Should I Stay or Should I Go? Inter-generational Transfers and Residential Choice. Evidence from China*

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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. We find suggestive evidence that the children's place of residence is 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

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1 Introduction

Inter-generational family ties are an important element of support at older age particularly in countries with less developed public social security and formal long-term care systems. Family transfers are often reciprocal: children support their parents at old-age while parents provide inter-vivos transfers – either contemporaneously or early in life – and potentially leave bequests to their children.[1] With globalizing economies, however, an increased mobility of the younger generation and migration to regions with better labor market prospects have challenged this inter-generational system of family-care. Children living further away from their parents can naturally provide less support in time. Instead, potentially higher income due to migration might lead to higher financial support towards the 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 location decisions and potential support to the parents should they become in need of care.

In this paper, we analyze inter-generational reciprocity in China by focusing the impact of parental early life transfers on children's support of the parents at old-age many years later. We highlight the importance of the children's place of residence for this nexus. We use data from the China Health and Retirement Longitudinal Study (CHARLS) which contains recall questions about parental transfers and allows to correlate early-life transfers with later life support. A family-time fixed effects model and a Hausman-Taylor approach is employed to account for unobserved heterogeneity both at the family level and at the individual level. We contrast the effect of two different transfers to the children: marital transfers and educational transfers. Our hypothesis is that both transfers affect the child's place of residence 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 better-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 well-suited to study inter-generational 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).[2] 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, 2020). 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). Inter-generational support of both money and time from children therefore play the major role in securing well-being at old-age.

Our study focuses on parental transfers to the adolescent child. In China, educational

[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).

[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.

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, 16 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). More importantly, sending one's children to school might imply high opportunity costs from forgone adolescent labor in the family business particularly in rural areas.

Traditional family support patterns are further challenged under huge internal migration flows induced by unprecedented economic growth since the 1970ies, and an increasing rural-urban income gap (K. H. 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 the transfer of 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).

The findings from our preferred econometric models show that children who received marital gifts when they were young, spend almost one additional visit per month with their old-age parents, on average. In contrast, annual material transfers are around 13 percent lower, compared to siblings who did not receive those gifts. Children who received educational transfers instead – proxied with years of schooling – tend to spend less time with their parents (0.3 fewer visits per year of education) but rather provide more financial support: an additional year of schooling increases the likelihood to transfer by one percent points (pp) and the amount by around 5 percent.

We further explore the mechanism of this outcome. Our findings suggest that receiving marital transfers discourages migration: children who received a gift for their marriage are 19pp more likely to live closer to their parents, in the same neighborhood compared to same town, for example. An additional year of schooling, on the other hand, is associated with a 3pp higher probability to live further away. Suggestive evidence from a mediation analysis shows that residential choice as a mechanism is quantitatively important.

We complement these findings with estimations on a subsample 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 by further disentangling the parental investment variables. We find that transferring the house has a particularly pronounced impact on caregiving. We also show that co-residing with one's parent is a distinct form of caregiving where our proposed hypotheses play out differently. Finally, we confirm that our proposed hypotheses are present for both genders, albeit more pronounced among sons, and both for rural and for urban families.

Our paper contributes to a rather small set of studies that analyses the impact on parental transfers early in life rather than contemporaneous or ex-post (i.e. as bequests) on the support from the adult children towards their parents many years later, see Cunningham, Yount, Engelman, and Agree (2013), Ciani and Deiana (2017) and Ho

(2019). The scarcity of studies might be due to problems with data availability requiring a very long panel dimension or – as in CHARLS – recall questions from the old-age parent about transfers that they made when they were young.

Most closely related to our study is Ho (2019) who, using the CHARLS data as we do, finds that higher parental transfers are positively associated with support from the child. Ho (2019), however, focuses on the gender-aspect of care and does not take the place of residence into account. To the best of our knowledge, this study is the first to study heterogeneous effects of different kinds of transfers for the child's caregiving by highlighting residential choice as a mechanism for the children's support behavior toward their parents when they become old.

The remainder of the paper is organized as follows: Section 2 lays out the hypotheses that we test and presents the empirical model. Section 3 presents the data, describes the variables and shows some descriptive statistics. Section 4 presents our main results and Section 5 explores heterogeneity of our results. Finally, Section 6 concludes.

