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The Motives of Intergenerational Transfer to the Elderly Parents in China: Consequences of High Medical Expenditure

Xiaoyu Wu and

China Academy of Public Finance and Public Policy, Central University of Finance and Economics

Lixing Li*

China Center for Economic Research, National School of Development, Peking University

Abstract

The support for the elderly is facing big challenges with the problem of population aging. Transfers from adult children could partly insure elderly parents against low income and high medical expenditure. There are two main motives for transfers in the literature, namely altruism and exchange. Using data from a new household survey of people aged 45 and above in China, we estimate the transfer derivatives with the adjustment of medical expenditure in elderly parents' income. We find a large negative impact of adjusted income on transfers at the lower end of income distribution, which is consistent with the altruistic motive. Evidence on the exchange motive is found only for sons, but not for daughters. In addition, there is evidence on the "exchange-for-service" motive, which interprets transfer as a payment to parents' family services, such as taking care of grandchildren.

Keywords

Transfer derivatives; Medical expenditure; Retirement; Family insurance; China

1. Introduction

Due to the sharp decline of fertility rate under the One-child policy and an increase in life expectancy during the past three decades, China is moving toward an aging society. According to the World Bank, China's fertility rate is 1.61 in 2009. According to the 2010 Population Census, the fraction of people aged 65 and above was 8.87%, up by two percentage points since 2000. The aggregate dependency ratio has reached 35.9%.¹ It is expected to exceed the current level in Organization for Economic Cooperation and Development (OECD) countries in 20 years. Support for the elderly is becoming a pronounced problem. Population aging has put large pressure on social security. The total pension expenditure was more than 990 billion *yuan* in 2008, eight times of the 1998 level.²

*Correspondence: Lixing Li, China Center for Economic Research, Peking University, Beijing, China 100871, tel: 86-10-62759485.

¹The aggregate dependency ratio is the ratio of the total number of people aged 65 and above and those younger than 15 to the number of people aged between 15 and 64.

²Data is from the "2008 Human Resource and Social Security Development Statistics" published by the National Bureau of Statistics of China.

The expansion of pension program into rural areas since 2009 further increased pension expenditure. The management of social security system is facing big challenges as well. Problems in investment operation, assets management, and risk management have affected the sustainability of pension system (Zhou, 2008).

There are distributional problems in the current social security program and public safety-net. Public transfers and subsidies to the low-income population are quite limited. Many laid-off workers in former state-owned enterprises that experienced privatization often suffer from pension arrears (Cai et al., 2006). Pension reforms in the mid-1990s have increased saving rate and decreased household expenditure on education and health (Feng et al., 2011).³ In addition, serious rural-urban inequality exists. There is a big gap between the pension levels for rural and urban residents. For urban workers, the pension system is a combination of pay-as-you-go system and individual account.⁴ The amount of the pay-as-you-go part is based on the average wage of all employees in the city/county (the national average is 1511 *yuan* per month in 2011). For urban non-workers and rural residents, the pension payment contains two parts, namely the basic part and the individual account payment. The national standard for the basic part was only 55 *yuan* per month in 2011. Thus there is a big gap between the pension levels for urban and rural residents. The coverage is also much lower in the rural area. The rural pension enrollment is 55.95 million in 2008, covering only 7.8% of the rural population. Elderly people tend to have a lower level of education and income, and their individual accounts are likely to be small. Although people with income below the poverty line could receive public transfers, the amount is quite limited. In Beijing's *Dibao* program,⁵ the average transfer amount is 410 *yuan* in 2010, accounting for only 1.66% of the average disposable income of urban residents.

The provision of health services for the elderly is facing big challenges as well. The ongoing reform in the health care sector is trying to increase the coverage of health insurance in China. While the New Cooperative Medical Scheme (NCMS) expands the public insurance for uninsured in rural area, the Urban Employee Basic Medical Insurance (UEBMI) and Urban Resident Basic Medical Insurance (URBMI) increase the urban insurance coverage for employees and non-employees, respectively (Wagstaff et al., 2009). However, these programs mainly focus on the inpatient services. The outpatient expenses are not covered or only very partially covered. These programs generally do not provide full insurance against medical expenditure, especially on diseases with a large bill. A survey of 79 cities conducted by the Peking University (Lin et al., 2009) shows that the average reimbursement rate is 45%, and the ceiling is between 30,000 to 80,000 *yuan*, based on the rank of hospital and actual expenditure. According to the 2008 survey of the China Health and Retirement Longitudinal Study, the average coinsurance rate is 38.52% for URBMI, 26.19% for UEBMI, and 45.80% for NCMS (Zhong, 2011). Although the coverage is scheduled to be

³Pension reforms started in 1995. Before the reform, the pension system is a pay-as-you-go system. After the reform, it became a combination of pay-as-you-go system and individual account. The replacement rate of pension for enterprise employees was reduced. To offset this negative effect on pension, people save more.

⁴Both the individual and enterprise's contribution to the individual account are compulsory. There is voluntary supplementary pension provided via commercial insurance.

⁵*Dibao* is a public subsidy program for low-income population provided by local governments. Families with income below the local minimum living standard are eligible to receive *dibao*. It is one of the major welfare programs in urban and rural China. The other major programs are basic living welfare for laid-off workers and the unemployment insurance.

increased, the target number of the reimbursement rate is only 60%. Poverty caused by major illness is prominent, especially in the rural area (Liu and Rao, 2006). The NCMS tends to have a higher coinsurance rate than URBMI and UEBMI, but its immediate reimbursement rate is lower (Zhong, 2011). Because a large fraction of elderly people is retired and not eligible for UEMBI, which is more generous than other programs, elderly people are in a disadvantageous position in insurance coverage. In addition, because aged people usually have a higher morbidity rate and receive a larger medical bill, they are more likely to reach the ceiling of reimbursement and be more affected by the limits in the reimbursement policy.

Monetary transfers from adult children to elderly parents could provide some insurance against low income and high medical expenditure. Such private transfers provide additional subsidy to the elderly and have a similar impact as public programs. Understanding how children's transfers are affected by parents' income is important in designing old-age support policies. In the literature, "transfer derivatives" is used to indicate how responsive private transfers are. It is the gradient of transfer amount with respect to recipients' pre-transfer income.

There are two main motives for private transfers, namely altruism and exchange. Under the altruistic motive, people care about the welfare of their elderly parents and children. For example, Li et al. (2010) find evidence for the altruistic motive of transfers from parents to children using Chinese data. Parents usually give more gifts to children with lower earnings and schooling. In the opposite direction, adult children would give remittances to parents when they suffer from low income (Becker, 1974). We expect a negative effect of elderly parent's income on the amount of transfer they receive from adult children. The income of adult children is also an important determinant of the transfer amount received by the elderly parents. Cai et al. (2006) use average education of children as a proxy for the earning ability of the transfer network of the elderly parents. In China, the interpretation of altruistic motive would be more complicated. First, the Constitution of China states that parents have the duty to raise children, and adult children have the duty to support parents. If the adult children failed to provide assistance for their parents, the penalization could be as serious as imprisonment. Second, the influence of Confucian tradition on the culture of support for elderly parents is common in China. "Filial piety", the requirement for the adult children to provide financial and time transfers to their elderly parents, is considered to be a universally accepted merit. Thus, part of the altruistic motive is due to the requirement of laws and influence of tradition. A strong negative transfer derivative would be consistent with altruism but does not necessarily indicate a real "altruistic" preference.

Under the exchange motive, contributors of transfer might expect to receive some resources back in the future, either as inter-vivos transfers or in the form of bequest (McGarry, 1999). Thus, the literature predicts a positive correlation between the amount of transfers and the income of elderly parents (Cox, 2004; Cai et al., 2006). In this case, wealth rather than income might be more important in determining the amount of transfers. Both wealth effect and income effect should be examined in order to shed light on the exchange motive.

