Living Arrangements of the Elderly in China:

Evidence from CHARLS

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Abstract

Recent increases in Chinese elderly living alone or only with a spouse has raised concerns about elderly support, especially when public support is inadequate. However, using rich information from the China Health and Retirement Longitudinal Study, we find that the increasing trend in living alone is accompanied with a rise in living close to each other. This type of living arrangement solves the conflicts between privacy/independence and family support. This is confirmed in further investigation: people with higher education tend to choose to live separately, indicating the increasing desire for independence/privacy with higher socioeconomic status; meanwhile, children living close by visit their parents more frequently, and provide more non-financial support. We also find that children who live far away provide a larger amount of transfers to their parents, a result consistent with responsibility sharing among siblings.

1. Introduction

Population is rapidly aging in China. In 2000, people 60 and older accounted for 10% of the population. The ratio rose to 13.3% in 2010 and is expected to reach 30% in 2050. Unlike developed countries where almost all elderly have access to social security, family has been the main source of support for Chinese elderly, especially in rural areas where the majority of Chinese elderly reside. In recent decades, however, the number of children has declined rapidly due partly to the draconian population policy implemented since the late 1970s, and rural young people have moved into cities in large numbers as part of the process termed "history's greatest migration in the world." These trends have cast doubt on the reliability of family as the provider of elderly support in China.

This concern is echoed by empirical evidence which shows that Chinese elderly are increasingly living alone or only with a spouse. Pamler and Deng (2008), using China Household Income Project (CHIPs) data collected in 1988, 1995, and 2002, show that persons 60 and older, especially those in urban areas, are increasingly more likely to live with their spouses rather than in intergenerational households with their children. They conjecture that the trend is due to the increasing availability of pensions which creates a basis for independence for the Chinese elderly as well as an additional source of income for traditional intergenerational households. Meng and Luo (2004), using the urban sample of CHIPs, also show that the fraction of elderly living in an extended family in urban China declined significantly over the study period. They attribute this trend to the housing reform during the 1990s, which increased housing availability and hence allowed elders who preferred to live alone to do so. Using population census data of 1982, 1990 and 2000, Zeng and Wang (2003) present a similar pattern and attribute it to tremendous fertility decline and significant changes in social attitudes and population mobility. They project that the rising trend of elderly with empty nests will persist in the future, which is confirmed in Figure 1, which shows that the rate of living alone or only with a spouse further

declined in 2005 compared to 2000.

[Figure 1 Insert Here]

What do we infer about the welfare of the elderly from this trend of living away from children? Most of the existing Chinese literature views it as rising misery on the part of the elderly because the elderly are not being supported or cared for. Benjamin et al. (2000) finds that elderly person living alone are worse off than those living in an extended household, and the implication is even stronger when we recognize that elderly in simple households also work more. Zimmer and Kwong (2003) is also less optimistic about this trend in reduction of family size. They concerns about whether traditional sources will decay, leading to an increase in the proportion of older adults with unmet needs. Sun (2002)'s research on China's contemporary old age support also suggests that living away from children does constrain them in receiving help with daily activities, and the family support system will face a great challenge in maintaining capacity to perform its supporting function in the near future given the continued demographic transition.

The same trend of elderly living alone has been noted in the United States where the proportion of elderly living independently increased markedly in the 20th century (Costa, 1997, McGarry and Schoeni, 1998, Engelhardt et al., 2005). While the literature has noted that living alone is associated with poverty, a higher level of depression symptoms and more persisting chronic diseases (Agree, 1993; Saunders and Smeeding, 1998; Victor et al., 2000; Kharicha, 2007; Wilson, 2007; Greenfield, 2010), the economic literature has in general viewed this trend as utility enhancing for the elderly and that independence or privacy is a normal good (Doty, 1986; Martin, 1989; Kotlikoff and Morris, 1990; Mutchier and Burr, 1991; Tomassini and Glaser et al., 2004). For example, Costa (1997) finds that prior to 1940, rising income substantially increased demand for separate living arrangements, and therefore, was the most important factor enabling the elderly to live alone in the United States. McGarry and Schoeni (1998) analyze the causes of the increasing share of elderly

widows living alone between 1940s and 1990s, and indicate that income growth, especially increased social security benefits, was the single most important factor causing the change in living arrangements, accounting for nearly two-thirds of the rise in living alone. With a more recent data from the Current Population Survey 1980-99, Engelhardt *et al.* (2005) find that living arrangements are still very income sensitive, particularly for widows and divorcees, and conclude from the results that privacy is valued by the elderly and their families.

The different attitudes towards living arrangements between China and the U. S. can be understood in light of the relative importance of the family in providing support for the elderly. What we find lacking in the literature is that living alone and getting the support from the family are viewed as mutually exclusive, that living alone means not getting the help and in order to get the care from the family they need to live together.

Privacy is a normal good for both Americans and Chinese. In addition, it is a normal good for both elderly parents and their children. With the phenomenal economic growth that occurred in China over the past three decades, it is natural that parents and children may prefer to live separately. However, providing care to elderly parents and getting elderly care may also be normal good. In this paper, we examine how Chinese families reconcile these two objectives. With detailed information on where children live from the China Health and Retirement Longitudinal Study (CHARLS), we find that many Chinese elderly live alone or only with a spouse, but at the same time, most of them have a child living nearby to guarantee care when needed.

This type of living phenomenon is not a recent invention. Bian et al. (1998) find from data from two cities (Shanghai and Tianjin) in 1993 that although most elderly still lived with children, many of them also had children living nearby, providing regular non-financial assistance and maintaining frequent contact. Giles and Mu (2007) also provide some evidence on this tendency, though it is not the focus of

their paper. Due mainly to lack of appropriate data, almost no other studies have followed this line of research to investigate this issue.

