Intergenerational Coresidence with Sons and with Daughters before Elder Parents' Death in Rural China

Abstract

We examined how previous intergenerational exchanges, the availability of kinship, and parents' needs influenced elder parents' likelihood of coresiding with sons and with daughters respectively before parents' death. The sample included 618 elders in a 4 wave longitudinal study in rural areas of Anhui Province China (2001-2009), who were reported to be dead in follow-up interviews. We used robust logistic and multinomial logistic regressions to examine the likelihood of intergenerational coresidence, and found that elders who were previously engaged with "time-for-money" exchanges with sons were more likely to coreside with sons and daughters, and elders who were previously engaged with "time-for-money" exchanges with daughters had higher likelihood of coresiding with sons. This supports the contingent coresidence hypothesis with the backdrop of high migration rate in rural China that parents strategically position themselves to gain coresidence eventually. The number of sons did not predict the possibility of coresiding with a son. Physically closer to a daughter reduced elder parents' likelihood of coresiding with sons. Having long term care needs and homeownership reduced elder's likelihood of coresiding with children. This examination also offers support for the gendered extended familism, which posits that intergenerational relationships in rural Chinese extended families are highly interdependent and siblings negotiate their responsibilities along the expectations in patrilineal families. Before death coresidence is crucial in Chinese filial piety culture and triggers substantial renegotiations of intergenerational responsibilities, which deserves further investigation.

Introduction

Intergenerational coresidence before death is a rarely studied area. One recent study has found that shift of coresidence before death occurs at a higher rate than other time in China, as a response to elder parents' needs (Zachary Zimmer & Korinek, 2010). In addition to elder parents' needs, coresidence before death may have symbolic meanings that wrap up lifelong intergenerational relationships and settle down unpaid debt and gain emotional fulfillment. This may be particularly important for Chinese elders, who have strong filial expectations and sanctify children's caring for elders' death.

In rural China, coresidence with children, particularly sons, is strongly endorsed by cultural values and forms a basis for promoting intergenerational exchange (Yan, Chen, & Yang, 2003; Zhang, 2004). Daughters and sons have different obligation in patrilineal families in rural China. The expectation is that sons will coreside with parents and take care of them. Because of the strong patrilineal family tradition, it has been reported that only 3% of elders lived with any daughter in rural China (Cong & Silverstein, 2008a).

In this manuscript, we examined how transition in intergenerational coresidence before death was influenced previous intergenerational exchanges, availability of kinship and parents' needs, which has rarely been systematically examined before despite of its importance as a culturally endorsed living arrangement and its special meaning in cultures endorsing filial piety. In addition, we examined coresidence with sons and as well as with daughters, the latter of which was rare in rural elders' self-reported living arrangements in regular settings. Even when intergenerational relationships in rural China disproportionally favor sons, daughters play important roles in the intergenerational relationships, such as function as a watch dog when sons neglect their duties. When parents' death is imminent, though daughters are less expected to be

the major providers of care and coresidence, their roles may be temporarily elevated into equally important as that of sons, which makes it possible and important to study coresidence with daughters before elder parents' death. Furthermore, we related elder parents' previous interactions with their children to parents' before death living arrangement to examine how previous intergenerational relationships, particularly exchanges would influence before death coresidence, which has important implications for the theoretical debate between altruistic vs. self-interested or exchange motivation in respect to intergenerational coresidence. Overall, this investigation would not only present a unique opportunity to examine competing hypotheses concerning motivations for intergenerational coresidence, but also explore family negotiation mechanisms when elder parents' death is expected.

Generally speaking, there are two major arguments for the motivation for intergenerational coresidence that serves the needs of elder parents, i.e., altruistic motivation and exchange motivation. Under the altruistic perspective, parents' needs and availability of kin are important predictors for coresidence. This is generally supported with existing literature. Meeting parents' needs is one important reason for intergenerational coresidence (Cong & Silverstein, 2010). Deterioration of health and change of marital status were found to be the major reason for shift in coresidence before death (Zachary Zimmer & Korinek, 2010). Availability of kin typically is another important predictor for elders' opportunity for coresidence. With the patrilineal tradition, the availability of sons and availability of daughters present options that are not equally valued by elders, e.g., even with large number of daughters, elder parents may not be willing to live with any of them, because sons are expected coresidence partners. Availability could be the sibling network size, physical distance, and even emotional closeness.

In the framework of exchanges, elders provide services, such as grandchildren care and

household help, or elders invest in their children's capability to increase human capital, and children pay back their investment in various ways, among which coresidence is an important one (Cox, 1987; Lee & Xiao, 1998; Lillard & Willis, 1997; Secondi, 1997).

China' large scale migration and patrilineal tradition in rural China makes the motivation contextual and gender specific (Cong & Silverstein 2011). Migration serves as a catalyst for intergenerational transfers in rural China. Labor migration has a strong intergenerational basis as it is often enabled and sometimes sustained by the actions of parents. Particularly, providing grandchildren care is a valuable resource that elders can provide at a time with high migration rates, and at the same time, parents receive higher remittances from migrant children, which is usually described by time-for-money exchanges (Silverstein, Cong, & Li, 2006).