However, there is possibly another type of exchange motive, which we shall call “exchange-for-service” motive. In China, it is common for elderly parents to do household services for their adult children. When the adult children are busy with work or become “migrant workers,” grandparents usually take care of grandchildren. Thus, transfers from adult children to elderly parents could be made as an exchange for the service of childcare. We expect that providing such service would increase the amount of transfer received by the elderly parents.

The traditional literature on transfer mainly focuses on distinguishing between the altruism and exchange motives (Barro, 1974; Becker, 1974; Cox, 1987; Laitner, 1997; McGarry and Schoeni, 1995; Ioannides and Kan, 2000). Mixed results are found in the United States.⁶ Because there exists a large public safety-net, private transfers are relatively trivial in such a society. It is not surprising to find a small derivative. For countries with low public transfers, such as Philippines, Cox et al. (2004) find strong transfer derivatives prevailing among low-income households. The expenditure level of China’s public transfer lies between the U.S. and Philippines, thus we expect a certain degree of transfer derivatives. Specifically, because the pension amount is still very low, and the public subsidies for low income families are quite limited, transfers from the adult children should play an important role in the support for the elderly.

More recent studies allow for the co-existence of both altruistic and exchange motives (Cox et al, 2004; Yatchew, 2003), so that the amount of transfers have a non-linear relationship with recipient’s income. When the recipient’s income is low, donors are altruistically motivated. Transfers could increase as the recipient’s income drops. When the recipient is well off enough, there is no need for the donors to help, even though donors still care about the recipient. Thus, when the recipient’s income reaches a certain level, transfers become non-responsive and the altruistic motive may disappear. If the recipient’s income is high enough, transfers could be motivated by the expectation of receiving something back. Thus, there might be some threshold point where the motive for transfers shifted from altruistic to exchange.

Despite the importance, little attention has been paid to transfers and support for the elderly people in China. Existing studies mainly use descriptive analysis (Rozelle et al, 2000; White, 1998; Shang, 1999; Chow, 2000; Saunders et al, 2003). To the best of our knowledge, the only exception is Cai et al. (2006), which finds that the intra-family transfers are altruistically motivated at the low level of household income in urban China. This paper differs from Cai et al. (2006) in the following ways. First, in addition to the traditional exchange motive, we explicitly examine the “exchange-for-service” motive of transfer. Second, we focus on the role of medical expenditure in the determination of intergenerational and public transfers. Third, we employ a new household survey data that contains detailed information about the contents and sources of transfers, which remedies many shortcomings of other datasets. Fourth, different components of transfers are examined. We compare private transfer and public transfer to examine the role of the

⁶While Cox and Rank (1992) and McGarry (1999) find positive effects, Cox and Jakubson (1995) and Altonji et al. (1997) find negative and small derivatives.

former. We also compare transfer from sons and daughters to investigate the role of child gender in determining responsiveness of transfer to income.

In the empirical examination of the derivatives of private transfers, we use the conditional least square threshold model, allowing for the co-existence of both altruistic and exchange motives. We add the role of medical expenditure into the analysis of transfer derivatives. With the adjustment of medical expenditure in parental income, more accurate estimates for the responsiveness of transfers are provided. We find a negative derivative for intergenerational transfers, which is consistent with the altruistic motive below a certain income level. Around 30% of the income reduction is not covered by existing private and public transfers, suggesting that a more generous public transfer program targeting low income population is needed. We also find that the magnitude of transfer derivative is relatively larger in the urban area and in places with a higher development level. In addition, we find that co-residence with adult children increases the responsiveness of transfers in the low income range. The fact that taking care of grandchildren increases transfer received by the elderly parents and its responsiveness provides evidence on the “exchange-for-service” motive, which interprets transfer as a payment to parents’ services.

The remaining of the paper is organized as follows. The next section describes the data and empirical method. Section 3 reports the estimation results. Section 4 concludes.

2. Data and Method

The data used in this paper mainly comes from the China Health and Retirement Longitudinal Study (CHARLS), a new survey conducted by the China Center for Economic Research at Peking University (Zhao et al., 2009).⁷ Two provinces, Zhejiang and Gansu, were surveyed in the pilot wave of CHARLS in 2008. They are different in various aspects of economic development. While Zhejiang is located in the east coast, Gansu is an inland province located in the northwest region. The average household income in Zhejiang is more than 4 times that of Gansu. In Zhejiang, 53% of the sample households live in the urban area. While in Gansu, this ratio is only 33%. This survey aims at residents aged 45 and above. In this paper, we shall call these respondents “elderly parents.” The dataset contains detailed information on transfers they received and gave out, and a rich set of individual and family characteristics as well.

The components of intergenerational transfers are regular transfers, non-regular transfers and in-kind transfers (non-monetary gifts). Regular transfers refer to the monetary allowance. Non-regular transfers include the money received as gifts (*hongbao*) on holidays, special events (e.g., birthday, wedding, funeral), and in case of medical emergencies. Non-monetary gifts are in-kind transfers. The value of gifts is estimated by the respondent. There are three groups of people in a typical transfer network: parents, children, and grandchildren. Adult children are the main contributors of intergenerational transfers received by the elderly parents.

⁷This data set is publicly available at <http://charls.ccer.edu.cn/charls/>.

In addition to private transfers, questions on public transfers were asked. The components of public transfers are different in the rural and urban areas. In the rural area, public transfers include agriculture subsidy, reforestation subsidy, *wubaohu* subsidy,⁸ *tekunhu* subsidy,⁹ *dibao*, emergency or disaster relief, donations, etc. In the urban area, the majority of public transfers are *dibao*, supplemented by disaster relief, donations, etc.

The distribution of per capita income is displayed in Figure 1. The pre-transfer income is the average net income of the elderly parents and household members living together. It includes wage income, self-employment income, agricultural income, pension income, and asset income. Because the self-employment income and agricultural income are defined as the difference between revenue and cost, some individuals have negative net income. After adding intergenerational and public transfers, the post-transfer income increased and its distribution was shifted to the right side. Figure 2 shows the distribution of these two types of transfers as a function of pre-transfer income. At low income levels, we observe a large amount of intergenerational transfers and a negative correlation between transfer and income. At high income levels, an opposite direction of transfer is found. Net transfer is negative, which indicates that adult children are receiving transfers from their elderly parents. The shape of this curve suggests a non-linear relationship between pre-transfer income and the amount of intergenerational transfers. In contrast, public transfers do not change much with the income level of elderly parents.

To estimate the relationship between transfers and income, we need a model that captures different degree of responsiveness across income levels. A linear model cannot reflect the change in responsiveness. For a polynomial model, if the estimated coefficients for high orders are not statistically significant, it cannot reflect the different degree of responsiveness either (the robustness check for polynomial model confirms this in section 3.6). To reflect the different transfer derivatives at different income levels, we follow the literature and use the conditional least square threshold model (Cox et al., 2004; Cai et al., 2006; Kazianga, 2006) to examine the transfer derivative. The advantage of this model is that it allows transfer derivative to switch from the altruistic motive to exchange motive at a certain threshold.¹⁰ In addition, the threshold could be explicitly estimated, so we know the ranges of pre-transfer income for different motives. We expect different gradients of transfers with respect to pre-transfer income at different income levels. Below the threshold, transfers are more likely to be altruistically motivated; we expect a negative coefficient of pre-transfer income on the amount of transfers. Above the threshold, transfers could be either altruistically or exchange motivated. The empirical specification is the following:

$$T_i = \beta_0 + \beta_1 \min(I_i, K) + \beta_2 \max(0, I_i - K) + X_i \alpha + u_i \quad 1$$

where T is the net transfer-in, the difference between transfer-in and transfer-out, and I is annual household income per capita without transfer. The subscript i indicates household. In equation (1), K represents the threshold. If K is known, the model would be a linear spline

⁸*Wubaohu* subsidy is for rural population and targets the low-income, blind, disabled, aged persons, and young persons that have no ways to support themselves.