The first goal of this paper is to depict an updated and broad picture of the living arrangements of the Chinese elderly and to look at how many elderly parents living alone actually have access to children, i.e., have children living nearby. Secondly, we aim to shed some light on what determines the living arrangements of Chinese families with elderly parents, especially the proximity of children. Finally, we examine the tradeoff between living arrangements and other forms of elderly support including the frequency of visits and financial transfers.

The remainder of the paper is organized as follows. The next section describes our data. Section 3 presents the patterns of China's elderly living arrangements. Section 4 discusses the empirical results on the determination of elderly living arrangements. Section 5 concludes.

2. Data

We use the CHARLS pilot data, which is described in detail in Zhao et al. (2009). CHARLS was designed after the Health and Retirement Study in the US as a broad-purposed social science and health survey of the elderly in Gansu and Zhejiang provinces.   The pilot survey was conducted in July-September 2008.   The CHARLS pilot sample is representative of people aged 45 and over, and their spouses, living in households in Gansu and Zhejiang provinces.

Zhejiang province is located in the developed coastal region, and Gansu, in the less developed western region.   Gansu is the poorest and one of the most rural provinces in China, with per capita income less than half of Zhejiang province and 75% of the population being rural. On the other hand Zhejiang is one of the most dynamic and richest provinces, with a per capita income 50% higher than the Chinese national average.   The pilot chose these two provinces to get at extremes within China.

The full CHARLS will be national in scope and is scheduled to be fielded in 2011.

The sampling design of the 2008 wave of CHARLS was aimed to be representative of residents 45 and older in these two provinces. Within each province, CHARLS randomly selected 13 county-level units by PPS (Probability Proportional to Size), stratified by regions and urban/rural. Within each county-level unit, CHARLS randomly selects 3 village-level units (villages in rural areas and urban communities in urban areas) by PPS as primary sampling units (PSUs). Within each PSU, CHARLS then randomly selected 25 dwellings in rural and 36 in urban areas from a complete list of dwelling units generated from a mapping/listing operation. In situations where more than one age-eligible household lived in a dwelling unit, CHARLS randomly selected one. Final household sample size within a PSU depended on age-eligibility and response rates. Within each household, one person aged 45 and older is randomly chosen to be the main respondent and the spouse is automatically included. Based on this sampling procedure, 1 or 2 individuals in each household were interviewed depending on marital status of the main respondent. The total sample size was 2,685 individuals in 1,570 households. The CHARLS pilot experience was very positive. Overall response rate was 85%; 79% in urban areas and 90% in rural areas. The response rate was about the same in the two provinces, 83.9% in Zhejiang and 85.8% in Gansu. These high response rates reflected the detailed procedures put in place to insure a high response to the survey.

Following the protocols of the Health and Retirement Studies (HRS) international surveys, the CHARLS main questionnaire in the 2008 survey consists of 7 modules, covering demographics, family background, health status (including physical and psychological health, cognitive functions, lifestyle, and behaviors), socioeconomic status (SES), and environment (community facilities) (Zhao et al., 2009). All data were collected in face-to-face, computer-aided personal interviews (CAPI).

In the family module, all CHARLS respondents were asked how many living children they have. For each child, CHARLS collected information on a variety of

characteristics: sex, birth year and month, biological relationship with respondent, and residence. The residence of the child is categorized as follows: (1) this household, (2) adjacent dwelling or same courtyard, (3) another house in this village or community, (4) another village or community in this county or city, (5) another county or city in this province, (6) another province, and (7) abroad. This information enables us to describe the living arrangements in a more detailed way than the previous literature. Other information collected includes each child's education level, marital status, working status, occupation and number of children. At the respondent (parent) level, we have detailed demographic information, income and wealth measures, and rich health measures (self-reported health, ADL and IADL difficulties, cognition scores, CESD, disease indicators and various physical examination indexes). More details about the variables we use are provided in Section 4. With this rich pool of information, we can use multivariate estimation to identify the determinants of elderly living arrangements and investigate joint decisions between parents and children.

3. Patterns of Elderly Living Arrangement

In this research, we define elderly living arrangements similar to the previous literature, but with special consideration to the proximity of child. That is, we divide elderly living arrangements into four categories: (1) living with one or more adult children, (2) living alone, but with one or more children in the same village or community, (3) living alone without any child in the same village or community, and (4) childless.

We restrict our attention to respondents who are 60 and older, who are considered old by the Chinese standard. Table 1 presents an overall picture of the elderly respondents' living arrangements in 2008. From this table, we can see that half (50.1%) of all respondents are living with one or more adult children, which means that the other half (49.9%) are living alone by the conventional definition. A small number of them (3.5% of all) are childless, the other 46.5% have at least one

child but do not live with the child(ren). Of those who have child(ren) but live alone, 56% (26.1/46.5) have at least one adult child living in the same village/community, meaning that they do have access to the care from child(ren).Putting these figures together, only 23.9% (3.5%+20.4%) of all elderly are without the care of children, in contrast to 49.9% if we disregard the proximity of children. Even for those without access to child in the same village, 79% (16.1/20.4) have at least one child living in the same county. This indicates that failing to account for the proximity of children will exaggerate the plight of the elderly in terms of care from children.

In general, women are more likely to live with or close to their children than men; those from Gansu and from rural areas are also more likely to do so than those from Zhejiang and urban areas. Meanwhile, men, those from Zhejiang and urban areas are more likely to be childless than their corresponding counterparts.

[Table 1 Insert Here]

Figure 2 shows the age patterns of elderly living arrangement by the conventional way. Two lines, one living alone or with spouse only, the other living with one or more adult child, are displayed. We see that the probability of living alone or only with spouse increases with age among CHARLS elderly respondents, and the probability of living with children declines correspondingly. If this figure was used to assess the welfare of the elderly, one would conclude that the Chinese elderly are miserable because they lose care as they age.[1] Living alone does not necessarily decline with age. Giles and Mu (2007) show the same pattern as ours using RCRE data. Based on a comprehensive dataset collected from 50 countries across five continents, the United Nations (2005) show that the likelihood of living

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[1] Note that this pattern differs from what we get from the census data (Figure 1), which presents a downward trend of living alone with age. The difference may be explained by the different definitions of "household". CHARLS is very meticulous about its definition of "households." Household members are defined as those families that live under the same roof, share food and other expenses. Census, on the contrary, has no clear definition of "households." The determination of a "household" is largely dependent on household registration. We think that our definition is more appropriate.

alone actually increases at advanced ages. Logan et al. (1998) argue that this decline reflects the normal process of maturation and growing independence of the child.

