Should I Stay or Should I Go? Intergenerational Transfers and Residential Choice. Evidence from China*

Ziwei Rao† Max Groneck‡ Rob Alessie§

January 20, 2021

Abstract

We study the impact of parental transfers to their children in early life on the child's support to the parents at older ages either in time or with money. We conjecture that the type of transfer from the parents has an impact on what kind of help they receive from their children. Using data from the China Health and Retirement Longitudinal Study (CHARLS) we find that transfers in children's education are associated with higher financial help at older ages. In contrast, transfers to support the children's marriage are positively linked with time support, such as more visits, from children to their parents. The children's residential decisions are identified as an important mechanism: transfers into education tend to let children move further away whereas marital transfers are associated with children staying closer to one's parents.

JEL Classification: D13, J13, J14

Keywords: marital transfer, educational investment, old-age support, migration

*We are grateful to Viola Angelini, Yi Zhang, Gregory Veramendi, and participants at the European Economics Association 2020 annual congress, the SMU School of Economics Seminars (Singapore), the NPS from the Royal Dutch Economic Association, the Network for Studies on Pensions, Aging and Retirement (Netspar) Pension Day and the PhD conference at University of Groningen, the Netherlands for their valuable comments and discussions. We thank the China Center for Economic Research, the National School of Development of Peking University for providing the data.

†Ziwei Rao, Department of Economics, Econometrics and Finance, University of Groningen, The Netherlands (z.rao@rug.nl).

‡**Corresponding author:** Max Groneck, Department of Economics, Econometrics and Finance, University of Groningen, P.O. Box 800 9700AV Groningen, The Netherlands; Netspar, and Aletta Jacobs School of Public Health (m.groneck@rug.nl).

§Rob Alessie, Department of Economics, Econometrics and Finance, University of Groningen, The Netherlands; Netspar (r.j.m.alessie@rug.nl)

1 Introduction

Intergenerational family ties are an important element to sustain well-being in old age. Old-age support from younger family members is particularly important in countries with less developed public social security and formal long-term care systems. Family ties are often reciprocal: children support their parents at old-age which is rewarded by parents with contemporaneous inter-vivos transfers or the prospect of inheritances.[1] With globalizing economies, however, an increased mobility of the younger generation and migration to regions with better labor market prospects have challenged this intergenerational system of family-care. Children living further away from their parents can naturally provide less support in time but might be more well-off to financially support their parents. Children typically make the choice of residence many years before the problem of caregiving becomes relevant. In effect, there is commonly a long time lag between residence decisions early in life and potential support to the parents should they become in need of care. This raises the question whether parental transfers that are granted long before a potential need of help at old-age arises might also act as a reciprocal tool. Do early-life transfers from the parent to the child influence the location decision of the child and, hence, the potential caregiving at older ages?

In this paper, we analyze intergenerational reciprocity in China by studying the impact of parental early life transfers on childrens' location decisions and, consequently, their help of the parents at old-age many years later. We use data from the China Health and Retirement Longitudinal Study (CHARLS) which contains recall questions about parental transfers and allows to connect early-life transfers to later life support. We exploit the variation between siblings by using a linear family-time fixed effect model. This allows us to control for unobserved time-varying family characteristics. We contrast the effect of two different transfers to the children: marital transfers and educational transfers. We hypothesize, that both transfers affect the child's residential decision very differently and, hence, the propensity to provide support to the parents. Investments into education potentially incentivize children to move away from the parents to a place with better job possibilities. These children tend to be financially well-off and support their parents financially at older ages. On the other hand, if parents provide marital transfers, such as a house, then children are rather incentivized to stay close to their parents. This, in turn, would lead to more time that children are able to spend with their parents and allow for potential caregiving for parents in need of long-term care.

China is particularly suited to study intergenerational relations. Almost three quarters of old-age parents in rural areas and half in urban areas receive either care or financial support from their children (Lee & Xiao, 1998). Social insurances are still poorly developed especially in rural areas. The nation-wide average replacement rate amounts to 20 percent of rural per capita net income varying greatly across regions (Fang & Feng, 2018). Public long-term care insurance is non-existent and private insurance products are prohibitively highly priced (Chu & Chi, 2008; Keating, Otfinowski, Wenger, Fast, & Derksen, 2003). Intergenerational support of both money and time from children therefore play the major role in securing well-being at old-age. Besides economic reasons, intergenerational relations in China are rooted in the cultural norm of filial piety – the duty of

[1] Empirical support for inter-generational exchange in caregiving is found by, e.g., Alessie, Angelini, and Pasini (2014), Norton, Nicholas, and Huang (2013), M. Brown (2006), Groneck (2016) and Horioka, Gahramanov, Hayat, and Tang (2018). Studies that focus on altruistic motives are, e.g., McGarry and Schoeni (1995) and Mukherjee (2020)

adult children to guarantee the old-age security of their parents.[2] However, exchange motivations also guide intergenerational transfers (Silverstein, Conroy, Wang, Giarrusso, & Bengtson, 2002).

Our study focuses on parental transfers to the adolescent child. In China, educational investments and marital gifts are two prominent early-life transfers to children. In rural areas, the bride-price amounts to 82 percent of the value of households' major durable goods, on average (P. H. Brown, 2009). In addition, 19 percent of parents in our sample even buy a house for their marrying children. Investing into the child's education also entails large direct and indirect costs. Sizable costs arise for teaching material, uniforms, school-lunch, as well as tuition fees for higher education, and they pose a hurdle for many poor families in China (Chi & Qian, 2016; Bray, 1996; P. H. Brown & Park, 2002). In addition, sending one's children to school might imply high opportunity costs from the forgone adolescent labor. In our sample, about 21 percent have a high-school degree or above and among those with a college degree, 59 percent of children received financial support for their college education.

Traditionally, a strong patrilineal family system requires the son to take care of the parents at old age in exchange for inheritances while the daughters are married out of the family which implies that daughters have no obligation to help their parents (Cong & Silverstein, 2008). This traditional gender-norm has been eroded in recent times due to significant socioeconomic changes in China (Xie & Zhu, 2009a). In our sample of married daughters, half of them are expected by parents to provide assistance in daily activities in the future, and around 80 percent of them also transferred material support to parents during the past year. We take gender-differences into account in our analysis.

Moreover, the traditional family support patterns are challenged under the huge internal migration flows and demographic changes. Longer life expectancy and lower birth rates accompanied by population controlling policies jointly contribute to the rising old-age dependency ratio in China (Hu & Yang, 2012). In our sample, however, more than 90 percent of families have more than one child with an average number of 3.1 because the majority are born prior to the introduction of the one-child policy. Massive internal migration was induced by unprecedented economic growth since the 1970ies, and an increasing rural-urban income gap (Zhang & Shunfeng, 2003). According to the National Bureau of Statistics of China (NBSC), 136 million rural migrants are working in urban areas in China in 2016, which amounts to around 10 percent of the total population. Better economic conditions allow for higher human capital investment into the children which, in turn, facilitates migration to wealthier regions with higher prospective income. However, migrants are discouraged from bringing the whole family with them, as the strict household registration system (Hukou) restricts to transfer major social benefits. Our sample reveals that almost one third of children live in a different town than their old-age parents. As a result, parents at old-age tend to receive remittances and share children's migration gain, and they enjoy less company and help in time from out-migrant children due to the enlarged distance (Guo, Aranda, & Silverstein, 2009).

Descriptive statistics from CHARLS are broadly in line with our hypothesized association between early life transfers, location decisions, and support at old-age. Adult children who live close to their parents (same neighborhood) are 9 percentage points (pp) more likely to have received a marital transfer than those who live further away (different

[2]Filial piety (*xiào*) is considered a key virtue in Chinese and other Asian countries' cultures to respect one's parents. Confucian ethics regard filial piety as an unconditional obligation of the child, which requires the child to reciprocate the care one's parents have given.

town). In addition, higher educated children tend to live further away: only 3 percent of adult children living in the same neighborhood with their parents have a college degree while this fraction is 15 percent for those living in a different town. Further, the kind of support depends on where children reside. Children who live further away are more likely to provide financial support (10pp) and provide higher amounts (more than twice the amounts, on average). In contrast, children who live close by their parents pay more visits (every other day versus once a month) and are more likely to provide future help with long-term care.

The findings from our econometric models broadly corroborate the descriptive statistics. We find that children who received monetary marital gifts when they were young, spend almost one additional visit per month with their old-age parents, on average. In contrast, the likelihood of providing material transfers is 11 percent lower, compared to siblings who did not receive those gifts. Children who received educational transfers instead – proxied with the educational attainment of the child – tend to spend less time with their parents but rather provide more financial support. Children with a college degree spend around 4 fewer visits per month, on average, while the transfer probability is 15.5pp higher compared to illiterate children who received no educational transfer.

We further explore the mechanism of this outcome. We show that parental transfers matter for the residential choices of children to stay close to the parents or to move further away. Our findings suggest that received marital transfers discourages migration: children who received a house as a gift for their marriage are 17pp more likely to live in the same neighborhood. Further, we find that higher education of the child is associated with a 23pp lower probability that the child lives in the same neighborhood – compared to an illiterate child, while the probability to live in another town is 25pp higher.

We complement these findings with estimations on a sub-sample of children with college degree. This allows us to use monetary transfers instead of our proxy variable of educational attainment. Finally, we study heterogeneous effects which broadly confirm our main findings. By focusing on rural children, we find that rural children who received marital gifts live closer even when conditioning on rural-urban migration decisions. Results in gender difference analysis suggest that the patterns found in the baseline specification are present for both sons and daughters, albeit they are more pronounced among sons. For instance, sons pay fewer visits whereas having higher probability of transferring material support to parents when receiving higher educational investment, compared to daughters. Overall, our results show strong reciprocal behavior between generations within families in China. In addition, the kind of transfer from the parent is associated with what kind of help they can expect from their child and we find evidence that the location decision of children might act as an important mechanism for these differences.

Our paper contributes to a rather small set of studies that analyses the impact on parental transfers early in life on the support from the adult children towards their parents many years later. The scarcity of studies might be due to problems with data availability because one needs either a very long panel dimension or – as we have in CHARLS – recall questions from the old-age parent about transfers that they made when they were young.

Cunningham, Yount, Engelman, and Agree (2013) gathered data from Ismailia, Egypt to study whether the investment into the quantity and quality of children pays off by receiving higher support from children in later life. They find a positive association with the number of children and old-age support but inconclusive results concerning the quality of children – measured with educational investments and marital gifts – on support. Ciani

and Deiana (2017), using survey data with retrospective questions from Italy, find that parents who helped their children in purchasing a house after children's marriage are more likely to receive informal care when they are old. Ho (2019), using the CHARLS data as we do, focuses on the gender-aspect for the impact of early-life transfers on old-age support in China. She finds that higher parental transfers are positively associated with support from the child. Daughters, in particular, are more likely to support their parents in time when they received parental transfers in the past. She finds no evidence for a higher probability of financial upward transfers from children. Ho (2019) does not focus on the importance of the different kinds of transfers for the child's location decision which is what we analyze.

To the best of our knowledge, this study is the first to establish a link between parental investments into the children influencing their location decisions and, hence, their support behavior later in life. While we also take gender-differences into account, we highlight a crucial channel stemming from the fact that different transfers from the parent induce the child to either stay close or migrate away making the location decision an important determinant for the kind of old-age support. Our results suggest that parental transfers can be used as strategic variable to influence the adult childrens' help either in time or with money many years later.

The remainder of the paper is organized as follows: Section 2 sketches the underlying theoretical concepts that guide our empirical analysis.. Section 3 presents the data, describes the variables and shows some descriptive statistics. The empirical models are discussed in Section 4. Section 5 presents our main results and Section 6 explores heterogeneity of our results. Finally, Section 7 concludes.

2 Theoretical Considerations and Hypotheses

There exist a long-standing literature on inter-generational family transfers. The early literature has proposed altruism (G. S. Becker, 1974; G. Becker, Murphy, & Tamura, 1990) and selfish or strategic exchange (Cox, 1987; Bernheim, Shleifer, & Summers, 1985) as the two conflicting motives for transfer behavior; Laferrère and Wolff (2006) provide an excellent review.

Instead of a full-altruism model where dynastic utility function is maximized (G. Becker et al., 1990) some models simultaneously assume altruism and self-interest motives to be active, cf. Ehrlich and Lui (1991). According to these *mutuality models* (Laferrère & Wolff, 2006), both parents and children act individually on their self-interest while being partially altruistic towards the other party. Intergenerational transfers occur out of altruistic motives but they can also be altered (or increased) by selfish considerations. These models focus on educational transfers of parents towards their children and upward transfers from the children later in life. Closely related is the the so-called *new economics of labor migration* literature, which also studies transfer behavior between a potentially migrating agent and its left-behind family. Here, market imperfections are highlighted as an argument for educational transfers and migration.[3]

The dynamic theoretical setting in this literature is typically a simple model of overlapping generations with inter-generational transfers (Cremer, Kessler, & Pestieau, 1992). Parents can decide whether and how much to invest into the childrens' human capital

[3]see Lucas and Stark (1985), Cox and Jimenez (1992), Cox, Eser, and Jimenez (1998), and Poirine (1997). Rapoport and Docquier (2006) provide an overview.

while children are usually passively accumulating human capital when young assuming them to be credit constrained. Adult children then decide about the upward transfer to support the parents who are then old.[4] In the migration literature, families decide which members move to regions with better earning possibilities which in turn imply higher remittances to the ones that are left behind. These remittances compensate for poorly functioning local markets or for a lack of government programs, such as social insurances (Hoddinott, 1994).