2 Empirical Model

2.1 Hypotheses

Our main idea is that parents have different kinds of transfers at their disposal that affect children's behavior differently. We conjecture that educational investment increases the children's earning potential and incentivizes children to move away to regions with better job possibilities. As a consequence, they tend to support their parents with money rather than in time. However, parents can also give marital gifts to their children. We presume that marital transfers are physically more attached to the parents' place of residence – e.g. when a house is transferred. This, in turn, might induce children to stay closer to their parents, allowing more support in time. The potentially lower educational attainment that comes along with staying at home might decrease the money support towards the parents, though.

Our main hypotheses relate to the literature of inter-generational transfers, cf. Laferrère and Wolff (2006), that theoretically studies the (dynamic) interconnection between children and their parents. Focusing on old-age parents seeking attention and/or support from their children, a common finding is that children's support is rewarded with either higher inter-vivos transfers, cf. Cox and Rank (1992), or with higher bequests, cf. Bernheim, Shleifer, and Summers (1985). The motives for reciprocal behavior can be either altruistic or strategic but the general positive relation is present in either case. Our analysis differs from that literature by a reversed timing: we study parental transfers early in life towards their younger children and the support of the adult child towards the old-age parent, suggesting to use children's support as the outcome variable. Further, we extend the literature by disentangling both the kind of transfer (marital gift versus educational investment) and the kind of support (time versus money) which give rise to potentially opposing effects between intra-family transfers and support.

Two main outcome variables of interest are defined: children's support of the parents in time (*timesupport*) and support with money (*moneysupport*). We aim to study the causal effect of two independent variables: parental early life investment into education (*educ*), and investment into the marriage of the children (*marit*). We discuss endogeneity problems of these variables further below but assume exogeneity for now, conditional on a family-time fixed effect and on a set of control variables $\boldsymbol{x}$ which includes child and

potentially family characteristics depending on the specification.[3] Assuming linearity we have the following two models for each child i in family h at time t:

$$timesupport_{iht} = \alpha_{ht1} + \beta_1 marit_{ih} + \beta_2 educ_{ih} + \boldsymbol{x}_{iht}^{'}\tilde{\boldsymbol{\beta}} + u_{iht1} \quad (1)$$

$$moneysupport_{iht} = \alpha_{ht2} + \gamma_1 marit_{ih} + \gamma_2 educ_{ih} + \boldsymbol{x}_{iht}^{'}\tilde{\boldsymbol{\gamma}} + u_{iht2} \quad (2)$$

We are interested in the coefficients of *marit* and *educ*. Our conjecture is that the location decision of the child is an important mechanism through which parental investments affect children's support at old age. The resulting (physical) distance between the parents and the child, *distance*, potentially drives the impact of parental transfers on the types of support – in time or with money – of the child. We set up the following additional model:

$$distance_{iht} = \alpha_{ht3} + \delta_1 marit_{ih} + \delta_2 educ_{ih} + \boldsymbol{x}_{iht}^{'}\tilde{\boldsymbol{\beta}} + u_{iht3}. \quad (3)$$

Our predictions are that marital and educational transfers affect the distance in opposing directions: higher educational investment into the child increases the probability that the child migrates to places with better earning potentials. This idea is based on the migration literature, cf. Bodvarsson, Simpson, and Sparber (2015).[4] Greenwood (1975) points out that higher education increases the likelihood for migration for various reasons: employment information and job opportunities are both expected to increase with increased education, and education may reduce the importance of tradition and family ties and increase the individual's awareness of other localities.

Another related strand of literature emphasizes the role of the family in the migration decision and the role of remittances and focuses mostly on explaining migration from developing to developed countries, see Rapoport and Docquier (2006). Here, education into a child is interpreted as an investment by the household that pays off for the family via higher remittances if the higher educated child migrates, cf. Lucas and Stark (1985). Sending family members abroad is essentially a 'family portfolio diversification decision' to hedge against risks and to ease liquidity constraints. Overall, we predict a positive effect of educational investments on the distance towards the parents such that $\delta_2 > 0$.

In contrast, we predict that marital transfers (*marit*) from the parent are tied to the location of the parent. In traditional China, due to the patrilineal system, a daughter in-law commonly moves in with the husband's family. A bride price from the son's family, such as a house nearby, thus implies that the new couple lives close to the son's parents. For daughters, marital transfers, or dowries, might enhance the bargaining power within the couple, see J. Zhang and Chan (1999) and P. H. Brown (2009). Empowered daughters are consequently more able to influence the location decision. Overall, we hypothesize that marital gifts would induce children to stay closer to their parents to allow for companionship and long-term care which implies that $\delta_1 < 0$.

As a natural consequence, the children's location decisions affect the kind of support towards the parents: living close is associated with help in time, while living far away implies more help with money, assuming that immigration was for better job possibilities.

