Do Adult Children Insure Elderly Parents Against Low Retirement Income and High Medical Expenditure? An Analysis of Transfer Derivatives in China*

Xiaoyu Wu
China Academy of Public Finance and Public Policy, Central University of Finance and Economics
xwu@cufe.edu.cn

December 2009

Preliminary and Incomplete: Please do not Quote

Abstract

Population aging becomes a prominent problem in the developing countries that experienced a decline in fertility rate and an increase in life expectancy during the past three decades. The support for the elderly is facing big challenges. Transfers from adult children could partly insure elderly parents against low retirement income and high medical expenditure. With a new dataset from a household survey for elder generation in China, we find that transfers, especially inter-generational transfers, do respond to household pre-transfer income levels. Results are also consistent with altruistic motive for transfers. Large negative transfer derivative is found at the lower end of the income distribution.

JEL classification: D64; H55; J14; O12; P35; P36

Keywords: Transfer; Retirement; Medical expenditure; China

* I would like to thank Yaohui Zhao, Xiaoyan Lei, Lixing Li, John Giles, Kang-Hung Chang, Ake Blomqvist and seminar participants at Peking University and Central University of Finance and Economics for helpful comments.

1 Introduction

Due to the sharp decline of fertility rate under family planning policies and the increase in life expectancy during the past thirty years, China is moving toward a society of aging population. The aggregate dependency ratio[1] is increasing and the fraction of the elderly is expected to reach its peak in the near future. There is growing concern about issues related to a society of aging population, among which support for the elderly generation would be a more pronounced problem. Large pressure is put on social security program and public safety-net. The transfer or subsidy provided to low income population, especially the household with income far below the poverty line, is very limited. The laid-off (*xiagang*) workers and the employees in decomposed state-owned enterprises suffer from pension arrears. The provision of health services for the elderly is facing big challenges as well. Although the ongoing reform in the sector of health care increase the coverage of health insurance in China, the upper limit for reimbursement do not provide full insurance for medical expenditure, especially for diseases that have large bills. Poverty caused by diseases and high medical expenditure becomes prominent.

Monetary transfer from adult children to elderly parents could provide some insurance against low retirement income and high medical expenditure. Transfer derivatives indicate how responsive inter-generational or private transfer to household resources is. Private transfer provides benefits similar to public transfer, unemployment insurance and health insurance. Understanding how the private transfer is determined by the income of elderly parents is important for safety-net policies.

In the literature, there are two main motives for private transfer, i.e., altruism and exchange. For altruism, people care about the welfare of their elderly parents. They would like to give some remittance to parents when they suffer from low retirement

[1] Dependency ratio is the ratio of old beneficiaries to young contributors.

income. We would expect a negative impact of elderly parent's income on the amount of transfer they receive from their adult children. In a developing country like China, the interpretation of altruistic motive would be more complicated. First, it is adult children's responsibility to provide support for elder parents under the requirement of law. Second, altruistic transfer actually includes the part motivated by the traditional Confucian filial piety. A strong negative transfer derivative would be consistent with altruism but does not necessarily mean real 'altruistic' preference. For the exchange motive, we expect positive correlation between the amount of transfer and income of elderly parents. Contributors might expect to receive some resources back in the future either in the inter-vivos transfers or in the form of bequest. If transfers are exchange-motivated, wealth rather than income might be more important in the determination of the amount of transfers. A comparison between wealth effect and income effect could also shed light on the explanation of transfer motives.

This paper focuses on transfer derivatives and the role of medical expenditure in the determination of inter-generational and public transfers with a new household survey data, China Health and Retirement Longitudinal Study. The questions that this paper tries to answer are the following. How do private transfers respond to retiree's income and demand for health services? Does altruism motivate private transfers? Do children insure their elderly parents against low income and high health expenditure?

2 Literature

The traditional transfer literature mainly focuses on distinguishing between the altruism and exchange motives for transfers (Barro, 1974; Becker, 1974; Cox, 1987; Laitner, 1997; McGarry and Schoeni, 1995; Ioannides and Kan, 2000). Mixed results are found in United States with positive effects in Cox and Rank (1992) and McGarry (1999) and negative and small derivatives in Cox and Jakubson (1995) and Altonji et al. (1997). Due to the large public safety-net in U.S., private transfer could be trivial. It is not surprised to see small derivatives in such a society. For other countries where

public transfers are small, Cox et al (2004) find strong transfer derivatives prevail among low-income households in Philippines.

More recent studies allow co-existence of both altruistic and exchange motives (Cox et al, 2004; Yatchew, 2003). The amount of transfer could have a non-linear relationship with recipient's income. If the recipient's income is very low, donors would be likely to be altruistically motivated. Transfers would increase with the reduction in recipient's income. When the recipients are well off enough, there is no need for the donors to help them even though donors still care about the recipients. Thus, as the recipient's income rise to some threshold, transfers are not responsive to income and the altruistic motive might disappear or be shifted to something else. If the recipient's income is high, transfers could be motivated by the expectation of receiving some resources back either in the form of inter-vivos transfers or bequest. Thus, there might be some threshold point where the motive for transfers shifted from altruistic to exchange.

The motivation of transfer is also impacted by cultural and institutional factors. In China, the interpretation of altruism would be more complicated. First, the influence of traditional Confucian on the culture of support for elderly parents is common in China. Filial piety, which requires the adult children to provide financial and time transfer to their elderly parents, is considered to be a merit and universally accepted. Second, the Constitution of China stated that parents have the duty to raise and educate their children, and the adult children have the duty to support their parents. If the adult children failed to provide assistance for their parents, they would be penalized in terms of imprisonment[2]. Thus, part of the 'altruistic' motive is due to the requirement of law and the traditional Confucian filial piety. Little attention has been given to transfers and support for the elderly people in China. Most studies focus on descriptive discussions of old age support (Rozelle et al, 2000; White, 1998; Shang, 1999; Chow, 2000; Saunders et al, 2003). Cai et al. (2006) examine the transfer

[2] From China Penal Code of 1980.

derivatives in urban China and find that the intra-family transfer is altruistically motivated at the low level of household income. This paper follows the method of Cox et.al (2004) and Cai et.al (2006) and add the role of medical expenditure into the analysis of transfer derivatives.