[Figure 2 Insert Here]

However, a different story emerges when we examine the pattern in more details. As shown in Figure 3, the decline in the proportion of coresidency is fully compensated by the increasing share of proximate child(ren). The likely story is that when children mature and obtain independence from their parents, they do not abandon the parents. They move out but live nearby so that the care needs of parents are met. This is further evidence that looking at the proximity of children is valuable in understanding the welfare of the elderly.

[Figure 3 Insert Here]

We then investigate the nearby children's supportive role in caring the elderly parents. Table 2 offers a detailed comparison between children living in the same household, children within the same village/community and children who live faraway. The coresident children are generally younger than those who are noncoresident. Parents are more likely to live with their youngest sons, and less likely to live with daughters. 78% of the elderly are living with in-laws. On average, coresident children have more grandchildren (less than 16 years old) than the noncoresident children.

[Table 2 Insert Here]

Table 3 shows the transfers provided by children with different living arrangements. The probability of financially transferring to parents is the same for the two groups of children, but those who live nearby are less likely to obtain transfers from their parents. The net amount of transfer from those living nearby is much larger than that from those living faraway. As expected, the children who live nearby are more likely to visit their parents, possibly for the purpose of providing

more help.

[Table 3 Insert Here]

To sum up the results in this section, we find that though half of the elderly CHARLS respondents live by themselves, most of them indeed have access to child assistance. The probability of elderly living alone increases as the elderly age, but it is mostly compensated by the presence of a child in the same village/community, and those nearby children pay more frequent visits to their elderly parents, and provide a higher amount of net transfers on average.

4. Determinants of Elderly Living Arrangement

In this section, we examine more systematically the predictors of elderly living arrangements. The rich information on parent and child characteristics together enables us to employ the data in two ways. The first is to group the data at the respondent (parent) level, which facilitates looking the effects of parental characteristics. The second one is grouping data at the child level, that is, to treat each child as one observation. This will enable us to use family fixed-effects to control for unobserved heterogeneity between families and focus on the job division between children.

We restrict our parent respondents to being aged 60 or above, with at least one child who is aged 25 and older and not a student. The parent-level sample is the 1,137 respondents and the corresponding child-level sample is the 2737. In Table 4, we provide summary statistics of both samples.

[Table 4 Insert Here]

The average age of the elderly parents is 69, with 52% male. Seventy-one percent of them are currently married, and 26% are widowed. Only 20% are from urban areas. Regarding health status, 70% of the elderly rate their health as being

bad or poor. 45% do not get full marks (13) in cognition, among whom, slightly more than half (53%) have relatively higher scores (above 8), and another nearly half (47%) have very low cognition scores (below 8), so we use 8 as a cutoff point to show a respondent's relative position of the cognitive scores in the sample. Forty-five percent report having ADL or IADL difficulties and 12% have a high depression score.[2] Thirty-one percent of the elderly are diagnosed with major diseases such as heart conditions, cancers and tumors, and 47% are diagnosed with minor conditions such as hypertension and joint problems. The education level of the elderly parents is generally very low. Fifty-one percent are illiterate, and 36% have a primary education either formally or informally. The annual pre-transfer income for the elderly household is 4,120 RMB, but with very large standard deviations. Ninety percent of the elderly parents currently own a house.

The average age of our child sample is around 42. Among these children, 46% are daughters, 91% are married, and 81% are currently working. We divide sons into three groups, oldest sons, youngest sons, and sons that are neither oldest or youngest. The first two groups may overlap, a single male child could be both the oldest and youngest son the same time. The average number of their children younger than 16, so grandchildren of our respondents, is 0.87. The educational level of the children sample is much higher than their elderly parents. Only 17% are illiterate, 35% have completed primary school, 28% have a middle school education, and the remaining 19% have an education of high school and above.

In the following, we will separately report the results from estimation on coresidence and on proximity, and then examine the associations of living arrangement with visit frequencies and transfers.

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[2] Having a "high" depression score should not be taken to be a medical diagnosis, just that the score is high in the distribution. Since we expect some of the health variables to be correlated with living arrangements more strongly if they are unusually high (or low), we define dummy variables to allow for such nonlinearities.

4.1. Determinants of Coresidence

Whether or not the elderly live with their adult children can be influenced by various factors. The usual predictors include the care needs of the elderly, the preferences of both parents and children, and the potential care giver's resources. In our model, we proxy the care needs of the parents using their widowhood, physical health, depression score, cognition difficulties or functional limitations. The preferences are represented by demographic characteristics and economic conditions of both parent and child. For example, the marital status of a child may significantly affect the parent's utility of living with the child due to in-law rivalry. Education of the children signifies the capacity and resources available from children. There may also be considerations of exchange of service for inheritance. Housing, for example, is an importance asset and children may care for parents by living together anticipating an inheritance.

Table 5 presents the results from OLS estimation with parent-level data, in which the characteristics of each respondent's children are included at an aggregate level. The dependent variable in this model is defined as a dummy variable, which equals to 1 if the elderly is living with at least one adult child (aged 25+), and equals to 0 when the elderly is living alone or with a spouse only. We can see that after controlling for child age, parent's age is no longer significant. Widowed parents are more likely to coreside with their adult children. Parents of primary education level are more likely than their higher education counterparts to coreside with their children. There is a nonlinear correlation between income and coresidence, but not significant. Parents owning a house are more likely to coreside with their children. Parents with ADL or IADL functional limitations have a better chance to coreside with one or more adult children, but parents with cognition impairment are less likely to do so.[3] The child characteristics, averaged across siblings, are generally insignificant, except the average age and fraction of married children. The fraction of married

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[3] These health variables could be endogenous, so we do not attempt to interpret them as a causal relationship.

children has a very significant negative effect on the probability of coresidence, indicating the preference of parents may dominate that of the child's.