⁹*Tekunhu* subsidy is for households with income levels far below the poverty line.

¹⁰As a robustness check, we also present results using linear and polynomial models later in section 3.5.

model and could be estimated by ordinary least squares. We expect different coefficients of I below and above K (β_1 and β_2). In the estimation, we treat K as an unknown parameter and use different percentile of income distribution as the threshold and estimate the models for transfer derivatives. The value of K that best fits the model minimizes the residual sum of squares. More flexible specifications are estimated for robustness check, such as OLS, more than one knot for pre-transfer income and polynomials of income.

The covariates X 's include wealth, education, age, age squared, marital status, household size, measure of activities of daily living (ADL), health status, having any health insurance, number of children, average education and age of children, whether co-residing with adult children or not, and whether taking care of grandchildren. Because the income of adult children and income of the elderly parents are correlated due to omitted ability, we follow Cai et al. (2006) and control for average education and age of children to reduce the bias that might be introduced by unobserved ability. In addition, male and female might have different transfer behaviors, so we also control for whether having a son or not in the regression. We will explain the role of co-residence and taking care of grandchildren later in this section.

Table 1 reports the descriptive statistics. The average age is 60.5 and the average number of adult children is 2.79. In together 47.6% of the households are from Gansu province and 57.1% live in the rural areas. A measure for ADL is also presented in this table. The ADL measure equals 2 if the respondent has big problem in an activity, equals 1 if she/he needs some help and equals 0 if no help is needed. The value presented in this table is calculated as the mean ADL measure for six different daily activities (namely walking, dressing, eating, toileting, bathing and controlling urination). The mean value of ADL measure in this sample is 0.052. Around 80% people do not need any help in daily activities. The percentage of people who have any health insurance is 90.7%. The reason why the coverage of health insurance is so high is that most people in rural areas are enrolled in the New Cooperative Medical Insurance. The average wealth is around 65,000 *yuan*. The average net transfer is 880 *yuan*, among which 577 are intergenerational transfers and 303 are public transfers. The average pre-transfer income for the elderly parents is 7,750 *yuan*. There are 3% people who have zero income. Comparing across different regions, it is easy to see that the pre-transfer income is much higher in Zhejiang than in Gansu. The standard deviation of transfer is quite large in the sample. For the intergenerational transfer, around 10% have a negative transfer amount with a magnitude of below 1,000 *yuan*, while 26% have a transfer higher than 1,000 *yuan* and more than 5% have a transfer higher than 5,000 *yuan*. Comparing the statistics for the three components of intergenerational transfer, we find that non-regular transfer makes a big contribution to the large variation of the transfers. We eliminate individuals who received extremely high level of transfer (there are 5 people with transfer higher than 100,000 *yuan*). The standard deviation of pre-transfer income is also large.

During the ten-year period of Cultural Revolution, many schools were shutdown, which deprives the educational opportunity for many children. Part of the elderly people in our sample could be affected and thus have less education and lower income and wealth. People born before 1944 were older than 22 in 1966, the year when the Cultural Revolution started. These people should have completed schools and were not affected by this event. In

contrast, people born after 1944 were likely to be interrupted. We use a dummy variable called “lost generation” to indicate them and control for this dummy variable in the main regression. The “lost generation” accounts for 63.1% of the whole sample.

Poverty induced by diseases and high medical expenditure have become prominent in China. Although reforms in the health care sector have increased the coverage of health insurance, the level of reimbursement is quite limited. For the inpatient services in urban basic medical insurance, the reimbursement rate is around 30% to 60%, and the ceiling is around 30,000 to 50,000 *yuan* (Lin et al., 2009). Health insurance does not provide full insurance for medical expenditures, especially for the diseases that have large bills. If we consider those large medical expenditures, the real disposable income would be even lower and the response of transfers could vary a lot. We make some adjustment to the pre-transfer income by directly subtract medical expenditure from it and estimate the derivative with respect to this adjusted income level. Figure 1 also displays the distribution of pre-transfer income with adjustment of medical expenditure. The empirical model is:

$$T_i = \beta'_0 + \beta'_1 \min(I_i - M_i, K) + \beta'_2 \max(0, I_i - M_i - K) + X_i \alpha' + u_i \quad 2$$

where M_i is the amount of medical expenditure, β'_1 and β'_2 indicate how the amount of transfers response to the actual household resources that could be used for daily living. To interpret the estimated coefficient as the derivative of transfer, we use the actual value of income or transfer, instead of their logarithm in the estimation.

There are several concerns about the estimation of transfer derivative. First, the labor supply of the non-retired recipients would be affected by the expectation of receiving transfers from their children or grandchildren. If adult children are very generous in giving remittance to their parents, parents might respond by decreasing their labor force participation, possibly through a higher reservation wage or lower effort in the searching for a job. In other words, there may exist a negative reverse effect of transfer on income, which would bias our estimation. We follow Cai et al. (2006) and use the predicted household income per capita based on information related to employment and productivity shocks, which are exogenous but have a long-term impact on labor force participation. For example, being laid-off in the past could affect the worker's current wage.

The second concern is that medical expenditure could be endogenous because the demand for health consumption is also affected by the amount of transfers received. To address this problem, we use the predicted amount of medical expenditure based on the health status and past health shocks, such as being disabled.

Living arrangement could affect transfer derivatives. For example, co-residence with adult children reveals more information on the daily consumption and medical conditions of the elderly parents. Although transfers observed by us are from adult children who did not live together with the elderly parents, their siblings who did could share such information with them, thus increasing the responsiveness of their transfers under the altruism assumption. In our sample, the fraction of people who are living with adult children is around 58%. We control for living arrangement in the regressions. We also split the sample by living

arrangement and add interaction terms between co-residence and pre-transfer income into the model to see how living arrangement affect transfer derivatives with respect to income.

The survey also asks whether the elderly often take care of their grandchildren, which is very helpful in understanding the motives of transfer. The percentage of elderly who take care of grandchildren is 29.3% in our sample. The survey does not provide information on who are the parents of the kids being taken care of. In another word, we cannot link the service of the elderly with the adult children's transfer on a one-to-one base. Thus, when examining the response of transfer to taking care of grandchildren, we use the sum of intergenerational transfers. Similar to co-residence, we estimate the model with interaction terms between pre-transfer income and whether taking care of grandchildren, in order to see how it affect transfer derivatives.

3. Empirical Results

The results reported in this section include the estimation for the impact of pre-transfer income on the amount of net transfer with different threshold in the conditional least square model. First, we use the rural poverty line of 2008 as the knot point. Second, we use the 10th and 25th percentile values of pre-transfer income. Then we compare these results with the best-fitted threshold value. Sub-samples, such as people aged 65 and above, rural households, urban households, are separately examined. Alternative models such as multi-knots and polynomial of income are also estimated.

3.1 Estimation of predicted income and medical expenditure

As mentioned in section 2, the predicted pre-transfer income is adopted as an alternative measure of pre-transfer income. This could reduce the bias caused by the reverse effect of transfer on the recipient's income, which is through the change in the labor supply decision. In order to predict the pre-transfer income, we need exclusion restrictions. We follow Cai et al. (2006) and use measures of employment shocks (whether the recipient was laid-off, fired or business closed) and productivity shocks (whether disabled and whether household members had an accident that affects daily activity) as our instruments. Employment and productivity shocks should have a significant impact on income, but are unlikely to be directly correlated with transfers. For example, it is hard to imagine a situation where receiving more transfers increase the chance of being disabled, having an accident, or being laid-off. Thus, these instruments are not likely to be reversely affected by transfers. In addition, as shocks largely due to macroeconomic policies or by accident, it is unlikely that there are other reasons that drive them to co-move with transfer. In sum, by employing these instruments, we only utilize the variation of pre-transfer income due to exogenous shocks to identify its impact on transfer.