3 Data and Method

The data used in this paper is from the China Health and Retirement Longitudinal Study (CHARLS), a new survey conducted by the National School of Development (China Center for Economic Research) at Peking University. Two provinces, Zhejiang and Gansu, are surveyed in the pilot wave of CHARLS in 2008. This survey aims at the residents of China age 45 and older. The dataset not only contains detail information on transfer, but also provides a rich set of individual and family controls.

The intergenerational transfer in the dataset includes regular transfers, non-regular transfers and in-kind transfers (non-monetary gifts). Regular transfer refers to the monetary allowance received from parents, children and grandchildren. Non-regular transfer includes the money received as gifts (*hongbao*) on holidays, birthday and special events such as wedding. Non-monetary gifts are in-kind transfers. The value of gifts is provided by the recipients. There are three groups of people in a typical transfer network: parents, children and grandchildren. Adult children are the main contributors in the inter-generational transfer received by the elderly parents.

The components of public transfer vary in rural and urban areas. In rural areas, public transfer includes agriculture subsidy, reforestation subsidy, *wubaohu*[3] subsidy, *tekunhu*[4] subsidy, *dibao*[5], emergency or disaster relief, donations, etc. In cities, the majority of public transfer is *dibao*. The other components are disaster relief,

[3] *Wubaohu* subsidy targets low-income, blind, disabled, aged persons, and young persons that have no ways to support themselves.
[4] *Tekunhu* are the households with income levels far below the poverty line.
[5] *Dibao* is a public transfers for the households with low income.

donations, etc. Figure 1 shows the distribution of pre-transfer income with or without transfers. The pre-transfer income is the average income received by the elderly parents. A small fraction of individuals has negative pre-transfer income. Most of them are from the rural areas, where the income is calculated as agricultural revenue minus cost. The income with inter-generational and public transfer increases and the distribution shifts to the right. Figure 2 shows the distribution of transfer as a function of pre-transfer income. At low income levels, we observe large amount of inter-generational transfers and a negative slope of transfer with respect to income. At high income levels, an opposite direction of transfer is found. Net-transfer in is negative, which indicate that adult children are receiving transfers from their elderly parents. Public transfers do not change a lot with income for the elderly parents.

We follow the theoretical framework of Cox et al.(2004). The transfer derivative switches from altruistic to exchange motives at certain threshold point. We use conditional least square threshold model (Hansen, 1996; Chan and Tsay, 1998; Cox et al., 2004). The empirical specification is the following:

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

where K is the threshold, which is treated as an unknown parameter. We 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 square, marital status, household size, activities of daily living (ADL), health status, having any health insurance, living with adult children or not, number of children, having a son or not, average education of transfer network, average of age transfer network, caring grandchildren, etc.

Table 1 reports the descriptive statistics for transfer variables and main control

variables. The average net-transfer in is 880 Yuan, among which 577 Yuan is intergenerational transfer and 303 Yuan is public transfer. The pre-transfer average income for the elderly parents is 7750 Yuan. The average wealth is around 65 thousand Yuan. Mean age is 60.5 and mean number of adult children is 2.79. 47.6% of the households are from Gansu province and the rest are from Zhejiang province. 55.6% of the sample is living in the rural areas. Around 5% have problems with ADLs[6].

Poverty induced by diseases and high medical expenditure becomes prominent in China. Although reforms in the health sector increase the coverage of health insurance, the upper limit for reimbursement do not provide full insurance for medical expenditure, especially for the diseases that have large bills. If we consider those large medical expenditures, the real disposable income would be even lower. The response in 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 levels. The specification becomes the following:

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

With adjustment of medical expenditure from pre-transfer income, in Figure 3, we observe a steeper slope of inter-generational transfer to pre-transfer income at low level of household resources.

The estimate of transfer derivative would be potentially biased due to the following concerns. First, the labor supply for the non-retired recipients would be affected by the expectation of receiving transfer from their children or grandchildren. If adult children are very generous in giving remittance to their parents, who might respond by decrease the labor force participation through a higher reservation wage or lower

[6] The ADL is calculated to be the mean of six different daily activities that the individual have problems with. These activities are walking, dressing, eating, toileting, bathing and controlling urination.

effort in searching for a job. This unobserved factor would bias the coefficient for pre-transfer household income upward. Alternatively, if the reason that some low-income elderly parents not receiving remittance is because adult children believe that their parents are capable of working but not working hard or look hard for employment, our estimate would be biased downward. We follow Cai et al. (2006) and use predicted household income per capita based on the information related to employment shock and productivity shock. The laid-off worker and accidental shock to productivity would be exogenous and have long-term impacts on labor force participation. They are used to predict the pre-transfer household income. Similar problem we have is for the measure of medical expenditure. The demand for health consumption could be affected by the amount of transfer received. We use the predicted amount of medical expenditure based on the health status, ADLs and past health shock.

The third problem we might have is the omitted ability that is shared by the elderly parents and their transfer network, adult children and grandchildren. We control average education attainment and age for adult children to reduce the bias that might be introduced by unobservables related to ability.

Living with adult children or not could reflect a net-transfer either in the direction from adult children to elderly parents or the reverse. Co-residence is another factor that could potentially introduce bias into the estimates. Living together makes the adult children be aware of the income of elder parents and their daily consumptions. The transfer from the adult children would be more responsive to low income under altruism. Alternatively, adult children might spend time on taking care of elderly parents, which might crowd out the financial transfer. Thus, we control living arrangement in the main regression for transfer derivative, check whether co-residence is driven by parental income and estimate the model with interaction terms between co-residence and pre-transfer income.