While a precise distinction between transfer motives is often hard to identify, the implications for intergenerational transfer behavior arising from these strands of literature are straightforward leading to our first hypotheses.

Hypothesis 1. *Higher educational transfers from the parent increase the likelihood of the child to live further away.*

Hypothesis 2a. *Educational transfers increase the likelihood and the amount of a monetary upward transfer from the child to the parent.*

Another important transfer motive arise from the need of parents to insure against old-age risks, such as long-term care, within the family. Studies have analyzed the exchange motive in caregiving by children and inter-vivo transfers or inheritances from the parent (Cox, 1987; Bernheim et al., 1985). Pestieau and Sato (2008) and Sloan, Zhang, and Wang (2002) explicitly take different upwards transfers of time versus money into account. Pestieau and Sato (2008) find that high productive children tend to give money while low productive children tend to transfer time. In addition, help from children depends on parental needs and resources. The general empirical implications arising from these models is that children who received a higher transfer, or expect to receive one in the future, are more likely and transfer higher amounts back to their parents when they are old and the kind of transfer depends on opportunity costs.

We extend this literature with the idea that parents have different kind of transfers at their disposal that they can use to influence the decision of children to migrate and, hence, to care for them. Next to educational investments, we assume that parents can give marital transfers to their children. We conjecture that these marital transfers are physically more attached to the parents residence – e.g. when a house is transferred. This, in turn, might induce children to stay closer to their parent. We derive the following additional hypotheses.

Hypothesis 2b. *Educational transfers decrease the likelihood of supporting the parents in time.*

Hypothesis 3. *Marital transfers from the parent increase the likelihood of the child to live closer to the parents.*

Hypothesis 4a. *Marital transfers increase the likelihood of supporting the parents in time.*

Hypothesis 4b. *Marital transfers decrease the likelihood and the amount of a monetary upward transfer from the child to the parent.*

[4]Typically, fertility is an endogenous decision (Cigno, 1993; Nugent, 1985) and the focus is on the quality-quantity trade-off of having children. In models without altruism, the problem of enforcement is also extensively studied (Cremer et al., 1992; Anderberg & Balestrino, 2003; Raut & Tran, 2005; Cigno, 2006).

The theory on intergenerational transfers highlights a number of characteristics of the parent and the child that are relevant and need to be controlled for. Upward transfers from the child might be for old-age support and are thus depending on the need of the parent. This implies that variables such as age of the parent, marital status, health status and financial resources matter for the children's transfer decision. If children are altruistic, parents with higher need will get higher transfers. The financial resources of the parents have an ambiguous effect depending on whether child is altruistic or selfish. An altruistic child increases help for low resource parents while a selfish child transfers higher resources to the richer parent to induce inheritances from the parent. More generally, the size of investments and upward transfers depends on family altruism (or the 'family interest rate' if private capital markets are modeled). In addition, contemporary downward transfers from the parent to the child matter. Cong and Silverstein (2011) discusses the importance of caring for grandchildren, while also direct inter-vivos transfers from the parent might interfere with the associations that we want to focus on. In our empirical approach, the family fixed effects picks up the characteristics at the family level. Most of the variables mentioned above are then explicitly included in the random effect specification.

A further aspect when analyzing transfers between generations are strategic interactions between siblings. Konrad, Künemund, Lommerud, and Robledo (2002) show that among siblings who are altruistic towards their parents, the firstborn child's tends to locate further away from their parents anticipating that the second-born child will bear higher (time) costs of helping the parents at old-age. Antman (2012) studies siblings' interactions in time and money support towards old-age parents conditional on their migration status, but they do not take the parental transfers into account. Horioka et al. (2018) studies rivalry among siblings for parental bequests. To control for strategic interactions, we take various characteristics of the siblings into account in our empirical specification, such as the total number of siblings, the birth order, and the gender composition.

Gender plays an important role for family support at old-age, particularly in China (Li, Feldman, & Jin, 2004; Cong & Silverstein, 2008). Traditionally, and particularly in rural China, sons rather than daughters in a family provide necessary support for their older parents. This pattern is rooted in the Chinese patrilineal family system under which sons generally inherit the family property and are obliged to take care of their parents at old-age. By contrast, parents marry out all of their daughters to other families, and these daughters cease to have any formal obligation to take care of their natal parents in old age. Instead, upon marriage, their obligations are supposed to be redirected to the support of their husbands' parents. In this traditional family system, financial support from adult children to their elderly parents is clearly gendered, with sons, but not daughters, expected to provide support. According to these traditions, we should observe a stronger effect of caregiving for sons than for daughters. However, socioeconomic changes - such as higher education and income levels - attenuate this traditional family system. As a consequence, daughters have taken more responsibilities in caring for their elder parents (Murphy, Tao, & Lu, 2011; Xie & Zhu, 2009b), essentially leaving it open how strong the gender differences still are empirically.

3 Data and Descriptive Statistics

3.1 Data

We use data from China Health and Retirement Longitudinal Study (CHARLS), an ongoing micro-longitudinal survey which is nationally representative of Chinese older population aged 45 and above. CHARLS is the sister data set of Health and Retirement Study (HRS), Survey of Health, Aging and Retirement in Europe (SHARE) and English Longitudinal Study of Aging (ELSA). CHARLS contains rich information on demographic characteristics, health status, health care and insurance, retirement and pensions, work and incomes, as well as on the family structure and interpersonal transfers. The main surveys start from 2011, and they are conducted biennially by face-to-face computer-assisted interviews. Details of the survey design, sampling procedure and samples are described in Y. Zhao et al. (2013) and Chen, Smith, Strauss, Wang, and Zhao (2017).

Since living arrangement and intergenerational transfers information in 2011 wave are not comparable with those in later waves, we employ data from 2013 and 2015 waves. There is one family respondent per household in each interview and the respondent's spouse (if present). The respondent is treated as the parent in our analysis. Questions related to children, intergenerational transfers between parents and each child and past marriage gifts offered to each child (if the child has ever married) are asked to the family respondent. The data allows us to focus on each child in a family as the unit of observation and to exploit the variation between siblings in each family.

Table 1: **Family Size**

Number of children	1	2	3	4+	Obs
Rural	4.7%	32.6%	27.8%	34.9%	5,056
Urban	12.7%	35.3%	23.6%	28.4%	2,944
Overall	7.6%	33.6%	26.2%	32.6%	8,000

Note: Fraction of families depending on the number of children for rural and urban families. Selected sample according to Table A1 including one-child families.

We select our sample by focusing on only living biological children. We exclude never married and co-resident children. Co-resident children are in many aspects very different in their inter-generational transfer behavior than non co-resident children. Importantly, the number of visits to the parent - a key variable in our analysis is meaningless for this sub-sample. In addition, monetary inter-generational transfers might be hard to measure in a household with co-residing adult children and the parents where a lot of resources are shared.[5] Never married children might get married in the future and receive marital gifts, thus, their investment decisions are not yet completed. In addition, focusing on variation between siblings requires to drop all single child families. In total, the selected sample consists of 24,981 child-year observations and 15,589 children coming from 5,157 families, cf. Table A1 in Appendix A.

Table 1 shows the distribution of family size by rural/urban households. Contrary to common belief, the generation that we study does not primarily consist of one-child

[5]Finally, co-residing children might well be rewarded with the house as a bequest once they have taken care of the parents. This transfer is not the focus of our analysis, though.

families in either rural area or urban area. On the contrary, only 7.6% of families have only one child. Children in our sample were mostly (i.e. 67%) born prior to the introduction of the one-child policy in 1979. In addition, various exemption rules, especially for rural households and ethnic minorities, applied (Wu & Li, 2011).

3.2 Variables

3.2.1 Dependent Variables

Support Variables from the Child There are four measures of support from the child to the parent, including time transfers and material transfers. The variable *Visit frequency* represents the number of monthly visits to parents from children. Paying visits to parents incurs time cost especially for those who live far away from their parents. It reflects the amount of companionship and attention that a child provides, and it may contribute to emotional closeness and a sense of fulfilling filial piety. The variable *Whether future help* is an indicator variable taken from the following question:

> "*Suppose that in the future, you needed help with basic daily activities like eating or dressing. Do you have relatives or friends (besides your spouse/partner) who would be willing and able to help you over a long period of time? What is the relationship to you of that person or those persons?*"

The variable represents parent's expectations about the help in activities of daily living (ADL) they expect to receive from their children in the future when they are in need of long term care. Being nominated by parents as a future helper can be seen as a proxy for emotional closeness between generations and higher future availability of the child (Cong & Silverstein, 2014; Pillemer & Suitor, 2006). Compared to actual ADL help, the expected care variable might contain some private information of the parents about the parent-child relationship.[6]

Material support is measured at the extensive and the intensive margin. *Whether material support* is an indicator variable whether children transferred money or in kinds to the parents in the year before the interview. The *Amount of material support* is the amount of money and in kind transfers provided over the previous year in 10,000 yuan. We use the natural logarithm of the actual amount in empirical analysis. These questions are:

> *"In the past year, how much economic supports did you or your spouse receive from your [child's name]? Money support such as helping with living expenses and in kind support includes food or clothes."*

Residential Choice To measure residence choice, we use three dummy variables that represent an increasing distance between children and their parents. The closest and the furthest measures are taken as the outcome variables of children's residence relative to their parents.[7] *Same neighborhood* is an indicator variable which equals one when the child lives in the adjacent dwelling/courtyard with their parents or lives in another house in the same village or neighborhood. *Same town* equals one when the child lives

[6]We also experimented with actual help with ADL as a further support variable. The results are quantitatively similar, although mostly smaller in magnitude and less significant.

[7]The variables are constructed from the question with regard to each child: " *Where does the child normally live now?*".

in the same county for rural parents or city for urban parents, but in a different village/neighborhood from their parents. *Different town* takes a value of one when the child and parents live in different counties/cities, which represents the furthest child-parent distance that we measure. These three dummy variables cover all living proximity possibilities of non-coresiding children, and depict an increasing distance to parents. In our analysis, we will focus on the indicator variables indicating the closest and the furthest distance.

Since co-residing children are excluded due to their difficulty in measuring intergenerational support, we leave out a traditional form of care-arrangement (Zimmer & Korinek, 2010; Oliveira, 2016). Living nearby the parents allows the provision of care but protects some form of privacy and is nowadays becoming an increasingly important living concept (Lei, Strauss, Tian, & Zhao, 2015; Zimmer & Korinek, 2008).[8]

3.2.2 Main Independent Variables

We study two kinds of parental early life transfers, namely marital gifts and educational investments. The reason for doing so is that they constitute major parental transfers with considerable magnitudes and they take relatively early in life, making them particularly relevant for children's location choices.

Marital Transfers Marriage gifts are past intergenerational transfers taken from the main questionaire of CHARLS. The transfer is taken as the marriage investment that parents make in each child. Marriage transfers are composed of two parts, namely money transfers and a house as a gift. Such variables are based on the following questions:

> *"Did you give betrothal gifts when [child name] got married?*
> *Did you buy a house for him/her when [child name] got married?*
> *At that time, how much was the total value of the betrothal gifts/the house?"*

The two main explanatory variables used in subsequent analyses are indicator variables *Marital monetary transfer* and *Marital house transfer*, which indicate whether the child received a monetary transfer, or whether the child received a house. Note, that the indicator variable for the house does not exclude additional monetary transfers.

It is important to note, that the marital gift question is a recall variable from a time potentially many years ago. The average birth year of the parents is 1947 and the average year when the child first get married is 1997. It implies that parents at an age of 67 are ask to remember the amount of marital transfers to each of their children, that were roughly 17 years ago, on average. Noticeably, many parents reported different values for the same child across waves. For this reason we choose the binary variables in our baseline specification, as they are arguably more reliable.[9] In a complementary analysis, we also take the natural logarithm of the amount of the marital gift. We convert values to 2015 prices using the GDP deflator from Index Mundi for years prior to 1986 and the CPI from World Bank for years 1986 onward.[10]

[8] We reran our analysis by including co-residing children in the the closet living proximity category. This yielded qualitatively very similar results, except for visiting frequency which is not measurable among these children.

[9] Binary variables are able to capture sufficient variation within families, as presented later in descriptive statistics. In the analysis where we use the amount variable, we take the average value in case they differ over the two waves.

[10] In order to deflate the variable, we make use of the variable indicating the age of (first) marriage of

Educational Investments We do not have detailed information about the amount invested into children's education under college. However, the years of education is a good indicator for schooling related costs and for indirect opportunity costs. Letting children go to school longer entails opportunity costs of forgone labor, which is especially the case in rural China where children often start to work and support the family at a young age due to financial constraints.