[Table 5 Insert Here]

The model in Table 5 is limited in the sense that it cannot illustrate the exact effect of each specific child characteristics, and may be biased because of other unobservable factors. In Table 6, we provide an alternative model which controls for family fixed effects. This model allows us to examine more closely the influence of child characteristics on coresidence, and control for the family unobservables. The sample is further restricted to those children with at least one adult sibling. Results show that (compared to those sons that are neither oldest nor youngest,) the youngest son is more likely to live with their parents, and daughters are the least likely to do so. Married children are unlikely to coreside with parents, and children with more young offspring are more likely to do so. The likelihood of coresidence among those parents with higher-educated children is lower than those with less educated children, probably due to migration of children with more education.

[Table 6 Insert Here]

The above findings are consistent with existing literature (Meng and Luo 2004; Logan et al. 1998; McGarry and Schoeni 1998). We find that coresidence is largely dependent on elderly parents' needs. Those widowed elderly or those elderly with health limitations are more likely to coreside with their children for care. Child may also save the housing expenses, and receive child care help by coresiding with their parents.

4.2. Determinants of Multiple Living Arrangements

Similar to the determination of coresidence, there are many factors that may affect children's living distance to their parents. Therefore, we adopt the multinomial logit model to analyze the multiple choices on living arrangements. We set those without

any child living nearby as base group and examine the relative risk of coresidence and of having a child nearby. As reported in Table 7, the age effect is not significant different across three types of living arrangements. Widowed elderly are much more likely to live with their children. Urban people are less likely to live with or live close to their children. People with higher education are slightly less likely to live close to their children. The more children the elderly have, the more they are likely to coreside with an adult child or have an adult child close by. Owning a house increases the probability of coresidence and does not significantly increase the chances of having child nearby. Functional limitations of parents increase the probability of coresidence, but have little effect on proximity. People with more sons are more likely to live close to their children. An interesting finding is on the fraction of married children. When we look at coresidence as a binary choice (last section), we find that married children are less likely to live with their parents. The multiple living arrangement choice model provides more details on where the children move out to. Our results show that married children move out to live independently of their parents, but they do not go far away – they are likely to live nearby so that they can continue to provide care when needed. Presence of more young grandchildren increases the probability of living nearby, but does not affect the probability of coresidece. Higher education of the children also slightly decreases the probability of living nearby.

[Table 7 Insert Here]

4.3. Living Arrangements, Visits and Transfers

In this section, we examine the correlations between living arrangements and other forms of parent support: frequency of visits and financial transfers. As transfers can only be defined clearly among non-coresident children and their parents, we exclude coresident children from this estimation. Again the proximity of a child is defined as living within the same village/community as his/her parents'. Frequent visit is measured as whether the child is the most frequent one to visit his/her parents among his/her siblings. Transfers are measured in two ways: 1) whether the

child offers transfer to his/her elderly parents and 2) the net amount of transfers to parents.

As seen from Table 8, proximity to parents has strong positive effects on the probability of being the most frequently visiting child. If the parent is coresiding with another adult child, the probability of frequent visits of the nonresident child is significantly reduced. Another factor worth noting is that, the more siblings a child has, the less likely he/she frequently visits. A married child is slightly more likely to visit, possibly due to the presence of young grandchildren.

[Table 8 Insert Here]

The second and third pairs of columns in Table 8 report the estimation on whether a child provides transfer to his/her parents and on the net amount of transfers respectively. The incidence of providing transfers to parents and the net amount of transfers are both negatively related to proximity, indicating those nearby children engage more in other forms of transfers. If the elderly parent coresides with another adult child, the nonresident child is less likely to provide help to parents, and the net amount is lower. The higher education the child has, the more he/she is providing to the elderly parents. There is an obvious nonlinear effect of parental pre-transfer income. A child is less likely to transfer to his/her parents if parental income is higher, but this is only true if parental income belongs to the bottom one third group. For this poorest group, if parental income increases by 1,000 RMB, the net amount of transfer from a child will decline by 188 RMB. Children's education is positively correlated to the net amount of transfers to parents, as they are more able to do so. Daughters provide less to their parents, married and working children provide more.

5. Conclusions

Previous literature has provided evidence that the Chinese elderly are increasingly

more likely to live alone or with a spouse only. This has raised concerns on the elderly support, considering the lack of public transfers in current China. With detailed information on elderly living arrangements, this paper reveals that living close to parents has become an important way of providing elderly support while at the same time maintain independence/privacy of both parents and children. We conclude from the results that living alone is inadequate in describing the living arrangement of the elderly.

We also find the existence of responsibility sharing among siblings. Children live close to their parents frequently visit their parents, providing non-financial transfers to their parents; while those living faraway provide larger amount of financial transfers.

Investigating into the determinants of elderly living arrangements finds that living arrangements are affected by both parent and child characteristics. In general, higher educated parent and child are less likely to live together or near each other, implying that the pattern of increasingly living alone in China is to some extent similar to that in Western countries. Privacy is a sort of normal goods that increases with socio-economic status. Parents with ADL or IADL difficulty are more likely to live with their children, meaning that coresidence is still functioning as an important source of elderly support. However, we see lower probability of coresidence for parents with cognitive ability, which implies that declining in cognition may cause difficulty in developing a harmonious family relationship.

Applying a sibling or family fixed-effects model to the child-level data, we have examined the within-family variations. One important finding is that youngest sons are more likely to live with their elderly parents, an interesting result different from the tradition of depending solely on oldest sons. Further research is needed to explore the underlying driving force of this transition.