With similar logic, we predict medical expenditure using shocks to the elderly parents' health condition. We include two variables, namely whether disabled and whether household members had an accident and received medical treatment, as our exclusion restrictions. The factors that induce disability tend to be exogenous. Disabled people are more likely to have a high level of medical expenditure. The individual who had an accident and received medical treatment also tends to consume more medical services. Since accidents are

exogenous, they should have no direct correlation with transfers. We adjust the predicted pre-transfer income with the predicted medical expenditure and examine the transfer derivative of income with the adjustment.

Thus, in the first stage, we regress pre-transfer income and medical expenditure on those instruments and a set of control variables. The predicted pre-transfer income and the prediction of the adjusted pre-transfer income are then used in the main regression. To get appropriate inference, we use bootstrapping in the second stage to estimate standard errors. The results are reported in Table 2. Column 1 shows the estimation on elderly parents' pre-transfer income. All these three variables are statistically significant in explaining the elderly parents' income level. Being disabled decreases the elderly parent's income by 4,260 *yuan*. Being laidoff, fired or business being closed decreases the income by 8,152 *yuan*. Column 2 lists the results for the estimation on medical expenditure. The instrumental variables are whether the respondent were disabled and whether he/she had an accident and received medical treatment. Both are statistically significant, and the effects are around 330–350 *yuan*. The F-test of excluded instruments gives a statistic of 25.20 for pre-transfer income and 11.67 for medical expenditure. These statistics reject the null hypothesis that the coefficients of instruments are zero and provide support to the relevance of our instruments.

3.2 Impact of pre-transfer income on net transfer

Table 3 reports the results on the key variables using conditional least square threshold model. Panels A, B and C show results on total transfer, intergenerational transfer and public transfer, respectively. The pre-transfer income is adjusted with medical expenditure. In Column 1, we use the official poverty line (785 *yuan*) as the thresholds for the shift in transfer motives.¹¹ In Columns 2 and 3, the 10th and 25th percentile of pre-transfer income (−50 *yuan* and 549 *yuan*) are used. For income below the poverty line, the transfer derivative is negative and statistically significant. One *yuan* reduction in the recipient's pre-transfer income would be covered by transfers with 0.71 *yuan*, among which 0.55 *yuan* is provided by intergenerational transfer network (Panel B). The magnitude of the transfer derivative is larger if we choose the income level below 10th percentile as the threshold. These results are consistent with the altruistic motive. At the low level of income, intergenerational transfers are very responsive. The comparison of the results with different values of threshold also indicates that the lower the income level, the more responsive the transfers would be. The coefficient for pre-transfer income above threshold is negative and statistically significant, with a magnitude of around 0.03. No evidence for the exchange motive is found.

Since the income of the elderly parents is correlated with income of their adult children, the negative effect of elderly income on transfer at the lower end of income distribution means that poorer adult children make even more transfer than those who are slightly richer. We have two explanations for this result. First, the transfer amount is small relative to adult children's income or wealth,¹² thus it is not a big problem for poor children to afford the transfer. Second, elderly parents in poor families are likely to sacrifice more in raising their

¹¹The poverty line is from the China Statistical Yearbook 2008.

¹²The average transfer amount received by the elderly is 577 *yuan*, which is about 1/14 of their income. Although we do not know the income of adult children, the transfer amount should on average be a very small portion of it.

children, which could generate a stronger altruistic motive. Thus, it is not surprising to see that poorer elderly parents receive more transfer from their adult children.

Columns 4 to 6 show the results with adjusted pre-transfer income.¹³ Subtracting the medical expenditure from pre-transfer income gives us the actual resources that could be used for household consumption. The estimated magnitude of transfer derivative is smaller for the adjusted pre-transfer income below threshold, suggesting that some transfers are due to the demand for medical service and is not necessarily a response to income.

In all regressions, with or without adjustment for medical expenditure, the coefficient for household wealth is statistically non-significant, suggesting that transfers are more likely to be motivated by income rather than wealth. Income effect dominates the impact of household resources on transfers received. The insignificance of the wealth effect could be explained by the decline in fertility rate, which decreases the competition for family resources. An extreme case is that, in one-child families, the only child does not need to compete for either the inter-vivos transfers or the bequest from their elderly parents.

The full regression results using best-fit threshold are listed in Table 4. We also report the estimated coefficients and standard errors for all control variables in this table. The estimated transfer derivative is larger than using other thresholds. A comparison between Column 1 and Column 2 shows that private transfers cover as much as 77% ($=0.760/0.986$) income reduction below the threshold. Public transfers cover only 23%. In Columns 3 and 4, when the pre-transfer income is adjusted for medical expenditure, the estimated transfer derivative becomes smaller, a result consistent with the previous table. For other explanatory variables, the estimated coefficient for lost generation is not significant, suggesting that being affected by the Cultural Revolution does not affect transfer behavior. The coefficient for taking care of grandchildren is positive and significant with 10% level for intergenerational transfers. This suggests that remittance to the elderly parents could serve as a payment to their service of taking care of grandchildren.

Because we have more than one instrument, we could use over-identification test to check the validity of these instruments. Based on a regression of the residuals in the second stage on all instruments, we manually calculate the Sargan Statistic, which is the product of the number of observations and R-squared (Wooldridge, 2009). This statistic equals to 0.760 and 0.304 when the second stage dependent variable is total transfer and intergenerational transfer, respectively. These statistics fail to reject the null hypothesis that the excluded instruments are uncorrelated with the error term and provide support to the exogeneity of our instruments.

For people aged 65 and above, the bias induced by the possible endogeneity of labor supply is less severe because those people are almost all retired. Table 4 Columns 5 and 6 show the result for them using adjusted pre-transfer income as the independent variable. Because the education of these people was not affected by the Cultural Revolution, “lost generation” is not included in the regression. The magnitude of the coefficient for pre-transfer income

¹³The values of threshold are also chosen based on the adjusted income.

below threshold is bigger than the full sample. One *yuan* less of income will be compensated by an increase of more than one *yuan* in transfers received. The large amount of health expenditure for the elderly people could be the main reason for such a big response of intergenerational transfers. The household wealth per capita has a positive and significant coefficient in the regression. However, given that wealth is measured in thousand *yuan*, the magnitude of such an effect is small. To save space, we will focus on income adjusted for medical expenditure from now on.

3.3 Rural Vs. Urban

Due to differences in culture and economic development, the transfer derivative may vary a lot between rural and urban areas. We conduct separate estimation for rural and urban households. Table 5 Columns 1–3 present the estimates for urban households. The coefficients for pre-transfer income below the best-fit threshold are consistent with the altruistic motive at low-income level. A one *yuan* reduction in parental income increases the total transfer by 0.89 *yuan*, among which 88% is due to intergenerational transfers. In contrast, the magnitude of the transfer derivative for rural households is much smaller. A reduction of one *yuan* in pre-transfer income is only covered by a 0.25 *yuan* increase in total transfer. This urban-rural gap is likely caused by difference in living standard and the general income level of adult children. With higher living expenses in the urban area, elderly people have a higher subsistence consumption level. Comparing with old people in the rural area, their received transfers are also larger when suffering from a negative shock and their consumption falling below the subsistence level. The coefficient of taking care of grandchildren is statistically more significant in rural areas, which suggests that caring services is important in the determination of net transfers from the adult child to the elderly parents.