4 Results

The results reported in this section include the estimates for the impact of pre-transfer income on the amount of net transfer in with different choice of threshold in the conditional least square model. First, we use poverty line[7] in rural area in 2008 as the knot. Second, we use the 10^{th} and 25^{th} percentile values of pre-transfer income. Then, we compare these results with the most fitted value of threshold. Sub-samples, such as people aged 65 and above, rural households, urban households, etc, are examined. Alternative models such as multi-knots and polynomial of income are estimated.

Predicted pre-transfer income is used to reduce the bias that might be generated by the endogeneity of the labor supply decisions of the transfer recipients. In order to obtain a prediction of pre-transfer income, we need some variables that have no impact on transfer and are exogenous to the labor supply participation. These variables include the employment shock, such as whether the recipient was laid-off, and health shock, such as whether the household member has any accident before and whether the accident affect productivity. Similarly, medical expenditure are regressed on a set of control variables including the past health shock that might have impacts on current medical expenditures. All the results reported in this session are the coefficient with predicted pre-transfer income.

4.1 Impact of Pre-Transfer Income on Net-Transfer In

Table 2 reports the results with conditional least square threshold model. In column (1) to (3), we use poverty line, 10^{th} and 25^{th} percentiles of pre-transfer income as thresholds for the shift in transfer motives. For income below the poverty line, the transfer derivative is negative and statistically significant. A dollar reduction in the recipient's pre-transfer income would be covered by transfer with 71 cents, among which 53 cents is provided by inter-generational transfer network (Panel B). The

[7] The poverty line is from China Statistic Yearbook in 2008.

magnitude of the transfer derivative is larger if we choose the income level below 10^{th} percentile as the threshold. The estimate with best-fit threshold is listed in column (4). Private transfer covers 76% of income reduction below the threshold, while public transfer covers 22%. These results are consistent with altruistic motive. At the low level of income, inter-generational transfer is very responsive. The comparison of the results with different values of threshold also indicates that the lower the income level, the responsiveness of transfer would be. The coefficient for pre-transfer income above threshold is statistically significant with a negative magnitude of 0.03. No evidence for exchange motive is found.

Column (5) to (8) in Table 2 presents the estimates with adjustment pre-transfer income with the value of threshold chosen based on this adjusted variable. Subtract the medical expenditure from pre-transfer income gives a prediction of actual resources that could be used for household consumption. The transfer derivative has a smaller magnitude for the adjusted pre-transfer income below threshold. Some transfer is due to the demand for medical service and is not necessarily a response to income. For the best-fit value of the threshold, the transfer derivative is around -0.67 for intergenerational transfer and -0.07 for public transfer.

In all of these regressions, with or without adjustment for medical expenditure, the coefficient for household wealth is not statistically significant, which suggest that transfers are more motivated by income rather than wealth. Income effect dominants the impact of household resources on transfer received. The insignificant wealth effect could be explained by the decline in fertility rate, which decrease the competition of 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.

For people age 65 and above, the biase that might be induced by the endogeneity of labor supply is further decreased since people are all retired after 65 years old. In table

3, we can see that the magnitude of the coefficient for pre-transfer income before threshold is big. A dollar decrease in income will be responded by about 2 to 3 dollars increase in transfer received. The large health expenditure for the elder people could be the main reason for such a big response of inter-generational transfer. The estimates with the medical-expenditure adjusted pre-transfer income are more reasonable and close to the transfer derivatives obtained for the whole sample. Without the consideration for medical expenditure, we tend to over estimate the transfer derivatives.

The intergenerational transfer includes three components, regular transfer, non-regular transfer and non-monetary gifts. In order to understand which part would be more responsive, we estimate the transfer derivative for each component. Table 4 presents the results using best-fit K as threshold. Only non-regular transfers are negatively impacted by pre-transfer income below the threshold. A dollar decrease in income would be covered by 53 cents in non-regular transfer. Non-monetary gifts and regular transfers are not responsive to household resources. Wealth has a statistically significantly positive impact on non-regular transfer but the magnitude is very small.

4.2 Transfer Derivatives By Regions

Due to the difference in culture and economic development across areas, the transfer derivative could vary a lot in rural/urban areas and in two different provinces in the dataset. Table 5 presents the estimates for transfer derivatives for people in different regions. Panel A reports the results for rural and urban households separately. The coefficients for pre-transfer income below the best-fit threshold are negative and statistically significant for both rural and urban household. They are consistent with the altruistic motive at low-income level. But, for people living in the cities, the magnitude of transfer derivative is much larger than the people in the rural areas. A dollar reduction in pre-transfer income would be covered with 88 cents by transfer. Around 90 percent of the coverage is due to the inter-generational transfer. The reason

that we observe a larger transfer at low income level for the people in the cities might due to the different living standard in urban and rural areas. In cities, people need a comparatively higher income to maintain certain level of consumption for subsistence. The transfer would be larger when elderly parents suffer from a reduction in income to a level which is not enough to maintain daily consumptions.

Panel B presents the transfer derivative in two provinces, Zhejiang and Jiangsu, separately. In Zhejiang province, the impact of predicted pre-transfer income on net-transfer in is -0.87. Inter-generational transfer is the main response to recipient's low income level. However, in Gansu, around 40% of the response is due to public transfer. With a comparatively low level and low growth rate in GDP, Gansu has a large population with income below poverty line. Subsidies from the government would be very important for the low-income household. The other 60% of transfer response comes from the remittance from household transfer network.