In our main analysis, we proxy parental investment into children's education by the educational attainment of each child, reflecting the intrahousehold resource allocation in education, especially between siblings. Similar proxies have been used in other studies in developing contexts, for instance, P. H. Brown and Park (2002) and Cunningham et al. (2013) measure educational investment with the number of years of schooling. In addition, we do have information about parental investment into college education for the subsample of children who went to college. In order to analyze the full sample of children across all educational groups, we define educational investment as a variable with five-categories: (1) illiterate, (2) primary school, (3) secondary school, (4) high school degree, (5) college or above. In a further analysis using only the sample of college educated children, we study the (natural logarithm of the) actual amount of parental investments into the college education and the amount of marital transfers. This variable is also deflated to 2015 prices.[11]

3.2.3 Control Variables

As our control variables, we use important child characteristics. The control variables of the child are age and age squared, marital status, birth order, and detailed gender measures among siblings (indicator variables whether being a daughter, the only son, the eldest son, a middle son and the youngest son), whether received grandchild care, and the (natural logarithmic transformed) amount of material transfers received from parents during the past year. Differentiating sons based on their birth order among male siblings takes into account both the anecdotal traditional role of the eldest son as the coresident child and the main care provider and the first-mover advantage of older siblings in making location decisions (Konrad et al., 2002; Maruyama & Johar, 2017). Controlling contemporaneous parental help in forms of grandchild care and inter-vivo transfers addresses the potential concern of reciprocal current exchanges between generations.

Since we select children who have ever married, the indicator variable on marital status takes value one if the child is currently married and zero if the child is separated, divorced or widowed. Birth order captures part of the innate ability of each child, given the findings that birth order affects earnings and intelligence quotient (Black, Devereux, & Salvanes, 2005; Barclay, 2015).

We also include controls at the parent level, and region and wave dummies when investigating the amount of parental transfers across families. Parental characteristics are mostly constructed at the household level, including age and age square of the elder parent, if any parent is currently working, responding parental gender, parental marital status, the number of children, educational attainment of the higher educated parent,

the child. This variable, however, has many missing values. For those observation that report a marital gift but not a specific marriage age, we impute it with provincial level gender specific average age at first marriage.

[11] Since we have no information about the year of graduation of the child, we take age 20 as the graduation year and deflate the expenses accordingly.

the number of ADL limitations of the more restricted parent, residence type urban or rural, pension type, and parental wealth. Parental wealth is measured by the sum of parental savings and the value of household assets, including housing, durable assets, fixed capital assets, irrigable land, and agricultural assets, which is inverse hyperbolic sine (IHS) transformed in regression analysis.

3.3 Descriptive Statistics

Parental Investments Table 2 shows the transfer behavior of parents for the marriage of their children and the within household distribution. The table reveals that marital transfers are very prevalent in China: 60% of children receive marital gifts. At the family level, gifts are granted in 79% of families, and 19% of parents even buy a house for their marrying children.[12] Marital transfers, on average, amount to 94,940 yuan when a house is transferred and this is roughly eight times higher than a money transfer. Turning to families with positive transfers allows to analyze the distribution of gifts. Interestingly, the vast majority of families – 93 percent – distributes marital gifts unequally among the children. Further, 44 percent of parents only support some of their children while others receive nothing. This variation is explored in our fixed effects analysis.

Table 2: **Marital Transfers and its Distribution***

Child level	
Prop. money transfer	51.7%
Amount (if > 0)	11,373
Prop. house transfer	9.0%
Amount (if > 0)	94,940
Heterogeneity among siblings**	
Equal amounts	6.9%
Unequal amounts	
Largest ≤ 5 times the smallest	29.7%
Largest > 5 times the smallest	19.1%
Smallest amount $= 0$	44.2%

Note: Monetary values are measured in RMB yuan in 2015 value (1000 yuan equals approx. 150USD). *Child is ever married such that the marital transfer decision has been made. ** Families with positive transfers.

Table 3 shows the educational investment received by children and the distribution among siblings within households. 79 percent of all children have completed at most secondary school. Only 8.8 percent of children are highly educated, namely attended college and above. Among the group who fall under the mandatory education law, there are still around 43 percent did not obtain a secondary school degree.[13] Among children with college degree, 60 percent were financially supported by their parents with an average amount of around 70,000 yuan.

The lower part of Table 3 shows that educational investment is also unevenly distributed among siblings. Around 38 percent of siblings have equal educational attainments. In 23 percent of families, education difference between siblings reaches two cat-

[12]Family level statistics are not shown in the table.

[13]The mandatory education law was introduced in 1985, and it is supposed to impact those who were younger than 15 at the time (Fang, Eggleston, Rizzo, Rozelle, & Zeckhauser, 2012).

Table 3: **Educational Investment and its Distribution***

Child level	
Illiterate	7.0%
Primary School	39.2%
Secondary School	32.3%
High School	12.7%
College and above	8.8%
College financed by parents	*60.3%*
Amount (if > 0)	*69,094*
Heterogeneity among siblings**	
Equal education	38.3%
Unequal education	38.7%
Very unequal education	23.1%

Note: Monetary values are measured in RMB yuan in 2015 value (1000 yuan equals approx. 150USD). *Child's age is at least 20 such that education is likely to be completed. **Equal education is calculated based on the five categories from illiterate to college and above. Very unequal education is defined as education difference between siblings of two categories or more, e.g. primary school and high school and above.

egories or more (labeled as a very unequal education). There are even 5% families with both primary or less educated children and college educated children (not shown in the table). The data support the argument that many children stopped schooling early, sometimes even earlier than required, and that parents make unequal investment decisions in children's education at all levels.

Support from Children Table 4 shows the children's support both in time and with money towards their parents. Almost every child pays visits to parents, and half of children are expected to provide help with Activities of daily living (ADL) to parents in the future if needed. Since the proportion of children who do not visit their parents is very small, we do not study the incidence of visiting the parents but only the number of visits. Three quarters of all children provide financial support to their parents, with an average amount of 1,837 yuan in the last year. The right-skewed distribution of financial transfer suggests a logarithmic transformation in later empirical analysis.

Differences of support between siblings are quite substantial. Most siblings visit their parents and provide material support to parents, but with different frequencies (84% of families) and different amounts (83% of families). Future help is expected from half of children, while in only around 22 percent of families the parent expects their children to provide unequal help.

There is a complementarity between paying visits and providing future ADL help (corr.=0.11), and a negative correlation between visits and the incidence of material transfer (corr.=-0.09). Children who visit their parents more often are also expected to provide ADL help in the future, but also to transfer less money.

The Importance of Residential Choice Living close to one's parents not only increases the probability of providing instrumental help (Yan, Chen, & Yang, 2003), but also fulfills the filial piety and improves parental well-being in China (Chen & Silverstein, 2000). 46 percent of adult children live in the same household or neighborhood as their

Table 4: **Child Support**

Support in Time - Child	
No visits	3.2%
Visit frequency (if > 0)	7.4
Future help expected	52.7%
Support in Money - Child	
Financial transfers	74.4%
Mean (if > 0)	1,837
Median (if > 0)	900
75th percentile (if > 0)	2,000
95th percentile (if > 0)	6,000
Heterogeneity among siblings	
Unequal visit behavior	84.4%
Unequal exp. future help	22.2%
Unequal financial transfers*	83.1%

Note: Monetary values are measured in RMB yuan (1000 yuan equals approx. 150USD). Visit frequency refers to the number of visits per month. Financial transfer refers to the material support during the past year of the interview. *Within the group of families with unequal financial transfers, the largest transfer is at least twice as much as the smallest positive transfer in 67% of families.

parents do. Having at least one adult child living in the same neighborhood is the case for the vast majority of 76 percent of families.[14]

Table 5 reveals that the importance of the child's residence for our proposed mechanism with respect to the inter-generational transfer behavior between parents and their children. As expected, children who live close to their parents visit their parents much more frequently (16 times per month) than those children who live further away (only around once per month for children living in a different town). Similarly, but less pronounced, children living close to their parents are more likely to provide future help with ADL. Conversely, children who live in the same neighborhood with their parents are 10pp less likely to provide financial aid to their parents. In addition, children living further away provide a higher amount of financial transfers to their parents, on average.

Turning to transfers from the parent, Table 5 shows that children who live close by their parents are 9pp more likely to received marital gifts compared to children living further away. Yet, the amount of marital transfers does not show such a clear pattern. Here, the amount is actually highest among children who live in a different town. This, however, might be due to the fact that parents who have children that live in a different town are better educated and are likely to be richer compared to parents where the children live close by. In contrast, children with higher educational attainment tend to live further away from their parents. Only 3% of children are college educated among those who live in the same neighborhood, whereas the number amounts to 15% among children living in another town.

Overall, the results in Table 5 already provide some suggestive evidence in favor of our main hypotheses: children who received a marital transfer are more likely to live close by their parents and they provide help towards their parents more in time rather than

[14]Statistics are based on the original sample.

Table 5: **Living Proximity, Parental Transfers, and Old-age Support**

	Same neighborhood	Same town	Diff town
Old-age support in Time			
Frequency of visits	15.7	4.3	1.2
Prop. future help	0.55	0.52	0.51
Old-age support with Money			
Prop. material transfer	0.67	0.78	0.77
Amt material transfer (if > 0)	1,284	1,514	2,837
Marital transfers			
Prop. money transfer	0.65	0.58	0.57
Prop. house transfer	0.16	0.05	0.07
Prop. either transfer	0.67	0.59	0.58
Amt either transfer	22,136	19,918	27,722
Educational investment			
Illiterate or Primary School	0.54	0.47	0.39
Secondary or High School	0.44	0.45	0.46
College or above	0.03	0.08	0.15
Observations	8,229	9,637	7,115
Fraction	32.9%	38.6%	28.5%

Note: Means in different residence groups are reported. The three residential choice measures are mutually exclusive, as defined before in section 3.2. Monetary values are measured in RMB yuan (1000 yuan equals approx. 150USD).

financially. In contrast, children who received educational investments are more likely to live further away. We will explore whether these results carry over in our full empirical model in the next sections.

4 Empirical Model

Estimating the impact of parental transfers on children's support and residential decisions suffer from endogeneity problems. Reverse causality issues might arise due to the fact that one can interpret intra-generational family transfers as a market of demand for care and attention which has a price paid for with a transfer. We think, however, that reverse causality is less of an issue in our analysis because of the long time-lag of the parental early-life transfer to the child and the children's support to the parents. Hence, our approach of taking the children's perspective – treating the past parental transfers as given – is a reasonable choice. Further, our data suffers from measurement problems. In particular, the recall questions from parental transfers might entail large errors, potentially leading to an attenuation bias. We partly account for this issue by focusing on binary variables under the assumption that this reduces the measurement error.

Most importantly, our estimations might be biased due to unobserved heterogeneity, which can be at two different levels. First, on the family level, we can think of more altruistic families, where parents might invest more into their children and children might simultaneously help their parents more. Second, children might systematically differ from their siblings in their (innate) ability either on the job market or to give care to their parents. An estimated impact of parental investment decisions on children's help might,

hence, be biased by this unobserved endogeneity. In our main estimation we control for the common family characteristics by employing a family fixed effect model, which we additionally also allow to change over time. Hence, in effect, we set up a family-time fixed effect model. We further include a set of child-level controls to at least partly account for child-level unobserved heterogeneity, e.g., by including the birth order of the child, which is known to be correlated with cognitive ability, see our discussion in subsection 3.2.3. We come back to the discussion of endogeneity in section 5.4.

To investigate the impact of parental investments on children's help and residential choice, we estimate the following model for child i in family h at time t

$$outcome_{iht} = \alpha_{ht} + \boldsymbol{m}_{ih}^{'}\boldsymbol{\beta}_1 + \boldsymbol{e}_{ih}^{'}\boldsymbol{\beta}_2 + \boldsymbol{x}_{iht}^{'}\tilde{\boldsymbol{\beta}} + \varepsilon_{iht}. \tag{1}$$

The dependent variable $outcome_{iht}$ refers to either old-age support or residential choice. As outlined in Section 3.2.1, we investigate four different variables for inter-generational support and two dummy variables for residential choice. *Visiting frequency* and *Whether future help* represent the help in time, *Whether material support* and *Amount of material support* represent the children's help in kind and with money, at the extensive and the intensive margin, respectively. Two indicator variables, *Same neighborhood* and *Different town*, represent the closest and the further distance to one's parents, respectively.

The amount of material support is censored at zero given that many children did not provide material support. Thus, a two-part model is employed in analyses of material support. A linear probability model is used in the first part. In the second part, an OLS with natural logarithm transformed dependent variable is employed on the sample with positive transfers. We estimate the extensive and the intensive margins independently.[15]

Our main independent variables are the parents investment variables. Denote by $\boldsymbol{m}_{ih} \in \{$*Marital money transfer*, *Marital house transfer*$\}$ two indicator variables whether child i received a marital gift - either monetary, or a house - in family h. $\boldsymbol{e}_{ih}$ are binary variables indicating the educational attainment of the child, ranging from illiterate - which will be the reference group that is left out -, primary-, secondary-, and high school, and college degree, cf. Section 3.2.2. These variables are our proxies for the parental investment into the children's education.