Given their large difference in economic development, the two sample provinces, Zhejiang and Gansu, form a natural couple to be compared with. We estimate their transfer derivatives separately and present the results in Table 6. The estimated coefficient of predicted pre-transfer income is -0.86 in Zhejiang province and -0.64 in Gansu province. Because Zhejiang has a much higher income and development level, this result is consistent with the urban-rural comparison. Furthermore, intergenerational transfers form the entire part of the response to recipient's low income level in Zhejiang, while 37% ($=1-0.407/0.643$) of the response is due to public transfers in Gansu. These results are also intuitive. Gansu has a large population with income below poverty line, thus subsidies from the government are relatively more important there.

3.4 Co-residence, Taking Care of Grandchildren and Transfer Derivatives

In the Chinese context, living arrangement and taking care of grandchildren are also important factors in determining transfer amount and transfer derivatives. In the summary statistics of Table 1, we list the average amount of transfer by whether the elderly parents co-reside with adult children and by whether they take care of any grandchildren. In regressions, we also include dummies of whether co-residing with adult children and whether taking care of grandchildren.

For co-residence, the simple statistics show that elderly parents who do not live with any of the adult children receive more transfers, but regressions in Tables 4 and 5 find no significant effect of co-residence on intergenerational transfers. This is not surprising given that living arrangement could be correlated with other variables, such as whether living in the urban area and income level. Comparing with the impact of co-residence on transfers, we are more interested in its impact on transfer derivatives. Thus, we split the sample by co-residence status and interact it with income variables. Table 7 Columns 1–2 show results of the separated samples. It is found that pre-transfer income below threshold has a negative and significant effect on transfer for the co-residence sample. This effect changes to be positive for those who do not co-reside with adult children. Columns 3–5 present regression results with interaction terms between co-residence and income variables for the full sample, rural sample, and urban sample, respectively. Regressions on the full and urban sample show that the coefficient on pre-transfer income below threshold is not significant, but its interaction term with co-residence has a negative and significant coefficient. These results demonstrate that co-residence increases the responsiveness of transfers in the low income range. Since that transfers are from adult children who do not live together with the elderly parents, the increased responsiveness suggests that there is information sharing among siblings who live with the elderly parents and those who do not. Overall, these results related to co-residence are consistent with the altruistic motive.

For taking care of grandchildren, Table 1 shows that those who take care of grandchildren receive more transfer on average (1110 vs. 356 *yuan*). The regression analysis also shows a sizable effect of taking care of grandchildren on intergenerational transfer, which is statistically significant in the full and rural sample. For example, Table 4 Column (4) shows that taking care of grandchildren could increase intergenerational transfer by 584 *yuan*, an amount roughly equivalent to the average transfer. This result provides support to the “exchange-for-service” motive of intergenerational transfer, which interprets the transfer as a payment to the elderly parents for their services. In Table 7 Columns 6–8, we put in the interaction terms between taking care of grandchildren and income variables. The coefficients on pre-transfer income below threshold and its interaction with taking care of grandchildren are generally negative and significant, suggesting that taking care of grandchildren strengthens the responsiveness of transfer at the lower end of income distribution. The fact that taking care of grandchildren increases both the amount of transfer and the responsiveness of transfer to income change could be interpreted as evidence of the “exchanger-for-service” motive.

3.5 Network of private transfers

Sons and daughters are the major donors of transfers to the elderly parents. On average, daughters transfer less to parents relative to sons (224 and 405 *yuan*, respectively). This is reasonable because China is still affected by the patrilineal familial system, where daughters become a member of the husband’s family after marriage and lose financial independence (Li and Wu, 2011). In order to further investigate the network of transfers, we estimate the transfer derivatives for daughters and sons separately. Table 8 Panel A shows the results.

Column 1 estimates the derivatives of the net transfer from sons for households who have at least a son. The coefficient for pre-transfer income is not statistically significant, meaning that son's remittance is not responsive to parents' income. However, we find a positive and significant coefficient on pre-transfer income above threshold, which is consistent with the exchange motive. In contrast, Column 3 shows that transfers from the daughters are very responsive to the income below the threshold, pointing to an altruistic motive. These results remain similar when we restrict the sample to the elderly parents who have at least a son and a daughter (Columns 2 and 4).

It could also be true that elderly parents may give back some money, which decreases the net transfer. Panel B shows the estimation results for gross transfer, which is the sum of intergenerational transfer (net transfer-in) and elderly parents' transfer back to their adult children. The results suggest that the gross transfer from daughters is also much more responsive to parental income at the lower end of distribution.

Sons are traditionally considered to provide old-age support to their parents in China, but daughters are gradually taken more responsibility in supporting their elderly parents, possibly due to the decline of fertility and the requirement for equal duty by the law (Zeng, 2010). Our results provide preliminary evidence on this trend. Although sons do make more transfer to the elderly parents than daughters on average, daughters' remittances to the elderly parents are found to be more responsive to income shocks of the elderly. At the same time, the exchange motive is found for son's transfer.

3.6 Alternative specifications

Our main results are based on the conditional least square model with a single-knot. In Table 9, we report results using more flexible specifications, including a model without any knot (Column 1), a model with segments of income (Column 2), and a model including the square of income (Column 3). In the model without any knot, the coefficient of transfer derivative is statistically significant with a very small magnitude. Comparing with the results in Table 4, the responsiveness of transfer to income tends to be under-estimated without the using of threshold model, Column (2) allows for more segments in pre-transfer income. The chosen knots of segmentation are the 25th, 50th and 75th income percentile. A significant and sizable effect is found only for the lowest income range, i.e., below the 25th percentile. Column (3) includes the square term of pre-transfer income, but its coefficient is small and not significant. Comparing these results with the conditional least square threshold model, the latter fits the data better and has a meaningful implication on transfer motives.

3.7 Alternative data source

The 2008 CHARLS only surveyed two provinces. In order to get a sense on the nationwide condition, we use an alternative household data set, the Chinese Longitudinal Healthy Longevity Survey (CLHLS) by the Center for Healthy Aging and Development Studies at Peking University.¹⁴ The 2008 CLHLS collects data from 22 provinces with a focus on population aged 65 and above. We use similar control variables as in CHARLS to conduct the tests.

Table 10 reports the estimation results of adjusted pre-transfer income on the amount of intergenerational transfers received by the elderly parents using the CLHLS data. For the full sample (Panel A), the transfer derivative below the threshold is -0.934 . In the rural area, the derivative is -0.677 . Compared with the CHARLS data, adult sons have a larger transfer derivative in the CLHLS sample. For people aged 85 and above (Panel B), the transfer derivative is even higher. Consistent with the CHARLS data, we find a negative gradient of intergenerational transfer with respect to the income of the elderly parents at a lower income level, which suggests that transfers are mainly motivated by altruism. However, we also find evidence of altruistic motive for income level above the threshold. For the full sample, about 14% of the reduction in pre-transfer income is covered by intergenerational transfers. Because a large fraction of the respondents are extremely old in the CLHLS data, they tend to have a low level of income and a high medical expenditure.¹⁵ Thus it is not surprising to see a stronger response of intergenerational transfers.

4. Conclusion

This paper examines how the net transfer, especially the intergenerational transfer to the elderly parents, is affected by pre-transfer household resources. We apply the conditional least square threshold model on a new survey data, CHARLS, and find that adult children do partly insure their parents against low income and high medical expenditure. After adjustment for medical expenditure, transfer derivative of the pre-transfer income below threshold is around -0.75 , meaning that one *yuan* loss of income of the elderly parents will be compensated by an increase of 0.75 *yuan* of transfers. The intergenerational transfers are the main component of the support for the elder generation and are highly responsive to household resources at the low level of pre-transfer income. This result is consistent with the altruistic motive of transfer. For the exchange motive in the usual sense, we only find evidence for transfers from sons, but not from daughters. However, we find that taking care of grandchildren increases both transfers received by the elderly parents and the transfer derivative with respect to income. This means an “exchange-for-service” motive of intergenerational transfer.