4.3 The Network of Private Transfer

The network of private transfer is examined in Table 6. Sons and daughters are the major donors of transfer to the elderly parents. The first column presents the derivatives of the transfer from sons for the households who have at least a son. The coefficient for pre-transfer income is not statistically significant, which suggests that son's remittance is not responsive to parents income. But, for the pre-transfer income above the threshold, we find positive effects on transfer received from the son. In the second column, transfers from the daughters are very responsive to the income below the threshold. A dollar reduction in recipient's income would be covered by daughter's transfer with 74 cents. The last two columns in Table 6 restrict the sample to the elderly parents who has both sons and daughters. We find similar results. Daughter's transfer is negatively impacted by household resource below threshold while son's transfer is positively impact by income above threshold. Thus, our estimates suggest that daughter's remittance to the elderly parents would be more

altruistic-motivated, while son's transfer would be more exchange-motivated. Although sons are generally considered to take the tradition role of supporting parents, however, due to the decline of fertility and equal requirement of adult children's duty in the law, sons and daughters take the same responsibility to support their elderly parents. Other possible explanations for the findings that daughter's transfer at low income level is more responsive and they are more altruistically motivated are that, women tend to control the family resource, and females might have a stronger filial piety.

4.4 Providing Care for Grandchildren and Transfer

Elderly population might provide some services to the adult children such as preparing for dinner, taking care of grandchildren, etc. It is very common to see elderly parents taking care of their grandchildren in China. These services might induce a higher transfer to those elderly households. In other words, transfer could be motivated by the exchange of services from elderly parents. In order to see whether taking care of grandchildren increase the transfer and transfer derivative, we restrict the sample to the elderly couple that have any grandchildren who are not adults and need to be taken care of.

Table 7 reports the results with measures of taking care of grandchildren. In Column (1), the coefficient of whether take care of any grandchildren is not statistically significant. With the interaction terms between pre-transfer income and taking care of grandchildren, we do not find significant impact of these interaction terms. The provision of services does not affect transfer derivatives. Column (3) and (4) include alternative measures for the services from elderly households. The weeks and hours of caring for grandchildren do not have significant effects on the intergenerational transfer received by the elderly people.

4.5 Co-residence

Living with adult children or not could reflect a net-transfer either in the direction from adult children to elderly parents or the reverse. Co-residence makes the adult children be aware of the income of elder parents and their daily consumptions. The transfer from the adult children would be more responsive to low income under altruism. Alternatively, adult children might spend time on taking care of elderly parents, which might crowd out the financial transfer. Although living arrangement is controlled in the main regression for transfer derivative, we need detail information about how co-residence affects transfer derivatives. We add the interaction terms between co-residence and income above/below the threshold into the main regression. However, if co-residence is driven by income levels of elderly parents, the effects we are picking up with the interaction terms only indicate the derivatives for a specific income range and do not tell us the true effect of co-residence on transfer derivatives. In order to rule out the situation that co-residence is affected by the income of elderly parents, we estimate how the income and other household characteristics affect the living arrangement.

Table 8 presents the result with OLS and Probit model. We find that parental income has no impact on the decision of co-residence. Adult children are more likely to live with their elderly parents when they are young or when their parents become older. The effect of co-residence on transfer derivatives are reported in Table 9. Large negative transfer derivatives are found for the elderly couple who are living with their adult children. A dollar reduction in pre-transfer income would increase transfer by 89 cents. The intergenerational transfer would be more responsive to low-level of parental income. With the rural and urban samples, we find that this effect of co-residence is only statistically significant in cities. In rural areas, we do not see the transfer derivatives are affected by living arrangement.

4.6 Alternative Specification

Our main results are based on conditional least square model with a single-knot. The

models in Table 10 allow more flexible specifications with segments of income and polynomials of income. Column (1) reports the OLS result. The transfer derivative is statistically significant but with a very small magnitude. Without the use of single knot conditional least square threshold model, the responsiveness of transfer to income tends to be under-estimated. Column (2) allows for more segments in pre-transfer income. The chosen knots of segmentation are 25^{th}, 50^{th} and 75^{th} income percentiles. The net-transfer in are only statistically significantly affected by pre-transfer income at the lowest income range, i.e. below 25^{th} percentile. For the highest income range, we find significant effects as well, but with a very small magnitude. Regressions in Column (3) and (4) include polynomials of pre-transfer income. The coefficients of a higher degree in the power of income are zero and not statistically significant.

5 Conclusions

This paper examines how the net-transfer in, especially the intergenerational transfer to the elderly parents, is affected by pre-transfer household resources. With a new survey data, CHARLS, and conditional least square threshold model, we find that adult children do partly insure their parents against low-retirement income and high medical expenditure. After adjustment for high medical expenditure, transfer derivative for pre-transfer income below threshold is around -0.7. The intergenerational transfers are the main component for the support of the older generation and highly responsive to household resources at the low level of pre-transfer income, which is consistent with altruistic motives. There is still around 30% of income reduction could not be covered by private transfer. Filial piety, the main motive for the inter-generational transfer, could not be relied on to provide enough support for the elderly. More generous public transfer targeted low income population would be needed, especially for the households with income far below the poverty line.

For different components of transfer, we find that regular transfer has a larger income derivative and is altruistically motivated; Non-regular transfer is statistically significantly affected by parental wealth. For the regions with different level of economic development, we find that Zhejiang has a larger magnitude of transfer derivative. Adult children in the cities would transfer more resource to their parents when they have a low level of income. Transfers from daughters and from adult children who live with parents would be more altruistically motivated. Co-residence increases the responsiveness of inter-generational transfer to the low income of elderly parents.

Reference

Barro, R.J. (1974) Are Government Bonds Net Wealth? *Journal of Political Economy* 82(6), 1095-1117.

Becker, G. (1974) A Theory of Social Interactions. *Journal of Political Economy* 82(6), 1063-1093.