A contingent coresidence hypothesis which is consistent with this line of argument proposes that in an era with large scale migration, elder parents are less likely to have coresidence partners because of the migration of their children to urban areas for job opportunities. Under this situation, elders strategically position themselves in their interactions with certain children by supporting their children's migration, living independently with the financial support their children provided, and wait for the return of these children to coreside when needs arise (Brown et al., 2002; Cong & Silverstein, 2010; Miller, 2004; Takagi, Silverstein, & Crimmins, 2007). Consequently, this kind of "contingent coresidence" could be related with parents' previous efforts in helping their children, particularly in the time-for-money exchanges (Silverstein et al., 2006).

In patrilineal families, daughters are usually involved in short-term exchanges with parents, while sons are involved in long-term exchanges with parents (Antonucci, Akiyama, & Birditt, 2004; Cong & Silverstein, 2008b; Yang, 1996). Since Cong & Silverstein (2010) has only

tested the contingent coresidence hypothesis concerning coresidence with sons because of the rarity of coresidence with daughters in rural China. It is uncertain whether the contingent coresidence hypothesis will also be applicable for daughters. It is possible that previous help from parents are stronger predictor for coresidence with sons instead of daughters, because coresidence before death is the last chance for sons to pay back what their parents have done for them and daughters have paid off their debt to parents at the time when they received help from parents.

Pezzin and his colleagues (2007) modeled the decision about living arrangements and the consequent care allocation as a two-stage game involving an elder parent and two children, and illustrated intergenerational coresidence as the outcome of a cooperative "game" involving multiple children, each acting based on their own preferences and constraints as well as preferences and constraints of their siblings – a model we label as "extended-family bargaining."

The availability, parents' needs and previous exchanges with parents could be better addressed from this perspective than from the dyadic relationship between elder parents and their each child. In this study, we are particularly interested in how daughters as group influenced sons' relationships with their parents, and vise versa how sons as a group influenced daughters' relationships with their parents.

Based on the above discussion, we hypothesize that:

1. (Availability hypothesis) The availability of sons and daughters (number, physical distance and emotional closeness with their parents) will increase elders' transition into coresidence with sons and with daughters before death respectively.

2. (Needs hypothesis) The needs of parents (lack of homeownership, needs of long-term care) would increase parents' likelihood of coresiding with sons or with

daughters.

3. (Exchange hypothesis) Parents' providing grandchildren care to sons will increase their odds of coresiding with at least a son before death, and parents' providing grandchildren care to daughters will increase their odds of coresiding with at least a daughter before death.

4. (Contingent coresidence hypothesis) Particularly, parents who had time-for-money exchanges with sons would be more likely to coreside with sons before death; parents who had time-for-money exchanges with daughters would be more likely to coreside with daughters before death.

5. (Extended family hypothesis) Parents' interactions with sons and daughters would influence the coresidence likelihood with the opposite gender children as well.

Methods:

Sample

The sample for this investigation was derived from the Anhui Province of China, a mostly rural province and the fifth most populous province in China. Currently, 12% of the rural population is 60 years of age and older (compared to only 8.5% of the nation) making it one of the most elderly provinces in China. This region was chosen specifically for its relatively high density of older adults and high levels of out-migration of working age adults. Between 1995 and 2000, Anhui Province had the third highest rate of out-migration among all provinces in China, and a higher than average rate of labor-related migration. Data were collected from a sample of adults age 60 and over living in rural townships within Chaohu, a city of 4.5 million people located on the north bank of the Yangtze River in the central part of Anhui Province. This rural

area of the province is generally known for its high rates of labor migration to the cities of Hefei, Nanjing, and Shanghai.

The sample was identified using a stratified multistage method to randomly select 1,800 potential respondents. First, 12 rural townships were randomly selected from all 126 townships in Chaohu. Second, 6 administrative villages were randomly selected in each township. Third, within each selected village, all people aged 60 and older were stratified to form two sampling frames based on age: (1) those aged 60-74, and (2) those 75 and above, providing an intentional over-sample of the 75+ population. Of 1,800 individuals randomly selected for the study, 1,715 completed the survey, yielding a response rate of 95.3%. In October 2003 the follow-up survey was conducted with 1,368 respondents, or 79.8% of the original participants. Mortality is the major reason for attrition. In Dec 2006, an additional wave of data was collected with 1067 elders, and in June 2009, data were replenished to reach 1224 cases.

In this study, we combined interviews of elders themselves when they were alive in 2001, 2003, and 2006, with the posthumous interviews of proxies concerning elders' coresidence status and support received just before their death in follow-up waves, i.e., 2003, 2006, and 2009, e.g., elders' self-report data in 2001 was matched with posthumous data in 2003 for those who were interviewed in 2001 (baseline) but died before the 2003 interviews (follow-up). Consequently we had three groups of elders with data for 2001-2003 match, 2003-2006 match, and 2006-2009 match. We then stack these three groups of people in the final analysis and got a working sample of 649 elders. After deleting those who did not have any child and those who did not have valid answer for the living arrangement before death, we had 618 elders in the study. For most variables, the missing values are minimal, except for distance with children. We used Multiple Imputations to create 10 data sets and conducted analysis based on the augmented data. This

provides us unique opportunities to relate pre-death living arrangements to parents' as well as children's characteristics and their interactions.