Because co-residence of the elderly parents and adult children is common in China, transfers may well be carried out through a non-monetary form, such as catering and accommodation offered to the elder parents. Although the survey asks about non-monetary transfer, it only covers in-kind gifts. Thus, we lack information on transfers in the form of catering and accommodation, and may underestimate transfer derivatives.

Even though we find that transfers from adult children do respond to the income of elderly parents and their demand for health services, around 32% of income reduction is still not covered by private transfers. At the same time, public transfers only cover 7% of income reduction. In total, 25% of the income reduction of elderly is not covered by any type of

¹⁴This data set is available at <http://web5.pku.edu.cn/ageing/>. In this paper, we do not use CLHLS as the main dataset for two reasons. First, CLHLS does not have rich information on exogenous shocks in income and medical expenditure that is needed to generate predicted income. Second, CLHLS only focuses on the very old people aged 65 and above. We use CLHLS data to do robustness tests.

¹⁵The average pre-transfer income is much lower in CLHLS (4,818 *yuan*) than in CHARLS (7,750 *yuan*).

transfers. These findings have important implications. Although increasing the health insurance coverage is one of the main on-going reforms in China, the help for families with a large medical bill and a low income is very important as well. It is not rare to see that severe illnesses exhaust households' economic resources and lead to poverty. Thus, more generous public transfers targeting low income population are needed, especially for households with a high medical expenditure.

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Figure 1.
Distribution of Income Per Capita

Figure 2.
Distribution of Transfer as a Function of Pre-Transfer Income

Table 1**Summary Statistics**

	Mean	Standard Deviation
<i>Demographics</i>		
Age	60.50	10.73
Male (the respondent)	0.488	0.500
Household size	3.54	1.76
Have a son	0.856	0.351
Co-residence with adult children	0.575	0.495
Take care of grandchildren	0.293	0.455
Living in the rural area	0.571	0.495
Lost generation	0.631	0.483
Gansu province	0.476	0.500
Zhejiang province	0.534	0.500
Married	0.995	0.068
Number of Children	2.790	1.561
Number of Grandchildren	3.638	4.145
<i>Education and Health</i>		
No formal education (illiterate)	0.451	0.498
Did not finish primary school but capable of writing	0.192	0.394
Elementary school	0.149	0.320
Middle school	0.116	0.248
High school	0.066	0.117
Vocational school	0.014	0.081
Two/Three year college / Associate degree	0.007	0.044
Four-year college / Bachelor degree	0.002	0.044
Measure of activity of daily livings (ADL)	0.052	0.143
Have any health insurance	0.907	0.291
<i>Income and Transfer</i>		
Pre-transfer income per capita	7750.46	18029.53
Pre-transfer income per capita - Gansu	3488.92	8197.35
Pre-transfer income per capita - Zhejiang	11626.54	22987.05
Pre-transfer income per capita - Urban	12003.56	24586.99
Pre-transfer income per capita - Rural	4555.74	9580.39
Average age of transfer network	47.31	10.43
Household wealth per capita (1,000 yuan)	64.52	185.29
Income per capita with intergenerational transfer	8327.28	17809.88
Income per capita with public and intergenerational transfer	8630.23	17885.70
Pre-transfer income with adjustment of medical expenditure	6883.14	18034.28
Medical expenditure	867.32	2349.91
Total transfer per capita	879.76	5195.14
Public transfer	302.95	1321.67

	Mean	Standard Deviation
Inter-generational transfer	576.82	4833.91
Regular transfer	44.98	1486.91
Non-regular transfer	248.82	5466.848
Non-monetary gift	283.02	1481.572
Inter-generational transfer (co-reside)	421.5	4936.4
Inter-generational transfer (not co-reside)	786.8	4687.1
Inter-generational transfer (take care of grandchildren)	1109.6	3858.4
Inter-generational transfer (not take care of grandchildren)	356.2	5169.8

Notes: Total observation is 1520. Income and transfer variables are measured in RMB *yuan*. Vocational schools are at the same level of high school but focus professional training.

Table 2

First Stage Results

	(1) Income per capita	(2) Medical Expenditure
<i>Instrumental variables:</i>		
Disabled	−4,260** (2,027)	352.6** (161.5)
Had an accident and received medical treatment		331.6* (178.7)
Had an accident which limit daily activities	−10,326* (5,386)	
Laidoff, Fired or Business Closed	−8,152** (4,087)	
<i>Other explanatory variables:</i>		
Household wealth per capita	2.230 (2.807)	0.296 (0.224)
Living in rural area	−3,006*** (878.6)	−69.418 (70.245)
ADL	3,083.859 (3,494)	426.5 (277.4)
Household size	576.6** (285.3)	−32.22 (22.83)
Age	617.4 (467.29)	26.619 (37.317)
Age square	−557.49 (347.44)	−32.49 (27.74)
Married	869.14 (995.76)	280.42*** (79.27)
Male (the respondent)	679.09 (876.74)	−110.45 (70.00)
Average education of transfer network	1,993.4*** (622.5)	−20.00 (49.77)
Average age of transfer network	40.62 (143.0)	19.35* (11.43)
Have a son	1,248 (1,171)	19.81 (93.47)
Number of children	−456.4 (318.3)	48.17* (25.43)
Co-reside	410.4 (958.4)	−143.1* (76.7)
Take care of grandchildren	−2,753.5***	−184.8**

	(1) Income per capita	(2) Medical Expenditure
	(911.7)	(72.8)
Lost generation	733.8	93.4
	(1,461.0)	(116.8)
R-squared	0.219	0.125
F-statistic for the test of excluded instruments	25.20	11.67
Observations	1520	1520

Notes: Standard errors are in parentheses

* Significant at 10%

** significant at 5%

*** significant at 1%. Other independent variables include province dummies, health indicators, health insurance indicators, the dummies of highest level of education.

Transfer Derivatives - Baseline Results

Table 3

threshold	Without adjustment for medical expenditure			With adjustment for medical expenditure		
	(1)PL:785	(2)10%:-50	(3)25%:549	(4)PL:785	(5)10%:-927	(6)25%:135
Panel A: Total Transfer						
Pre-transfer income below threshold	-0.712*** (0.096)	-0.878*** (0.105)	-0.760*** (0.098)	-0.529*** (0.056)	-0.674*** (0.063)	-0.587*** (0.059)
Pre-transfer income above threshold	-0.034*** (0.008)	-0.034*** (0.008)	-0.034*** (0.008)	-0.037*** (0.008)	-0.037*** (0.008)	-0.037*** (0.008)
Household wealth per capita	0.796 (0.765)	0.798 (0.762)	0.794 (0.764)	0.836 (0.755)	0.818 (0.749)	0.821 (0.752)
Panel B: Intergenerational Transfer						
Pre-transfer income below threshold	-0.550*** (0.090)	-0.678*** (0.099)	-0.587*** (0.092)	-0.473*** (0.052)	-0.604*** (0.059)	-0.524*** (0.055)
Pre-transfer income above threshold	-0.035*** (0.007)	-0.035*** (0.007)	-0.035*** (0.007)	-0.037*** (0.007)	-0.037*** (0.007)	-0.037*** (0.007)
Household wealth per capita	0.917 (0.717)	0.918 (0.715)	0.915 (0.717)	0.953 (0.705)	0.936 (0.700)	0.940 (0.703)
Panel C: Public Transfer						
Pre-transfer income below threshold	-0.162*** (0.025)	-0.201*** (0.028)	-0.173*** (0.026)	-0.056*** (0.015)	-0.070*** (0.017)	-0.063*** (0.016)
Pre-transfer income above threshold	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.000 (0.002)	0.000 (0.002)	0.000 (0.002)
Household wealth per capita	-0.121 (0.200)	-0.120 (0.200)	-0.121 (0.200)	-0.117 (0.202)	-0.118 (0.202)	-0.119 (0.202)

Notes: The number of observations in all regressions is 1520. Standard errors are in parentheses.

