Response of Family Elder Support to Changes in the Income of the Elderly in Korea

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Abstract:

The population of South Korea is aging rapidly. The traditional arrangement of family elder support is breaking down fast but remains important. With the recent radical expansion of government programs targeted to the elderly, widespread concern about possible crowding out of private assistance is reasonable. Despite its implications to public policy, relatively little is known about the extent to which support by adult children responds to changes in elderly parents' income. We address this issue using data from the first two waves of the Korean Longitudinal Study of Ageing.

Between 2005 and 2007 there was substantial variation in sources and amounts of income of elderly Koreans and in family elder support. We find that poor elders were more likely than wealthier elders to live with a child; the elders' current income predicts coresidence even when we control for elders' coresidence status at an earlier point in time. On the other hand, children responded to an increase in their parents' own income by *increasing* financial support. That pattern suggests that a government income-support program would cause the reverse of crowd-out – the extra income would be amplified by the children's actions.

Our findings show that family elder support in Korea is influenced by several types of motivation. This study also points up the importance of unmeasured individual covariates as potential sources of bias in cross-sectional analyses, and hence the value of longitudinal data.

I. Introduction

The Korean population is rapidly ageing due to extended life expectancy and decreased fertility rates. The traditional arrangement of family elder support is breaking down fast but still remains substantial. With recent radical expansion of government programs targeted to the elderly, concerns about possible crowding out of private assistance by public programs have been growing. However, there is little systematic understanding of the effects of public elder support on private elder support or of the motives for family elder care, which ultimately determine the impact.

Using data from the first two waves of the Korean Longitudinal Study of Ageing, we provide an overview of changes in elderly Koreans' income and adult children's support for their elderly parents, and assess the extent to which the children's support responds to changes in parents' income. We analyze two major types of family elder support, children's cohabitation with and financial transfers to their elderly parents.

We utilize a new nationally representative longitudinal dataset, studying not only children's financial transfers but also their coresidence. Our results provide evidence on what motivates private elder support and on how public elder support provision affects the private support. Ultimately the evidence will help policy makers in Korea predict the effects of income-support programs and improve their design.

This paper is organized as follows. Section II provides background on elder care system in Korea and Section III summarizes the relevant literature on intergenerational transfers. Section IV introduces the Korean Longitudinal Study of Ageing dataset and variables used in this paper. Section V provides an overview of elderly Koreans' income and family support for them, and examines how family support responds to the elders' income. Finally, section VI offers some caveats and discusses main findings of this paper.

II. Background on Korean elder care system

The current widespread poverty of elders in Korea reflects the demographic and socioeconomic history of Korea, the culture and traditions around elder support, and the recent changes in public elder support policies. The Korean population is rapidly ageing due to growing life expectancy and decreased fertility rates (Table 1). Though population ageing is common in many developed countries, it is occurring much faster in Korea, giving little time for the Korean government to cope. The transition from an ageing society, where over 7 percent of the population are aged 65 or older, to an aged society, where over 14 percent are aged 65 or older, is expected to take just 18 years from 2000 to 2018. This transition is notably shorter than the estimates of 115 years in France, 71 years in the U.S., 40 years in Germany, and 24 years in Japan (Korea National Statistical Office 2006; United Nations 2000). The growth rate of the oldest of the old is even higher, which will engender a drastic increase in chronic illnesses and elder care needs.

[Table 1 about here]

Traditionally, families have played the dominant role in the Korean elder care system. In particular, based on the prevailing Confucianism in East Asian countries, the eldest son has been primarily responsible for taking care of his old parents, coresiding with them in a three generation household. Since males have been the usual breadwinner in Korea, the wife of the eldest son has been the actual care provider for her parents-in-law.

Though adult children are still an important source of old-age security for parents, the tradition of family care is rapidly breaking down. For example, 77 percent of elderly people aged 65 or older lived with their child in 1984 but the proportion decreased to 54 percent in 1998 (Kim and Rhee 1999). Child-to-parent monetary transfers accounted for 72 percent of total income of people aged 60 or older in 1980 but only 31 percent of the income in 2003 (Moon *et al*. 2006). As in other Asian countries, rapid industrialization and urbanization during recent decades partly explain the erosion in Korea (Mason 1992).

Although the traditional family care system is breaking down, an alternative public system is still at the infant stage. For example, the Korean national pension program started in 1988, so few elderly people have accumulated enough funds to receive sizable benefits. As for elder care services, Cho *et al*. (2004) estimated that the ratio of the number of long-term care beds to number of the elderly in Korea, 0.4 percent, is much lower than that of developed countries, where it ranges from 2 to 7 percent.

In fact, with its priority on economic growth, the Korean government has tended to minimize its provision of social services. Total public social spending in Korea has remained the lowest among the Organisation for Economic Co-operation and Development (OECD) countries. In 2005, the spending was 6.9 percent of GDP and this proportion was far below the OECD average of 20.6 percent (OECD 2010). Elder care has been no exception and the government has intentionally emphasized the norm of filial piety (Chee 2000; Palley 1992). Expenditures for the welfare of the elderly population took only about 0.4 percent of the total government budget and about five percent of the Korean Ministry of Health and Welfare budget until recently (Korea National Statistical Office 2008). Elderly Koreans suffer from serious financial difficulties. According to OECD (2009), over 45 percent of Koreans age 65 or above had income below half of median household income in 2005. This is the highest relative poverty rate among the elderly in OECD countries and is far below the second highest rate (31%, in Ireland).