Measures

Proxies were asked to report the number of sons coresiding with elders before their death and number of coresiding daughters as well. Based on this, we created three dummy variables, including coresiding with at least one son (=1), and coresiding with at least one daughter (=1), and coresiding with at least one child (=1). Coresidence with sons and with daughters were not exclusive of each other.

Number of sons and daughters were measured with elders' own report of the number of their sons and daughters at baseline. In the self-report questionnaire, elders reported where each of their children lived (0= coresidence, 1=The same village, 2= The same township, 3= The same county, 4= The same city, 5= The same province, 6= Other provinces). Based on that information, we calculated elders' distance to their nearest son and nearest daughter.

Emotional closeness. We used three questions to assess emotional closeness of each parent-child relationship. These questions were adapted from the intergenerational solidarity inventory (Mangen, Bengtson, & Landry, 1988) that assesses emotional cohesion between generations: (1) "Taking everything into consideration, how close do you feel to (this child)?" (2) How much do you feel that this child) would be willing to listen when you need to talk about your worries and problems? (3) "Overall, how well do you and (this child) get along together?" The items were coded as follows: 0= "Not at all close/not at all/not at all well", 1= "Somewhat close/somewhat/somewhat well", 2= "Very close/very much/very well". An additive scale was computed for each child, ranging from 0-6. We took the highest total score across all sons and all daughters respectively to measure the how close parents were to their sons and to their

daughters.

Parents' long-term care need was measured with the number of days that elders stay bedridden before death, reported by proxies. Parents' homeownership was measured with a dummy variable (1= having all or part of the ownership).

Parents' previous help in grandchildren care to sons and daughters were measured as the total amount of grandchildren care provided to all sons and daughters respectively based on elders' self reported frequency of providing care for grandchildren, ranging from 0 to 6. The values of these variables were defined as follows: 0= "not taking care of grandchildren", 1= "seldom", 2= "about once a month", 3= "several times a month", 4= "at least once a week", 5= "A period of a day (not the whole day)", 6= "The whole day, from morning to evening." We summed all grandchildren care for daughters and for sons respectively. Homeownership was measured with a dummy variable with 1 means elders owned or jointly owned the house they were living in, and 0 means elders did not have the ownership of the house.

Financial transfers from children at baseline were based on the total amount of money that elder parents' own report of amount of money received from each child during the past 12 months. Parents were asked to provide the exact amount of money first, and if they could not give a exact number, they were asked to choose among the following categories based on Chinese RMB currency (100 RMB = $14USD): 0 = none, 1 = less than 50, 2 = 50 - 99, 3 = 100 - 199, 4 = 200 - 499, 5 = 500 - 999, 6 = 1000 - 2999, 7 = 3000 - 4999, 8 = 5000 to 9999, and 9 = More than 10,000. We took the actual amount if it was available or used the median amount of the category if the exact amount was not supplied. We summed the amount from all sons and all daughters respectively. We also included financial support that parents provided to sons and to daughters, which were similarly measured.

Because time-for-money exchange usually comes with increases in financial support from children, we interacted the amount of grandchildren care and financial support from sons and from daughters respectively to create two interaction items.

We controlled for important parent's characteristics including their age at death, gender (=1), marital status (1=married), education (1=some education), income. We measured parents' heritance by two dummy variables, no heritance (=1), and leave all heritance to children (=1). The reference group was those who left their heritance to spouses and other arrangement.

Model

We used Stata to estimate the logistic regression model as well as multinomial logistic regression with parents' characteristics as well as children's gender-specific aggregated characteristics in the model to examine parents' likelihood of coresiding with sons, and with daughters before parents' death. We used robust standard errors because of clustering to elders within three periods, i.e., 2001-2003, 2003-2006 and 2006-2009.

Results

As shown in Table 1, the average age at death was 79 years old. 50% of them were female. Forty percent were married at baseline, and 16% had some formal education. The average income is RMB 0.47 (1000 RMB). The average bed ridden time was 106 days. On average, each elder had 2.1 sons and 1.8 daughters. Sons on average received RMB 52 from parents, and daughters received RMB 9 from parents. Sons on average gave parents RMB 872, and daughters gave RMB 467. On average, sons received 1.3 help with grandchildren care from parents, and daughters received 0.25. On average, sons are closer than daughters with a average distance of 1.4, compared with that of daughters as 2.3.

As shown in Table 2, we showed the transition of coresidence between baseline and

before death. At baseline, 34% of elders coresided with (at least) a son, and 5% coresided with (at least) a daughter, none of them coresided with both sons and daughters. Before death coresidence showed that 17% lived only with sons, 2.43% lived only with daughters and 34% lived with both sons and daughters. Among those who lived with sons, a little bit less than 50% transited into coresiding with daughters alone or with daughters and with sons together.