[3] It is important to note that a local distance measure between parents and children is *not* included in the set of controls.

[4] The literature interprets migration commonly as the act of locating one's skills in that market that offers the highest return. The underlying human capital model implies that the migrant's goal is to maximize utility by choosing the location that offers the highest net return to human capital. The prospective migrant calculates the value of the opportunity available in the market at potential destinations relative to the value at the point of origin, net of the costs of moving.

Hence, through an increased distance due to educational transfers ($\delta_2 > 0$), these transfers *indirectly* also imply less help in time but more financial support in equations (1) and (2). Reversely, through closer residence due to marital transfers ($\delta_1 < 0$), these transfers imply more help in time and less financial support because of lower paid job possibilities.

Is there also a *direct* effect expected from parental investment towards children's help irrespective of location decisions? The literature studying the trade-off between transfers in time versus money of the children – assuming only one specific transfer – predicts ambiguous results, cf. Pestieau and Sato (2008), Sloan, Zhang, and Wang (2002), and Lillard and Willis (1997). Sloan et al. (2002) assumes one-sided altruistic children that can help their parents in need by utility enhancing time or resource improving monetary transfers. This model predicts an unambiguous positive effect of a higher productivity (wages in their model) on monetary support out of (one-sided) altruistic motives. The direct effect on time support however is ambiguous due to an income effect (higher overall income increases both transfers) and a substitution effect: a higher earnings potential increases opportunity costs of time. Pestieau and Sato (2008) on the other hand model strategic interaction between the generations and assume a utility enhancing technology with (perfectly substitutable) time and money inputs from the child. In this case, the unambiguous prediction is that high productive children tend to give money while low productive children tend to transfer time again out of an opportunity costs argument.

Translated to our setting we would expect a *direct* positive effect of an investment into education on financial upward transfers through an increase of the child's productivity. The effect on time-support, however, is ambiguous due to income- versus substitution effects. A marital transfer, on the other hand, increases children's wealth but does not lead to higher productivity of the child, implying that this transfer has a different impact on the children's helping behavior. Here, we expect a pure income effect such that the direct effect of marital transfers is positive for both support in time and with money

We summarize our main hypotheses in Table 1, where the coefficients refer to Equations (1), (2), and (3). For the ambiguous total effect of the educational investment, we conjecture that the mechanism of the location decision (indirect) dominate the direct effect due to its ambiguous sign.

It is important to note that the coefficients in Equations (1) and (2) give us the *total* average treatment effect (ATE) which combines the direct and indirect effects described above. Are we able to single out the indirect effect of location decisions for the nexus between parental transfers and children's support? This is a classical mediation analysis, cf. Imai, Keele, and Tingley (2010), Imai, Keele, and Yamamoto (2010), and Celli (2021). According to this approach, the child's location decision is a *mediator* through which the causal effect of parental transfers (called *treatment*) operates towards the outcome variable which is the children's support in our setup. It allows to assess the strength of the mediation effect, i.e., it allows to single out the effect of parental investments on children's support that operates through the children's location decision. However, the necessary assumptions to disentangle the total effect into a direct and an indirect one are very restrictive and we argue further below that they are likely to be violated in our data. Hence, we will only provide suggestive evidence in Section 5 where we present further results.

Table 1: Main Hypotheses

	Marital Investments (*marit*)	Educational Investments (*educ*)
Time Support, Equation (1)		
Indirect	positive	negative
Direct	positive	ambiguous
Total	$\beta_1 > 0$	$\beta_2 \lesseqgtr 0$
Money Support, Equation (2)		
Indirect	negative	positive
Direct	positive	positive
Total	$\gamma_1 \lesseqgtr 0$	$\gamma_2 > 0$
Living Close to Parents, Equation (3)	$\delta_1 > 0$	$\delta_2 < 0$

Notes: Hypothesized signs of the coefficients of Equations (1), (2) and (3). The variables used for the analysis are described in Section 3.