Cai, F., Giles, J. and Meng, X. (2006). How Well Do Children Insure Parents Against Low Retirement Income? An Analysis Using Survey Data From Urban China. *Journal of Public Economics* 90 (2006) 2229-2255.

Chow, N.W.S. (2000) Social Welfare With Chinese Characteristics: The Reform of the Social Security System in China. Centre of Asian Studies, University of Hong Kong.

Cox, D. (1987). Motives for Private Income Transfer. *Journal of Political Economy* 95(3), 509-546.

Cox, D., and Rank, M.R. (1992). Inter-vivos Transfers and Intergenerational Exchange. *Review of Economics and Statistics* 74(2), 305-314.

Cox, D., Hansen, B.E., Jimenez, E. (2004). How Responsive Are Private Transfers to Income? Evidence From a Laissez-faire Economy. *Journal of Public Economics* 88(9-10), 2193-2219.

Ioannides, Y.M., Kan, K. (2000) The Nature of Two-Directional Intergenerational Transfers of Money and Time: An Empirical Analysis. In: Gerard-Varet, L.-A., Kolm, S.-C., Mercier Ythier, J.(Eds.), The Economics of Reciprocity, Giving and Altruism. St. Martin's Press, New York.

Laitner, J. (1997) Intergenerational and Interhousehold Economic Links. In: Rosenzweig, M.R., Stark, O. (Eds.), Handbook of Population and Family Economics. North-Holland, New York.

McGarry, Kathleen. (1999) Inter-vivos Transfers and Intended Bequests. *Journal of Public Economics* 73(3), 321-325.

McGarry, K., Schoeni, R.F. (1995) Transfer Behavior in the Health and Retirement Study: Measurement and the Redistribution of Resources Within the Family.

Journal of Human Resources 30, S184-S226.

Saunder, P., Shang, X., Zhang, K. (2003) The Structure and Impact of Formal and Informal Social Support Mechanism for Older People in China. Social Policy Research Centre, University of New South Wales.

Shang, X. (1999) The Political Origins of China's Social Security System: From a Premature Social Insurance System: From a Premature Social Insurance Program to a Segmented Welfare Regime. New Zealand Journal of Asian Studies 1(2), 48-70.

White, G. (1998) Social Security Reforms in China: Towards and East Asian Model? In: Goodman, R., White, G., Kwon, H.-J.(Eds.), The East Asian Welfare Model: Welfare Orientalism and the State. Routledge, London.