As shown in table 3. For those who did not coreside with any child at baseline, the likelihood of transiting into coresiding with any child was predicted by homeownership, bed ridden time, heritance status and other factors. Owning their own home reduced elders' chances of transitioning into coresiding with any child. The longer bed ridden, the less likely that an elder would transition into coreside with any child. Compared with elders who left heritance to spouses or arranged in other way, having no heritance at all and leaving heritance to children increased elders' chances of transitioning into coresiding with any child. Providing more child care for daughters also increase elders' likelihood of transitioning into coresiding with a child, so did having closer relationships with sons. Particularly, if providing grandchild care for sons and received financial support from sons, which implies a "time-for-money" exchange, elders were more likely to transition into coresiding with any child.

When transitioning into coresidence with any daughter was used as an outcome variable, homeownership and heritance followed the same pattern as in the situation of transitioning into coresiding with any child. Providing daughters with child care and emotional closeness with sons increased elders' likelihood of transitioning into coresidence with any daughter. If providing grandchild care for sons and received financial support from sons, which implies a "time-for-money" exchange, elders were more likely to transition into coresiding with any child. However, proving grandchild care for daughters and received financial support from daughters would

reduce elders' likelihood of transitioning into coresidence with any daughter.

When transitioning into coresidence with any son was used as an outcome variable, homeownership was no longer important and heritance style had similar influence on transitioning either with any child or with any daughter. Bed ridden time reduced the likelihood of transitioning into coresidence with any son. Elder parents' help with child care for their daughters increased elder parents' likelihood of coresiding with at least a son. Living closer to a daughter reduced elder parents' likelihood of coresiding with at least a son. Having closer relationship with sons and having less closer relationships with daughters increased the likelihood of transition. Providing grandchild care for sons and received financial support from sons also increased elders' likelihood of transitioning into coresiding with any son ($p<0.1$, we slacked our significance level to 0.1 for interactive items because main effects were controlled).

As shown in Table 4, for those who coresided with at least a child, we examined their likelihood of their continue coresiding with at least a child, with at least a son, and with at least a daughter. Number of sons significantly reduced elders' likelihood of coresiding with any of child. Having no heritance and leaving all heritance to children increased elders' likelihood of continue coresiding with any child compared with those who left coresidence to spouses. Providing more child care for daughters also increase elders' likelihood of transitioning into coresiding with a child, so did having closer relationships with sons. The effect of providing child care for sons depends on whether sons provide financial support at the same time. When child care was accompanied by financial support at the same time, elders had increased likelihood of coresiding with at least a son.

For those who coresided with any child, elders' bed ridden time and number of sons reduced the likelihood for them to transition into coreside with any daughter. Financial support

from elders to sons also reduced the likelihood of coreside with any daughter. Compared with elders who left heritance to spouses or arranged in other way, having no heritance increased elders' chances of transitioning into coresiding with at least a daughter. Providing grandchild care for sons and received financial support from sons increased elders' likelihood of transitioning into coresiding with at least one daughter. However, proving grandchild care for daughters and received financial support from daughters would reduce elders' likelihood of transitioning into coresidence with any daughter.

For those who coresided with a child at baseline, number of sons significantly reduced elders' likelihood of coresiding with any son. Having no heritance increased elders' likelihood of continue coresiding with any son compared with those who left coresidence to spouses. The effect of providing child care for sons depends on whether sons provide financial support at the same time. When child care was accompanied by financial support at the same time, elders had increased likelihood of coresiding with at least a son. Emotional closeness with sons also increased elders' likelihood of continuing coresiding with sons.

Because the above outcome variables were not exclusive from each other, we addressed the living arrangement from the competing risk perspective as shown in Table 5, and categorize elders' living arrangement as three exclusive categories, i.e., elders who live with neither sons nor daughters, elders who lived with sons but not daughters, and elders who lived with any daughters (majority of which coresided with sons and daughters at the same time). We used elders who lived sons but not daughters as the reference group, and focus on the comparison between those who coresided with sons only and with daughters as well as sons. Again, we conduct analyses for those who coresided with at least one child and for those who did not live with any child respectively.

Providing financial support to daughters increased elders' likelihood of living without children as compared to coreside with sons only. Providing grandchildren care for daughters reduced elders' likelihood of coresiding with living alone, however, this depends on the amount of financial support daughters provided for elder parents. When elders received more financial support from daughters when provided child care services, elders were more likely to end up with living without any child. Elders with homeownership were less likely to coreside with daughters and sons together compared to coresiding with sons alone. The effect of help with child care for daughters depends on daughters' financial support to elder parents. When daughters provided financial support to elder parents, they were more likely to coreside with sons and daughters together.

As for those who lived with any child at baseline, their likelihood of transitioning into living with no child was predicted by their help with child care for their sons. When they provided child care for sons and received financial support from sons, they were less likely to live with no child. Closer emotional relationship with sons also reduced the likelihood of living alone. Closer emotional relationship with daughters increased that.