While most of the results are similar across the simple traditional binomial regression on coresidence and the multinomial regressions with more detailed information on living arrangements, the multi-choice model yields richer insights on how families balance between the objectives of independent living and access to care by the elderly. For example, with traditional regression on coresidence, the coefficient

on children being married is negative, which may give a wrong impression that married children do not provide care to parents. However, with the multinomial regression on living arrangements, we find these children move out but they tend to live close by. This arrangement may be Pareto improving for both parents and children. Our results highlight the importance of differentiating multiple types of living arrangements.

References:

Agree, E. M. (1993). Effects of demographic change on the living arrangements of the elderly in Brazil: 1960-1980, Duke University.

Benjamin, D. and L. Brandt, S. Rozelle (2000). "Aging, wellbeing, and social security in rural northern China." <u>Population and Development Review</u> 26: 89-116.

Bian, F. and J. R. Logan, Y. Bian (1998). "Intergenerational relations in urban China: Proximity, contact, and help to parents." <u>Demography</u> **35**(1): 115-124.

Cameron, L. (2000). "The residency decision of elderly Indonesians: A nested logit analysis." <u>Demography</u> **37**(1): 17-27.

Costa, D. L. (1998). Displacing the family, University of Chicago Press.

Doty, P. (1986). "Family care of the elderly: The role of public policy." <u>The Milbank Quarterly</u> **64**(1): 34-75.

Edmonds, E. V. and K. Mammen, D. Miller (2005). "Rearranging the Family? Income Support and Elderly Living Arrangements in a Low-Income Country." <u>The Journal of Human Resources</u> **40**(1): 186-207.

Engelhardt, G. V. and J. Gruber (2004). Social security and the evolution of elderly poverty, National Bureau of Economic Research Cambridge, Mass., USA.

Giles, J. and R. Mu (2007). "Elderly Parent Health and the Migration Decisions of Adult Children: Evidence from Rural China." <u>Demography</u> **44**(2): 265-288.

Greenfield, E. A. and D. Russell (2010). "Identifying Living Arrangements That Heighten Risk for Loneliness in Later Life: Evidence From the US National Social Life, Health, and Aging Project." <u>Journal of Applied Gerontology</u>.

Kharicha, K. and S. Iliffe, S. Illiffe, S. Harari, C. Swift, G. Gillmann, A. Stuck. (2007). "Health risk appraisal in older people 1: are older people living alone an 'at-risk' group?" <u>The British Journal of General Practice</u> **57**(537): 271.

Kotlikoff, L. J. and J. N. Morris (1990). "Why don't the elderly live with their children? A new look." University of Chicago Press, 1990.

Lin, J. (1994). "Parity and Security: A Simulation Study of Old-Age Support in Rural China." Popu-lation and Development Review 20:423-48.

Logan, J. R. and F. Bian, Y. Bian (1998). "Tradition and change in the urban Chinese family: The case of living arrangements." <u>Soc. F.</u> **76**: 851.

Martin, L. G. (1989). "Living arrangements of the elderly in Fiji, Korea, Malaysia, and the Philippines." <u>Demography</u> **26**(4): 627-643.

McGarry, K. and R. F. Schoeni (2000). "Social security, economic growth, and the rise in elderly widows' independence in the twentieth century." <u>Demography</u> **37**(2): 221-236.

Mutchier, J. E. and J. A. Burr (1991). "A longitudinal analysis of household and nonhousehold living arrangements in later life." <u>Demography</u> **28**(3): 375-390.

Palmer, E. and Q. Deng (2008). "What has economic transition meant for the well-being of the elderly in China." In Gustafsson, Li; and Sicular, eds., Inequality and public policy in China, Cambridge University Press:182–203.

Smeeding, T. M. and P. Saunders (1998). "How Do the Elderly in Taiwan Fare Cross-nationally?:

Evidence from the Luxembourg Income Study (LIS) Project." Maxwell School of Citizenship and Public Affairs, Syracuse University.

Sun, R. (2002). "Old age support in contemporary urban China from both parents' and children's perspectives." <u>Research on Aging</u> **24**(3): 337.

Tomassini, C. and K. Glaser, D. Wolf, M. I. Broese van Groenou, E. Grundy (2004). "Living arrangements among older people: an overview of trends in Europe and the USA." <u>Further release of 2001 Census data</u> **1329**: 24.

Victor, C. and S. Scambler, et al. (2000). "Being alone in later life: loneliness, social isolation and living alone." <u>Reviews in Clinical Gerontology</u> **10**(04): 407-417.

Wilson, B. (2007). "Historical evolution of assisted living in the United States, 1979 to the present." <u>The Gerontologist</u> **47**(suppl 1): 8.

Meng, X. and C. Luo (2008). "What determines living arrangements of the elderly in urban China." <u>Inequality and Public Policy in China</u>: 267–286.

Zhao, Y., J. Strauss, A. Park and Y. Sun. 2009. "China Health and Retirement Longitudinal Study User's Guide." China Center for Economic Research, Peking University.

Zimmer, Z. and J. Dayton (2005). "Older Adults in Sub-Saharan Africa Living with Children and Grandchildren." <u>Population Studies</u> **59**(3): 295-312.

Zimmer, Z. and J. Kwong (2003). "Family size and support of older adults in urban and rural China: Current effects and future implications." Demography 40(1): 23-44.