Figure 1: Distribution of Income Per Capita

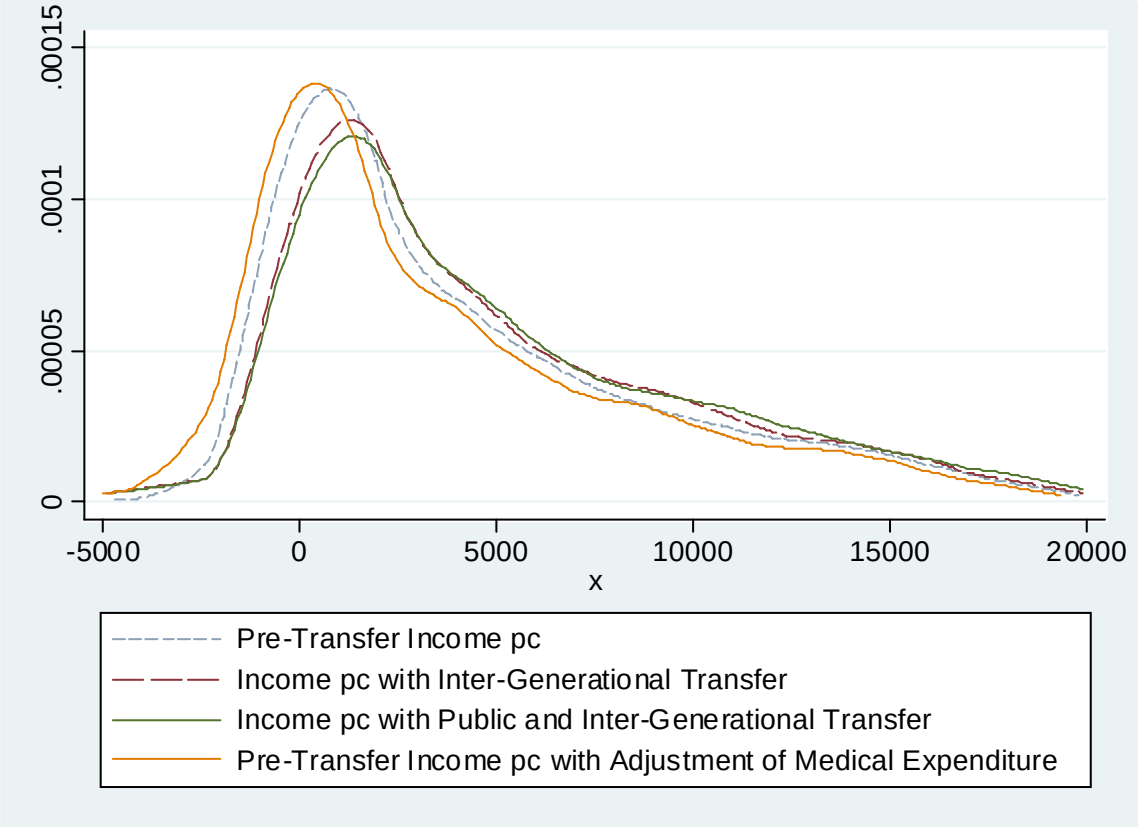

Figure 2: Distribution of Transfer as a Function of Pre-Transfer Income

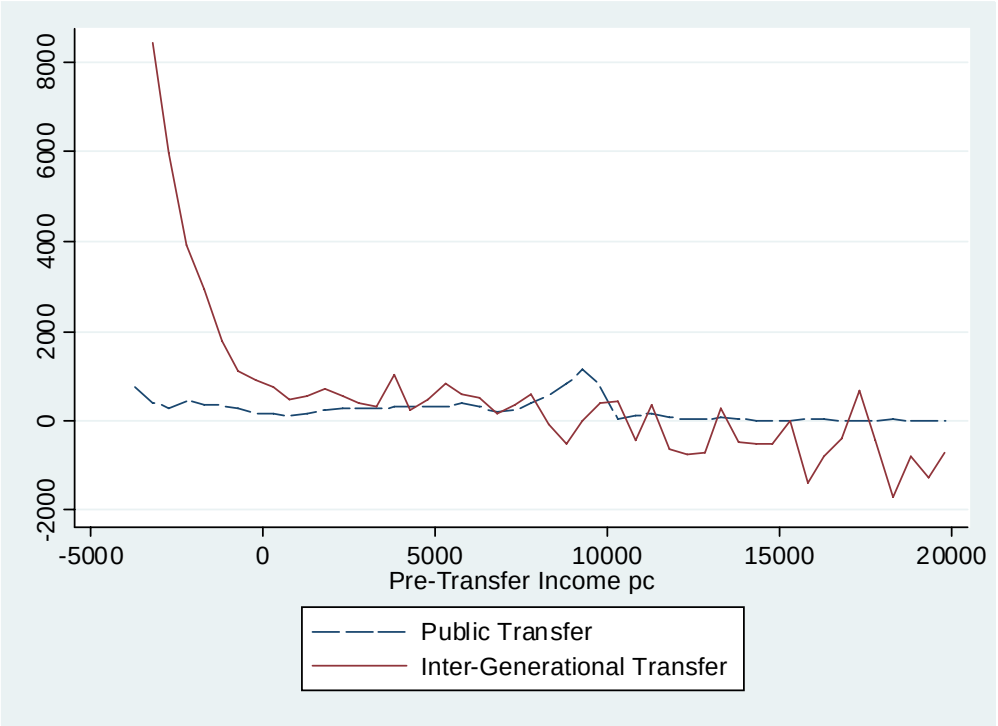

Figure 3: Distribution of Transfer as a Function of Pre-Transfer Income with Adjustment of Med Expenditure

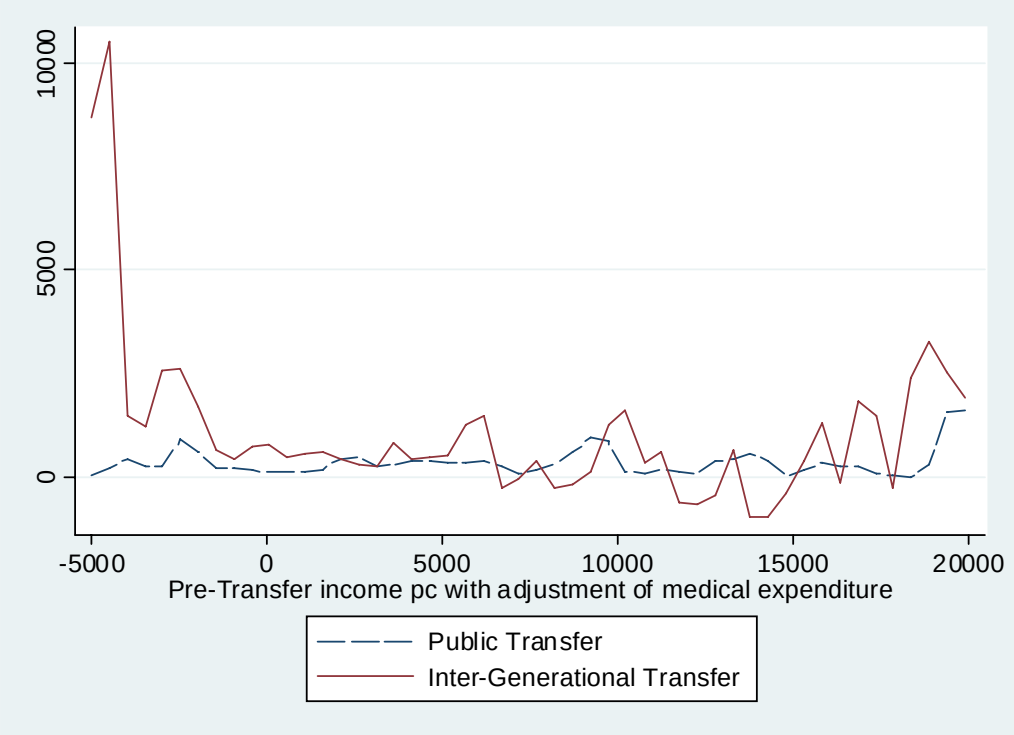

Table 1: Descriptive Statistics

Variable	Mean	SD
Pre-transfer income per capita	7750.46	18029.53
Income pc with inter-generational transfer	8327.28	17809.88
Income per capita with public and inter-generational 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
- 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
- Public transfer	302.95	1321.67
Household wealth per capita	64.52	185.29
Household size	3.54	1.76
Age	60.50	10.73
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
Vocational school	0.066	0.117
Two/Three year college / Associate degree	0.014	0.081
Four-year college / Bachelor degree	0.007	0.044
Married	0.995	0.068
Number of Children	2.790	1.561
Have young grandchildren	0.694	0.461
Province - Gansu	0.476	0.500
Province – Zhejiang	0.534	0.500
Living in Rural Areas	0.556	0.497
Males (Gender of the respondent)	0.488	0.500
ADLs	0.051	0.141
Have health insurance	0.898	0.303
Observation	1520	