For those who lived with at least one child at baseline, bed ridden time reduced their risks of coresiding with both sons and daughters as compared to coresiding with sons alone. Elders' financial support to their sons and their emotional closeness with sons also reduced the comparative risks. These comparative risks also depended on elders' help with child care for daughters. If elder parents provided more grandchildren care and at the same time received more financial support from daughters, they had lower risks of ending up with sons and daughters together.

Discussion

Although coresiding with daughters is not common place in rural China because of the patrilineal tradition, coresidence with daughters before death is not rare. The sharp difference between the rate of coresidence with daughters from elder parents' self-reported data (3%) and that from posthumous report by proxies concerning elder parents' living arrangement before death (34%) makes it necessary to examine the contributing factors of coresiding before death from gendered extended family perspective.

Before death coresidence may be very short-term, and may not convey substantial instrumental support and be meaningfully long to function as old age security. Yet, the special meaning of having children around and caring for elders' death makes coresidence before death culturally important. Before death may be crucial timing for extended family members to reconcile their imbalance in exchanges across life time, and negotiation of filial responsibilities among siblings centering around parents' imminent death may become more intense with the expectation of the end of intergenerational relationships.

In this manuscript, we tested several hypotheses related with coresidence, particularly our investigation draws from exchange theory, contingent coresidence hypotheses, and extended family perspective. We regarded the roles of daughters and sons as different and complement of each other in an extended family. The reduction of all daughters and sons into two groups of children who interact with their parents with different rules makes it possible to concentrate on their functions as children of different gender who carry different expectations as well as cultural and practical meanings.

We were particularly interested in the contingent coresidence hypothesis. It borrows from the exchange theory, and regard coresidence as the eventual outcome when parents' needs arise, which culminates with the expectation of imminent death. We found support for the contingent

coresidence hypothesis concerning having "time-for-money" exchange with sons. Our findings show that when parents provided child care services for sons and received higher level of remittances at baseline, elder parents were more likely to pass away with coresiding sons, and less likely to pass away without any coresiding child. Our previous study found that providing grandchild care for migrant sons increased the bargaining power of grandparents and brought higher marginal returns to grandparents than non-migrant sons could (Cong & Silverstein 2011). In addition, we found that when migrant sons provided financial support for their parents, the parents were less likely to coreside with any non-migrant sons even when they were in proximity (Cong & Silverstein, 2010). At the same time, return migrants were likely to coreside with their parents, particularly when those return migrants were the only son and the youngest son (Cong & Silverstein, 2010). All these support the "contingent coresidence hypothesis" that parents would wait for certain sons to come back to coreside with them. Our findings in this manuscript with posthumous living arrangement information further support this hypothesis, that those parents who had the "time-for-money" exchanges with their migrant children enjoyed a better chance of intergenerational coresidence as a pay back to their efforts in caring grandchildren.

These elders not only have a higher chance to coreside with sons, but also a higher chance to coreside with daughters. Particularly for those who did not coreside with any child, this result was applicable only for transitioning into coresidence with daughters, though most of this kind of coresidence consists of coresiding with sons together with daughters. This may be related with the increased willingness on the sons' side to make sure that their sisters be around before their parents' death, which is another way to realize residual responsibilities due to benefiting from parents' help with child care, which offers support for the extended family hypothesis as well (Pezzin, Pollak, & Schone, 2007). This may be also be related with family

specific culture that is associated with strong family solidarity that in some families parents are more willing to provide support to children and children are close to parents and united with the expectation of parents' death.

It is interesting to find that when parents had "time-for-money" exchanges with sons and with daughters, elder parents expected quite different payoff. It is possible that since daughters' exchanges with parents are comparatively short-term oriented than that of sons in patrilineal cultures (Antonucci & Jackson, 2003), daughters have paid off their debt timely by providing more financial support to their elder parents when the child care services were rendered (Yang, 1996), daughters are no longer obligated to provide coresidence . However, helping daughters with child care increased elder parents' likelihood of transitioning into coresiding with sons, which provides support for extended family hypothesis. It is possible that daughters' who had the "time-for-money" exchange with parents were closer to their parents and emotionally indebted, and had the determination to supervise their brothers into coresidence, which was regarded as a cultural ideal, and at the same time absolved daughters from coresiding.

Concerning the availability of kin, when daughters are close by, elders were less likely to transition into coreside with sons. And when emotional closeness with sons were high, elders were less likely to coreside with daughters. Apparently, elder parents' interactions with sons and with daughters influenced elder parents' relationship with children of the opposite gender.

It is interesting that the number of sons does not predict coresiding with sons. On the contrary, more sons will lead to less chance for coresidence. This is consistent with several other studies (Zachary Zimmer & Kim, 2008). As suggested by Cong & Silverstein (2010), sons of certain characteristics are more likely to be designated as coresidence partners, and are more likely to return to provide coresidence when needed. When there are many sons, there may be

confusion of the designated status, e.g., both first born and last born may feel the other are the designated coresidence partners, which makes the responsibilities unclear, and ends up with either share of responsibilities or the unlimited put off of the realization of responsibilities, even when elder parents were on the verge of death. In addition, living close by and providing support is also another popular living arrangement that facilitate the providing of basic comforts without coresidence, which is described with the term "network living arrangement". It is likely that with more sons, network living arrangement is more likely because of the sharing of responsibilities among sons.