The impending crisis faced by elderly Koreans and related social problems, such as the lowest fertility level in the world, have recently been drawing attention from policy makers. To

cope with the problems, the government radically expanded various social services within past few years. In 2008 the government introduced a supplemental income program, named the Basic Old-Age Pension (BOAP), and a long-term care support program, named the Long-term Care Insurance (LTCI). With these two policies, the expenditures for elder support in 2008 recorded a dramatic increase of 262 percent compared to that in 2007, reaching 2.1 billion k₩ (Korea National Statistical Office 2008).[1] Though the public supports the programs, concerns about their high costs and possible crowding out of private assistance have been prominent in the public debate.

III. Literature review

Families can respond to public elder support modifying their support levels, with important consequences for the net effects of the government programs. This concern is particularly keen in countries with a strong family elder care tradition (Biddlecom, Chayovan and Ofstedal 2002).

The theories on what motivates family elder support and how public elder support affects the private assistance largely divide into two categories. The first hypothesis, the altruism motive, says that people transfer their resources to other family members due to an altruistic concern (Becker, 1974; 1991). In other words, one's utility function depends not only on one's own well-being but also on that of family members. The altruism motivation predicts that family members with greater need receive more intra-family transfers. According to the hypothesis, public support simply substitutes, or completely crowds out, family support as the public support lowers recipient's need (Barro 1974).

As a competing hypothesis, the exchange motivation assumes that family members are selfish and, hence, transfers among them occur only when there is an expectation for reciprocity (Cox, 1987). For example, adult children might provide more financial support to a parent who provides help with house work or childcare. Along the same line, elderly parents might strategically use their bequests to draw more care and attention from their children if the support is motivated by potential bequests (Bernheim, Shleifer, Summers 1985). While the exchange motive does not hypothesize a particular relationship between public and private elder support, it would be logical to assume that public support which increases elderly people's resources to reciprocate brings in more family support that are motivated by exchange.

Most existing studies on elderly Koreans' economic resources and their coresidence with children are restricted to cross-sectional studies, often with a non-representative sample and with an indicator variable for the resources instead of their actual amount (Chung 2002, De Vos and Lee 1993, Eu 1992, Han and Yoon 2000, Martin 1989, Park, Kim and Kojima 1999). Only Kim (2007) analyzed panel data but the author also used elders' education as an indicator for the economic need. All studies except Park, Kim and Kojima (1999) and Martin (1989) find that elderly Koreans with fewer economic resources are more likely to live with their children.

With increased interest in population ageing, several nationally representative longitudinal surveys have been initiated in Korea around 2005. To identify motivations for family elder support, some recent studies examined the association between children's financial transfers to their elderly parents and elders' income excluding the transfers by analyzing the first

[1] 1,000 Korean won is worth about $1. For that reason the financial statistics in this paper are presented in units of 1,000 Korean won, abbreviated k₩.

wave of the surveys. Based on the negative association between the two, the studies conclude that not exchange but altruism is the major motive for family elder care and, therefore, it will be crowded out by public provision for the elderly (Kim 2008, Lee and Lee 2009, Park forthcoming, Moon et al. 2006).

Interestingly, the literature supporting the altruism motive for family elder care does not account for the traditional exchange underlying the private assistance. Although caring for an older parent has often been honored as a reflection of filial piety in Korea, the relationship has traditionally included an intergenerational exchange of resources, reinforced by strong norms. In a largely agrarian society, the eldest son took advantage of scarce family resources such as educational opportunities and family properties (Oh and Warnes 2001). In return, the eldest son and his wife cared for his parents when they got old. The eldest son who neglected his parents could be easily identified in a rural society with limited mobility and was strongly blamed for neglecting his filial duty by his siblings and neighbors.

As with other studies in the literature, our study assumes that elders' own income is exogenous. Under that assumption, we examine how family elder support through coresidence and financial transfers responds to changes in the income over time in Korea. Our study contributes to the literature by analyzing a new nationally representative longitudinal dataset and by studying not only adult children's financial transfers to but also their coresidence with elderly parents.

IV. Korean Longitudinal Study of Ageing and variables

The data for our analysis come from the Korean Longitudinal Study of Ageing (KLoSA). The KLoSA is a survey of nationally-representative Koreans aged 45 or older excluding institutionalized people and residents of Che-Ju Island (Korea Labor Institute 2009). For the purpose of this paper, the analysis sample is limited to people who were aged 65 or older in the first wave and participated in both waves. Age 65 is not only the usual cutoff point to define the aged population in various demographic studies, but also an eligibility criterion for Korean government programs targeted on older people. The final sample includes 3,340 elderly persons.