Table 2: Transfer Derivatives – Net Transfer in

	Dependent variable: Net Transfer in							
	without adjustment for medical expenditure				with adjustment of medical expenditure			
Threshold	(1)PL :785	(2)10%:-50	(3)25%:549	(4)BF:-800	(5)PL :785	(6)10%:-927	(7)25%:135	(8)BF:-2000
				Panel A: Total Transfer				
Pre-transfer income	-0.713***	-0.875***	-0.764***	-0.982***	-0.527***	-0.671***	-0.585***	-0.744***
below threshold	(0.095)	(0.104)	(0.098)	(0.113)	(0.056)	(0.063)	(0.058)	(0.067)
Pre-transfer income	-0.033***	-0.033***	-0.033***	-0.033***	-0.036***	-0.036***	-0.036***	-0.036***
above threshold	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Household wealth	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
per capita	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
				Panel B: Intergenerational Transfer				
Pre-transfer income	-0.556***	-0.678***	-0.595***	-0.760***	-0.473***	-0.602***	-0.523***	-0.671***
below threshold	(0.089)	(0.098)	(0.092)	(0.106)	(0.052)	(0.058)	(0.054)	(0.063)
Pre-transfer income	-0.034***	-0.034***	-0.034***	-0.034***	-0.037***	-0.036***	-0.037***	-0.037***
above threshold	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Household wealth	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
per capita	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
				Panel C: Public Transfer				
Pre-transfer income	-0.156***	-0.196***	-0.169***	-0.222***	-0.055***	-0.069***	-0.062***	-0.073***
below threshold	(0.025)	(0.027)	(0.026)	(0.030)	(0.015)	(0.017)	(0.016)	(0.018)
Pre-transfer income	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
above threshold	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Household wealth	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
per capita	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	1520	1520	1520	1520	1520	1520	1520	1520

Table 3: Transfer Derivatives for People Aged 65 and Above– Net Transfer in

	Dependent variable: Net Transfer in							
	without adjustment for medical expenditure				with adjustment of medical expenditure			
Threshold	(1)PL :785	(2)10%:-300	(3)25%:120	(4)BF:-1200	(5)PL :785	(6)10%:-1493	(7)25%:-163	(8)BF:-2500
				Panel A: Total Transfer				
Pre-transfer income	-2.386***	-3.097***	-2.842***	-3.627***	-0.895***	-1.050***	-0.959***	-1.119***
below threshold	(0.162)	(0.184)	(0.174)	(0.203)	(0.064)	(0.071)	(0.067)	(0.074)
Pre-transfer income	0.055	0.029	0.037	0.020	0.036	0.013	0.023	0.008
above threshold	(0.034)	(0.032)	(0.032)	(0.031)	(0.037)	(0.034)	(0.036)	(0.034)
Household wealth	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***
per capita	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
				Panel B: Intergenerational Transfer				
Pre-transfer income	-2.428***	-3.125***	-2.867***	-3.661***	-0.904***	-1.056***	-0.963***	-1.125***
below threshold	(0.156)	(0.177)	(0.168)	(0.195)	(0.062)	(0.069)	(0.065)	(0.072)
Pre-transfer income	0.034	0.007	0.015	-0.002	0.011	-0.012	-0.003	-0.017
above threshold	(0.033)	(0.031)	(0.031)	(0.030)	(0.036)	(0.033)	(0.034)	(0.033)
Household wealth	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***
per capita	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
				Panel C: Public Transfer				
Pre-transfer income	0.042	0.027	0.025	0.033	0.009	0.006	0.005	0.006
below threshold	(0.045)	(0.054)	(0.051)	(0.061)	(0.018)	(0.020)	(0.019)	(0.021)
Pre-transfer income	0.021**	0.022**	0.022**	0.022**	0.026**	0.025**	0.026**	0.025**
above threshold	(0.010)	(0.009)	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)
Household wealth	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
per capita	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	516	516	516	516	516	516	516	516

Table 4: Transfer Derivatives: Different Components of Intergenerational Transfer

	(1)Regular	(2)Non-regular	(3)Non-Monetary
Pre-transfer income	0.073	-0.534**	-0.024
below threshold	(0.045)	(0.074)	(0.021)
Pre-transfer income	-0.010**	-0.014*	0.002
above threshold	(0.005)	(0.009)	(0.002)
Household wealth	-0.001*	0.003***	0.000
per capita	(0.001)	(0.001)	(0.000)
R-squared	0.062	0.103	0.184
Observations	1520	1520	1520

Notes: With the threshold that best fit the data. Standard errors are in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5: Transfer Derivatives – By Regions

	Total Transfer	Inter-generational Transfer	Public Transfer	Total Transfer	Inter-generational Transfer	Public Transfer
			Panel A: Urban vs. Rural			
		Urban			Rural	
Pre-transfer	-0.879***	-0.773***	-0.106***	-0.240***	-0.285***	0.045*
income below K	(0.103)	(0.095)	(0.028)	(0.089)	(0.085)	(0.026)
Pre-transfer	-0.042***	-0.042***	0.001	-0.011	-0.007	-0.003
income above K	(0.012)	(0.012)	(0.003)	(0.012)	(0.011)	(0.003)
Wealth	0.001	0.001	-0.000	0.000	-0.001	0.001**
	(0.001)	(0.001)	(0.000)	(0.002)	(0.001)	(0.000)
R-squared	0.267	0.268	0.108	0.157	0.141	0.140
Observations	652	652	652	868	868	868
			Panel B: Zhejiang vs. Gansu			
		Zhejiang			Gansu	
Pre-transfer	-0.868***	-0.874***	0.006	-0.613***	-0.383***	-0.230***
income below K	(0.096)	(0.093)	(0.021)	(0.098)	(0.083)	(0.033)
Pre-transfer	-0.032***	-0.034***	0.002	-0.000	-0.000	-0.000
income above K	(0.009)	(0.009)	(0.002)	(0.025)	(0.021)	(0.008)
Wealth	0.001	0.001	-0.000	0.002	0.001	0.000
	(0.001)	(0.001)	(0.000)	(0.002)	(0.002)	(0.001)
R-squared	0.278	0.270	0.203	0.150	0.137	0.138
Observations	796	796	796	724	724	724