Figure 1. Living alone or with a spouse only
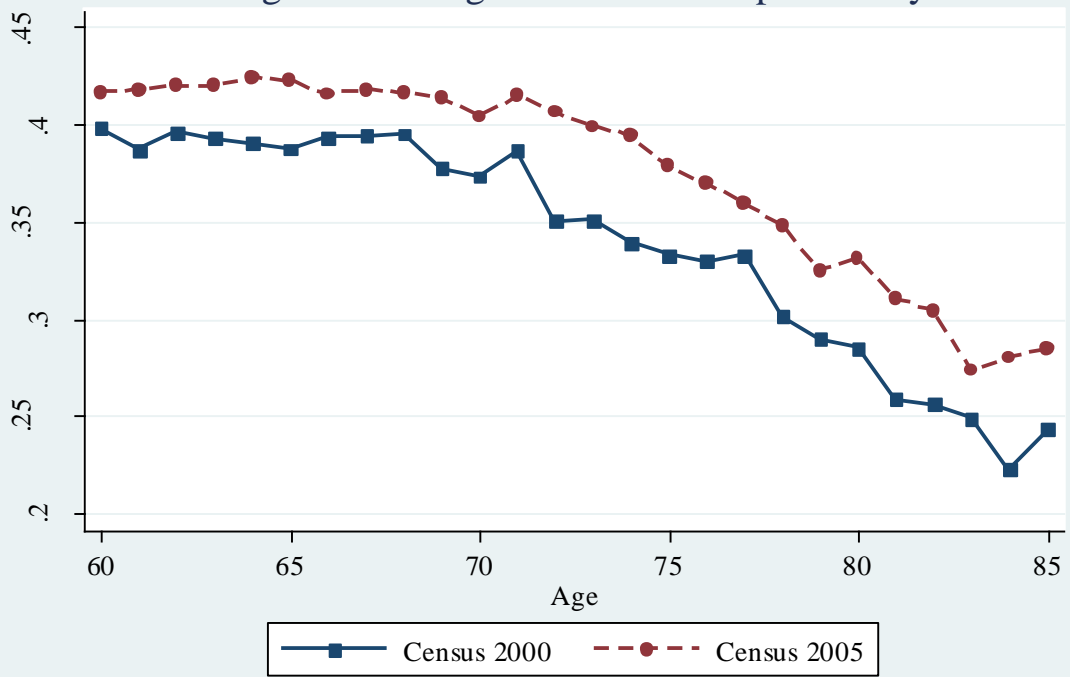
China Census 2000 and 2005

Figure 2. Living arrangement by age
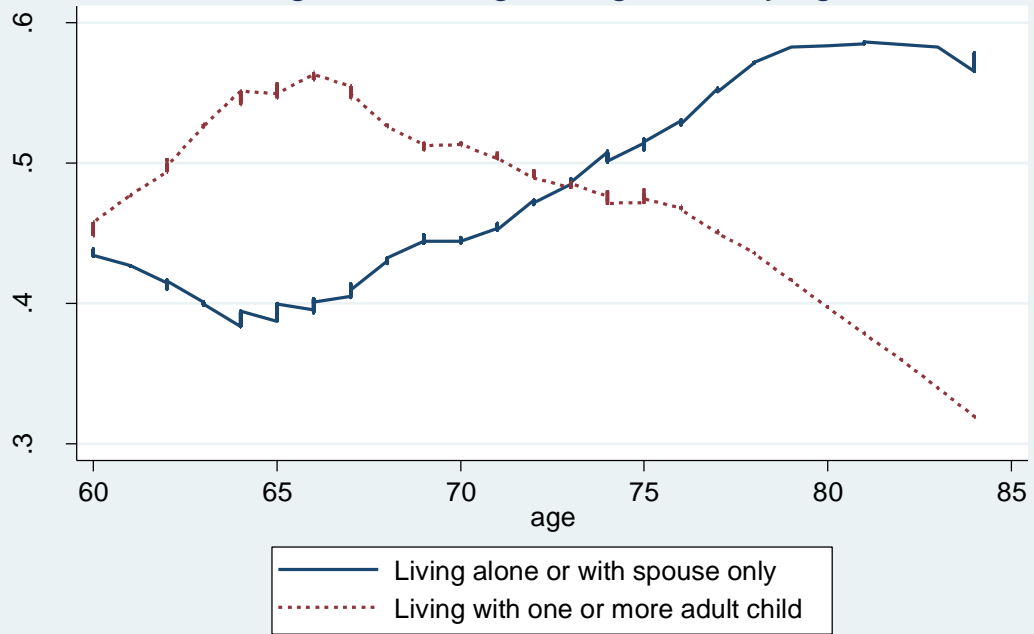
Data: CHARLS 2008 repondents aged 60+ bandwidth=0.4

Table 1. Living Arrangement of Persons Aged 60+ (%)

	OBS	Total	Female	Male	Gansu	Zhejiang	Rural	Urban
Living with one or more adult children	584	50.1	51.7	48.7	59.8	44.7	54.5	35.4
Live alone, but with one or more adult children in the same village/community	305	26.1	27.8	24.5	23.1	27.7	27.9	19.8
Live alone, but with one or more adult children in another village/community in the same county	188	16.1	14.5	17.5	11	19	12	29.9
Live alone without any child in the same county	50	4.3	4.2	4.3	3.9	4.5	2.9	8.6
No adult child	41	3.5	1.7	5	2.3	4.2	2.6	6.4
Bases		1,167	552	615	550	617	933	234

Source: CHARLS 2008 aged 60+

Table 2. Children's Characteristics by Living Arrangements

	All	Coresident	Nearby Child	Non-Nearby Child
Demographics				
Child Age	41.92	39.12	42.99*	40.54*
	[8.07]	[0.33]	[0.18]	[0.40]
Oldest Son	0.16	0.23	0.14*	0.16*
	[.37]	[0.02]	[0.01]	[0.02]
Youngest Son	0.74	0.74	0.73	0.79
	[.44]	[0.02]	[0.01]	[0.02]
Daughter	0.46	0.12	0.55*	0.47*
	[.50]	[0.02]	[0.01]	[0.02]
Fraction Married	0.91	0.78	0.96*	0.83
	[.29]	[0.02]	[0.00]	[0.02]
# of child younger than 16	0.87	1.02	0.83*	0.87*
	[.76]	[0.03]	[0.02]	[0.03]
Education				
Illiterature	0.17	0.12	0.20*	0.12
	[.38]	[0.02]	[0.01]	[0.02]
Primary Education	0.35	0.33	0.36	0.28
	[.47]	[0.02]	[0.01]	[0.02]
Middle School	0.29	0.38	0.26*	0.29*
	[.45]	[0.02]	[0.01]	[0.02]
HighSchool	0.13	0.13	0.13	0.15
	[.34]	[0.02]	[0.01]	[0.02]
College and Above	0.06	0.03	0.04	0.14*
	[.24]	[0.01]	[0.00]	[0.02]
Fraction Working	0.81	0.85	0.80*	0.81
	[.39]	[0.02]	[0.01]	[0.02]
Observation	2800	474	1852	474