Translating our hypotheses from Section 2 into the empirical model, we expect $\boldsymbol{\beta}_1 > 0$ for the children's help in time (hypothesis 4a), represented by *Visiting frequency*, and *Whether future help*, whereas we expect $\boldsymbol{\beta}_1 < 0$ for the children's help in money (hypothesis 4b). We conjecture that parents can influence the children's help in time by generous marital transfers. At the same time, we hypothesize that the coefficients $\boldsymbol{\beta}_2$ for (higher) educational attainment will be positive with respect to children's help in money (hypothesis 2a), while it will be negative for children's help in time (hypothesis 2b) relative to illiterate children.

We expect positive coefficients for $\boldsymbol{\beta}_1$ if *Same neighborhood* is used as the dependent variable, while we expect $\boldsymbol{\beta}_1 < 0$ for *Different town* (hypothesis 3, cf. Section 2). Analogously, we expect increasingly negative coefficient for higher educational attainments for *Same neighborhood* as the dependent variable, while the opposite gradient is expected for *Different town* (hypothesis 1).

$\boldsymbol{x}_{iht}$ captures child characteristics, including child's age, age square, birth order, marital status, detailed gender measures, and contemporaneous parental help of grandchild

[15]Tobit is not adopted since it requires estimates on transfer decision and conditional transfer amount to be in the same direction, which is likely to be violated by the predictions of exchange motive. The logarithmic transformation is employed because of the right-skewed distribution of positive transfers.

care and downward inter-vivo transfers. α_{ht} denotes the family-time effect. It captures unobserved characteristics, such as fixed family shared values, which may determine both parental investments and old-age support. α_{ht} also represents time-variant observed characteristics such as parental wealth, age or their education level which we thus do not have to control for explicitly. The time-variant feature further allows the characteristics to change over time. Note, that introducing this time-fixed effect implies that we only analyze variation between siblings within a household. ε_{iht} is an idiosyncratic error term. Identification assumption that mg_{ih} and $\boldsymbol{e}_{ih}$ may not be correlated with the error term ε_{iht} needs to be made. In the family-time fixed effect model, family-time effect α_{ht} is allowed to be correlated with the explanatory variables.

As a further analysis we study the subsample of college educated children. Here, we can study the monetary amounts of the parental marital gifts as well as for the investments into the college education. We estimate a random effect model instead of a preferred fixed effect model, since there are too few families with multiple college educated children who could effectively contribute to the estimation. We take the natural logarithm of the monetary amount paid for the aggregate marital gift (including the house) and for the children's college education. We additionally include controls at the parent level, including age and age square of the elder parent, parental wealth, if any parent is currently working, responding parental gender, parental marital status, the number of children, educational attainment of the higher educated parent, the number of ADL limitations of the more restricted parent, residence type urban or rural, pension type, and region dummies. We check the validity of the assumption by running the robust version of Hausman test as proposed by Mundlak (1978) and Wooldridge (2010).[16] Test results support the random family effect assumption in the college subsample in almost all regressions, except the regression on the incidence of material support, where fixed effect and random effect results are found to be nevertheless qualitatively the same.

5 Main Results

5.1 Old-age Support

Results of equation (1) are presented in Table 6. Compared to siblings who received no gift, children who received monetary gifts are spending 0.8 additional visit per month with their parents, on average. They have a 1.3pp higher probability of providing future help. Further, their annual material transfer toward parents is 11 percent lower, conditional on transferring.[17] Children who received a house transfer behave in a similar way with much larger absolute magnitudes of changes. For instance, the magnitude of material support to the parents from children who received a house transfer as about a quarter lower, which amounts to 469 yuan at the mean level.[18] In line with our hypotheses, marital transfers seem to incentivize more time or physical support, but discourage monetary transfers. Our results are qualitatively in line with other studies. Ciani and Deiana (2017) finds that Italian children who were helped with the house at the time of marriage are 2.6pp more

[16]The same test has also been done for specifications in the full sample, where we reject the RE assumption. We therefore use FE model, of which we are in favor.

[17]The percentage change is calculated based on a exponential transformation of the coefficient, i.e., $100 \cdot (\exp(-0.113) - 1) = -11\%$.

[18]The amount value is calculated based on the percentage change and the conditional mean of material transfer, i.e., $(\exp(-0.295) - 1) \times 1837 = -469$.

likely to provide informal care in later life to parents. Cunningham et al. (2013) finds that parents who invested more in children's marriage, reflected by a higher proportion of married children, are more likely to receive daily visits in Egypt.

Table 6: **Parental Transfers and Old-age Support**

	Visit frequency	Whether future help	Whether material support	Ln amount of material support if > 0
Marital transfers				
Money	0.763***	0.013*	−0.003	−0.113***
	(2.64)	(1.81)	(−0.28)	(−4.37)
House	2.721***	0.018	−0.006	−0.295***
	(5.24)	(1.51)	(−0.42)	(−6.79)
Educational investments (reference group: Illiterate)				
Primary school	0.441	0.016*	0.029**	0.110***
	(1.00)	(1.65)	(2.08)	(2.68)
Secondary school	−0.221	0.018*	0.059***	0.225***
	(−0.45)	(1.68)	(3.86)	(5.03)
High school	−1.272**	0.020	0.093***	0.396***
	(−2.21)	(1.63)	(5.44)	(7.85)
College and above	−4.281***	−0.021	0.155***	0.761***
	(−6.98)	(−1.50)	(7.94)	(13.20)
Family-time fixed effect	Yes	Yes	Yes	Yes
Child controls	Yes	Yes	Yes	Yes
Observations	24,981	24,981	24,981	18,574
R-squared*	0.074	0.039	0.031	0.069

t statistics in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note: Dependent variable old-age support includes visit frequency, whether providing future help, whether transferring material support, and the amount of material support if transfer. Control variables of the child consist of child's age, age square, birth order, marital status, detailed gender measures, and contemporaneous parental help of grandchild care and downward inter-vivo transfers. Standard errors are clustered at the household level. *Within R-squared is reported. Full set of results can be found in Table B1 in the Appendix.

Reversely, higher educational degrees of the children - used as our measure of parental investment into education - are associated lower frequency of visits, but seems to greatly stimulate financial support. For instance, received educational support until college decreases the number of monthly visits by 4.3, compared to illiterate siblings. However, it increases the probability of providing material support by 15.5pp and the conditional amount of material transfer by 114 percent. There is a clear and significant gradient of the level of educational attainment on the magnitude of visits, the probability to provide material transfers, and the amount of material transfers, going in opposite directions: the higher educated the child, the lower the number of visits and the higher the probability and the amount to provide financial transfers to the parents. The pattern is less clear for *whether future help*, where the coefficients are first significantly positive and then they turn negative for college educated children.

Regression results including the full set of control variables are relegated to Table B1 in

the Appendix. While variables on age, marital status and birth order are mostly insignificant, we see very significant effects for the indicator variables on the gender-composition. Conditional on child characteristics and the incidences of receiving different investments, sons pay more visits, are more likely to provide future help, and transfer larger amounts of material support conditional on transferring. Contemporaneous exchanges between generations also take place: children who received grandchild care from parents visit parents more often, are more likely to provide ADL help in the future, transfer higher amounts of material support if transferring.

To sum up, the results confirm the different returns of marital transfers and educational investments, where the former contributes to time support and the latter stimulates material transfers from the child.

5.2 Residential Choice

The child's decision of where to live has an impact on potential future possibilities to support the parents. We now analyze residential choice as the underlying mechanism of the associations between parental transfers and old-age supports again applying a family time-fixed effect model.

Receiving a house transfer is associated with a 17pp higher probability of living in the same neighborhood, and a 16pp lower probability of living a different town, compared to children who received no transfer, see Table 7. Receiving a monetary transfer as a marital gift is associated with living in the same neighborhood and living in a different town in the same directions as receiving a house transfer, yet the absolute magnitudes are much smaller. Hence, marital transfers in the past have increased the likelihood of children to stay close to their parents.

Children's educational attainment which we use as a proxy for parents investment into children's education shows a pronounced gradient with respect to the place of residence of children relative to their parents. Overall, higher educational attainments are significantly correlated with a higher probability of migrating to a different town, and a lower probability of staying in the same neighborhood. Children with a high school degree have a 10pp higher likelihood of migrating to a different town, and a 9pp lower likelihood of living in the same neighborhood, relative to children with no formal education. Children who attended college are 23pp less likely of living in the same neighborhood and 25pp more likely of living in a different town than their parents. Our results are in line with previous studies that report a negative link between education and living proximity to the parents (Lei et al., 2015; J. Zhao & Zhong, 2019).

Table B1 in the Appendix, showing the full results, reveals that gender differences are relevant. In particular, sons are more likely to live close to their parents compared to daughters. Further, despite the traditional norms, it is not necessarily the oldest son who resides closely with parents; both indicator variables for the eldest, and for the middle son are (almost) equally large and significant. Similar gender and gendered-birth order patterns have also been documented in literature (Lei et al., 2015; Ma & Wen, 2016).

In conclusion, the hypothesized underlying mechanism of living proximity is supported by findings on residential choice.

Table 7: **Parental Transfers and Residential Choice**

	Same neighborhood	Different town
Marital transfers		
Money	0.064***	-0.091***
	(5.50)	(-8.47)
House	0.165***	-0.158***
	(8.11)	(-9.37)
Educational investments (reference group: Illiterate)		
Primary school	0.002	0.033**
	(0.10)	(2.03)
Secondary school	-0.044**	0.071***
	(-2.18)	(3.85)
High school	-0.093***	0.101***
	(-4.08)	(4.81)
College and above	-0.229***	0.251***
	(-9.32)	(9.96)
Family-time fixed effect	Yes	Yes
Child controls	Yes	Yes
Observations	24,981	24,981
R-squared*	0.145	0.043

t statistics in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note: Dependent variable residential choice includes living in the same village/neighborhood and living in a different county/city. Control variables of the child consist of child's age, age square, birth order, marital status, detailed gender measures, and contemporaneous parental help of grandchild care and downward inter-vivo transfers. Standard errors are clustered at the household level. *Within R-squared is reported. Full set of results can be found in Table B1 in the Appendix.

5.3 Amount of Parental Transfers

In order to directly compare the actual amounts invested both into marital transfers and into the education of the child, we now focus on the subsample of children with college degree. College expenses are the only available schooling expenditure. Hence, information simultaneously on the amount of both marital transfer and educational investments is only available for this subsample.

The analysis of the amount of parental transfers allows us to compute the marginal return of transfers in old-age support and living proximity. Results shown in Panel A in Table 8 indicate that a 10 percent increase of marital transfers increases the frequency of monthly visits by 1.2 significantly. The effect of marital transfers on the amount of material support is negative at the intensive margin, but the coefficient is highly insignificant. Results show a positive correlation between the amount of marital transfers and support in time.

Consistent with our hypothesis, a 10 percent increase in college expenses is associated with a 0.2 percent increase in the amount of material support which is highly significant but quantitatively rather small in magnitude. The probability of material support is increased by college expenses as well, albeit insignificant. Moreover, both time supports tend to be negatively correlated with college expenses. A 10 percent increase in college expenses significantly reduces the number of visits per month by 1.5. Therefore, the amount of college investment is found to be negatively linked with time help, but positively correlated with material support.

The association with residence choice is also significantly in line with our hypotheses, as shown in Panel B in Table 8. Higher marital transfer decreases the probability of living in a different town, but increases the likelihood of residing in the same neighborhood. In contrast, a child who received more college expense is more likely to move to a different town.

Full results are reported in Table B2 in the appendix. Having more siblings is found to be associated with fewer visits, which suggests substitution between siblings. Suggestive evidence on the altruism of children is mixed. Children pay more visits to parents who are retired, reflecting a potential altruistic motive. However, children provide less future help to parents who are widowed and restricted by more ADL limitations. It is also noticeable that children transfer more material support to richer parents, which is in line with a selfish motive. In addition, male respondents tend to report fewer visits from children, and urban children live closer and pay more visits to parents.

5.4 Discussion of the Mechanism

We perform a mediation analysis by including living proximity variables in our main regressions in order to test the importance of residential choice as a pathway for the association of parental transfers and children's support. If living proximity was the sole pathway through which parental transfers affect the children's support, the corresponding coefficients should turn insignificant once we control for living proximity.

Results before and after the mediation are shown in Table B3 in the Appendix. Living proximity seems to explain away a large part of the associations, especially the positive association between marital gifts and time support. Marital gifts increase time support mainly, if not entirely, through encouraging closer residences of children. The negative impact of educational investment on the frequency of visits is also largely gone due to

Table 8: **The Amount of Parental Transfers**

Panel A: Old-age Support

	Visit frequency	Whether future help	Whether material support	Ln amt of material support if >0
ln(Amt marital gifts+1)	0.124**	0.001	0.003	-0.008
	(2.50)	(0.24)	(1.48)	(-1.03)
ln(Amt college expense+1)	-0.151***	-0.003	0.002	0.019***
	(-2.67)	(-1.35)	(1.08)	(2.74)
Family-time random effect	Yes	Yes	Yes	Yes
Child controls	Yes	Yes	Yes	Yes
Parental controls	Yes	Yes	Yes	Yes
Observations	2,438	2,438	2,438	1,876
R-squared*	0.169	0.0798	0.0752	0.108

Panel B: Residential Choice

	Same neighborhood	Different town
ln(Amt marital gifts+1)	0.003*	-0.013***
	(1.67)	(-4.93)
ln(Amt college expense+1)	-0.006***	0.011***
	(-3.46)	(3.95)
Family-time random effect	Yes	Yes
Child controls	Yes	Yes
Parental controls	Yes	Yes
Observations	2,438	2,438
R-squared*	0.087	0.138

z statistics in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note: Dependent variable old-age support includes visit frequency, whether providing future help, whether transferring material support, and the amount of material support if transfer. Dependent variable residential choice includes living in the same village/neighborhood and living in a different county/city. Child controls include child's age, age square, birth order, marital status, detailed gender measures, and contemporaneous parental help of grandchild care and downward inter-vivo transfers. Controlled parental characteristics include parental age, age square, gender, work status, marital status, the number of children, educational attainment, wealth, the number of ADL limitations, residence type urban or rural, pension type, and region dummies. Standard errors are clustered at the household level. *Overall R-squared is reported. Full set of results can be found in Table B2 in the Appendix.

the inclusion of residential choice. The living proximity measures powerfully determinate children's time support.

The indirect impact through residence choice is less strong in determining material transfers. Around a quarter of the negative impact of marital gifts on the amount of material transfers can be accounted for by adding the living proximity variables in our baseline regressions. However, the positive impact of educational investment on monetary support is only slightly affected by the inclusion of living proximity terms. These results suggest that the association between children's education and their material transfer behavior is not solely explained by the variables on the child's location.

It is likely that our measures of living proximity, which are classified based on neighborhood and town, are not detailed enough to capture the income effect of job-related migration. For instance, siblings who are classified as living the furthest in our analysis can still be heterogeneous in the sense that some may live in the neighbor town whereas some may live in a distant large city. Consequently, the income gain brought by migration would be different.

There are several explanations for the continuing significance of the positive association between educational investments and children's financial support to the parents. First of all, higher educational attainment results in higher life-time income also among siblings who live in the same proximity. In addition to the income effect from migration, the higher income regardless of living proximity likely discourages physical care provision by higher opportunity cost, and encourages monetary transfer due to lower marginal cost. Higher educated children may further choose to substitute time support with money.

Second, children who received more educational investments may transfer more money due to greater altruism towards parents. Parental investment can shape children's preference in younger age, and children can be manipulated to be more altruistic towards parents (G. Becker, Murphy, & Spenkuch, 2016). Therefore, more support would be provided by children who are manipulated to be more altruistic. Additionally including child current income as a mediator only explains away part of the remaining correlation, which supports both the direct income effect and the altruism effect discussed above.[19]

The remaining negative correlation between marital gifts and monetary transfer after mediation suggests some remaining endogeneity problems that we are not controlling for.We adopt a family time fixed effect model to account for time-variant unobserved fixed family shared values, implying that we do not explicitly control for child-level unobserved factors. We do include a set of child controls, such as birth order and gender, which controls for observed child characteristics. Unobserved child characteristics, such as endowed altruism and ability, are likely to be observable to parents and consequently impact parental investment decisions. Old-age support led by these unobserved child characteristics would then be mistaken for a result of parental transfers. If children who received marital gifts are those with low ability, even after controlling for their residence, they would be less capable of providing material support.

[19]Results are available upon request. When additionally controlling for last year's income of the child and the child's spouse, the higher educated still provide more monetary support albeit with smaller magnitudes. Apart from the altruism effect, another possible reason could be that the income we measure is a bad proxy for life-time income. Highly educated children would support parents financially due to their higher prospective life-time income, however, their early stage career during the survey implies a low contemporary income.

6 Heterogeneity

We investigate heterogeneous effects in two dimensions: First, given the traditional gender role of sons as supporters to older parents in China, it is of question whether the hypothesized pattern is stronger among sons than daughters. Second, we conjecture that evidence from rural families and rural-urban migration can better support our proposed mechanism, since a large fraction of rural residents migrate into cities which prevents them from taking care (in time) of their parents but allows remittances back home.

6.1 Gender Differences

In China, gender differences exist in almost every aspect of family transfers due to the patriarchal social system and a patrilineal tradition (Greenhalgh, 1985). Traditionally, parents invest more in male descendants because sons are considered as long-term members of the family and, in return, sons take the responsibility of helping the parents when they are old (Greenhalgh, 1985; Whyte, 2003).[20] An additional gender division is in the type of support: sons often provide financial support while daughters (in law) provide physical assistance (Whyte, 2003).

With the improvement of women's socioeconomic status, gender differences in old-age support are decreasing. Evidence from urban China shows that daughters' financial help has surpassed sons' contributions (Xie & Zhu, 2009a). Ho (2019) finds that daughters repay parental transfers with more help and composite support. Since migration opportunities are becoming more accessible and internal migration has grown in popularity, not only sons but also daughters migrate to cities for better earning potentials. Improved economic status of daughters also increases their opportunity cost of caregiving, which could further weaken the traditional gender division in financial and instrumental support to parents (Song, Li, & Feldman, 2012).

The descriptive statistics by gender shown in Table 9 reveal surprisingly comparable transfer behavior within the family, with notable exceptions. Notably, the incidence of receiving a marital gift is very similar among genders. However, sons receive almost twice the amount compared to daughters, on average. Most notably, it is almost exclusively sons who receive a house as a marital gift[21] Further, while daughters in general receive lower educational investment, the gender difference is not very large. It shows that daughters also receive considerable educational investment compared to sons.

Table 9 also suggests that daughters are certainly an important support for their parents at old-age, even after they are married and traditionally join the husbands family. Stil, we find that almost all daughters pay visits to parents, though at a lower frequency than sons. In addition, 48 percent of daughters are expected by parents to provide long-term care in the future, which certainly reflects parents' reliance on daughters' care provision as well. Surprisingly, the incidence of providing material support is even higher for daughters (78 percent) compared to sons (70 percent). This might be a compensation for their less frequent visits, given the complementarity between time support and monetary support.

[20]For instance, sons are preferred through prenatal selection (Ebenstein, 2010), they enjoy a higher school enrollment rate and more schooling related expenditures (Song, Appleton, & Knight, 2006; Gong, Van Soest, & Zhang, 2005), and they receive more financial support for college education and marriage from parents (Ho, 2019).

[21]Since very few daughters received a house, we merge the two dummy variables of marital gifts into one – *Whether received either money or house gift* – in the gender difference analysis.

Table 9: **Inter-generational transfers by gender**

	Sons	Daughters
Marital transfers		
Prop. money transfer	52.0%	51.4%
Amount (if > 0)	15,128	8,114
Prop. house transfer	18.8%	0.6%
Amount (if > 0)	92,608	161,600
Educational investment		
Illiterate	2.4%	10.9%
Primary School	36.6%	41.4%
Secondary School	36.2%	29.1%
High School	14.4%	11.3%
College and above	10.5%	7.4%
College financed by parents	*60.2%*	*60.3%*
Amount (if > 0)	*72,568*	*64,886*
Inter-generational support		
Visits	97.0%	96.6%
Visit frequency (if > 0)	10.1	5.3
Future help expected	58.0%	48.4%
Material transfers	70.0%	77.8%
Amount (if > 0)	2,228	1557

Note: Monetary values are measured in RMB yuan in 2015 value (1000 yuan equals approx. 150USD). Children are ever married and no younger than 20, such that the marital transfer decision has been made, and education is likely to be completed.

It is an empirical question whether the hypotheses that we proposed in Section 2 are relevant for both males and females, given both the traditional role of sons as care providers and the increasing female power. Although it is documented that daughters are likely to migrate to wealthier regions through marriage (Das Gupta & Shuzhuo, 1999), we hypothesize that marital transfers maintain the positive links with living proximity and time help among females. The reason is that higher educational attainment may inevitably enlarge physical distance between daughters and parents by facilitating both marriage-related migration through matching in the marriage market and job-related migration through higher wage differentials. Thus, parents who wish to keep daughters around for companionship are likely to sign such implicit family contract with daughters as they do with sons. In brief, the hypothesized differential impacts of educational and marital investments may apply both to sons and to daughters.

We conduct the same regressions by introducing interaction terms between parental transfers and child's gender.[22] The gender specific marginal returns are reported in Table B4 and visualized in Figures B1-B2 in the appendix. Results suggest that the patterns found in the baseline specification are present both for sons and daughters, albeit they are more pronounced among sons. We find statistically significant difference only in the

[22]Detailed gender measures, which consider sons' within gender group birth order, are substituted by variable *Son* for the simplicity of discussion.

return of marital gifts on the incidence of material transfer between sons and daughters, where daughters reciprocate more than their male siblings. Different from Ho (2019), who finds that daughters reciprocate marital transfer significantly more in terms of ADL help, we find the gender difference to be insignificant when the outcome variable changes to expected future help. Overall, our results suggest no clear gender difference in children's transfer behavior from marital gifts.

In contrast, the marginal return of educational investment is quite different between genders. In particular, we see a clearly negative gradient of education on the number of visits only for sons, while there is no gradient for daughters (see Figure B2). This implies that only sons act in line with our hypothesis while there is no negative association for daughters. Clear gender-differences also occur in the impact of investments into education on material transfers from the child. Sons are much more likely to transfer to the parents the higher educated they are, than daughters. Conditional on transferring, however, the increase in the monetary amount of transfers from higher educated sons is not as much as the returns of educational investments from daughters.

Our proposed pathway of residence choice offers an explanation to the observed gender difference, as shown in Table B4. Daughters' and sons' residential choices are alike in terms of marital gift. Received marital gifts increases the probability of living in the same neighborhood and decreases the chance of living in a different town among both daughters and sons by the same amounts.[23] However, educational investment only strongly discourages living in the same neighborhood among sons, which is arguably a crucial predictor of providing care (Giles & Mu, 2007). Consequently, the negative impact of educational investment on time support is only found among sons.

6.2 Living Proximity and Rural-urban Migration

We next focus on the sample of children with parents living in rural areas which allows us to disentangle the decision about physical distance and the decision to move from a rural to an urban residence. To obtain better job opportunities and a higher income, a rural child could move to an urban area for jobs in the non-agricultural sector. Urban places can either be close, such as a town center in the same county, or be further away, such as a city in another province. Therefore, a migrating child opting for an urban life can still decide whether to stay relatively close or whether to move to a place which is further away.[24]

Our hypotheses implies that marital gifts are positively correlated with a shorter physical distance between children and parents, in order to allow for more time support, irrespective of the type of residence (urban versus rural). Hence, we expect that among all children who migrated to an urban place, those who received a marital gift are more likely to stay closer (same county) than if they did not receive such a gift. Similarly, among all children who stayed in a rural area, there is a higher likelihood of staying in the same village instead of moving to another rural county if a marital gift was received. In contrast, educational investments are particularly important for the decision to move to an urban (vs. rural) residence for better job opportunities. Consequently, conditional on

[23]This is indicated by the statistically insignificant interaction terms between gender and marital gifts.

[24]A household is classified as a rural household if parents have current rural residence, which comes from the interviewer recorded residence type of the household during surveys. We define rural-urban migrants as children who come from rural households and currently live in urban regions outside the village.

Table 10: **Rural Children's Residence Type and Distance Choices**

	Same village	Same county	Diff. county	Obs
Rural-urban migrant	0	40.1%	59.9%	5,424
Non rural-urban migrant	50.1%	36.7%	13.2%	10,888
Children with rural parents	33.5%	37.9%	28.7%	16,312

Note: Children whose parents currently live in rural areas are defined as rural children. Rural-urban migrants (non rural-urban migrants) refer to rural children who live in urban (rural) regions.

children living in either a rural or an urban area, we should observe no or little correlation between educational investments and the location proximity decision.

Table 10 shows that many rural children choose to migrate to urban areas while still staying relatively close to their parents. This is especially true nowadays with the popular rural-urban migration and strong filial values in China. In this table, we consider the residence choice of children whose parents currently live in villages (16,312). Around 1/3 of rural children moved from rural to urban (5,424), and 40.1% of them live in the same county. Among those who stayed in rural places (10,888), only 13.2% live in a different county.

The results of our empirical analysis, relegated to Table B5 in the appendix, largely confirm our hypotheses.[25] Conditioning on the rural/urban residence choice, marital transfers still increase living proximity. Among siblings who stay in rural areas (the non rural-urban migrants group, shown in columns three and four in the table), children have a 5pp (11pp) higher chance of living in the same village, and a 7pp (6pp) lower probability of living in a different county, if they received money gifts (house gift). Among siblings who migrate to urban towns or cities (the rural-urban migrants group in the last column), a 8pp (18pp) lower probability of living in a different county is associated with receiving money gifts (a house gift). The results indicate that children who received marital transfers are encouraged to live closer, despite of the rural-urban migration decision. Further, the size of the negative impact of educational investment on living proximity becomes much smaller when conditioning on rural/urban residence type. Comparing siblings who currently live in villages with siblings who live in urban cities, educational investment plays a less important role in determining living proximity; the coefficients for the education dummies are small and in most cases not significantly different from zero. This suggests that children are driven to further locations by education largely through the rural-urban migration channel.

7 Conclusion

This study analyzes whether and how parental early life transfers affects children's support of their parents at older ages. We empirically examine the links between educational investment and marital transfers from the parents, and residential choices and old-age support of their offspring. We use data from Chinese panel data, CHARLS, and employ family-time fixed effect to account for endogeneity issues brought by unobservable family

[25]Note that the first two columns show results for the sample of all children with rural parents which is largely in line with our results found for the full sample, cf. Table 7.

factors.

Our results suggest that strong intergeneartional reciprocity exists and that it seems to benefit both parents and children. However, parents' need for care potentially discourages children's education and career enhancements. Better educated children increase the spatial dispersion of families by encouraging migration, which might leave behind parents with no one to help once they become in need of long-term care.

The results highlights the dilemma that well-educated children face when they decide on their location decision and, in this respect, provide additional arguments for public social insurances. Extending social insurances at old-age would not only improve the living quality of old-age people. It would also encourage children from less developed regions to migrate for better job opportunities, since social insurances reduce the parents' need for informal care from offspring and free children from heavy care responsibility. Thus, through facilitated migration, an extending public social security and long-term care systems might generate positive effects on economic growth and mitigate inequality in society.

8 Declarations

8.1 Funding

None

8.2 Conflicts of interest/Competing interests

None

8.3 Availability of data and material

The China Health and Retirement Longitudinal Study is publicly available and can be downloaded at `http://charls.pku.edu.cn/index.html`

8.4 Code availability

Code to reproduce the results is available upon request from the authors.

8.5 Authors' contributions

All authors contributed to the manuscript. The econometric analysis was performed by Ziwei Rao; progress was frequently discussed with Rob Alessie and Max Groneck. The draft of the manuscript was written by Ziwei Rao and Max Groneck and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

A Sample Selection

The original unbalanced sample consist of 13,105 families with 38,897 children and 66,192 child-year observations. Children across waves are first matched through householdID and child ID. Children with inconsistent gender, and large differences in age and educational attainment after the matching are removed. We restrict the sample to living biological children because adopted or fostered children could be essentially different. Since biological information is only available in 2013 wave, new children entered in 2015 wave are excluded. We consider children who age 20 or older such that their education is likely to be completed. Marriage gifts questions are asked for the child's first marriage, we thus exclude children who were never married in both waves. We also discard children who coreside with their parents as in these family arrangements intergenerational transfers (time spend together, financial support) is hard to disentangle. Apart from these selections, missing values of variables cause a further reduction in regression sample sizes. Finally, families with one child in the sample, either actual single-child families or families left with only one child due to previous selections, are excluded in fixed-effects analysis as there is no within-family variation.

Table A1: Sample Selection

Selection	Family	Child	OBS
original	13,105	38,897	66,192
wrongly matched	-175	-2,453	-4,906
non living biological	-2,691	-9,238	-10,121
age under 20	-167	-772	-1,843
never married	-997	-3,169	-5,451
coresident	-626	-2,734	-8,132
missing values	-449	-1,985	-5,356
single-child families	-2,843	-2,957	-5,402
selected sample	5,157	15,589	24,981

B Additional Results

Table B1: **Old-age Support and Residential Choice: Dummy Investment FE**

	Old-age support				Residence choice	
VARIABLES	Visits	Future help	Transfer	Ln amt transfer	Same neighborhood	Diff town
Parental investments						
Ref. group: No gift						
Money	0.763***	0.013*	-0.003	-0.113***	0.064***	-0.091***
	(2.64)	(1.81)	(-0.28)	(-4.37)	(5.50)	(-8.47)
House	2.721***	0.018	-0.006	-0.295***	0.165***	-0.158***
	(5.24)	(1.51)	(-0.42)	(-6.79)	(8.11)	(-9.37)
Ref. group: Illiterate						
Primary school	0.441	0.016*	0.029**	0.110***	0.002	0.033**
	(1.00)	(1.65)	(2.08)	(2.68)	(0.10)	(2.03)
Secondary school	-0.221	0.018*	0.059***	0.225***	-0.044**	0.071***
	(-0.45)	(1.68)	(3.86)	(5.03)	(-2.18)	(3.85)
High school	-1.272**	0.020	0.093***	0.396***	-0.093***	0.101***
	(-2.21)	(1.63)	(5.44)	(7.85)	(-4.08)	(4.81)
College and above	-4.281***	-0.021	0.155***	0.761***	-0.229***	0.251***
	(-6.98)	(-1.50)	(7.94)	(13.20)	(-9.32)	(9.96)
Child characteristics						
Age	0.070	-0.001	0.003	0.005	0.005	-0.015***
	(0.64)	(-0.53)	(0.78)	(0.42)	(1.17)	(-3.24)
Agesqr	-0.000	-0.000	-0.000	-0.000	-0.000	0.000**
	(-0.38)	(-0.29)	(-1.33)	(-1.48)	(-0.46)	(2.21)
Marital status: married	0.406	0.019	0.070***	0.035	0.005	-0.079***
	(0.91)	(1.56)	(4.24)	(0.78)	(0.30)	(-4.59)
Ref. group: Daughter						
Only son	1.674***	0.066***	-0.109***	0.284***	0.097***	0.101***
	(4.41)	(6.28)	(-9.21)	(6.60)	(6.54)	(6.75)
Eldest son	5.585***	0.073***	-0.108***	0.078***	0.325***	0.032***
	(15.54)	(9.14)	(-10.59)	(2.64)	(24.28)	(2.85)
Middle son	5.459***	0.075***	-0.087***	0.035	0.330***	0.020
	(13.35)	(8.20)	(-7.77)	(1.06)	(21.70)	(1.58)
Youngest son	4.433***	0.077***	-0.099***	0.102***	0.257***	0.060***
	(12.26)	(9.23)	(-9.42)	(3.32)	(18.27)	(4.91)
Ref. group: Birth order 1						
Birthorder2	0.362	-0.007	-0.001	-0.003	0.003	-0.011
	(1.44)	(-1.29)	(-0.12)	(-0.15)	(0.34)	(-1.15)
Birthorder3	0.139	-0.013	-0.016	-0.021	0.002	-0.018
	(0.37)	(-1.51)	(-1.37)	(-0.60)	(0.14)	(-1.26)
Birthorder4	-0.157	-0.018	-0.014	0.022	-0.016	-0.012
	(-0.30)	(-1.44)	(-0.91)	(0.45)	(-0.79)	(-0.60)
Birthorder5	-0.067	-0.030*	-0.031	0.006	-0.013	0.002
	(-0.09)	(-1.79)	(-1.46)	(0.09)	(-0.49)	(0.06)
Birthorder6	-0.764	-0.041*	-0.044	-0.024	-0.033	0.002
	(-0.82)	(-1.94)	(-1.54)	(-0.29)	(-0.92)	(0.07)
Birthorder7	-0.851	-0.020	-0.080*	0.070	-0.024	-0.006
	(-0.65)	(-0.72)	(-1.89)	(0.61)	(-0.44)	(-0.12)
Birthorder8	0.155	0.007	-0.143**	-0.134	-0.081	-0.092
	(0.07)	(0.16)	(-2.27)	(-1.00)	(-1.08)	(-1.44)
Birthorder9	1.301	-0.015	-0.263**	-0.280	0.116	-0.027
	(0.47)	(-0.24)	(-2.05)	(-1.00)	(0.84)	(-0.21)
Birthorder10	-7.271***	0.007	-0.154	-1.147***	-0.238	-0.114
	(-3.46)	(0.04)	(-0.71)	(-4.12)	(-1.32)	(-0.72)
Contemporaneous parental transfers						
Any grandchild care	1.969***	0.063***	0.006	0.210***	0.055***	0.019
	(5.73)	(7.50)	(0.59)	(6.08)	(4.33)	(1.56)
Ln amt inter-vivo transfers	0.037	-0.000	-0.005**	-0.017***	0.001	-0.006***

Continued on next page

Table B1 – *Continued from previous page*

VARIABLES	Old-age support				Residence choice	
	Visits	Future help	Transfer	Ln amt transfer	Same neighborhood	Diff town
	(0.82)	(-0.18)	(-2.55)	(-3.53)	(0.79)	(-3.31)
Observations	24,981	24,981	24,981	18,574	24,981	24,981
R-squared	0.074	0.039	0.031	0.069	0.145	0.043

Robust t-statistics in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Note: Family-time fixed effect models are applied in all regressions. Child characteristics are controlled. Standard errors are clustered at the household level. *Within R-square is reported.

Table B2: **Old-age Support and Residential Choice: Amount Investment RE**

	Old-age support				Residence choice	
VARIABLES	Visits	Future help	Transfer	Ln amt transfer	Same neighborhood	Diff town
Parental investments						
ln(Amt marital gifts+1)	0.124**	0.001	0.003	-0.008	0.003*	-0.013***
	(2.50)	(0.24)	(1.48)	(-1.03)	(1.67)	(-4.93)
ln(Amt college expense+1)	-0.151***	-0.003	0.002	0.019***	-0.006***	0.011***
	(-2.67)	(-1.35)	(1.08)	(2.74)	(-3.46)	(3.95)
Child characteristics						
Age	0.145	0.002	0.041***	0.070	-0.004	-0.022
	(0.46)	(0.17)	(2.98)	(1.51)	(-0.31)	(-1.38)
Agesqr	-0.001	-0.000	-0.000**	-0.001	0.000	0.000
	(-0.24)	(-0.02)	(-2.36)	(-1.19)	(0.69)	(0.84)
Marital status: married	-0.388	0.238***	0.102	0.419***	0.037	0.025
	(-0.24)	(3.28)	(1.64)	(2.66)	(0.90)	(0.39)
Ref. group: Daughter						
Only son	-1.570**	0.020	-0.122***	0.112	-0.004	0.140***
	(-2.50)	(0.72)	(-4.54)	(1.25)	(-0.22)	(4.55)
Eldest son	-1.087	0.011	-0.099***	0.136	0.013	0.111***
	(-1.47)	(0.31)	(-3.37)	(1.31)	(0.55)	(2.90)
Middle son	0.755	0.048	-0.140***	0.008	0.065	0.005
	(0.61)	(0.86)	(-2.73)	(0.04)	(1.41)	(0.08)
Youngest son	-1.633**	0.087**	-0.004	0.113	-0.015	0.099**
	(-2.10)	(2.41)	(-0.12)	(1.14)	(-0.60)	(2.43)
Ref. group: Birth order 1						
Birthorder2	-0.049	0.006	-0.024	0.052	0.025	-0.003
	(-0.08)	(0.24)	(-0.97)	(0.66)	(1.29)	(-0.10)
Birthorder3	0.396	-0.021	0.003	0.046	0.033	0.024
	(0.46)	(-0.49)	(0.09)	(0.39)	(1.27)	(0.54)
Birthorder4	3.005**	-0.035	-0.042	0.041	0.071*	-0.031
	(2.18)	(-0.61)	(-0.83)	(0.24)	(1.73)	(-0.47)
Birthorder5	-1.362	0.017	-0.091	0.351	0.044	0.038
	(-0.85)	(0.20)	(-1.13)	(1.23)	(0.70)	(0.40)
Birthorder6	-1.976	-0.347***	-0.120	-0.147	0.108	0.080
	(-1.12)	(-3.22)	(-0.75)	(-0.21)	(0.89)	(0.53)
Birthorder7	-1.253	-0.233*	0.002	-0.028	0.007	0.475***
	(-0.52)	(-1.93)	(0.01)	(-0.05)	(0.10)	(3.21)
Birthorder8	4.001	-0.165	0.158	0.025	0.174**	-0.152
	(1.37)	(-1.16)	(1.25)	(0.07)	(1.98)	(-1.00)
Birthorder9	-3.126	-0.125	-0.918***		-0.086	0.216
	(-1.01)	(-0.38)	(-7.92)		(-0.87)	(0.53)
Birthorder10	-4.028	0.371***	-0.924***		-0.081	0.610***
	(-1.56)	(2.64)	(-7.22)		(-0.93)	(4.35)
Contemporaneous parental transfers						
Any grandchild care	3.344***	0.042	-0.031	0.046	0.039**	-0.080***
	(6.94)	(1.62)	(-1.34)	(0.61)	(2.51)	(-3.80)
ln amt inter-vivo transfer	0.025	0.004	0.009***	-0.018**	0.001	-0.002
	(0.48)	(1.37)	(3.20)	(-2.15)	(0.38)	(-0.77)
Parental characteristics						
Parental gender: male	-1.310***	-0.012	-0.033*	0.029	0.008	0.015
	(-3.56)	(-0.49)	(-1.74)	(0.44)	(0.66)	(0.73)
Parental working	-1.163**	0.017	0.002	-0.088	-0.034*	0.004
	(-2.12)	(0.54)	(0.08)	(-1.14)	(-1.94)	(0.15)
Parental age	0.057	0.000	0.030*	0.075	0.020*	0.001
	(0.15)	(0.00)	(1.66)	(1.24)	(1.79)	(0.06)
Parental agesqr	-0.000	-0.000	-0.000*	-0.001	-0.000*	-0.000
	(-0.15)	(-0.22)	(-1.79)	(-1.43)	(-1.81)	(-0.19)
Parental married	-0.491	0.124***	0.047	-0.003	-0.048*	0.032
	(-0.65)	(3.11)	(1.34)	(-0.02)	(-1.80)	(0.94)
Parental wealth (IHS)	-0.010	0.000	0.003	0.022**	-0.001	-0.000
	(-0.18)	(0.05)	(1.21)	(2.13)	(-0.77)	(-0.13)
Parental nr. of children	-0.657**	0.009	0.019	-0.079*	-0.018*	0.005

Continued on next page

Table B2 – *Continued from previous page*

VARIABLES	Old-age support				Residence choice	
	Visits	Future help	Transfer	Ln amt transfer	Same neighborhood	Diff town
	(-2.21)	(0.59)	(1.44)	(-1.85)	(-1.96)	(0.30)
Parental nr. ADL	-0.029	-0.029***	0.005	-0.013	-0.004	-0.001
	(-0.34)	(-5.09)	(1.21)	(-0.82)	(-1.19)	(-0.25)
Parental urban residence	3.160***	-0.021	-0.051*	0.058	0.072***	-0.109***
	(5.60)	(-0.68)	(-1.90)	(0.64)	(3.96)	(-3.47)
Ref. group: Parental educ: Illiterate						
Primary school	0.795	-0.023	-0.031	-0.055	0.036	0.118**
	(0.82)	(-0.46)	(-0.74)	(-0.40)	(1.11)	(2.21)
Secondary school	0.292	-0.038	-0.028	-0.072	0.037	0.054
	(0.31)	(-0.73)	(-0.65)	(-0.52)	(1.15)	(0.98)
High school and above	0.418	0.018	-0.041	0.038	0.027	0.081
	(0.42)	(0.33)	(-0.88)	(0.25)	(0.82)	(1.41)
Ref. group: Parental pension: None						
Pension type: Government	0.604	-0.008	-0.012	-0.032	0.008	-0.039
	(0.94)	(-0.25)	(-0.44)	(-0.35)	(0.36)	(-1.17)
Pension type: Firm	0.417	0.010	-0.027	0.057	0.033*	-0.003
	(0.69)	(0.37)	(-1.02)	(0.65)	(1.82)	(-0.10)
Pension type: Private	0.143	-0.014	0.042	0.064	-0.015	0.019
	(0.22)	(-0.42)	(1.58)	(0.69)	(-0.75)	(0.55)
Pension type: Public	-0.612	0.076**	0.076**	-0.108	0.052**	-0.057
	(-0.80)	(2.35)	(2.47)	(-1.11)	(2.26)	(-1.60)
Province and wave dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,438	2,438	2,438	1,876	2,438	2,438
R-square	0.169	0.0798	0.0752	0.108	0.0874	0.138

Robust z-statistics in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note: Family-time random effect models are applied in all regressions. Both child characteristics and parental controls are included. Standard errors are clustered at the household level. *Overall R-square is reported.

Table B3: **Parental Transfers and Old-age Support: the Pathway through Living Proximity**

	Visit		Future help		Transfer		Ln amt transfer	
Living proximity								
(ref. Same nbh)								
Same town		-11.411***		-0.044***		0.059***		0.139***
		(-44.13)		(-7.24)		(7.53)		(6.33)
Diff town		-14.578***		-0.069***		0.058***		0.412***
		(-54.33)		(-9.34)		(6.46)		(14.97)
Marital gifts								
Money	0.763***	-0.253	0.013*	0.007	-0.003	0.001	-0.113***	-0.082***
	(2.64)	(-1.11)	(1.81)	(1.08)	(-0.28)	(0.13)	(-4.37)	(-3.27)
House	2.721***	0.333	0.018	0.007	-0.006	0.003	-0.295***	-0.232***
	(5.24)	(0.81)	(1.51)	(0.57)	(-0.42)	(0.22)	(-6.79)	(-5.42)
Educ investment								
Primary school	0.441	0.523	0.016*	0.017*	0.029**	0.029**	0.110***	0.101**
	(1.00)	(1.44)	(1.65)	(1.75)	(2.08)	(2.09)	(2.68)	(2.51)
Secondary school	-0.221	0.507	0.018*	0.022**	0.059***	0.057***	0.225***	0.201***
	(-0.45)	(1.26)	(1.68)	(2.04)	(3.86)	(3.70)	(5.03)	(4.62)
High school	-1.272**	0.111	0.020	0.027**	0.093***	0.087***	0.396***	0.355***
	(-2.21)	(0.24)	(1.63)	(2.19)	(5.44)	(5.11)	(7.85)	(7.17)
College and above	-4.281***	-0.877*	-0.021	-0.005	0.155***	0.142***	0.761***	0.661***
	(-6.98)	(-1.75)	(-1.50)	(-0.36)	(7.94)	(7.21)	(13.20)	(11.77)
Family-time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Child controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	24,981	24,981	24,981	24,981	24,981	24,981	18,574	18,574
R-squared	0.074	0.304	0.039	0.048	0.031	0.035	0.069	0.097

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

Note: In the mediation regressions, the closest residence choice *Same neighborhood* is omitted as a reference group. The association between parental transfers and children's time support largely disappears and the link between parental transfers and old-age material support become weaker, when living proximity is controlled. Control variables of the child consist of child's gender, age, age square, birth order, marital status, and contemporaneous parental help of grandchild care and downward inter-vivo transfers. Standard errors are clustered at the household level. *Within R-squared is reported.

Figure B1: By gender: Marginal returns of marital gifts

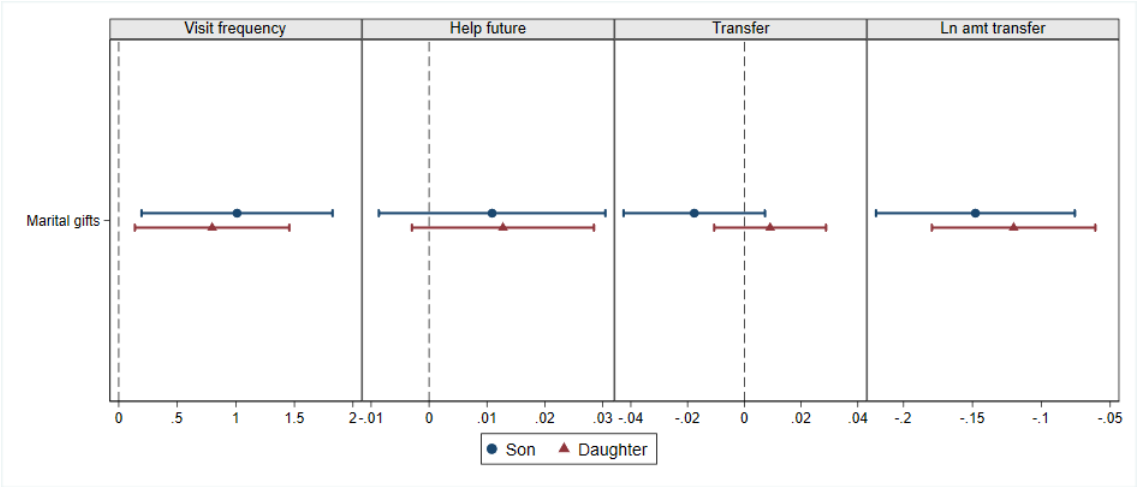

Figure B2: By gender: Marginal returns of educational investments

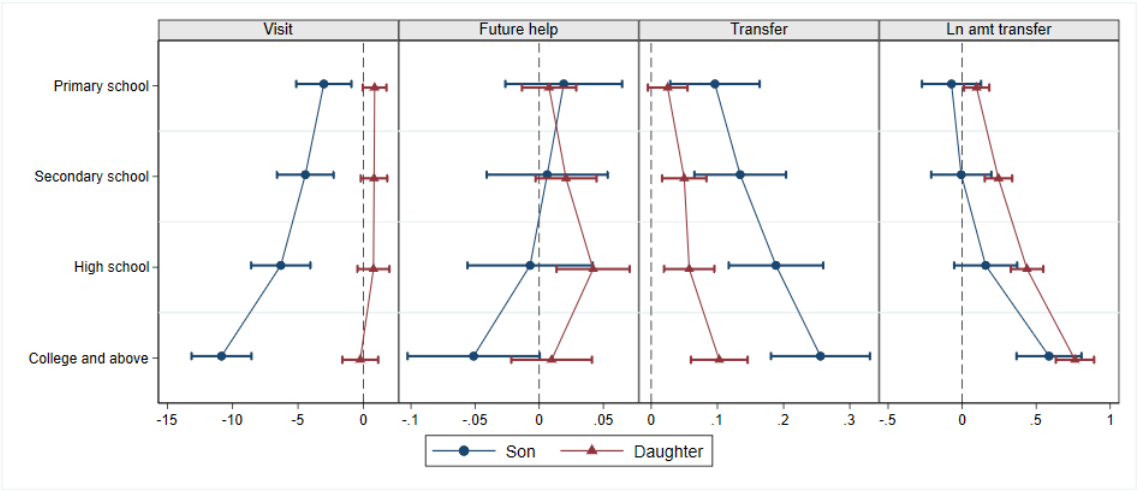

Table B4: **Gender Differences: Parental Transfers, Old-age Support and Residential Choice**

VARIABLES	Old-age support								Residence choice			
	Visits		Future help		Transfer		Ln amt transfer		Same neighborhood		Diff town	
	Dau	Son	Dau	Son	Dau	Son	Dau	Son	Dau	Son	Dau	Son
Any marital gift	0.798**	1.010**	0.013	0.011	0.009	-0.018	-0.120***	-0.148***	0.066***	0.077***	-0.101***	-0.097***
	(2.37)	(2.43)	(1.59)	(1.09)	(0.90)	(-1.39)	(-3.97)	(-4.01)	(4.79)	(4.82)	(-7.92)	(-6.53)
Primary school	0.864*	-3.022***	0.008	0.019	0.025	0.096***	0.097**	-0.072	0.017	-0.127***	0.010	0.102***
	(1.87)	(-2.80)	(0.71)	(0.82)	(1.63)	(2.79)	(2.23)	(-0.71)	(0.83)	(-3.41)	(0.55)	(3.68)
Secondary school	0.823	-4.435***	0.021*	0.006	0.050***	0.134***	0.245***	-0.006	0.008	-0.218***	0.046**	0.135***
	(1.59)	(-4.02)	(1.73)	(0.26)	(2.92)	(3.81)	(5.19)	(-0.06)	(0.37)	(-5.65)	(2.31)	(4.56)
High school	0.774	-6.313***	0.042***	-0.007	0.057***	0.189***	0.438***	0.159	0.006	-0.306***	0.108***	0.139***
	(1.25)	(-5.46)	(2.89)	(-0.29)	(2.96)	(5.18)	(7.84)	(1.46)	(0.25)	(-7.56)	(4.47)	(4.40)
College and above	-0.234	-10.851***	0.010	-0.051*	0.103***	0.256***	0.762***	0.587***	-0.026	-0.523***	0.241***	0.316***
	(-0.33)	(-9.28)	(0.60)	(-1.95)	(4.71)	(6.70)	(11.55)	(5.24)	(-0.93)	(-12.82)	(8.15)	(8.82)
Observations	24,981	24,981	24,981	24,981	24,981	24,981	18,574	18,574	24,981	24,981	24,981	24,981

z statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Note: Family-time fixed effect models are applied in all regressions. Gender differences are captured by interaction terms between gender and parental transfers. Control variables of the child consist of child's gender, age, age square, birth order, marital status, and contemporaneous parental help of grandchild care and downward inter-vivo transfers. Standard errors are clustered at the household level. *Within R-squared is reported.

Table B5: **Parental Transfers and Living Proximity: Rural-urban Migration**

	Children with rural parents		Non rural-urban migrants		Rural-urban migrants
VARIABLES	Same village	Diff county	Same village	Diff county	Diff county
Marital transfers					
Money	0.060***	-0.102***	0.053***	-0.069***	-0.078***
	(4.15)	(-7.84)	(2.84)	(-5.12)	(-3.48)
House	0.167***	-0.171***	0.108***	-0.057***	-0.179***
	(6.71)	(-8.44)	(3.60)	(-3.21)	(-4.12)
Educ. investments (ref. group: Illiterate)					
Primary school	-0.008	0.031*	-0.008	0.010	0.023
	(-0.37)	(1.74)	(-0.37)	(0.63)	(0.49)
Secondary school	-0.069***	0.067***	-0.045*	0.022	-0.007
	(-3.04)	(3.22)	(-1.84)	(1.17)	(-0.14)
High school	-0.134***	0.105***	-0.032	0.025	0.006
	(-4.88)	(4.16)	(-0.99)	(1.12)	(0.11)
College and above	-0.287***	0.278***	-0.063	0.084*	0.100*
	(-9.70)	(8.86)	(-0.99)	(1.70)	(1.66)
Family-time FE	Yes	Yes	Yes	Yes	Yes
Child controls	Yes	Yes	Yes	Yes	Yes
Observations	16,312	16,312	10,888	10,888	5,424
R-squared*	0.179	0.052	0.332	0.019	0.041

t statistics in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note: Dependent variable living proximity includes whether live in the same village and whether live in a different county. Control variables of the child consist of child's age, age square, birth order, marital status, detailed gender measures, and contemporaneous parental help of grandchild care and downward inter-vivo transfers. Standard errors are clustered at the household level. *Within R-squared is reported.