The influences of heritance evoke reflection into the complexity of intergenerational relationships. Parents without heritance were much more likely to coreside with their children than those who left heritance to spouses, and parents who left heritance to children were more likely to coreside with their children. On the one hand, the exchange motivation is supported; on the other hand, the altruistic motivation is also supported, which reflect the complicated nature of intergenerational relationships when filial piety and social changes mingled together. In addition, when elder parents had no heritance, which accounts for 78% of our subjects, it was quite possible that parents had given all heritance in advance either explicitly, or implicitly by "serial division of families", i.e., when each son gets some assets from parents and becomes independent from the extended family . In that case, exchange motivation is further supported.

Homeownership is not important for those who coresided with children at baseline, but for those who did not live with children, homeownership reduced their likelihood to transition into coresiding with children, which supports the needs hypothesis. Having longer bedridden time before death reduced the likelihood of elder parents who did not coreside with any child transition into coresiding with any child or with at least a son; for those who coreside with at

least one child at baseline, having long term care needs reduced their likelihood of attracting daughters to coreside. These findings contradict needs hypothesis, reflecting complexity in the motivations for intergenerational coresidence.

Concerning limitations, we do not know the length of the living arrangement which limits our ability to infer the consequences of the before death living arrangement. Coresidence with daughters may be short term arrangement, which does not imply the corresponding increases of instrumental support. In addition, because most of coresidence with daughters happens together with coresidence with sons, how much it is symbolic and how much it actual provides care is not certain. In addition, we used aggregated data of children which prevented us from singling out the actual coresiding children, and be more specific about the intergenerational interactions between parents and each of their individual children.

Generally speaking, the examination of contributing factors of before death coresidence presents an interesting scenario where children of different gender negotiate their responsibilities based on their previous relationships with parents following different rules, based on the availability of themselves as well as that of other siblings, as well as the parents' needs. This study shows the significance of studying living arrangement before death as a way to answer some important theoretical questions that could not be answered by using regular self report survey data.

Reference

Antonucci, T. C., Akiyama, H., & Birditt, K. (2004). Intergenerational exchange in the United States and Japan. In M. Silverstein & K. W. Schaie (Eds.), *Annual review of gerontology and geriatrics: Focus on intergenerational relations across time and place* (Vol. 24, pp. 224-248). New York: Springer.

Antonucci, T. C., & Jackson, J. S. (2003). Ethnic and cultural differences in intergenerational social support. In V. L. Bengtson & A. Lowenstein (Eds.), *Global aging and challenges to families* (pp. 355-370). New York: Aldine de Gruyter.

Brown, J. W., Liang, J., Krause, N., Akiyama, H., Sugisawa, H., & Fukaya, T. (2002). Transitions in Living Arrangements Among Elders in Japan: Does Health Make a Difference? . *Journals of Gerontology, 58(B)*, S209-S220.

Cong, Z., & Silverstein, M. (2008a). Intergenerational support and depression among elders in rural China: Do daughters-in-law matter? *Journal of Marriage and Family, 70*(3), 599–612.

Cong, Z., & Silverstein, M. (2008b). Intergenerational time-for-money exchanges in rural China: Does reciprocity reduce depressive symptoms of older grandparents? *Research in Human Development, 5*(1), 6-25.

Cong, Z., & Silverstein, M. (2010). Which sons live with their older parents in rural China? The role of migration and intergenerational exchanges. *Family Science, 1*(1), 67-71.

Cong, Z., & Silverstein , M. (2011). Intergenerational exchange between parents and migrant and nonmigrant sons in Rural China. *Journal of Marriage and Family, 73*(1), 93-104.

Cox, D. (1987). Motives for private income transfers. *Journal of Political Economy, 95*(3), 508-546.

Lee, Y., & Xiao, Z. (1998). Children's support for elderly parents in urban and rural China: Results from a national survey. *Journal of Cross-Cultural Gerontology, 13*(1), 39-62.

Lillard, L. A., & Willis, R. (1997). Motives for Intergenerational Transfers: Evidence from Malaysia. *Demography, 34*(1), 115-134.

Miller, E. T. (2004). Compromises of old age: Power and independence in rural north China. *DAI, 65*(07A), 221.

Pezzin, L. E., Pollak, R. A., & Schone, B. S. (2007). Efficiency in family bargaining: Living arrangements and caregiving decisions of adult children and disabled elderly parents. *CESifo Economic Studies, 53*(1), 69-96.

Secondi, G. (1997). Private monetary transfers in rural China: Are families altruistic? *Journal of Development Studies, 33*(4), 487-511.