*standard error in bracket

**sample restriced to CHARLS children aged 25+ with at least a parent aged 60+

Table 3. Transfer and visit by living arrangement

	Overall	Live in the village/community	Do not live in the village/community
Transfer to Parents			
Fraction	0.58	0.58	0.58
	[.50]	[0.02]	[0.01]
Average amount	794.74	711.43	830.76
	[3278.56]	[139.51]	[56.79]
Tranfer From Parents			
Fraction	0.29	0.25	0.31*
	[.45]	[0.01]	[0.01]
Average amount	428.28	52.22	590.84*
	[6857.38]	[16.58]	[172.99]
Net Transfer			
Average amount	366.46	659.21	239.92
	[7629.82]	[140.62]	[182.88]
Frequent Visit	0.23	0.25	0.22*
	[.42]	[0.01]	[0.01]
Observation	3214*	970	2244

*Standard errors in bracket

**Restricted to non-coresident child sample

Table 4. Summary Statistics

Parent Sample

Average age	69.01	Bad/poor SRH	0.70	Education		
	[6.89]		[.42]	illiterate		0.51
Fraction male	0.52	Cognition score[8,13)	0.24			[.50]
	[.50]		[.43]	primary		0.36
Fraction married	0.71	Cognition score[0, 8)	0.21			[.48]
	[.45]		[.41]	middle school		0.08
Fraction widowed	0.26	ADL/IADL difficulties	0.45			[.27]
	[.44]		[.50]	high school and above		0.05
Fraction Zhejiang	0.53	CESD>12	0.12			[.22]
	[.50]		[.21]	Pretransfer income (000s)		4.12
Fraction urban	0.20	Major illness	0.31			[10.56]
	[.40]		[.46]	House ownership		0.90
# of children	3.51	Minor illness	0.47			[.30]
	[1.57]		[.50]			
Observations	1137					

Child Sample

Child age	41.94	Fraction married	0.91	Education		
	[8.1]		[.28]	Illiterate		0.17
Oldest son	0.16	# of child younger than 16	0.87			[.38]
	[.37]		[.77]	Primary education		0.35
Youngest son	0.74	Fraction working	0.81			[.48]
	[.44]		[.39]	Middle school		0.28
Daughter	0.46					[.45]
	[.50]			High school		0.13
						[.34]
				College and above		0.06
						[.24]
Observation	2737					

*Standard deviations in brackets

Parent sample are respondents of 60 and older who have at least one child aged 25 and above.

Child sample are adult children of 25 and older who have at least one parent no younger than 60.

Table 5. Parent-Level OLS Estimation on Coresidence

Parent Characteristics	Coef.	S.E.
Age	0.010	(0.039)
Age2/100	-0.010	(0.027)
Male	0.007	(0.024)
Widowed	0.143***	(0.035)
Urban	-0.058	(0.069)
Education		
Primary	0.065**	(0.033)
Middle school	-0.046	(0.063)
High school and above	-0.011	(0.076)
# of Children	0.017	(0.015)
House Ownership	0.266***	-0.051
Pre-transfer Income (1000 RMB)		
For PTI 1-1/3	-0.007	(0.005)
For PTI 1/3-2/3	0.011	(0.010)
For PTI 2/3-1/3	0.001	(0.002)
Health		
Bad/Poor SRH	0.029	(0.032)
CESD>12	-0.134	(0.108)
ADL&IADL Difficulties	0.096***	(0.036)
Cognition Score[0, 8]	-0.061*	(0.036)
Cognition Score[8,13]	-0.061*	(0.036)
Major illness	-0.026	(0.040)
Minor Illness	0.003	(0.034)
Child Characteristics		
Average age	-0.008**	(0.004)
Average age^2	-0.009	(0.025)
Fraction of being male	-0.058	(0.063)
# children under 16	-0.005	(0.010)
Fraction working	0.002	(0.058)
Fraction married	-0.236***	(0.084)
Maximum education		
Primary school	0.101	(0.095)
Middle School	0.152	(0.093)
High School	0.143	(0.097)
College and Above	0.093	(0.103)
County Dummy	Yes	
Observations	1137	

Note: Sample are respondentsof 60 and older who have at least one child aged 25 and above.

     Clustered standard errors at household level are reported.

