, and sample B uses the data from the 2009 wave, since caregiving for parents-in-law was not asked in 2011. Regarding care involvement, 10.8% of the respondents in sample B care for a parent(s)-in-law, not well below 12.9% who care for a parent(s), indicating the importance of care for parents-in-law among Japanese women.

We utilize two sets of care-need information of parents as instruments for daughters' care involvement. The first is the need for care of each of the parents (in samples A and B) and parents-in-law (in sample B). The second is the reported number of potential caregivers other than the respondent for parents (in samples A and B) and parents-in-law (in sample B), which is expected to represent the possibility of care involvement more precisely than does the number of siblings often used in preceding studies.

Table 1 provides the summary statistics of key variables for samples A (baseline) and B. Among daughters having at least one parent alive (sample A), 25.1% ( $= 66/263$ ) care for a

parent(s). The proportion of those working in the market is 60.6% among caregivers, compared to 76.6% among non-caregivers. For daughters having at least one parent or parent-in-law alive (sample B), 21.6% (= 52/241) care for a parent(s) and/or parent(s)-in-law. The proportion of those working in the market is 63.5% and 74.1% among caregivers and non-caregivers, respectively.

### **3. Model**

First, we estimate ordinary least square (OLS) models, in which the dependent variable is an indicator for daughter's employment and the independent variables are an indicator variable for caregiving to a parent(s) in sample A and to a parent(s) or parent(s)-in-law in sample B, daughter's age and its square, self-assessed health, functional limitations, education, marital status, the number of children in the household, whether the daughter is living with a child less than 18 years old, city, and year. Second, we estimate instrumental variable (IV) models treating informal care as endogenous using two-stage least squares. For sample A, we instrument informal care with two indicator variables of each parent's need for care and the number of other potential caregivers for parents in sample A. For sample B, we use four indicator variables of each parent's and parent-in-law's need for care and the numbers of other potential caregivers for parents and for parents-in-law. Third, we estimate fixed-effects (FE) models to control for time-invariant individual heterogeneity

using the two-wave panel data in sample A.

#### 4. Results

Table 2 reports the estimation results using sample A. The estimated coefficient on caregiving from the OLS is  $-0.163$  ( $0.067$ ), which is negative and significant at the 5% level, a result consistent with a lower proportion of workers among caregivers than non-caregivers observed in Table 1. After controlling for the endogeneity of caregiving, the estimated coefficient on caregiving from the IV is  $-0.047$  ( $0.114$ ), which is three-fourths of the OLS estimate, and is no longer significant. This suggests that the observed negative association between care and work is strongly overestimated due to the endogeneity of caregiving.<sup>1</sup>

Another focus is on the impact of care adjusted for an individual's time-invariant attributes. The FE estimate is  $-0.017$  ( $0.067$ ), which is small and insignificant, a result consistent with the view that observed prevalence of a combination of care and low employment is attributable to an individual's time-invariant attributes.

We conduct the same estimation for sample B, which consists of daughters having at least one parent or parent-in-law alive. In Table 3, the coefficient on caregiving from the OLS is large and negative but insignificant, unlike in the case of sample A. This is

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<sup>1</sup> The F-statistic of the joint significance of the instruments in the first-stage regression is greater than 10, and we also do not reject the test for over-identifying restrictions.

consistent with the finding in Table 1, which shows that the difference in the prevalence of work between caregivers and non-caregivers is somewhat smaller in sample B than in sample A. Meanwhile, the IV estimate is only  $-0.029$  ( $0.094$ ), indicating that informal care has little impact on female labor supply after controlling for the endogeneity of caregiving.

## **5. Conclusions**

The key findings in this study are generally consistent with previous studies in Europe and the U.S. using similar methods and data from HRS and SHARE, which are comparable with JSTAR. Parental care has little impact on female labor force participation after controlling for the endogeneity of care or individual time-invariant attributes.

The results suggest that parental caregiving is endogenous in nature, affected by decisions to work and other life arrangements. Even reverse causation from work to care cannot be excluded; caregivers' lower attachment to labor force may raise the chance of becoming a caregiver (Michaud et al., 2010). Their association is also likely confounded by an individual's unobserved attributes, including personality traits and other inherent attributes (Heitmueller, 2007).

Limited associations between parental caregiving and caregiver employment do not mean that caregiving does not matter for the caregiver's behavior or well-being. These may reflect a flexible working environment that allows caregivers to adjust hours worked or

crunch time to make room for caregiving rather than getting out of the labor force (Bolin et al., 2008; Van Houtven et al., 2013; Michaud et al. 2010). Meanwhile, caregiving is most likely to have adverse impact on a caregiver's mental health outcomes. We should expand the analysis to consider the association of caregiving with a wider range of characteristics relating to caregivers' life arrangements and well-being.