The KLoSA is a biennial longitudinal study. The Korea Labor Institute has released the first two waves of the survey and this paper provides results using the two waves. The first wave was surveyed between August and December in 2006 and it contains information during the calendar year 2005 for flow variables (e.g. income and financial transfers), and information at the time of the 2006 interview for stock variables (e.g. wealth and coresidence status). The second wave was surveyed between July and November in 2008 and it contains information for 2007 and 2008 in an analogous fashion.

The KLoSA is ideal to examine the research question as it consists of various ageing-related modules including socio-demographic characteristics, income, assets, family composition, employment, health, and life satisfaction. In fact, the dataset is very similar to the Health and Retirement Study in the U.S. Since the KLoSA is an individual-representative dataset, the unit of analysis in this paper is an elderly person and all variables are defined at the level.

Independent variables

The independent variable of interest is elderly people's income. In the KLoSA, elderly respondents reported the amount of their income denominated in 10 k₩. There are several things to note regarding the independent variable.

First of all, since the unit of analysis is an elderly person, we define the independent variable as personal income. In the KLoSA, respondents were asked to report their own income excluding their spouse's income. While elderly males tend to earn more than elderly females, the living standard of an elderly couple depends on their combined income. Accordingly, for an elderly couple, this paper recalculated personal income and assets by averageing husband's and wife's income.

Second, since we are interested in children's response to changes in elderly parents' income, we exclude private financial transfers, most of which are from children in Korea, from an elder's personal income. The KLoSA surveys private financial transfers from children, parents, and other family members as separate sources of a respondent's income, so we can calculate the pre-transfer income.

Third, elderly people's income can come from various sources and changes in income from different sources might have different effects on family elder support responses. Therefore, we categorize elderly people's pre-transfer income into five major categories, including earned income, pension income, asset income, social welfare income, and other income, and analyze them as separate categories in addition to analyzing total pre-transfer income.

Dependent variables

As for dependent variables, we use two major types of family elder support, elderly people's coresidence with a child and financial transfers received from non-coresident children. As for coresidence with a child, we define the variable as an elderly person's living with at least one adult child. Elderly respondents in the KLoSA reported whether they lived with individual children at the time of each wave interview, that is, at one point in time between August and December in 2006 and at another point in time between July and November in 2008.

In analyzing coresidence as one source of elder support, it is desirable to restrict the analysis sample to elderly people and their adult children. This is because many Koreans cohabit with their parents until they marry, and children are less likely to provide support as receive it in this arrangement. To determine a reasonable age cutoff for adult children, we compare the proportion of children providing their parents with major types of elder care by child age group using the first wave of the KLoSA (Appendix 1). The proportion of children cohabiting with parents drops sharply around age 30, which is about the average marriage age in Korea. The proportion of children providing financial transfers to parents increases substantially around the same age. Therefore, we use age 30 for the cutoff point for adult children.

Second, we define the second dependent variable, financial transfers from children, as financial transfers from all non-coresident children. The KLoSA asks elderly people about transfers from each child during the one-year period prior to the interview at each wave, that is, in 2005 and in 2007.[2] One limitation of the dataset is that the transfer information was gathered

[2] For all questions regarding children, including those on financial transfers between parents and children, only one person within a couple answered to the questions and the answer was applied to both the husband and the wife. However, compared to transfer data from other studies, married/cohabited respondents do not seem to separate what they received from or gave to children from what their spouse

only for non-coresident children. This is partly because money transfers between coresident family members are difficult to measure. The KLoSA asks the amount of regular money transfers, that of irregular monetary transfers, and the kinds of non-monetary transfers. This paper analyzes the sum of regular and irregular monetary transfers and calls the sum as financial transfers.

Other covariates

To identify reasons underlying children's provision of support for their elderly parents, we need both parents' and children's characteristics. The KLoSA dataset provides rich information on the possible covariates. Our analyses of coresidence control for various exogenous characteristics of an elder person including sex, age, education, marital status, and the number of sons while the analyses of financial transfers control for elderly people's marital status and health measured with ADL and IADL limitations, and their number of children who are married, own a house, and work.[3] Table 2 presents summary statistics of key variables in the 2006 and 2008 KLoSA dataset.

[Table 2 about here]

V. Responses of family elder support to changes in elders' income

We begin by providing descriptive statistics on levels and two-year changes in elderly Koreans' pre-transfer income, financial transfers from children, and coresidence status with a child.

The median value of pre-transfer income was 660 k₩ in 2005 (Table 3), increasing to 1,120 k₩ in 2007. Among various sources, public transfers, equal to 120 k₩ in both years, were an important source of elderly Koreans' pre-transfer income. Social welfare income showed the most increase during the period.

[Table 3 about here]

Regarding children's financial transfers, Table 3 shows that they account for most private financial transfers as mentioned earlier. Furthermore, we can see the importance of children's economic support to old-age security among elders. The proportion of children's financial transfers in their elderly parent's total personal income was above 20 percent in both years. Children's financial transfers increased to a median of 550 k₩ in 2007, up from 350 k₩ in 2005. The proportion of the transfers in total personal income also increased from 24.1 percent to 29.1 percent, showing the growing importance of the private economic assistance as the parents become older.