References

Alessie, R., Angelini, V., & Pasini, G. (2014). Is it true love? Altruism versus exchange in time and money transfers. *De Economist*, *162*(2), 193–213.

Anderberg, D., & Balestrino, A. (2003). Self-enforcing Intergenerational Transfers and the Provision of Education. *Economica*, *70*(277), 55–71.

Antman, F. M. (2012). Elderly care and intrafamily resource allocation when children migrate. *Journal of Human Resources*, *47*(2), 331–363.

Barclay, K. J. (2015). A within-family analysis of birth order and intelligence using population conscription data on Swedish men. *Intelligence*, *49*, 134–143.

Becker, G., Murphy, K., & Spenkuch, J. (2016). The manipulation of children's preferences, old-age support, and investment in children's human capital. *Journal of Labor Economics*, *34*(S2), S3–S30.

Becker, G., Murphy, K., & Tamura, R. (1990). Human capital, fertility, and economic growth. *Journal of political economy*, *98*(5, Part 2), S12–S37.

Becker, G. S. (1974). A theory of social interactions. *Journal of Political Economy*, *82*(6), 1063–1093.

Bernheim, D., Shleifer, A., & Summers, L. (1985). The strategic bequest motive. *Journal of Political Economy*, *93*(6), 1045-1076.

Black, S. E., Devereux, P. J., & Salvanes, K. G. (2005). The more the merrier? The effect of family size and birth order on children's education. *The Quarterly Journal of Economics*, *120*(2), 669–700.

Bray, M. (1996). *Counting the full cost: arental and community financing of education in East Asia*. Washington, DC: The World Bank.

Brown, M. (2006). Informal care and the division of end-of-life transfers. *Journal of Human Resources*, *41*(1), 191–219.

Brown, P. H. (2009). Dowry and intrahousehold bargaining evidence from China. *Journal of Human Resources*, *44*(1), 25–46.

Brown, P. H., & Park, A. (2002). Education and poverty in rural China. *Economics of Education Review*, *21*(6), 523–541.

Chen, X., & Silverstein, M. (2000). Intergenerational social support and the psychological well-being of older parents in China. *Research on aging*, *22*(1), 43–65.

Chen, X., Smith, J., Strauss, J., Wang, Y., & Zhao, Y. (2017). China Health and Retirement Longitudinal Study (CHARLS). *Encyclopedia of Geropsychology*, 463–469.

Chi, W., & Qian, X. (2016). Human capital investment in children: an empirical study of household child education expenditure in China, 2007 and 2011. *China Economic Review*, *37*, 52–65.

Chu, L.-W., & Chi, I. (2008). Nursing homes in china. *Journal of the American Medical Directors Association*, *9*(4), 237–243.

Ciani, E., & Deiana, C. (2017). No free lunch, buddy: past housing transfers and informal care later in life. *Review of Economics of the Household*, *16*(4), 1–31.

Cigno, A. (1993). Intergenerational transfers without altruism: family, market and state. *European Journal of Political Economy*, *9*(4), 505–518.

Cigno, A. (2006). The political economy of intergenerational cooperation. In S.-C. Kolm & J. M. Ythier (Eds.), (Vol. 2, pp. 1505–1558). Elsevier.

Cong, Z., & Silverstein, M. (2008). 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. (2011). Caring for grandchildren and intergenerational support in rural China: a gendered extended family perspective. *Ageing and Society*, 425.

Cong, Z., & Silverstein, M. (2014). Parents' preferred care-givers in rural china: gender, migration and intergenerational exchanges. *Ageing & Society*, *34*(5), 727–752.

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

Cox, D., Eser, Z., & Jimenez, E. (1998). Motives for private transfers over the life cycle: An analytical framework and evidence for peru. *Journal of Development Economics*, *55*(1), 57–80.

Cox, D., & Jimenez, E. (1992). Social security and private transfers in developing countries: The case of Peru. *The World Bank Economic Review*, *6*(1), 155–169.

Cremer, H., Kessler, D., & Pestieau, P. (1992). Intergenerational transfers within the family. *European Economic Review*, *36*(1), 1–16.

Cunningham, S. A., Yount, K. M., Engelman, M., & Agree, E. (2013). Returns on lifetime investments in children in Egypt. *Demography*, *50*(2), 699–724.

Das Gupta, M., & Shuzhuo, L. (1999). Gender bias in china, south korea and india 1920–1990: Effects of war, famine and fertility decline. *Development and Change*, *30*(3), 619–652.

Ebenstein, A. (2010). The "missing girls" of china and the unintended consequences of the one child policy. *Journal of Human Resources*, *45*(1), 87–115.

Ehrlich, I., & Lui, F. (1991). Intergenerational trade, longevity, and economic growth. *Journal of Political Economy*, *99*(5), 1029–1059.

Fang, H., Eggleston, K., Rizzo, J., Rozelle, S., & Zeckhauser, R. (2012). *The returns to education in China: evidence from the 1986 compulsory education law* (NBER Working Paper No. 18189). National Bureau of Economic Research. Retrieved from `https://www.nber.org/papers/w18189`

Fang, H., & Feng, J. (2018). *The chinese pension system* (Tech. Rep.). National Bureau of Economic Research.

Giles, J., & Mu, R. (2007). Elderly parent health and the migration decisions of adult children: Evidence from rural china. *Demography*, *44*(2), 265–288.

Gong, X., Van Soest, A., & Zhang, P. (2005). The effects of the gender of children on expenditure patterns in rural china: A semiparametric analysis. *Journal of Applied Econometrics*, *20*(4), 509–527.

Greenhalgh, S. (1985). Is inequality demographically induced? the family cycle and the distribution of income in taiwan. *American Anthropologist*, *87*(3), 571–594.

Groneck, M. (2016). Bequests and informal long-term care: evidence from HRS exit interviews. *Journal of Human Resources*, *52*(2), 531–572.

Guo, M., Aranda, M. P., & Silverstein, M. (2009). The impact of out-migration on the inter-generational support and psychological wellbeing of older adults in rural china. *Ageing and Society*, *29*(7), 1085.

Ho, C. (2019). Child's gender, parental monetary investments and care of elderly parents in China. *Review of Economics of the Household*, *17*(3), 741–774.

Hoddinott, J. (1994). A model of migration and remittances applied to Western Kenya. *Oxford economic papers*, 459–476.

Horioka, C. Y., Gahramanov, E., Hayat, A., & Tang, X. (2018). Why do children take care of their elderly Parents? Are the Japanese any

different? *International Economic Review*, *59*(1), 113-136. Retrieved from https://onlinelibrary.wiley.com/doi/abs/10.1111/iere.12264 doi: https://doi.org/10.1111/iere.12264

Hu, N., & Yang, Y. (2012). The real old-age dependency ratio and the inadequacy of public pension finance in china. *Journal of Population Ageing*, *5*(3), 193–209.

Keating, N., Otfinowski, P., Wenger, C., Fast, J., & Derksen, L. (2003). Understanding the caring capacity of informal networks of frail seniors: a case for care networks. *Ageing & Society*, *23*(1), 115–127.

Konrad, K., Künemund, H., Lommerud, K. E., & Robledo, J. (2002). Geography of the family. *American Economic Review*, *92*(4), 981–998.

Laferrère, A., & Wolff, F.-C. (2006). Microeconomic models of family transfers. *Handbook of the economics of giving, altruism and reciprocity*, *2*, 889–969.

Lee, Y.-J., & 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.

Lei, X., Strauss, J., Tian, M., & Zhao, Y. (2015). Living arrangements of the elderly in china: evidence from the charls national baseline. *China economic journal*, *8*(3), 191–214.

Li, S., Feldman, M., & Jin, X. (2004). Children, marriage form, and family support for the elderly in contemporary rural China: the case of Songzi. *Research on Aging*, *26*(3), 352–384.

Lucas, R., & Stark, O. (1985). Motivations to remit: Evidence from Botswana. *Journal of Political Economy*, *93*(5), 901–918.

Ma, S., & Wen, F. (2016). Who coresides with parents? an analysis based on sibling comparative advantage. *Demography*, *53*(3), 623–647.

Maruyama, S., & Johar, M. (2017). Do siblings free-ride in "being there" for parents? *Quantitative Economics*, *8*(1), 277–316.

McGarry, K., & Schoeni, R. (1995). Transfer behavior in the health and retirement study: Measurement and the redistribution of resources within the family. *Journal of Human resources*, S184–S226.

Mukherjee, A. (2020). *Intergenerational altruism and retirement transfers: Evidence from the social security notch.*

Mundlak, Y. (1978). On the pooling of time series and cross section data. *Econometrica*, *46*(1), 69-85.

Murphy, R., Tao, R., & Lu, X. (2011). Son preference in rural china: Patrilineal families and socioeconomic change. *Population and Development Review*, *37*(4), 665-690. Retrieved from https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1728-4457.2011.00452.x doi: https://doi.org/10.1111/j.1728-4457.2011.00452.x

Norton, E. C., Nicholas, L. H., & Huang, S. S.-H. (2013). Informal care and inter-vivos transfers: results from the National Longitudinal Survey of Mature Women. *The BE Journal of Economic Analysis & Policy*, *14*(2), 377–400.

Nugent, J. B. (1985). The old-age security motive for fertility. *Population and Development Review*, *11*(1), 75-97.

Oliveira, J. (2016). The value of children: Inter-generational support, fertility, and human capital. *Journal of Development Economics*, *120*, 1–16.

Pestieau, P., & Sato, M. (2008). Long-Term Care: the State, the Market and the Family. *Economica*, *75*(299), 435-454. Retrieved from

https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1468-0335.2007.00615.x doi: https://doi.org/10.1111/j.1468-0335.2007.00615.x

Pillemer, K., & Suitor, J. J. (2006). Making choices: A within-family study of caregiver selection. *The Gerontologist*, *46*(4), 439–448.

Poirine, B. (1997). A theory of remittances as an implicit family loan arrangement. *World development*, *25*(4), 589–611.

Rapoport, H., & Docquier, F. (2006). The Economics of Migrants' Remittances. In S.-C. Kolm & J. M. Ythier (Eds.), *Handbook of the economics of giving, altruism and reciprocity* (Vol. 2, pp. 1135–1198). Elsevier. Retrieved from http://www.sciencedirect.com/science/article/pii/S1574071406020173 doi: https://doi.org/10.1016/S1574-0714(06)02017-3

Raut, L., & Tran, L. (2005). Parental human capital investment and old-age transfers from children: Is it a loan contract or reciprocity for Indonesian families? *Journal of Development Economics*, *77*(2), 389–414.

Silverstein, M., Conroy, S., Wang, H., Giarrusso, R., & Bengtson, V. (2002). Reciprocity in parent–child relations over the adult life course. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *57*(1), S3–S13.

Sloan, F., Zhang, H., & Wang, J. (2002). Upstream intergenerational transfers. *Southern Economic Journal*, 363–380.

Song, L., Appleton, S., & Knight, J. (2006). Why do girls in rural china have lower school enrollment? *World Development*, *34*(9), 1639–1653.

Song, L., Li, S., & Feldman, M. W. (2012). Out-migration of young adults and gender division of intergenerational support in rural china. *Research on aging*, *34*(4), 399–424.

Whyte, M. K. (Ed.). (2003). *China's revolutions and intergenerational relations*. University of Michigan Press. Retrieved from http://www.jstor.org/stable/10.3998/mpub.19840

Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data* (2e ed.). Cambridge, MA: The MIT Press.

Wu, X., & Li, L. (2011). Family size and maternal health: evidence from the one-child policy in China. *Journal of Population Economics*, *25*(4), 1341–1364.

Xie, Y., & Zhu, H. (2009a). Do sons or daughters give more money to parents in urban china? *Journal of Marriage and Family*, *71*(1), 174–186.

Xie, Y., & Zhu, H. (2009b). Do sons or daughters give more money to parents in urban China? *Journal of Marriage and Family*, *71*(1), 174–186.

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: Center for Chinese Studies, University of Michigan.

Zhang, K. H., & Shunfeng, S. (2003). Rural–urban migration and urbanization in china: Evidence from time-series and cross-section analyses. *China Economic Review*, *14*(4), 386–400.

Zhao, J., & Zhong, H. (2019). A demographic factor as a determinant of migration: what is the effect of sibship size on migration decisions? *Journal of Demographic Economics*, *85*(4), 321–345.

Zhao, Y., Strauss, J., Yang, G., Giles, J., Hu, P., Hu, Y., ... Wang, Y. (2013). *China Health and Retirement Longitudinal Study 2011–2012 national baseline users' guide*. Beijing, China: National School of Development, Peking University.

Zimmer, Z., & Korinek, 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.