Notes: With the threshold that best fit the data. Standard errors are in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6: Transfer from Sons and Daughters

Sample	Have at least a son	Have at least a daughter	Have both son and daughter	
Dependent Variable	Transfer from Son	Transfer from Daughters	Transfer from Son	Transfer from Daughters
Pre-transfer income below threshold	-0.059	-0.736***	-0.042	-0.817***
	(0.054)	(0.045)	(0.054)	(0.045)
Pre-transfer income above threshold	0.016**	0.008	0.019**	0.008
	(0.007)	(0.006)	(0.008)	(0.007)
Household wealth per capita	0.003***	0.001*	0.003***	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
R-Squared	0.110	0.248	0.151	0.304
Observations	1305	1108	936	936

Notes: With the threshold that best fit the data. Standard errors are in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7: The Impact of Taking Care of Grandchildren on Net-Transfer in

	Dependent Variable: Inter-generational Transfer			
	(1)	(2)	(3)	(4)
Pre-Transfer Income below K	-1.088***	-1.104***	-1.087***	-1.089***
	(0.052)	(0.061)	(0.052)	(0.052)
Pre-Transfer Income above K	0.017	0.016	0.017	0.016
	(0.019)	(0.025)	(0.018)	(0.018)
Take Care of Grandchildren	85.665	104.694		
	(276.791)	(323.312)		
Care * Income below K		0.057		
		(0.113)		
Care * Income above K		0.000		
		(0.031)		
Care Weeks			1.651	
			(2.212)	
Care Hours				-0.021
				(0.020)
R-Squared	0.435	0.435	0.435	0.436
Observations	791	791	791	791

Notes: With the threshold that best fit the data. Standard errors are in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 8: Impact of Parental Income on the Decision to Co-reside

	Whole Sample		Rural		Urban	
	OLS	Probit	OLS	Probit	OLS	Probit
Parental Income	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Household Wealth	-0.000	-0.000	0.000	0.000	-0.000	-0.000
Per Capita	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.011	0.000	-0.003	0.012	-0.024	-0.018
	(0.012)	(0.019)	(0.017)	(0.025)	(0.019)	(0.033)
Age square	0.024***	0.028**	0.017	0.019	0.036**	0.048**
	(0.009)	(0.014)	(0.012)	(0.019)	(0.014)	(0.024)
Education	0.029**	0.039**	0.012	0.016	0.045**	0.067**
	(0.012)	(0.019)	(0.017)	(0.025)	(0.018)	(0.031)
ADL	-0.089	-0.113	-0.074	-0.089	-0.103	-0.117
	(0.079)	(0.122)	(0.100)	(0.148)	(0.132)	(0.229)
Own House	-0.018	-0.028	-0.014	-0.012	-0.027	-0.044
	(0.029)	(0.044)	(0.043)	(0.062)	(0.040)	(0.069)
Have Young	-0.064***	-0.089***	-0.063**	-0.090**	-0.064*	-0.082
Grandchildren	(0.023)	(0.035)	(0.031)	(0.044)	(0.035)	(0.059)
Average Education	-0.056***	-0.077***	-0.028	-0.034	-0.086***	-0.138***
of Adult Children	(0.017)	(0.026)	(0.023)	(0.034)	(0.025)	(0.043)
Average Age of	-0.025***	-0.045***	-0.022***	-0.042***	-0.029***	-0.057***
Adult Children	(0.004)	(0.007)	(0.005)	(0.009)	(0.006)	(0.013)
Number of Children	-0.001	0.015	0.008	0.025	-0.010	0.012
	(0.009)	(0.014)	(0.011)	(0.017)	(0.014)	(0.025)
Province Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Type of Location	Yes	Yes	Yes	Yes	Yes	Yes
Health Indicators	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1515	1515	865	862	650	649

Notes: For Probit model, marginal effects are reported. Standard errors are in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 9 Co-residence and Transfer Derivatives

	Whole	Rural	Urban
Co-reside*Pre-transfer	-0.894***	0.108	-1.625***
income below K	(0.098)	(0.095)	(0.176)
Co-reside*Pre-transfer	-0.077***	-0.012	-0.083***
income above K	(0.012)	(0.019)	(0.019)
Pre-transfer income	0.003	-0.337***	0.560***
below threshold	(0.096)	(0.097)	(0.170)
Pre-transfer income	0.008	-0.004	0.010
above threshold	(0.010)	(0.012)	(0.016)
Wealth	0.001	-0.001	0.001
	(0.001)	(0.001)	(0.001)
R-squared	0.243	0.143	0.365
Observations	1520	1520	1520

Notes: With the threshold that best fit the data. Standard errors are in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 10: Alternative Specification

	OLS	Segments of Income	Polynomials of Income	
	(1)	(2)	(4)	(5)
Pre-transfer Income	-0.050***		-0.055***	-0.036*
	(0.008)		(0.015)	(0.019)
Pre-transfer Income *		-0.602***		
I(Income < 25th percentile)		(0.059)		
Pre-transfer Income * I(25th		-0.358		
< Income < 50th percentile)		(0.413)		
Pre-transfer Income * I(50th		0.005		
< Income < 75th percentile)		(0.060)		
Pre-transfer Income *		-0.035***		
I(Income > 75th percentile)		(0.008)		
Pre-transfer Income ^ 2			0.000	-0.000
			(0.000)	(0.000)
Pre-transfer Income ^ 3				0.000
				(0.000)
Wealth	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
R-squared	0.141	0.191	0.142	0.143
Observations	1520	1520	1520	1520

Notes: Standard errors are in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%.