* Significant at 10%

** significant at 5%

*** significant at 1%. BF means using the threshold that best fit the data. Estimation results on control variables are not reported in this table.

Table 4

Transfer Derivatives - Best-fit Threshold

	Full sample				Aged 65 and Above	
	Without adjustment for medical expenditure		With adjustment for medical expenditure		With adjustment for medical expenditure	
	Total Transfer	Intergenerational Transfer	Total Transfer	Intergenerational Transfer	Total Transfer	Intergenerational Transfer
threshold	(1) BF: -800	(2) BF: -800	(3) BF: -2000	(4) BF: -2000	(5) BF: -2500	(6) BF: -2500
Pre-transfer income Below threshold	-0.986*** (0.113)	-0.760*** (0.106)	-0.748*** (0.067)	-0.674*** (0.063)	-1.127*** (0.074)	-1.132*** (0.072)
Pre-transfer income above threshold	-0.034*** (0.008)	-0.035*** (0.007)	-0.037*** (0.008)	-0.037*** (0.007)	0.017 (0.034)	-0.009 (0.033)
Household wealth per capita	0.806 (0.760)	0.924 (0.714)	0.815 (0.747)	0.932 (0.698)	5.480*** (1.205)	5.234*** (1.166)
Take care of grandchildren	413.766 (310.147)	510.940* (291.361)	500.737 (305.079)	583.544** (285.008)	186.490 (477.415)	119.386 (461.877)
Co-reside	-134.044 (332.049)	-97.498 (311.937)	-201.009 (326.449)	-149.116 (304.972)	85.561 (522.398)	76.076 (505.397)
Living in the rural Area	-492.057 (302.244)	-285.925 (283.937)	-463.957 (297.139)	-240.120 (277.590)	-4,627.36*** (909.002)	-3,636.44*** (879.419)
ADL	-514.920 (972.180)	-339.204 (913.294)	-666.554 (956.228)	-513.722 (893.317)	-324.940 (1,039.076)	-328.623 (1,005.260)
Household size	-164.411* (97.791)	-102.179 (91.868)	-136.515 (96.156)	-80.356 (89.830)	89.908 (142.691)	175.439 (138.047)
Age	265.352* (152.039)	231.481 (142.830)	251.069* (149.500)	221.194 (139.665)	1,297.026* (672.505)	1,375.994** (650.618)
Age square	-208.730* (113.613)	-177.442* (106.731)	-206.129* (111.725)	-175.734* (104.374)	-887.213*** (450.702)	-914.207*** (436.034)
Married	-368.746 (302.244)	-396.546 (283.937)	-364.987 (297.139)	-371.830 (277.590)	-487.491 (909.002)	-463.354 (879.419)

	Full sample				Aged 65 and Above	
	Without adjustment for medical expenditure		With adjustment for medical expenditure		With adjustment for medical expenditure	
	Total Transfer	Intergenerational Transfer	Total Transfer	Intergenerational Transfer	Total Transfer	Intergenerational Transfer
threshold	(1) BF:-800	(2) BF:-800	(3) BF:-2000	(4) BF:-2000	(5) BF:-2500	(6) BF:-2500
	(333.265)	(313.079)	(327.462)	(305.918)	(426.984)	(413.088)
Male (the respondent)	-299.979	-284.630	-294.513	-295.926	-172.215	-352.736
	(292.881)	(275.141)	(287.851)	(268.913)	(432.760)	(418.676)
Average education of transfer network	72.299	86.540	110.357	112.748	293.082	395.931
	(211.024)	(198.242)	(207.406)	(193.761)	(345.486)	(334.243)
Average age of transfer network	73.115	44.095	79.066*	48.858	67.359	21.565
	(46.258)	(43.457)	(45.487)	(42.495)	(65.321)	(63.195)
Have a son	196.094	316.408	263.998	377.136	493.245	666.276
	(397.873)	(373.774)	(391.310)	(365.565)	(859.257)	(831.292)
Number of children	308.120***	301.372***	278.515***	271.984***	153.743	179.832
	(105.059)	(98.695)	(103.380)	(96.578)	(120.972)	(117.035)
Lost generation	388.781	153.965	345.403	118.378		
	(495.583)	(465.565)	(487.299)	(455.239)		
R-squared	0.166	0.150	0.194	0.187	0.464	0.466
Observations	1520	1520	1520	1520	516	516

Notes: Standard errors are in parentheses.

* Significant at 10%

** significant at 5%

*** significant at 1%. BF means using the threshold that best fit the data.

Table 5

Transfer Derivatives - Rural vs. Urban

	Urban			Rural		
	(1)Total Transfer	(2)Intergen Erational Transfer	(3)Public Transfer	(4)Total Transfer	(5)Intergen Erational Transfer	(6)Public Transfer
Pre-transfer income below threshold	-0.885*** (0.104)	-0.778*** (0.096)	-0.107*** (0.028)	-0.246*** (0.089)	-0.290*** (0.084)	0.045* (0.026)
Pre-transfer income above threshold	-0.043*** (0.012)	-0.043*** (0.011)	-0.000 (0.003)	-0.006 (0.012)	-0.003 (0.011)	-0.003 (0.003)
Household wealth per capita	0.742 (1.101)	0.973 (1.020)	-0.231 (0.298)	-0.232 (1.552)	-1.313 (1.477)	1.081** (0.454)
Take care of grandchildren	541.188 (684.390)	598.525 (634.063)	-57.337 (185.049)	401.134* (218.330)	468.591** (207.698)	-67.457 (63.803)
Co-reside	362.728 (732.226)	294.721 (678.381)	68.006 (197.984)	-409.728* (236.130)	-284.099 (224.631)	-125.629* (69.004)
ADL	-2,408.349 (2,311.079)	-2,446.520 (2,141.132)	38.171 (624.884)	14.671 (657.429)	202.476 (625.414)	-187.805 (192.120)
Household size	-100.607 (234.814)	17.727 (217.547)	-118.334* (63.490)	-146.995** (66.505)	-111.242* (63.266)	-35.754* (19.435)
Age	267.957 (331.346)	173.613 (306.980)	94.343 (89.591)	267.300** (109.023)	282.083*** (103.714)	-14.782 (31.860)
Age square	-270.985 (247.418)	-192.619 (229.224)	-78.366 (66.898)	-184.929** (80.865)	-185.639** (76.927)	0.710 (23.631)
Married	-93.022 (702.517)	-139.062 (650.857)	46.039 (189.951)	-514.959** (241.114)	-499.079** (229.372)	-15.880 (70.461)
Male (the respondent)	-1,289.7** (593.033)	-1,348.1** (549.423)	58.381 (160.348)	292.738 (222.639)	333.782 (211.797)	-41.044 (65.062)
Average education of transfer network	-205.848 (441.652)	-257.851 (409.174)	52.003 (119.416)	415.5*** (155.885)	460.3*** (148.294)	-44.872 (45.554)

	Urban			Rural		
	(1) Total Transfer	(2) Intergerational Transfer	(3) Public Transfer	(4) Total Transfer	(5) Intergerational Transfer	(6) Public Transfer
Average age of transfer network	165.783 (102.404)	141.085 (94.873)	24.698 (27.689)	21.288 (32.314)	-12.181 (30.740)	33.469*** (9.443)
Have a son	243.411 (767.773)	257.645 (711.314)	-14.234 (207.595)	-102.979 (314.089)	82.604 (298.793)	-185.584** (91.786)
Number of children	425.900* (233.553)	413.053* (216.378)	12.847 (63.149)	239.64*** (73.719)	214.369*** (70.129)	25.272 (21.543)
Lost generation	-466.239 (1,088.350)	-730.017 (1,008.317)	263.778 (294.275)	770.197** (348.859)	552.727* (331.871)	217.470** (101.947)
R-squared	0.254	0.258	0.102	0.172	0.155	0.147
Observations	652	652	652	868	868	868