2.2 Empirical Specification: Addressing Endogeneity

Estimating the impact of parental transfers on children's support and residential decisions is likely to suffer from endogeneity problems. 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 altruistic families, or families with a high social status, where parents might invest more into their children and children might simultaneously help their parents more. Second, children might systematically differ in their (innate) ability either on the job market or to give care to their parents. Similarly, the (unobserved) personal relation between children and their parents can simultaneously affect parental transfer behavior and children's support behavior and location decisions. An estimated impact of parental investment decisions on children's help might, hence, be biased by this unobserved heterogeneity.[5]

Family Fixed Effect Model We employ a family-time fixed effect model as our main specification for the full sample of children. The term α_{htj} where $j = \{1, 2, 3\}$ refers to Equations (1)-(3) represents the family-time effect that accounts for common time-varying family characteristics. Note that the fixed effect also captures all time-varying observed characteristics at the household level, such as parental health, wealth, age or

[5]Further, there might be biases due to reverse causality and measurement errors. Reverse causality, however, is arguably less of an issue in our analysis because of the long time-lag between explanatory- and outcome variables. Both parental transfers and the location decision of the child happen early in life whereas the children's obligation for supporting the parents is likely to occur many years later. Measurement errors, e.g., errors in recalling the amount of marital gifts in the recall question, might also bias our estimates. We partly account this by using binary variables under the assumption that reporting errors are less severe in that case. Further, our family fixed effect model would address measurement errors under the assumption that reporting errors of the same respondent (=the parent) about each child is likely to go into a similar direction. The instrumental variable approach also addresses these issues.

marital status. We explicitly account for child characteristics by including the set of child-level controls listed in section 3.2. These variables also partially account for child-level unobserved heterogeneity. For example, we include the birth order of the child which is known to be correlated with cognitive ability. Observe that introducing this family-time fixed effect implies that we only analyze variation between siblings within households. Hence, all families with only one child – only 7.6 percent in our sample – are not considered in this specification. As an identification assumption we require that $marital_{ih}$ and $educ_{ih}$ are not correlated with the error terms u_{ihtj}, $j = \{1, 2, 3\}$. Since we account for common family characteristics it can be argued that individual unobserved heterogeneity is less relevant. For example, innate ability of children *within* families is likely to be similar.[6]

Hausman-Taylor Model As a second step we augment the family fixed effects model with a Hausman-Taylor approach (Hausman & Taylor, 1981) that enables the estimation of a model with endogenous time-invariant variables. To this end, notice first that we can obtain estimates for the parameters of the family fixed effects model by estimating within transformed versions of Equations (1)–(3) by means of OLS to account for common unobserved family characteristics. In the Hausman-Taylor approach we allow for the possibility that the investment variables $educ_{ih}$ and $marit_{ih}$ are correlated with the unobserved individual effect. We make the identifying assumption that the within transformed control variables $\tilde{\boldsymbol{x}}_{iht} = \boldsymbol{x}_{iht} - \bar{\boldsymbol{x}}_{ht}$ are uncorrelated with the individual effect. Due to this identifying assumption we can apply IV estimation on the within transformed models (1)–(3), where the individual specific averages $\bar{\tilde{\boldsymbol{x}}}_i$ of the transformed control variables $\tilde{\boldsymbol{x}}_{iht}$ serve as instruments for the within transformed investment variables $\widetilde{educ}_{ih}$ and $\widetilde{marit}_{ih}$. Estimates of the first-stage instrumenting both parental investment variables as endogenous turned out to suffer from weak-instrument problems [7]. We are thus only able to instrument the education variable *educ* while we still have to assume exogeneity for the other parental investment variable *marit*.[8]

[6] More formally, let us decompose the error terms in Equations (1)-(3) into an individual specific component and a random error: $u_{iht} = \gamma_{ih} + \varepsilon_{iht}$ where the index j is omitted for readability. The assumption in the family fixed effects model are then

1. $E\left[\varepsilon_{iht} | marit_{ih}, educ_{ih}, \boldsymbol{x}_{iht}, \alpha_{ht}, \gamma_{ih}\right] = 0$
2. $E\left[\gamma_{ih} | marit_{ih}, educ_{ih}, \boldsymbol{x}_{iht}, \alpha_{ht}\right] = 0$
3. $E\left[\alpha_{ht} | marit_{ih}, educ_{ih}, \boldsymbol{x}_{iht}\right] \neq 0.$

[7] The Kleibergen-Paap Wald F-statistic used to test weak instruments is around 1 when both parental investments are instrumented.

[8] More formally, again decompose the error terms in Equations (1)-(3) by $u_{iht} = \gamma_{it} + \varepsilon_{iht}$ where the index j is omitted henceforth. The assumption in the Hausman-Taylor model with family fixed effects are

1. $E\left[\varepsilon_{iht} | marit_{ih}, educ_{ih}, \boldsymbol{x}_{iht}, \alpha_{ht}, \gamma_{ih}\right] = 0$
2. $E\left[\gamma_{ih} | marit_{ih}, \tilde{\boldsymbol{x}}_{iht}, \alpha_{ht}\right] = 0$
3. γ_{ih} correlated with $\widetilde{educ}_{ih}$
4. $E\left[\alpha_{ht} | marit_{ih}, educ_{ih}, \boldsymbol{x}_{iht}\right] \neq 0.$

College Subsample As a second analysis we zoom in on the subsample of children with a college degree for which we have information on the actual amount that was spent for the college education of the children. In addition, we make use of the actual amount (both in logs) of marital transfers. This analysis yields additional insights on the effects of the amount of transfers and simultaneously serves as a robustness for our results by using a more homogeneous sample, different variables and a modified approach.