The median value of total personal income, the sum of pre-transfer income and private financial transfers from all sources, increased from 2,360 k₩ to 3,020 k₩ over the two-year

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did. Accordingly, we assume people reported transfers at a couple-level and divide the transfers by two if an elderly person was married. When transfer amount in the dataset is not the same for a husband and his wife, averaged amount is used.

[3] Activities of Daily Living (ADL) are defined as "the tasks of everyday life" and they include activities such as eating, dressing, getting into/out of a bed or chair, taking a bath or shower, and using the toilet. Instrumental Activities of Daily Living (IADL) are "activities related to independent living" such as preparing meals, manageing money, shopping, doing housework, and using a telephone (National Cancer Institute).

period. The increase is explained primarily by the change in children's financial transfers supplemented by a change in social welfare income. In terms of mean values, children's financial transfers, public pension, and social welfare income become more important while earned income and asset income become less important.

There was also considerable turnover in living arrangements of the elderly. Table 4 shows transitions in parents' coresidence status between 2006 and 2008. In each year, about 40 percent of elderly parents live with a child, showing that still significant portion of elderly Koreans live in a multi-generational household. In terms of change over time, 4.2 percent of the elderly moved into and 6.5 percent moved out of coresidence between the two years. 33.0 percent remained coresident and 56.2 percent remained non-coresident. Thus about one in five who were coresident in 2006 were living separately two years later, suggesting that coresidence is often a temporary arrangement.

[Table 4 about here]

Response of coresidence

Do changes in elders' income affect their coresidence status or financial support by children? It turns out that the question is not interesting for a large share of elders whose pre-transfer income is (and remains) zero. In the analysis that follows we restrict the sample to those who have substantial income – above the poverty line – in 2005.[4] After excluding poor elders, the sample size reduces to 1,365.

First, we examine the relationship between elders' income and their coresidence status with cross-sectional analyses in each year, that is, in 2006 and in 2008, using logit regression. The second set of analyses exploits the longitudinal nature of the KLoSA dataset, analyzing coreseidence in 2008 using prior coresidence (in 2006) as a covariate. By doing so, we control for unobserved determinants of coresidence, such as the preferences of parents and children for alternative living arrangements.

In the logit regressions, an elder's coresidence status is regressed on total pre-transfer income (Table 5(a)) as well as on pre-transfer income by sources (Table 5(b)). In the latter analysis, pre-transfer income is categorized into the aforementioned five categories–earned income, pension income, asset income, social welfare income, and other income. All income variables are log-transformed.

The first two columns of Table 5(a) present results from the regressions of elderly people's coresidence status on their total pre-transfer income. According to the analyses, elders' pre-transfer income is negatively associated with their likelihood to coreside with a child in both years ($\beta = -0.061$, p-value < 0.01 in 2006; $\beta = -0.108$, p-value < 0.01 in 2008). The coefficient of pre-transfer income is greater in absolute value in 2008 than in 2006, suggesting that the decision to coreside with children becomes more sensitive to own income as parents age.

[Table 5 about here]

The analysis of coresidence status in 2008 controlling for coresidence status in 2006 is

[4] In this paper, we defined elder poverty utilizing the eligibility criterion for the Basic Old-Age Pension, which provides poor elderly people with supplemental income just as does the Supplemental Security Income program in the U.S. By this criterion, an elderly person is classified as being poor if his or her self-support, annual income except private transfers + 0.05*net assets, is lower than a predetermined poverty line, equivalent to 3,840 k₩ for married individuals and 4,800 k₩ for others (Korean Ministry of Health and Welfare, 2007).

shown in the last column of Table 5(a). The addition of coresidence in 2006 as a covariate reduces the coefficient in absolute size but it is still negative at a statistically significant level ($\beta = -0.060$, p-value < 0.01). With this finding, we can make a stronger causal claim that greater economic need of elderly people causes their coresidence with children and, therefore, altruism might be the motive at least for children's support through coresidence.

Based on the regression outcome from this specification, we estimate the effect of additional public provision on elders' coresidence.[5] For example, the maximum amount of monthly benefits from the BOAP program is 80 k₩ (Korea Ministry of Health and Welfare 2007). If we assume that elders' pre-transfer income increases from its monthly median amount of 35.7 k₩ in 2007 by 80 k₩, the likelihood for elders to coreside decreases from 14.39 percent to 14.24 percent. This estimation is based on the analysis sample of the regression, that is, those who are aged 65 or older, have at least one adult child, and are non-poor in the first wave and participated in both waves. Therefore, there is uncertainty about applying the estimation to the entire elderly population. The impact would be larger in the population as it includes poor elders in addition to non-poor ones.