Silverstein, M., Cong, Z., & Li, S. (2006). Intergenerational transfers and living arrangements of older people in rural China: Consequences for psychological well-being. *Journal of Gerontology: Social Sciences, 61B*(5), S256-S266.

Takagi, E., Silverstein, M., & Crimmins, E. M. (2007). Intergenerational coresidence of older adults in Japan: Conditions for cultural plasticity. *Journal of Gerontology: Social Sciences, 62B*(5), S330–S339.

Yan, S., Chen, J., & Yang, S. (2003). Living arrangements and old-age support. In M. K. Whyte (Ed.), *China's revolutions and intergenerational relations* (pp. 143-166). Ann Arbor, MI: University of Michigan Center for Chinese Studies.

Yang, H. (1996). The distributive norm of monetary support to older parents: A study in China. *Journal of Marriage and the Family, 58*(2), 404-415.

Zhang, H. (2004). Living alone and the rural elderly: Strategy and agency in post-Mao rural China. In C. Ikels (Ed.), *Filial piety: Practice and discourse in contemporary East Asia* (pp. 63-87). Stanford, CA: Stanford University Press.

Zimmer, Z., & Kim, K. (2008). Does family size predict whether an older adult lives with or proximate to an adult child in the Asia-Pacific region? *Asian Population Studies, 4*(2), 135-159.

Zimmer, Z., & Korinek, K. (2010). Shifting Coresidence Near the End of Life: Comparing Decedents and Survivors of a Follow-Up Study in China. *Demography, 47*(3), 537-554.

Table 1 Descriptives

Variables	mean	sd	range
Coreidence with any son	0.51	0.50	0, 1
Coreidence with any daughter	0.36	0.48	0, 1
Coreidence with any child	0.53	0.50	0, 1
Coresidence with any child at baseline	0.39	0.49	0, 1
Age at death	79.10	7.21	61-97
Gender	0.50	0.50	0 (male),1 (female)
Married	0.40	0.49	0(unmarried)-1(married)
Education	0.16	0.37	0 (no education)-1 (some education)
Homeownership	0.37	0.48	0, 1
Income (1000 RMB)	0.47	1.50	0-15.3
Heritance (reference: left all heritance to spouses or others)			
No heritance	0.78	0.41	0, 1
Left all heritance to children	0.10	0.30	0, 1
Bed ridden time (100 days)	1.07	4.71	0-34.36
Number of sons	2.06	1.27	0-7
Number of daughter	1.77	1.28	0-6
Distance to nearest sons	1.45	1.94	0 (coresidence)-6 (other provinces)
Distance to nearest daughters	2.30	1.62	0 (coresidence)-6 (other provinces)
Maximum emotional closeness with sons	3.94	2.14	0-6
Maximum emotional closeness with sons	3.71	2.33	0-6
Financial help to all sons (1000RMB)	0.05	0.25	0-2.275
Financial help to all daughters (1000RMB)	0.05	0.08	0-2
Financial help from all sons (1000RMB)	0.87	2.35	0-52.5
Financial help to from all daughters (1000RMB)	0.47	1.07	0-20
Help with child care for all sons	1.31	2.73	0-16
Help with child care for all daughters	0.25	1.11	0-10

Table 2 Transition of living arrangement

	Living arrangement before death				
Baseline Living arrangement	Living with no child	Living with at least a son, but no daughter	Living with at least a daughter, but no son	Living with at least a son as well as a daughter	Total
Living with no child	234	40	8	96	378
Row percentage	61.9%	10.58%	2.12%	25.4%	100%
Column percentage	81.25%	37.38%	53.33%	46.15%	61.17
Living with any son	48	62	4	96	210
Row percentage	22.86%	29.52%	1.9%	45.71%	100%
Column percentage	16.67%	57.94%	26.67%	46.15%	33.98
Living with any daughter	6	5	3	16	30
Row percentage	20%	16.67%	10%	53.33%	100%
Column percentage	2.08	4.67	20	7.69	4.85
Total	288	107	15	208	618
Row percentage	46.6	17.31	2.43	33.66	100%
Column percentage	100%	100%	100%	100%	100%

Table 3 Logistic regression of the likelihood of transitioning into coresiding with at least a child, son, or daughter before death for those elder parents who did not coreside with any child at baseline (N=378)

	Model 1	Model 2	Model 3
Variables	Coreside with at least one child	Coreside with at least one son	Coreside with at least one daughter
Age at death	0.02	0.01	0.02
Gender	0.09	0.26	0.18
Married	-0.22	-0.26	-0.02
Education	0.05	0.05	0.23
Homeownership	-0.50*	-0.40	-0.85**
Income	0.02	0.02	0.04
Heritance (reference: left all heritance to spouses or others)			
No heritance	1.75***	1.63***	2.05**
Left all heritance to children	1.68**	1.67**	1.75*
Bedridden time	-0.07*	-0.07*	-1.90
Number of sons	-0.12	-0.12	-0.21
Number of daughter	0.11	0.10	0.14
Distance to nearest sons	0.09	0.05	0.03
Distance to nearest daughters	-0.14	-0.19*	-0.05
Maximum emotional closeness with sons	0.16*	0.19**	0.21**
Maximum emotional closeness with sons	-0.12+	-0.13*	-0.12+
Financial help to all sons (1000RMB)	0.33	0.33	0.57
Financial help to all daughters (1000RMB)	7.87	7.18	2.39
Financial help from all sons (1000RMB)	-0.12	-0.12	-0.13
Financial help to from all daughters (1000RMB)	0.01	0.01	0.00
Help with child care for all sons	-0.11+	-0.11+	-0.11
Help with child care for all daughters	0.61**	0.61**	0.49***
Financial help from all sons* Help with child care for all sons	0.08+	0.08+	0.10*
Financial help from all daughters* Help with child care for all daughters	-0.23	-0.22	-0.12*
Constant	-3.12	-2.27	-4.03+