      *** p<0.01, ** p<0.05, * p<0.1

     Missing data are imputed using multivariate normal regression

Table 6. Child-Level Estimation on Coresidence (Fixed-Effect)

Child Characteristics	Coef.	S.E.
Age	-0.013**	0.007
Age^2	-0.002	0.008
Oldest son	-0.005	0.027
Youngest son	0.139***	0.026
Daughter	-0.337***	0.023
# children under 16	0.017**	0.009
Working	-0.016	0.016
Married	-0.165***	0.035
Education		
Primary school	-0.026	0.019
Middle school	0.002	0.020
High school	-0.041*	0.024
College and above	-0.152***	0.027
Observations	2,737	

Note: Sample includes adult children of 25 and older who have at least one parent no younger than 60 and who have at least one adult sibling.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Missing data are imputed using multivariate normal regression

Table 7. Parent-Level Multinomial Logit Estimation on Living Arrangements

	In the Same Household		Within the village/community	
Parent Characteristics	Relative Risk	S.E.	Relative Risk	S.E.
Age	1.228	(0.355)	0.71	(0.213)
Age2	0.859	(0.175)	1.257	(0.262)
Male	0.913	(0.163)	0.948	(0.179)
Widowed	2.377***	(0.625)	1.115	(0.319)
Urban	0.378***	(0.126)	0.876	(0.302)
Primary education	0.94	(0.214)	0.804	(0.199)
Middle school	0.606	(0.244)	0.73	(0.290)
High school and above	0.583	(0.297)	0.380*	(0.215)
# of children	1.460***	(0.161)	1.540***	(0.171)
Owning house	2.903***	(1.197)	0.704	(0.259)
Pre-transfer Income (1000 RMB)				
For PTI in 0-1/3	0.952	(0.042)	0.98	(0.040)
For PTI in 1/3-2/3	1.123*	(0.069)	1.06	(0.068)
For PTI in 2/3-1	0.995	(0.013)	0.976	(0.017)
Bad SRH	0.889	(0.214)	0.782	(0.196)
CESD>12	0.75	(0.515)	0.495	(0.535)
ADL&IADL Difficulty	2.056***	(0.451)	1.233	(0.291)
Cognitive score [0-8]	0.407***	(0.094)	0.583**	(0.138)
Cognitive score [8-13]	0.431***	(0.098)	0.81	(0.194)
Major illness	1.015	(0.273)	0.869	(0.248)
Minor illness	1.219	(0.283)	0.975	(0.234)
Child Characteristics				
Fraction male	1.74	(0.658)	2.062*	(0.853)
Average age	1.168	(0.203)	1.804***	(0.386)
Average age^2	0.998	(0.002)	0.993***	(0.002)
Fraction married	0.718	(0.411)	3.277*	(2.274)
# of young grandchild	1.104	(0.076)	1.169**	(0.080)
Fraction working	1.398	(0.492)	1.821	(0.747)
Maximum education				
Primary education	0.636	(0.385)	0.387	(0.249)
Middle school	0.831	(0.489)	0.366	(0.230)
High school	0.74	(0.458)	0.367	(0.242)
College and Above	0.496	(0.321)	0.220**	(0.154)
County Dummy	Yes		Yes	
Observations	1,137			

Note: Sample are respondents of 60 and older who have at least one child aged 25 and above.

   Clustered standard errors at household level are reported.

    *** p<0.01, ** p<0.05, * p<0.1

   Missing data are imputed using multivariate normal regression

  Base group: those without any children in the same household or the same village/community.

Table 8. Vists, Transfer, and Living Arrangment

	Frequent Visit		Transfer to Parents		Net Amount of Transfer	
	Coef.	SE	Coef.	SE	Coef.	SE
Live in the same village/community	0.051**	0.024	-0.024	0.029	-170.459*	95.027
Parents live with another adult child	-0.091***	0.015	-0.100***	0.038	-59.731	100.975
Parent Characteristics						
Age	-0.012	0.018	0.060	0.042	-83.274	106.965
Age^2	0.007	0.012	-0.046	0.029	50.453	73.492
Male	-0.001	0.018	0.020	0.043	80.263	99.483
Widowed	-0.016	0.017	0.005	0.043	-93.088	105.851
Urban						
Education	0.015	0.030	0.114	0.071	69.945	286.612
Primary	0.004	0.017	0.036	0.042	211.248	134.104
Middle school	0.022	0.029	0.095	0.068	461.954*	235.759
High school and above	0.036	0.041	-0.001	0.097	292.222	552.870
# of children	-0.037***	0.005	0.023*	0.014	-6.518	38.552
House ownership	0.022	0.018	-0.002	0.050	-82.684	158.838
Pre-transfer Income (1000 RMB)						
For PTI 1-1/3	-0.001	0.003	-0.009	0.007	-187.509***	69.267
For PTI 1/3-2/3	0.005	0.004	-0.012	0.010	1.194	34.455
For PTI 2/3-1/3	-0.000	0.001	-0.002	0.003	-6.540	4.690
Health						
Bad/Poor SRH	0.015	0.014	0.038	0.034	-40.307	98.447
CESD>12	-0.034	0.024	-0.151*	0.079	221.538	262.096
ADL&IADL difficulties	0.013	0.016	-0.016	0.040	37.605	121.333
Cognition score [0, 8)	-0.004	0.017	0.024	0.044	-274.633**	120.302
Major illness	-0.016	0.014	-0.017	0.038	20.493	87.528
Child Characteristics						
Child age	0.005	0.010	0.038***	0.012	76.565*	43.699
Child age^2	-0.002	0.011	-0.032**	0.013	-65.554	40.187
Oldest son	0.012	0.037	-0.011	0.038	-236.703	186.860
Youngest son	0.034	0.036	-0.009	0.035	-12.428	115.557
Daughter	-0.048	0.034	0.007	0.033	-248.192**	121.951
Married	0.065*	0.039	0.041	0.055	513.733**	206.489
# of Children<16	-0.006	0.014	-0.017	0.017	27.771	41.967
Education						
Primary education	0.019	0.028	0.075**	0.038	-116.372	99.806
Middle school	-0.018	0.030	0.062	0.047	42.730	139.330
High school	0.018	0.039	0.159***	0.050	413.485**	182.881
College and above	-0.046	0.049	0.261***	0.065	851.896**	366.235
Working	-0.012	0.025	0.002	0.036	223.371*	128.778
Constant	0.585	0.573	-2.493*	1.462	1,324.816	3,527.944
Observations	2326		2326		2326	
R-squared	0.074		0.160		0.222	

Note: Sample includes non-coresident children of 25 and older with at least one parent no younger than 60.

*** p<0.01, ** p<0.05, * p<0.1.

Missing data are imputed using multivariate normal regression.