Next, Table 5(b) presents the results from the regressions of elders' coresidence status on their pre-transfer income by sources. In the cross-sectional results shown in the first two columns, income from various sources has a negative relationship with coresidence status: earned income, pension income, and social welfare income have negative coefficients at a significant level in 2006 while asset income has a negative coefficient additionally in 2008. Among various sources of income, elders' likelihood to coreside seems particularly sensitive to their earned income ($\beta = -0.064$, p-value < 0.01 in 2006; $\beta = -0.069$, p-value < 0.01 in 2008). Over time, coresidence status becomes more relevant with pension income ($\beta = -0.027$, p-value < 0.1 in 2006; $\beta = -0.044$, p-value < 0.01 in 2008) while the opposite is true with social welfare income ($\beta = -0.059$, p-value < 0.05 in 2006; $\beta = -0.048$, p-value < 0.05 in 2008).

When we additionally control for elders' coresidence status in 2006, only earned income is negatively associated with the likelihood for an elder to live with a child in 2008. The size of the coefficient become smaller and its statistical significance also gets weaker ($\beta = -0.045$, p-value < 0.1).

Response of financial transfers

Here we examine how children's financial transfers respond to changes in their elderly parents' income. In this analysis, unlike in the analysis of coresidence, we are able to take full advantage of the longitudinal structure of the data. In particular, we introduce a complete set of fixed effects for elders, so that the estimated effects of income on transfers are identified through changes – assuring that stable characteristics of the elders and their children are fully accounted for, whether or not they are observed. As in the analyses of coresidence, financial transfers are analyzed separately for total pre-transfer income and for pre-transfer income by sources.

As before, we exclude poor elders, and in this case we also limit the analysis to elders whose coresidence status is unchanged over the two years As described earlier, the transfers in the KLoSA are surveyed only for non-coresident children. To avoid a bias owing to this selection into non-coresidence, financial transfers in this paper are analyzed only for elderly people who had no change in their coresidence status over two KLoSA waves, that is, either

[5] The estimation assumes that assets and liabilities are fixed at their median value and all other variables are fixed at their mean value.

those who kept coresident or kept non-coresident with a child. With these restrictions, the final sample includes 1,223 individuals.

We analyze both the total amount of children's financial transfers (Table 6(a)) and the amount of net financial transfers from children, that is, financial transfer received from children excluding financial transfers given to children (Table 6(b)). This is to capture the possibility that elders with higher pre-transfer income might receive more money from their children simply because they give more money back to them.

Table 6(a) presents the results when the dependent variable is log amount of total financial transfers that an elder person received. According to the analyses, a one percent increase in total pre-transfer income of an elder is associated with 0.14 percent *increase* in financial transfers received from children (p-value < 0.01). Broken down by sources of pre-transfer income, an increase in earned income, asset income, and other income each has a significant positive association with the financial transfers ($\beta = 0.06$, p-value < 0.1; $\beta = 0.07$, p-value < 0.05; $\beta = 0.08$, p-value < 0.1, respectively).

[Table 6 about here]

Table 6(b) shows the results when the dependent variable is net financial transfers from children. (We are unable to use the log form because in some case the net transfer is negative.) Even excluding the possibility of concurrent reciprocity, elders' total pre-transfer income has a positive relationship with net transfers from children. However, the size of the coefficient is small: one percent increase in the income is associated with 1.35 k₩ *increase* in net financial transfers from children (p-value < 0.01). When elders' pre-transfer income is decomposed depending on its sources, no specific category of income has a positive association at a significant level.

In sum, the analyses of adult Koreans' financial transfers to their elderly parents consistently show that children send more money when their parents have higher income. These findings suggest the possibility that children's financial support for their elder parents in Korea might be crowded in, rather than crowded out, by public elder support and/or be motivated by an exchange motive, rather than an altruism motive.

VI. Conclusion

Using the first two waves of the KLoSA, this study examines how family elder support responds to changes in elderly people's income over time. In particular, we estimate the changes both in adult children's coresidence with and in their financial transfer to parents in response to changes in the parents' pre-transfer income.

Elder's pre-transfer income and children's support were dynamic rather than static over time. The median value of elders' pre-transfer income increased from 660 k₩ to 1,120 k₩ between 2005 and 2007 and the increase is explained by change in social welfare income most. Children's financial transfers substantially increased from 350 k₩ by 200 k₩. In terms of mean values, the proportion of the children's transfers in elders' total personal income also increased from 24.1 percent to 29.1 percent, showing growing importance of the private economic assistance as elderly people become older. As for elders' coresidence with a child, 4.2 percent of the elderly moved into and 6.5 percent moved out of coresidence between 2006 and 2008, suggesting that coresidence is often a temporary arrangement for older Koreans.

The analyses of elders' coresidence show that poor elders are more likely to live with a

child both in 2006 and in 2008. The relationship in 2008 holds even after we control for elders' coresidence status in 2006. With this finding, we can make a stronger causal claim that greater economic need of elderly people causes coresidence between elders and their children and, therefore, altruism might be the motive in Korea at least for children's support through coresidence.

The analyses of adult Koreans' financial transfers using fixed effect models consistently show that parents who experience a relatively large increase in own income also enjoy an increase in cash transfers from children. This finding is starkly contrasted with that from cross-sectional studies in the literature. Hence, it appears misleading to make a conclusion on motives for Koreans' financial transfers for their elderly parents or effects of public support on the private support purely based on studies with cross-sectional research design. Our study suggests the possibility that the private economic support might be crowded in by public elder support and/or be motivated by an exchange motive.

This study has its own caveats. First of all, our study assumes that elders' pre-transfer income is exogenous as earlier studies in the literature. Second, the time frame of the data analyzed in this paper is limited to two waves over two-year period. Third, we are not able to measure financial transfers between cohabiting children and their parents.

Nonetheless, our study contributes to the literature by analyzing a new nationally representative longitudinal dataset and by studying not only adult children's financial transfers to but also their coresidence with elderly parents. By doing so, this study serves as a test of the relative importance of different motives for private elder support and as a starting point to estimate possible crowding-out effects of newly introduced government programs with uncertainty in their cost-effectiveness. Ultimately the evidence will help policy makers in Korea better adapt to demographic aging by preserving family elder care tradition. Furthermore, this study also has implications for other rapidly changing countries in Southeast and East Asia, which follow similar demographic and socioeconomic trajectories.

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Tables

Table 1. Demographic trends in Korea, 1960-2020

	1960	1970	1980	1990	2000	2010	2020
% Population 65 and over	3.7	3.3	3.9	5.0	7.3	11.0	15.4
% Population 80 and over	0.4	0.4	0.5	0.7	1.1	2.0	3.6
Old-age dependency ratio[1)]	6.7	6.1	6.2	7.2	10.2	15.2	21.7
Life expectancy at birth	55.2	60.9	66.8	72.7	77.5	80.0	81.7
Total fertility rate	5.6	4.3.	2.2	1.7	1.2	1.3	1.3

Source: United Nations (2009)

1) Old-age dependency ratio = Population aged 65 and over / population aged 15-64 * 100

Table 2. Summary statistics of Koreans aged 65+ in 2006 and 2008[1), 2)]

	2006			2008		
	Mean	SD	Max	Mean	SD	Max
Age	72.793	6.158	105	–	–	–
Male	0.395	–	1	–	–	–
Education						
<Middle school	0.745	–	1	–	–	–
Middle school	0.091	–	1	–	–	–
High school	0.115	–	1	–	–	–
> High school	0.048	–	1	–	–	–
Marital status						
Married / cohabited	0.622	–	1	0.602	–	1
Separated / divorced	0.013	–	1	0.012	–	1
Widowed / dispersed	0.365	–	1	0.387	–	1
Number of children	3.935	1.697	10	3.972	1.677	10
No child	0.018	–	1	0.015	–	1
Married	3.360	1.753	10	3.418	1.743	10
Home-owned	1.462	1.535	9	1.647	1.589	9
Working	2.363	1.418	8	2.574	1.452	8
Number of sons	2.026	1.160	7	2.044	1.160	7
No son	0.075	–	1	0.075	–	1
Number of grandchildren	6.665	4.217	34	7.171	4.200	34
Grandchild care						
Any	0.060	–	1	0.022	–	1
Total hours spent	115.982	1,127.030	5,824	48.613	413.040	8,736
Number of ADL limitations	0.276	1.139	7	0.346	1.322	7
Number of IADL limitations	0.991	2.323	10	1.115	2.571	10
Subjective health						
Very good	0.016	–	1	0.010	–	1
Good	0.174	–	1	0.152	–	1
Fair	0.321	–	1	0.367	–	1
Bad	0.378	–	1	0.375	–	1
Very bad	0.110	–	1	0.097	–	1

Source: Data from the 2006 and 2008 Korean Longitudinal Study of Ageing

1) The sample is 3,340 people who are aged 65 or older in the first wave and participated in both waves.
2) Min values are zeros for all variables except the lowest age is 65.

Table 3. Median and mean annual personal income of Koreans aged 65+ in 2005 and 2007[1)]

(in k₩ ≈ dollar)

	Median income			Mean income				
	2005	2007	Δ	2005		2007		Δ
					%		%	
Total personal income	2,360	3,020	660	5,501	100.0	4,729	100.0	-772
Pre-transfer income	660	1,120	460	4,148	75.4	3,342	70.7	-806
Earned income	0	0	0	2,414	43.9	1,768	37.4	-646
Wage	0	0	0	410	7.5	409	8.6	-1
Self-employed	0	0	0	1,106	20.1	447	9.5	-659
Agriculture / fishery	0	0	0	864	15.7	828	17.5	-37
Side job	0	0	0	34	0.6	85	1.8	51
Asset income	0	0	0	626	11.4	307	6.5	-319
Interest	0	0	0	581	10.6	187	4.0	-394
Rent	0	0	0	45	0.8	120	2.5	75
Public transfers	120	120	0	987	17.9	1,147	24.3	160
Public pension	0	0	0	661	12.0	749	15.8	87
National pension	0	0	0	238	4.3	269	5.7	31
Occupational pension	0	0	0	423	7.7	480	10.2	56
Social welfare	0	120	120	326	5.9	399	8.4	73
Worker's compensation	0	0	0	13	0.2	13	0.3	0
Basic Living Security	0	0	0	160	2.9	202	4.3	43
Veteran's benefits	0	0	0	77	1.4	110	2.3	32
Others	0	60	60	75	1.4	74	1.6	-2
Private pension	0	0	0	28	0.5	15	0.3	-13
Other income	0	0	0	92	1.7	105	2.2	13
Private financial transfers	375	550	175	1,353	24.6	1,387	29.3	33
From children	350	550	200	1,328	24.1	1,374	29.1	46
From parents	0	0	0	1	0.0	1	0.0	0
From others	0	0	0	25	0.5	13	0.3	-12

Source: Data from the 2006 and 2008 Korean Longitudinal Study of Ageing

1) The sample is 3,340 people who are aged 65 or older in the first wave and participate in both waves.