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**Table 1: Summary statistics of work and care variables**

	Sample A ( <i>N</i> = 263)		Sample B ( <i>N</i> = 241)	
	Daughters who have at least one parent alive		Daughters who have at least one parent or parent-in-law alive	
	Non-caregiver ( <i>N</i> = 197)	Caregiver ( <i>N</i> = 66)	Non-caregiver ( <i>N</i> = 189)	Caregiver ( <i>N</i> = 52)
<i>Prevalence</i>				
Working	0.766	0.606	0.741	0.635
Father needs care	0.041	0.242	0.000	0.115
Mother needs care	0.234	0.864	0.101	0.654
Father-in-law needs care			0.026	0.115
Mother-in-law needs care			0.048	0.538
<i>Number of potential caregivers</i>				
	<i>Mean (SD)</i>	<i>Mean (SD)</i>	<i>Mean (SD)</i>	<i>Mean (SD)</i>
For parents	0.34 (0.69)	1.32 (0.90)	0.14 (0.48)	0.85 (0.92)
For parents-in-law			0.07 (0.41)	0.54 (0.78)

**Table 2: Estimated impact of providing care to parents on caregiver employment**Sample A: Daughters having at least one parent alive ( $N = 263$ )

Dependent variable = Working	OLS		IV		FE	
	Coef.	(SE)	Coef.	(SE)	Coef.	(SE)
Caregiving	-0.163**	(0.067)	-0.047	(0.114)	-0.017	(0.067)
Age	-0.494	(0.587)	-0.347	(0.577)	0.547	(0.593)
Age <sup>2</sup>	0.041	(0.053)	0.027	(0.052)	-0.062	(0.053)
Less than High School	-0.056	(0.105)	-0.079	(0.100)		
Some College	-0.041	(0.065)	-0.035	(0.063)		
University	-0.042	(0.083)	-0.042	(0.082)		
Divorced or widowed	0.101	(0.066)	0.101*	(0.061)		
Never Married	0.379***	(0.108)	0.342***	(0.108)		
Self-assessed health: very good	-0.016	(0.073)	-0.013	(0.071)	0.261	(0.163)
Self-assessed health: good	-0.024	(0.068)	-0.013	(0.067)	0.122	(0.084)
Self-assessed health: fair or poor	-0.168	(0.105)	-0.169*	(0.101)	0.101	(0.090)
Physical functional limitation: 1	-0.205*	(0.110)	-0.221**	(0.102)	-0.016	(0.077)
Physical functional limitation: 2+	-0.484***	(0.145)	-0.475***	(0.142)	-0.235	(0.154)
Number of Living Children	0.042	(0.031)	0.042	(0.031)		
Children less than 18 years old	-0.088	(0.136)	-0.107	(0.131)	-0.120	(0.160)
$R^2$	0.240		0.231		0.022	

Notes: Robust standard errors clustered at the individual level are in parentheses. All regressions include municipality and survey-wave dummies. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 3: Estimated impact of providing care to parents or parents-in-law on caregiver employment**Sample B: Daughters with at least one parent or parent-in-law alive ( $N = 241$ )

Dependent variable	OLS		IV	
	Coef.	(SE)	Coef.	(SE)
= Working				
Caregiving	-0.078	(0.072)	-0.029	(0.094)
Age	-1.090*	(0.651)	-1.093*	(0.629)
Age <sup>2</sup>	0.095	(0.059)	0.095*	(0.057)
Less than High School	-0.090	(0.112)	-0.100	(0.109)
Some College	-0.050	(0.067)	-0.052	(0.064)
University	0.004	(0.088)	0.001	(0.085)
Divorced or widowed	0.164***	(0.060)	0.164***	(0.057)
Never Married	0.311**	(0.133)	0.307**	(0.127)
Self-assessed health: very good	-0.058	(0.078)	-0.054	(0.075)
Self-assessed health: good	-0.063	(0.068)	-0.056	(0.065)
Self-assessed health: fair or poor	-0.171	(0.115)	-0.165	(0.110)
Physical functional limitation: 1	-0.014	(0.167)	0.013	(0.156)
Physical functional limitation: 2+	-0.401**	(0.170)	-0.402**	(0.161)
Number of Living Children	0.043	(0.034)	0.042	(0.033)
Children less than 18 years old	-0.174	(0.150)	-0.181	(0.145)
$R^2$	0.157		0.156	

Notes: See note for Table 2. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .