CARE WORK AND
THE ECONOMY

Advancing policy solutions with
gender-aware macroeconomic models

THE QUALITY OF LIFE OF FAMILY CAREGIVERS IN SOUTH KOREA

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CWE-GAM METHODOLOGY REPORT

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ABSTRACT

Purpose: In rapidly aging populations, an increasing number of men and women are finding themselves carrying the responsibility of caring for older relatives. The paper examines how the mental toll, physical burden, opportunity costs, and rewards of caregiving affect the quality of life of family caregivers.

Methods: We analyze data from a special-purpose national household survey of 501 households in Korea with an older person in need of care. It collected detailed information about the cognitive and physical status of the care recipient. Instead of estimating a quality-of-life index, the paper relates the level of the quality of life reported by the caregiver to the reported costs and perceived reward of caregiving using maximum likelihood estimates of a generalized structural equations model.

Results: A caregiver who experiences either a heavier mental toll, physical burden, or worsened financial status is about half as likely to report being satisfied with her life as not. These three costs have about the same effect on the quality of life. A caregiver who finds caregiving rewarding is nearly twice as likely to report a higher quality of life.

Conclusion: The self-reported quality of life of family caregivers is affected negatively by the mental, physical and financial costs of caregiving, and yet these costs appear to be outweighed by the psychic or emotional reward felt by the caregiver. (222 words)

JEL codes: J14, J16

Keywords: factors of care burden, quality of life of family caregivers, generalized structural equations model

THE CARE WORK AND THE ECONOMY (CWE-GAM) PROJECT

The Care Work and the Economy (CWE-GAM) Project strives to reduce gender gaps in economic outcomes and enhance gender equality by illuminating and properly valuing the broader economic and social contributions of care givers and integrating care in macroeconomic policymaking toolkits. We work to provide policymakers, scholars, researchers and advocacy groups with gender-aware data, empirical evidence, and analytical tools needed to promote creative, gender-sensitive macroeconomic and social policy solutions. In this era of demographic shifts and economic change, innovative policy solutions to chronic public underinvestment in care provisioning and infrastructures and the constraints that care work places on women's life and employment choices are needed more than ever. Sustainable development requires gender-sensitive policy tools that integrate emerging understandings of care work and its connection with labor supply, and economic and welfare outcomes.

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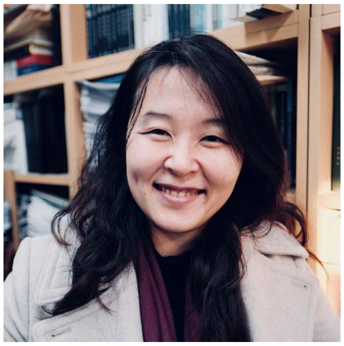

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1. INTRODUCTION

The quality of life of family caregivers – their mental and physical health as well as their economic and social wellbeing – is important for at least two reasons. First, the caregivers' own quality of life affects the level and quality of care that they can provide. Fatigue, physical ailments and increased depression levels in caregivers are predictive of more frequent harmful behavior, such as verbal abuse, toward their wards [1, 2]. Second, safeguarding the physical and mental health of caregivers allows them to return to their previous employment and other social and productive activities once their care responsibilities end. Previous studies have found that long-term family caregiving tends to reduce the formal labor market participation of caregivers both at the extensive and intensive margins [3, 4].

This paper examines the determinants of the quality of life of family caregivers. Instead of defining a multi-dimensional index of that quality of life, which is frequently the method used in similar studies [5-7], we use a structural equations model that allows us to estimate the effects of the cost and reward factors on a caregiver's quality of life based on direct responses of the caregiver, and detailed information about the mental and physical status of the elderly care recipient and that of the family caregiver, the time and effort spent on caregiving, and the extent to which that care work is shared with other household members or paid workers.

2. THE CAREGIVER'S QUALITY OF LIFE

There is a large body of literature on elderly care provision, its burden on caregivers, and its effect on the quality of life of caregivers. One recurring theme in that literature is how difficult it is to identify the factors that most influence the burden experienced by caregivers, let alone measure them, and to define what is meant by the caregiver's quality of life. In this study we estimate the effect of three types of the cost of caregiving—mental, physical, and opportunity costs—and a measure of the psychic or emotional reward from caregiving. Mental or emotional costs result from having to cope with the care recipient's level of disability (such as cognitive impairment, problematic behavior, and ADL limitations) and the caregiver's feelings about those conditions (such as feelings of overload), as well as any problems that arise as a result of caregiving in the family or at work [8-13]. Physical costs relate to the level of effort required by specific tasks which lead to an increased risk for caregivers themselves to develop health issues such as back problems, cardiovascular disease, and other chronic ailments [14-16]. Opportunity costs pertain to the indirect costs of caregiving which may include the value of the caregiver's lost earnings due to loss of employment and any reduction in the time for other caregiving or social activities. Caregivers generally are able to balance their market work and caregiving when their care responsibilities are not heavy, but much less so when care work involves more than ten hours per week, particularly for women [17, 18]. In Korea, women who provide more than 10 hours of care per week participate in the labor force at 15.2 percentage points lower than those without any care burdens [19]. In Japan, a study of elder caregivers finds that caregivers who were able to engage daily in a hobby or a leisure activity in the home felt less burden from caregiving [20].

There are also rewards from caregiving, such as "an enhanced caregiver–care recipient relationship, personal growth, caring self-competence, satisfaction with social involvement, increased understanding of the aging process, ability to provide good care, and other specific uplifts in the caregiving process" [10, p.818]. These psychic or emotional rewards can counterbalance the feeling of being burdened and depressive symptom scores while improving self-assessed health [21, 22] and the quality of life of the caregiver.

Researchers have constructed proxy measures of the quality of life that are subjective and multidimensional, encompassing the caregiver's psychological, physical, emotional, social well-being, family relationships, and overall life satisfaction [12, 13, 23-25]. [1] Such constructs, however, cast the measure in terms of how researchers conceptualize quality of life rather than in terms of the respondents' own perceptions [29]. In contrast, a unidimensional response from the caregiver is more respondent-centered and simpler to analyze and interpret [30]. A note of caution about this approach, however, is that respondents may not understand the scales provided.[2] In this paper, we use the direct responses from the caregiver to a question regarding the quality of life, but we use those responses within a multivariate analysis in which we control for the characteristics of the respondent as well as other factors.

3. CONCEPTUAL FRAMEWORK AND EMPIRICAL MODEL

We posit that the *quality of life* of an unpaid family caregiver depends on the toll of caregiving—the mental cost, physical burden, and opportunity costs it imposes on the caregiver—relative to the reward, as measured by the caregiver's feeling of satisfaction, *ck*. How costs and reward translate into quality of life is influenced by mediating factors such as the characteristics of the caregiver and the household, which are meant to proxy for the resilience of the caregiver and the availability of household resources to support the caregiver. Figure 1 is a simple illustration of the basic conceptual model that underlies our empirical analysis.

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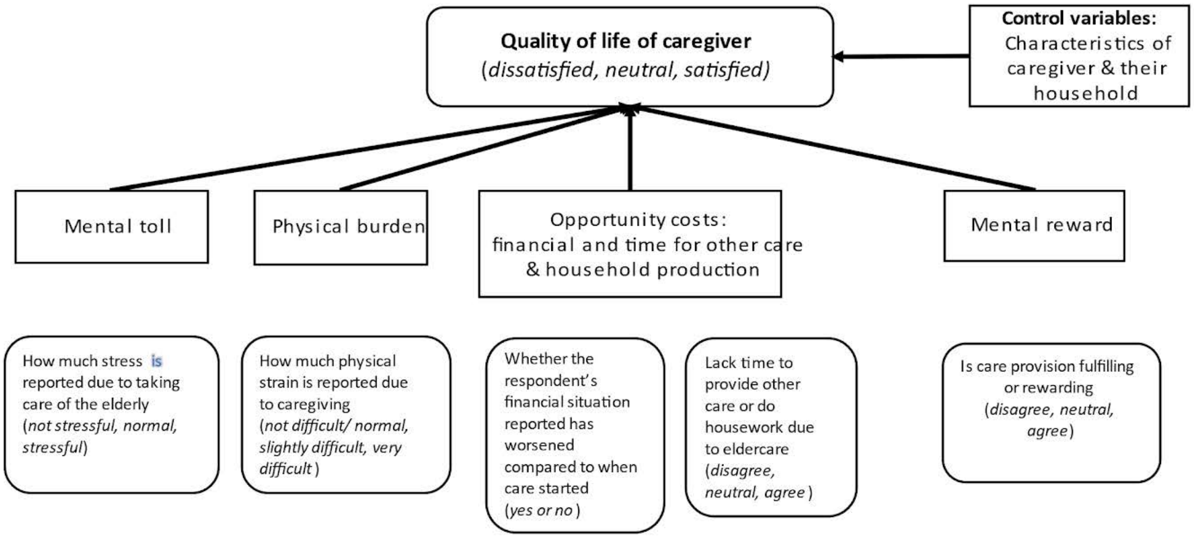
[1] There is a debate about whether the quality of life (QoL) and satisfaction and well-being (SWB) are identical concepts. The WHOQOL is an instrument first developed by the World Health Organization in the early 1990s [26]. It assesses individuals' perception of their quality in life in the context of the culture and value systems in which they live. It was developed and piloted on about 4500 respondents in 15 diverse cultural settings. It produces a multi-dimensional profile of scores across six domains and 24 sub-domains of quality of life. Another QoL measure is the Family Quality of Life Survey (2006) (FQOLS), also a self-report questionnaire, that consists of 54 forced choice and open-ended question items over nine domains [27]. A definition of SWB is provided by [28] as the valuation that "people make regarding their lives, the events happening to them, their bodies and minds, and the circumstances in which they live."

[2] "Despite the apparent signal in subjective well-being data, one could legitimately question whether one should give a cardinal interpretation to the numeric values attached to individuals' responses about their life satisfaction or emotional states because of the potential for personal use of scales" [31, p18-19].

Figure 1. A conceptual framework for how cost and reward in eldercare affect the quality of life of the caregiver



Notes: Authors' diagram

In equation form, this general conceptual framework can be expressed as a system of equations,

$$Q_i = f(C^*_i, R^*_i, X_i, v_i) \qquad [1]$$

in which ƈkᵢ, the quality of care of caregiver ffi is a function of a vector of different costs (*UF*) and rewards (ƈtF) to caregiving, a vector of control variables (*e*) and a random error vector (*fl*). *e* ffi pertains to the characteristics of caregiver ffi such as gender, age, and employment status, and several household characteristics such as household size, location, presence of young children, and income. Each cost *U* and reward ƈt component of the respective *UF* and ƈtF vectors can be written, in turn, as,

$$C_i = aZ_i + e_i \qquad [2]$$

$$R_i = rY_i + w_i \qquad [3]$$

where *f* pertains to the characteristics of the care recipient, such as age and gender, as well as their mental and physical status, and ę includes the relationship of the caregiver to the care recipient. As mentioned above, we use only one measure of reward in our estimation model.

We estimate this system of relationships of the quality of life of the caregiver as a generalized structural equations model (GSEM) using maximum likelihood estimation. In this approach, we explicitly recognize that the costs and rewards of caregiving are themselves endogenous and are functions of measures of the older adult's mental status, physical capacity, and household characteristics. We use direct measures of the different costs and rewards using direct responses by the caregivers to specific survey questions, discussed in the next section.[3] A structural equations model allows us to establish the pathways through which the individual costs and reward of caregiving affect the quality of life of the caregiver, as well as how characteristics of the older adult receiving care and the caregiver influence those costs and reward. By directly estimating the relative effects of the different costs and reward on the caregiver's quality of life, we identify how the caregiver's quality of life might be improved. This structural approach is different from previous studies that have also used multivariate analysis but have obtained reduced-form estimates [32, 33]. In addition, by using maximum likelihood estimation, we take into account the fact that the different costs may be correlated with each other, such as a heavy physical burden or a high opportunity cost also increasing the mental cost, or the caregiver's health suffering because of sustained emotional strain from observing a loved one's health decline.

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[3] In STATA, we use the GSEM command to estimate this model. An alternative to estimating the model using maximum likelihood estimation is to estimate a two-stage model which would involve estimating each cost and reward equation in a first stage (perhaps using Seemingly Unrelated Regressions method) and then to use the predicted values of the costs and returns in the quality-of-life equation. The shortcoming of this alternative method is that it does not allow for interdependencies between the endogenous variables. Recognizing that the costs likely are interrelated, we estimated a Seemingly Unrelated Regression model (SUR) of the cost equations to ascertain that the GSEM estimates are not significantly different from the SUR estimates.

3. DATA AND SAMPLE

Our analysis uses data from the 2018 Care Work Family Survey in Korea [34] which collected detailed information on caregivers and care recipients, on care arrangements of the household, as well as on the physical, psychological, and economic burden of the caregivers. Our sample consists of 501 caregivers who were taking care of a person aged 65 or older who needed help in maintaining daily life due to frailty or sickness. Only main caregivers were eligible for the interview: people who considered themselves as mainly responsible for the care of the older person(s) and who either lived with the older person(s) and provided care or who did not live with them but visited at least three times a week to provide a minimum of two hours of care per visit. [4]

We use the self-reported responses to direct questions addressed to the caregiver: [5]

- Mental toll: In general, how much stress do you have taking care of the elderly person? (Not stressful at all, not too stressful, neutral, a bit stressful, very stressful)
- Physical burden: In general, how much physical difficulty do you have taking care of the elderly person? (Not difficult at all, not too difficult, neutral, a bit difficult, very difficult)
- Opportunity cost:
    - How is your household's current, financial situation compared to when you started taking care of the elderly person? That is, has your financial situation worsened compared to when care started? (Our financial situation worsened a lot, slightly worsened, there isn't much difference, slightly improved, improved a lot
    - Please indicate whether the following statement describes your situation: I feel lack of time to take care of other family members because I need to take care of `the older person (strongly disagree, disagree, neutral, agree, strongly agree)
- Psychic reward: What do you think of the following statement: I feel proud of myself for taking care of the older person? (Strongly disagree, disagree, neutral, agree, strongly agree)
- Quality of life: How satisfied are you with your life in general? (Very dissatisfied, dissatisfied, neutral, satisfied, very satisfied)

The majority of respondents (64.5 percent) found caregiving stressful; only 7.8 percent reported that they did not. More than 60 percent of caregivers reported physical strain from the caregiving, with 12 percent finding caregiving physically very difficult. In terms of the financial opportunity cost, 27.7 percent of the caregivers experienced a worsening of financial situation with caregiving. For time cost, about half of the respondents reported that they felt a lack of time to provide care for other family members or to do housework due to their elder care responsibility. 37.2 percent of caregivers reported that caregiving made them feel proud of

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[4] More detailed information about the survey can be found in [35].

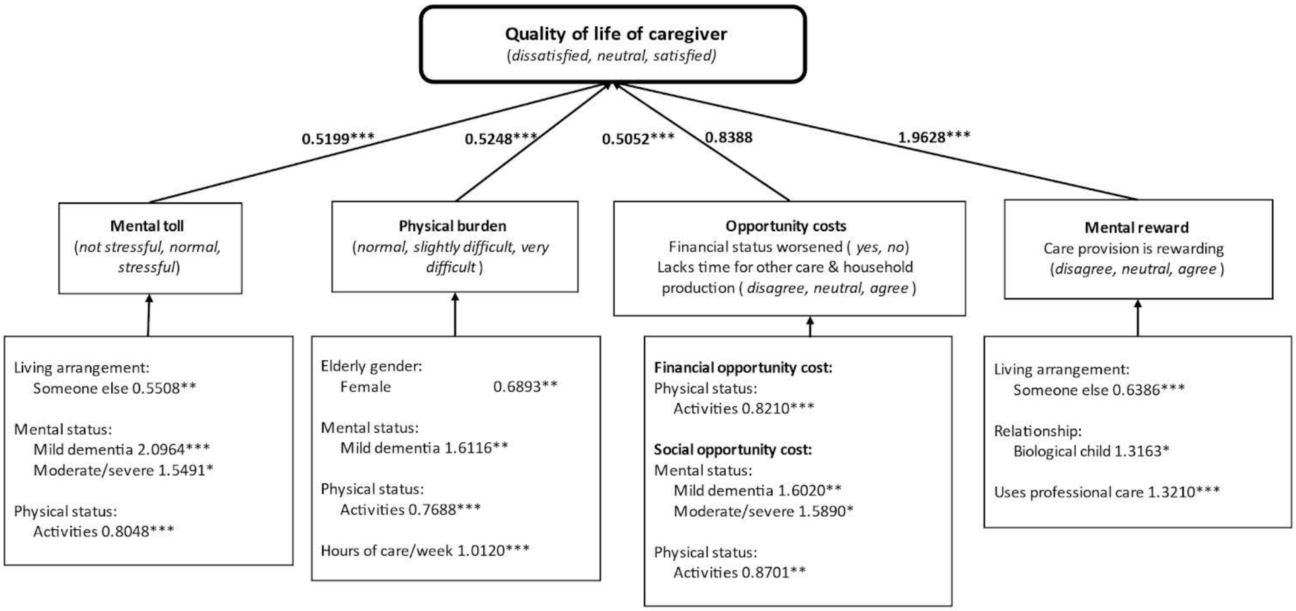
[5] In our analysis, we condense the categories to reflect the limited observations in the tails of the distributions. For instance, the mental toll was coded as 1= not stressful if the respondent found the caregiving either not too stressful or not at all stressful, 2=neutral if the respondent found it neutral, 3=stressful if the respondent found the caregiving either a bit stressful or very stressful.

themselves, and about half of the caregivers found caregiving as meaningful. With respect to the quality of life, only 25.1 percent answered that they were satisfied with their life in general, while about one-fifth reported that they were not satisfied with their life. The largest group was neutral, people who reported that they were neither satisfied nor dissatisfied.

4. RESULTS

The direct responses to the survey questions about the quality of life, costs and reward are discrete and ordered, so we estimated ordered logit equations. Figure 2 highlights the statistically significant predictors of the individual cost and reward measures, and the contributions of the different costs and reward to the affect the quality of the life of the family caregiver. Full estimated findings and descriptive statistics are given in appendix tables (Tables 1-5).

Figure 2. Estimates of how cost and reward in eldercare affect the quality of life of the caregiver



Notes: Log-odds ratios shown are from the estimation of Equations 1-3 using a generalized structural equations model.
Statistical significance: * p<0.1, ** p<0.05, *** p<0.01.
Data source: Authors' calculations using 2018 Korea Paid Care Workers Survey.

Focusing first on how the different costs and reward affect the caregiver's reported quality of life, we find that a caregiver who experienced either heavier mental toll, physical burden, or worsened financial status is approximately half as likely to report being satisfied with life as not. These three costs have about the same effect on the quality of life, while the effect of time opportunity costs (that is, loss of time for other care and household production) is not statistically significant. Controlling for costs, a caregiver who finds her care activities rewarding, for whatever reason, is nearly twice as likely to report a high quality of life. Controlling also for a few characteristics of the caregiver, we find that being employed while also being a caregiver reduces the quality of life (odds ratio of 0.5506, p=0.02), but the presence of children, household size, and wealth are not statistically significant.

Our GSEM approach also estimates the relative importance of the possible predictors of costs and rewards. Overall, the degree of cognitive impairment of the older person which significantly increases the mental and physical stress felt by the caregiver. For example, if the care recipient has even mild dementia, the caregiver is twice as likely (odds ratio of 2.096, p=0.00) to report a high mental toll, compared with caring for a care recipient with no dementia. In addition, the greater the number of the functional activities that the older person(s) is capable of undertaking without help from the caregiver, the lower the probability of mental and physical stress for the caregiver. On feeling some reward for caregiving, caring for one's parent significantly increases the likelihood of finding caregiving rewarding (odds ratio of 1.3163, p=0.07), as well as being able to share the care burden by using paid care services (odds ratio of 1.3210, p=0.01).

4. CONCLUDING REMARKS

Family members continue to be the predominant providers of eldercare in South Korea and many other countries, but their role as care providers depends on their ability to protect their own level of quality of life. Using a maximum likelihood method, we estimated the coefficients of a generalized structural equations model (GSEM) of the quality of life of caregivers. The model posits explicitly that the costs and rewards of caregiving which affect the caregiver's quality of life are themselves endogenous and are associated with a number of factors that include the characteristics of the older person receiving care, the caregiver, and the household. In sum, we find that the mental, physical and the financial costs of caregiving lower the quality of life of the caregiver by about the same degree in Korea – although this effect may not be the case in other contexts. Being able to estimate separately the effect of each type of burden can help to inform how better to alleviate the caregiver's total burden and how to protect her quality of life. Finding also that the psychic or emotional reward experienced by a family caregiver can outweigh the burdens she feels suggests why family caregiving persists in many contexts despite the presence of institutional care provision and thus why family caregiving deserves public support.

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STATEMENTS AND REMARKS

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APPENDIX

Table 1. Descriptive statistics of the cost, reward, and quality of life of caregiver

Variable	Measurement	Men	Women	Full Sample
Mental Toll	**Amount of stress**			
	Not Stressful	14.4	6.6	7.8
	Neutral	30.4	27.2	27.7
	Stressful	55.2	66.2	64.5
Physical Burden	**Physical strain**			
	Not Difficult	19.7	7.7	9.6
	Neutral	29.7	24	24.9
	Slightly difficult	39.4	56	53.5
	Very difficult	11.2	12.2	12.1
Opportunity cost: Financial	**Worsened financial situation**			
	Yes	34.5	26.5	27.7
	No	65.6	73.5	72.3
Opportunity cost: Time	**Lack of time to provide care or do housework**			
	Disagree	30.7	16.2	18.4
	Neutral	29.5	32.2	31.8
	Agree	39.8	51.6	49.8
Reward	**Providing care causes feelings of pride**			
	Disagree	6.5	17.9	16.2
	Neutral	54.7	45.2	46.7
	Agree	38.8	36.9	37.2
Quality of Life	**General level of life satisfaction**			
	Dissatisfied	13.9	20.0	19.1
	Neutral	61.8	54.7	55.8
	Satisfied	24.3	25.3	25.1
Observations		76	425	501

Source: 2018 Care Work Family Survey in Korea

Notes: Percentages were computed using analytic weights. Mental toll refers to how much stress is reported due to taking care of the elderly care recipient, with ordered responses collapsed to be "not stressful," "normal," or "stressful." Physical burden refers to how much physical strain is reported due to caregiving, with ordered responses collapsed to be "not difficult/normal," "slightly difficult," or "very difficult." Financial opportunity cost is a yes or no response to whether the respondent's financial situation has worsened compared to when care started, while time opportunity cost refers to whether a respondent reports lacking time to provide care or do other housework due to eldercare, with ordered responses collapsed as "disagree," "neutral," or "agree."

Table 2. Pairwise correlations of cost measures

	Mental toll	Physical burden	Opportunity cost: Financial	Opportunity cost: Time
Mental toll	1.0000			
Physical burden	0.5963	1.0000		
Opportunity cost: Financial	0.2189	0.1645	1.0000	
Opportunity cost: Time	0.2477	0.2668	0.0435	1.0000

Notes: Mental toll refers to how much stress is reported due to taking care of the elderly care recipient, with ordered responses collapsed to be "not stressful," "normal," or "stressful." Physical burden refers to how much physical strain is reported due to caregiving, with ordered responses collapsed to be "not difficult/normal," "slightly difficult," or "very difficult." Financial opportunity cost is a yes or no response to whether the respondent's financial situation has worsened compared to when care started, while time opportunity cost refers to whether a respondent reports lacking time to provide care or do other housework due to eldercare, with ordered responses collapsed as "disagree," "neutral," or "agree."

Table 3. Effects of toll and reward on caregiver's quality of life

	(1) Quality of life of caregiver				
	Odds ratio	Std. Err	p-value	[95% Conf. Interval]	
Toll & Reward					
Mental toll	**0.5199*** **	0.0897	0.00	0.3707	0.7292
Physical burden	**0.5248*** **	0.0894	0.00	0.3758	0.7328
Financial status (worsened)	**0.5052*** **	0.1146	0.00	0.3238	0.7882
Lacks time for other care & household work	0.8388	0.1121	0.19	0.6455	1.0900
Mental reward	**1.9628*** **	0.2849	0.00	1.4768	2.6087
Controls					
Age	1.0268	0.0992	0.78	0.8497	1.2409
Age^2	0.9997	0.0008	0.75	0.9982	1.0013
Caregiver gender (=female)	0.9056	0.2519	0.72	0.5250	1.5620
Employed (=yes)	**0.5506** **	0.1428	0.02	0.3312	0.9153
Child present (=yes)	1.2051	0.4527	0.62	0.5771	2.5162
Household size	1.1289	0.1285	0.29	0.9032	1.4110
Locality					
Metropolis	1.0000	(empty)			
Small/medium city	1.0985	0.2451	0.67	0.7094	1.7010
County (eup, myeon)	**2.5803*** **	0.6719	0.00	1.5488	4.2986
Wealth - household income quintile					
Below 100~250	1.0000	(empty)			
250~350	1.3337	0.4145	0.35	0.7253	2.4524
350~450	1.3396	0.4457	0.38	0.6979	2.5714
450-550	1.5149	0.5607	0.26	0.7334	3.1292
550 or above	1.8368	0.7261	0.12	0.8464	3.9861

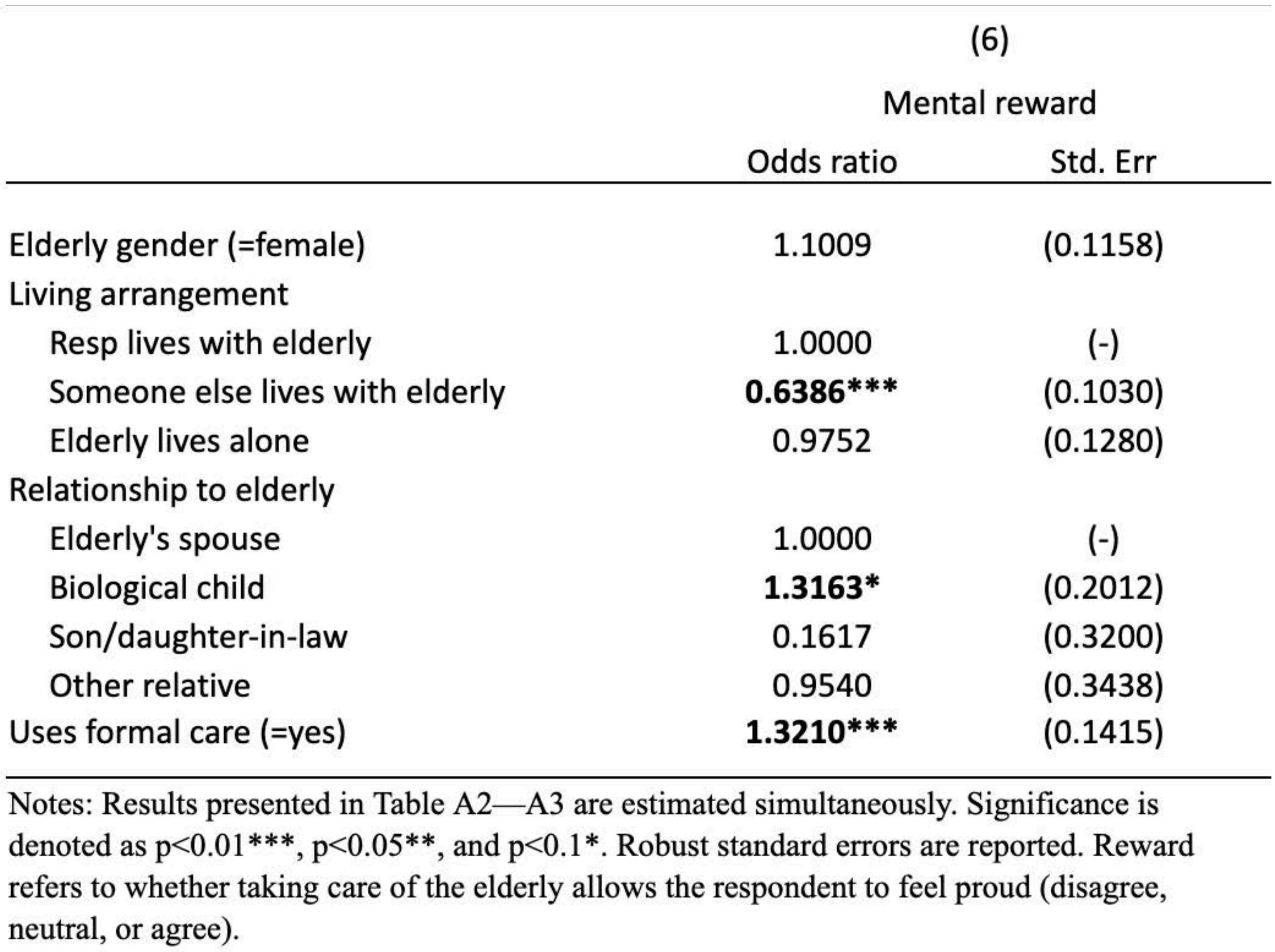
Notes: Results presented in Table A2—A3 are estimated simultaneously using maximum likelihood estimation. Statistical significance is denoted as p<0.01***, p<0.05**, and p<0.1*. Robust standard errors are reported. Quality of life refers to how satisfied the respondent reported being with their life in general (dissatisfied, neutral, or satisfied).