Table 4 Logistic regression of the likelihood of transitioning into coresiding with at least a child, son, or daughter before death for those elder parents who coresided with at least a child at baseline (N=249)

	Model 1	Model 2	Model 3
Variables	Coreside with at least one child	Coreside with at least one son	Coreside with at least one daughter
Age at death	-0.03	0.00	-0.07+
Gender	0.20	0.23	-0.47
Married	-0.28	-0.16	-0.09
Education	0.35	0.55	-0.16
Homeownership	0.40	0.14	-0.30
Income	0.02	0.02	0.07
Heritance (reference: left all heritance to spouses or others)			
No heritance	2.46**	1.90**	2.20*
Left all heritance to children	1.45	1.27	0.85
Bed ridden time	0.00	0.00	-2.38*
Number of sons	-0.60**	-0.47*	-0.53**
Number of daughter	-0.17	-0.09	-0.31
Distance to nearest sons	0.02	-0.08	-0.03
Distance to nearest daughters	-0.22	-0.17	-0.23+
Maximum emotional closeness with sons	0.33**	0.34**	-0.06
Maximum emotional closeness with sons	-0.20+	-0.17+	0.07
Financial help to all sons (1000RMB)	0.38	0.43	-5.57*
Financial help to all daughters (1000RMB)	-2.00	-0.51	-0.17
Financial help from all sons (1000RMB)	-0.15	-0.28	-0.06
Financial help to from all daughters (1000RMB)	0.10	0.03	0.48
Help with child care for all sons	-0.25**	-0.21*	-0.13
Help with child care for all daughters	0.45*	0.27+	1.35+
Financial help from all sons* Help with child care for all sons	0.17*	0.12*	0.20*
Financial help from all daughters* Help with child care for all daughters	-0.23	-0.08	-2.19*

Constant	2.93	-0.16	6.16*

+ p<0.1, *p<0.05, ** p<0.01, ***p<0.001

Table 5 Multinomial logistic regression predicting the likelihood of coresidence with no child and with at least on daughter, compared to that of with son but no daughters

	Those who did not live with any child (reference, coreside with sons but no daughters, n=378)		Those who coreside with at least one child (reference, coreside with sons but no daughters, n=240)	
	Model 1	Model 2	Model 3	Model 4
Variables	Living with no child	Coreside with at least one daughter	Living with no child	Coreside with at least one daughter
Age at death	-0.01	0.02	-0.01	-0.08+
Gender	0.20	0.31	-0.74	-0.79+
Married	0.53	0.46	0.40	0.14
Education	0.36	0.49	-0.49	-0.37
Homeownership	-0.28	-1.11**	-1.13+	-0.82
Income	-0.00	-0.04	-0.09	-0.09
Heritance (reference: left all heritance to spouses or others)				
No heritance	-1.27+	0.93	-1.89+	1.17
Left all heritance to children	-1.49+	0.52	-1.41	0.00
Bed ridden time	-0.00	-1.90	-0.01	-2.66**
Number of sons	-0.08	-0.27	0.37	-0.40+
Number of daughter	-0.06	0.09	0.03	-0.32
Distance to nearest sons	-0.15	-0.10	-0.12	-0.03
Distance to nearest daughters	0.28+	0.20	0.10	-0.19
Maximum emotional closeness with sons	-0.05	0.17	-0.49***	-0.26*
Maximum emotional closeness with sons	0.09	-0.05	0.29*	0.17+
Financial help to all sons (1000RMB)	5.48	5.92	-1.01	-6.15*
Financial help to all daughters (1000RMB)	-20.17*	-15.37+	3.21	2.47
Financial help from all sons	0.06	-0.09	0.37	0.32

(1000RMB)				
Financial help to from all daughters (1000RMB)	-0.22	-0.23	0.34	0.80
Help with child care for all sons	0.11	-0.02	0.46**	0.17
Help with child care for all daughters	-1.69***	-0.96*	0.26	1.61*
Financial help from all sons* Help with child care for all sons	-0.01	0.09	-0.27**	0.01
Financial help from all daughters* Help with child care for all daughters	2.19***	2.01**	-0.62	-2.63**
Constant	3.07	-1.23	2.81	8.85*

+ p<0.1, *p<0.05, **p<0.01, ***p<0.001