Table 4. Transitions in coresidence status of Koreans aged 65 or older between 2006 and 2008[1)]

2006 \ 2008	Coresidence	Non-coresidence	Total
Coresidence	32.8%	6.4%	39.2%
Non-coresidence	4.2%	56.6%	60.8%
Total	37.0%	63.0%	100.0%

Source: Data from the 2006 and 2008 Korean Longitudinal Study of Ageing

1) Coresidence means living with at least one adult child.

Table 5. Logit regression analyses of co-residence status of Koreans aged 65+ in 2006 and 2008[1), 2)] (continued)

(a) using total pre-transfer income

(Coefficient estimates, SE in parentheses, in 1,000 k₩ ≈ 1,000 dollar)

	Coresidence in 2006	Coresidence in 2008	Coresidence in 2008
Coresidence in 2006	–	–	4.219 (0.206)***
Log pre-transfer income	-0.061 (0.023)***	-0.108 (0.025)***	-0.060 (0.034)***
Log assets	0.029 (0.029)	-0.048 (0.017)***	-0.052 (0.024)**
Log debts	0.004 (0.015)	0.026 (0.015)*	0.035 (0.023)
Marital status (ref: married)			
Separated/divorced	-0.616 (1.090)	-0.400 (1.048)	-0.059 (0.676)
Widowed	0.723 (0.168)***	0.60w (0.168)***	0.278 (0.240)
Male	0.033 (0.142)	0.042 (0.145)	-0.022 (0.218)
Age (ref: <70)			
70 – 74	-0.163 (0.155)	-0.171 (0.156)	-0.054 (0.229)
75 – 79	-0.308 (0.194)	-0.091 (0.192)	0.487 (0.231)**
≥80	0.212 (0.261)	-0.088 (0.257)	-0.264 (0.488)
Education (ref: <middle school)			
Middle school	0.527 (0.190)***	0.144 (0.196)	-0.636 (0.286)**
High school	-0.144 (0.193)	-0.080 (0.191)	0.063 (0.294)
>High school	-0.073 (0.247)	-0.303 (0.267)	-0.598 (0.372)
Number of sons (ref: >2 sons)			
0	-0.577 (0.329)*	-0.449 (0.340)	-0.082 (0.493)
1	0.004 (0.171)	0.008 (0.174)	-0.067 (0.246)
2	-0.264 (0.160)*	-0.047 (0.161)	0.289 (0.235)
Constant	-0.849 (0.206)***	-0.666 (0.189)***	-2.574 (0.277)***
Sample size	1,365	1,365	1,365
F-statistics	4.02	4.00	27.65

Table 5. Logit regression analyses of co-residence status of Koreans aged 65+ in 2006 and 2008[1), 2)] (continued)

(b) using pre-transfer income by sources

(Coefficient estimates, SE in parentheses, in 1,000 k₩ ≈ 1,000 dollar)

	Coresidence in 2006	Coresidence in 2008	Coresidence in 2008
Coresidence in 2006	–	–	4.221 (0.208)***
Log pre-transfer income by sources			
Log earned income	-0.064 (0.017)***	-0.069 (0.017)***	-0.045 (0.024)*
Log pension income	-0.027 (0.016)*	-0.044 (0.017)***	-0.017 (0.025)
Log asset income	0.006 (0.020)	-0.041 (0.024)*	-0.020 (0.037)
Log social welfare income	-0.059 (0.024)**	-0.048 (0.024)**	-0.011 (0.033)
Log other income	-0.010 (0.035)	-0.033 (0.050)	-0.061 (0.069)
Log assets	0.014 (0.029)	-0.046 (0.017)***	-0.050 (0.024)**
Log debts	0.007 (0.015)	0.025 (0.015)	0.033 (0.024)
Marital status (ref: married)			
Separated/divorced	-0.759 (1.112)	-0.535 (1.035)	-0.088 (0.683)
Widowed	0.702 (0.169)***	0.564 (0.166)***	0.263 (0.245)
Male	0.130 (0.145)	0.106 (0.147)	-0.024 (0.219)
Age (ref: <70)			
70 – 74	-0.202 (0.158)	-0.229 (0.161)	-0.086 (0.229)
75 – 79	-0.419 (0.198)**	-0.193 (0.195)	0.402 (0.232)*
≥80	0.068 (0.265)	-0.168 (0.258)	-0.337 (0.487)
Education (ref: <middle school)			
Middle school	0.421 (0.191)**	0.083 (0.197)	-0.661 (0.289)**
High school	-0.331 (0.197)*	-0.158 (0.194)	0.013 (0.290)
>High school	-0.354 (0.249)	-0.462 (0.279)*	-0.721 (0.387)*
Number of sons (ref: >2 sons)			
0	-0.695 (0.328)**	-0.587 (0.338)*	-0.152 (0.488)
1	-0.019 (0.173)	-0.066 (0.175)	-0.096 (0.247)
2	-0.291 (0.160)*	-0.102 (0.162)	0.281 (0.237)
Constant	-1.319 (0.332)***	-1.617 (0.416)***	-3.322 (0.610)***
Sample size	1,365	1,365	1,365
F-statistics	3.78	3.26	22.10