Table 4. Estimated effects of characteristics of care recipient, caregiver on individual cost measures

	(2)		(3)		(4)		(5)	
	Mental toll		Physical burden		Opportunity cost: Financial status worsened		Opportunity cost: Lacks time	
	Odds ratio	Std. Err	Odds ratio	Std. Err	Odds ratio	Std. Err	Odds ratio	Std. Err
Elderly gender (=female)	0.7653	(0.1346)	**0.6893****	(0.1253)	0.9186	(0.1896)	0.8553	(0.1534)
Living arrangement								
Respondent lives with elderly	1.0000	(-)						
Someone else lives with elderly	**0.5508****	(0.1454)	0.8900	(0.2500)	1.3624	(0.4424)	1.1384	(0.3022)
Elderly lives alone	0.8684	(0.2289)	1.3230	(0.3379)	1.0531	(0.3167)	1.0699	(0.2651)
Dementia status								
No dementia	1.0000	(-)						
Mild dementia	**2.096*****	(0.4361)	**1.6116****	(0.3328)	0.9752	(0.2347)	**1.6020****	(0.3229)
Moderate/severe dementia	**1.5491***	(0.3826)	0.6533	(0.1738)	0.9888	(0.2992)	**1.5890***	(0.4141)
Activities elderly can perform	**0.8048*****	(0.0503)	**0.7686*****	(0.0468)	**0.8210*****	(0.0591)	**0.8701****	(0.0533)
Hours per week spent on care	0.9970	(0.0040)	**1.0120*****	(0.0044)	1.0069	(0.0045)	1.0007	(0.0039)

Notes: Results presented in Table A2—A3 are estimated simultaneously. Significance is denoted as $p<0.01$***, $p<0.05$**, and $p<0.1$*. Robust standard errors are reported. Mental toll refers to how much stress is reported due to taking care of the elderly care recipient, with ordered responses collapsed to be "not stressful," "normal," or "stressful." Physical burden refers to how much physical strain is reported due to caregiving, with ordered responses collapsed to be "not difficult/normal," "slightly difficult," or "very difficult." Financial opportunity cost is a yes or no response to whether the respondent's financial situation has worsened compared to when care started, while time opportunity cost refers to whether a respondent reports lacking time to provide care or do other housework due to eldercare, with ordered responses collapsed as "disagree," "neutral," or "agree."

Table 5. Determinants of reward to caregiving



	(6)	
	Mental reward	
	Odds ratio	Std. Err
Elderly gender (=female)	1.1009	(0.1158)
Living arrangement		
Resp lives with elderly	1.0000	(-)
Someone else lives with elderly	**0.6386*** **	(0.1030)
Elderly lives alone	0.9752	(0.1280)
Relationship to elderly		
Elderly's spouse	1.0000	(-)
Biological child	**1.3163***	(0.2012)
Son/daughter-in-law	0.1617	(0.3200)
Other relative	0.9540	(0.3438)
Uses formal care (=yes)	**1.3210*** **	(0.1415)

Notes: Results presented in Table A2—A3 are estimated simultaneously. Significance is denoted as p<0.01***, p<0.05**, and p<0.1*. Robust standard errors are reported. Reward refers to whether taking care of the elderly allows the respondent to feel proud (disagree, neutral, or agree).