Notes: Best-fit threshold is used. Standard errors are in parentheses

* Significant at 10%

** significant at 5%

*** significant at 1%. BF means using the threshold that best fit the data.

Table 6

Transfer Derivatives - By Province

	Zhejiang			Gansu		
	(1)Total Transfer	(2)Intergene Aational Transfer	(3)Public Transfer	(4)Total Transfer	(5)Intergene Rational Transfer	(6)Public Transfer
Pre-transfer income below threshold	-0.860*** (0.097)	-0.866*** (0.094)	0.006 (0.022)	-0.643*** (0.098)	-0.407*** (0.082)	-0.236*** (0.032)
Pre-transfer income above threshold	-0.034*** (0.009)	-0.036*** (0.009)	0.002 (0.002)	0.004 (0.025)	0.004 (0.021)	-0.000 (0.008)
Household Wealth Per Capita	0.873 (0.907)	0.948 (0.883)	-0.075 (0.202)	1.874 (2.459)	1.671 (2.062)	0.204 (0.815)
R-squared	0.262	0.258	0.198	0.143	0.135	0.127
Observations	796	796	796	724	724	724

Notes: The thresholds used in the table are the ones that best fits the data. Standard errors are in parentheses.

* Significant at 10%
** significant at 5%
*** significant at 1%. Estimation results on control variables are not reported in this table.

Table 7

Co-residence, Taking Care of Grandchildren and Transfer Derivatives

	(1) Coreside	(2) Not co-reside	(3) Full Sample	(4) Rural	(5) Urban	(6) Full Sample	(7) Rural	(8) Urban
Pre-transfer income below threshold	-1.255*** (0.075)	0.638*** (0.129)	0.023 (0.096)	-0.361*** (0.097)	0.249 (0.164)	-0.610*** (0.066)	-0.198** (0.085)	-0.740*** (0.102)
Pre-transfer income above threshold	-0.056*** (0.010)	-0.007 (0.012)	0.007 (0.010)	-0.001 (0.012)	0.015 (0.016)	-0.037*** (0.007)	0.001 (0.011)	-0.044*** (0.011)
Co-reside × Pre-transfer income below threshold			-0.924*** (0.099)	0.146 (0.096)	-1.305*** (0.160)			
Co-reside × Pre-transfer income above threshold			-0.078*** (0.012)	-0.010 (0.019)	-0.092*** (0.019)			
Take care of grandchildren × Pre-transfer income below threshold						-0.381*** (0.107)	-0.583*** (0.108)	-0.256 (0.190)
Take care of grandchildren × Pre-transfer income above threshold						0.038 (0.024)	-0.053 (0.035)	0.052 (0.036)
Household Wealth Per Capita	-0.932 (1.026)	2.469** (0.980)	1.025 (0.675)	-1.295 (1.480)	1.322 (0.957)	0.778 (0.703)	-1.445 (1.457)	0.647 (1.031)
R-squared	0.355	0.248	0.238	0.152	0.342	0.195	0.181	0.263
Observations	874	646	1520	868	652	1520	868	652

Notes: The thresholds used in the table are the ones that best fits the data. Standard errors are in parentheses.

* Significant at 10%

** significant at 5%

*** significant at 1%. Estimation results on control variables are not reported in this table.

Table 8

Transfer from Sons and Daughters

	Transfer from sons		Transfer from daughters	
	(1) Have at least a son	(2) Have at least a son and a daughter	(3) Have at least a daughter	(4) Have at least a son and a daughter
Panel A: Intergenerational transfer				
Pre-transfer income below threshold	−0.072 (0.054)	−0.052 (0.054)	−0.741 *** (0.045)	−0.821 *** (0.045)
Pre-transfer income above threshold	0.015 ** (0.007)	0.018 ** (0.008)	0.006 (0.006)	0.006 (0.007)
Household wealth per capita	2.574 *** (0.687)	3.280 *** (0.740)	0.807 (0.509)	0.247 (0.619)
R-Squared	0.114	0.154	0.244	0.303
Observations	1305	936	1108	936
Panel B: Gross transfer				
Pre-transfer income below threshold	−0.106 ** (0.051)	−0.091 * (0.051)	−0.739 *** (0.045)	−0.819 *** (0.046)
Pre-transfer income above threshold	0.015 ** (0.007)	0.017 ** (0.008)	0.006 (0.006)	0.006 (0.007)
Household wealth per capita	2.459 *** (0.652)	3.170 *** (0.704)	0.785 (0.516)	0.251 (0.629)
R-Squared	0.131	0.172	0.240	0.297
Observations	1305	936	1108	936

Notes: Gross transfer is the sum of intergenerational transfer (net transfer-in) and elderly parents' transfer back to their adult children. The thresholds used in the table are the ones that best fits the data. Standard errors are in parentheses

* Significant at 10%

** significant at 5%

*** significant at 1%.

Table 9

Transfer Derivatives – Alternative Specification

	(1)2SLS	(2)Segments of Income	(3)2SLS
Pre-transfer Income	−0.051*** (0.008)		−0.0527*** (0.015)
Pre-transfer Income × I(Income < 25 th percentile)		−0.605*** (0.059)	
Pre-transfer Income × I(25 th < Income < 50 th percentile)		−0.326 (0.414)	
Pre-transfer Income × I(50 th < Income < 75 th percentile)		0.012 (0.060)	
Pre-transfer Income × I(Income > 75 th percentile)		−0.037*** (0.008)	
Pre-transfer Income square/1000			0.00001 (0.00006)
Household Wealth Per Capita	1.008 (0.773)	0.858 (0.753)	1.023 (0.790)
R-squared	0.133	0.183	0.133
Observations	1520	1520	1520

Notes: Standard errors are in parentheses

* Significant at 10%

** significant at 5%

*** significant at 1%.

Table 10

Transfer Derivatives – CLHLS data

	Conditional Least Square Threshold Model							
	OLS (1) Full Sample	(2) Full Sample	(3) Rural	(4) City	(5) Son	(6) Daughter	(7) Co-reside	(8) Not Co-reside
Panel A: Full Sample								
Pre-transfer Income	-0.187*** (0.007)							
Pre-transfer Income Below threshold		-0.934*** (0.038)	-0.677*** (0.036)	-1.471*** (0.083)	-0.417*** (0.027)	-0.244*** (0.018)	-1.266*** (0.062)	-0.779*** (0.050)
Pre-transfer Income Above threshold		-0.142*** (0.007)	-0.077*** (0.009)	-0.180*** (0.012)	-0.066*** (0.005)	-0.029*** (0.003)	-0.083*** (0.010)	-0.206*** (0.011)
Observation	11578	11578	6939	4639	10551	10208	8205	3373
R-squared	0.123	0.153	0.126	0.204	0.095	0.099	0.133	0.242
Panel B: Age >= 85								
Pre-transfer income	-0.154*** (0.009)							
Pre-transfer Income Below threshold		-1.876*** (0.057)	-1.428*** (0.056)	-2.260*** (0.106)	-0.687*** (0.042)	-0.383*** (0.031)	-1.663*** (0.067)	-2.289*** (0.123)
Pre-transfer Income Above threshold		-0.072*** (0.009)	0.004 (0.009)	-0.132*** (0.016)	-0.042*** (0.006)	-0.024*** (0.005)	-0.047*** (0.010)	-0.128*** (0.022)
Observation	7264	7264	4351	2913	6517	6305	6085	1179
R-squared	0.126	0.225	0.223	0.260	0.128	0.128	0.191	0.388

Notes: The thresholds used in the table are those that best fit the data. The dependent variable is inter-generational transfer (net transfer-in). Standard errors are in parentheses.

* Significant at 10%

** significant at 5%

*** significant at 1%.