Source: Data from the 2006 and 2008 Korean Longitudinal Study of Ageing

1) Coresidence status indicates whether the respondent is living with at least one adult child.
2) Analysis samples are restricted to those who are aged 65 or older, have at least one adult child, and are non-poor in the first wave and participate in both waves.

***: p-value < 0.01, **: p-value < 0.05, *: p-value < 0.10

Table 6. Fixed effect regression analyses of financial transfers from children to Koreans aged 65+ between 2005 and 2007[1), 2)]

(a) dependent variable = log total financial transfers from children

(Coefficient estimates, SE in parentheses, in 1,000 k₩ ≈ 1,000 dollar)

		using total pre-transfer income	using pre-transfer income by sources
Log pre-transfer income		0.136 (0.036)***	–
	Log earned income	–	0.059 (0.034)*
	Log pension income	–	-0.027 (0.039)
	Log asset income	–	0.065 (0.026)**
	Log social welfare income	–	0.051 (0.048)
	Log other income	–	0.084 (0.047)*
Log assets		0.056 (0.027)**	0.051 (0.027)*
Log debts		-0.032 (0.022)	-0.032 (0.022)
Married (vs. other marital status)		-0.488 (0.873)	-0.521 (0.876)
With at least one ADL limitation		0.422 (0.478)	0.575 (0.480)
With at least one IADL limitation		0.411 (0.262)	0.352 (0.266)
Number of hours for childcare (in 100 hours)		0.012 (0.018)	0.014 (0.018)
Number of children – married		0.420 (0.208)**	0.419 (0.208)**
Number of children – home-owned		0.380 (0.131)***	0.373 (0.132)***
Number of children – working		0.244 (0.136)*	0.230 (0.138)*
Constant		-4.568 (1.024)***	-3.220 (1.134)***
Sample size		1,223	1,223
R-square (within)		0.039	0.039

Table 6. Fixed effect regression analyses of financial transfers from children to Koreans aged 65+ between 2005 and 2007[1), 2)] (continued)

(b) dependent variable = net financial transfers from children

(Coefficient estimates, SE in parentheses, in 1,000 k₩ ≈ 1,000 dollar)

	using total pre-transfer income	using pre-transfer income by sources
Log total pre-transfer income	0.135 (0.049)***	–
Log earned income	–	0.048 (0.047)
Log pension income	–	0.006 (0.055)
Log asset income	–	0.051 (0.036)
Log social welfare income	–	0.094 (0.066)
Log other income	–	0.050 (0.066)
Log assets	-0.007 (0.037)	-0.010 (0.038)
Log debts	-0.007 (0.031)	-0.008 (0.031)
Married (vs. other marital status)	-0.210 (1.205)	-0.178 (1.210)
With at least one ADL limitation	-0.173 (0.660)	-0.037 (0.664)
With at least one IADL limitation	0.147 (0.362)	0.080 (0.367)
Number of hours for childcare (in 100 hours)	0.011 (0.025)	0.013 (0.025)
Number of children – married	0.183 (0.287)	0.180 (0.288)
Number of children – home-owned	-0.020 (0.181)	-0.026 (0.182)
Number of children – working	0.460 (0.188)**	0.422 (0.191)**
Constant	-0.524 (1.415)	0.812 (1.567)
Sample size	1,223	1,223
R-square (within)	0.012	0.011

Source: Data from the 2006 and 2008 Korean Longitudinal Study of Ageing

1) Financial transfers from children indicates amount of financial transfers from all non-co-resident children.
2) Analysis samples are restricted to those who are aged 65 or older, have at least one adult child, and are non-poor in the first wave, participate in both waves, and have no change in their coresidence status between waves (that is, either keep coresident or keep non-coresident).

***: p-value < 0.01, **: p-value < 0.05, *: p-value < 0.10

Appendix 1. Proportion of children providing support for parents aged 65+ by child age groups[1)]

(Number of observations in parentheses)

Child age group	% children coresiding with elderly parents		% non-coresident children making financial transfers to elderly parents	
25-29[1)]	36.5	(148)	42.6	(94)
30-34	19.9	(846)	53.2	(678)
≥35	12.5	(10,420)	54.8	(9,118)
Total	13.7	(11,429)	54.5	(9,901)

Source: Data from the 2006 Korean Longitudinal Study of Ageing

1) The youngest child of people aged 65+ was 20. Children younger than age 24 are omitted from this table due to the small number of observations.