For the college subsample, we employ a family-time *random* effect model supported by the robust version of Hausman test as proposed by Mundlak (1978) and Wooldridge (2010).[9] To further control for common family characteristics we add a set of family level control variables such as age, marital status, labor force participation, health, wealth, and the source of pensions. In addition, we add wave and province dummies to the model.

We again augment the RE model with the Hausman-Taylor approach. In contrast to the full-sample, however, college expenses are identified as exogenous in the endogeneity test for this subsample.[10] In addition, we would again encounter weak instrument problems if we instrument both parental investment variables. Arguably, the college subsample is more homogeneous and ability is likely to be similar among college graduated children. College expenses might also be largely determined by factors other than child ability, such as the child's location and subject of study. Hence, we only instrument the amount of marital gifts and treat the amount of college expenses as exogenous.

3 Data and Descriptive Statistics

We use data from China Health and Retirement Longitudinal Study (CHARLS), an ongoing longitudinal survey which is nationally representative of Chinese older population aged 45 and above. CHARLS is the sister data set of the U.S. Health and Retirement Study (HRS), the Survey of Health, Aging and Retirement in Europe (SHARE) and the 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 Zhao et al. (2013) and Chen, Smith, Strauss, Wang, and Zhao (2017).

3.1 Sample Selection

We employ data from three waves in 2011, 2013 and 2015. There are one main family respondent and the respondent's spouse (if present) per household. The respondent is treated as the parent in our analysis. Questions related to children, inter-generational 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

[9]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.

[10]The endogeneity test, i.e. the C-test of exogeneity which calculates the difference between two Sargan's statistics with and without the suspected instruments (Hayashi, 2000), gives p-values of 0.000 and 0.630 for marital gifts and college expenses respectively, when both are instrumented in the regression of monthly visits.

focus on each child in a family as the unit of observation and to exploit the variation between siblings in each family.

Table 2: **Family Size**

Number of children	1	2	3	4+	Obs
Rural	4.6%	32.8%	27.7%	34.9%	5,122
Urban	12.8%	34.8%	24.1%	28.3%	3,038
Overall	7.6%	33.5%	26.4%	32.5%	8,160

Note: Fraction of families depending on the number of children for rural and urban families in the full sample.

We construct a sample of children by matching data of the respondent (at the household level) with information of the child. Table A1 in Appendix A shows the details of the sample selection. Important selections include focusing on only living biological children, dropping young children who are under 20 or still in school, and excluding never married and co-resident children.

Never married children are not considered because they might get married in the future and receive marital gifts, thus, their investment decisions are not yet completed. Note, however, that only 12 percent of children are never-married with complete information in our sample.

Co-resident children are dropped because the number of visits, one of our main outcome variables, is (naturally) not reported. In addition, the financial support variables from co-resident children towards the parents are unavailable in the 2011 wave, and they are likely to be incomplete measures of financial support due to shared resources within the same household. Hence, we view co-resident children as a distinct group of children that we drop for our main results. However, co-residing children amount to roughly 18.6 percent of the sample and are an important group to be studied. Hence, we analyze co-residing group separately in Section 5.

In total, the selected full sample consists of 30,827 child-year observations and 14,868 children coming from 5,116 families. The college subsample consists of 3,556 observations from 1,796 child and 1,483 families.

Table 2 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 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

Support Variables from the Child The first time support from the child is measured by *Monthly visits* which represents the number of monthly visits paid by children to parents. The second time support variable that we use is *Any future help* which 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.

Material support is measured at the extensive and the intensive margins. *Any 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 RMB yuan, conditional on transferring.[11] We use the natural logarithm of (one plus) the actual amount in regressions, which is deflated to 2015 values by the CPI from World Bank.

Residential Choice We use *Distance*, a categorical variable, to measure the increasing distance of the children's places of residence compared to the parents: living in the same neighborhood (village for rural parents), living in the same town (county for rural parents or city for urban parents), or living in a different town.[12]

Marital Transfers Marriage gifts are past inter-generational transfers taken from the main questionnaire of CHARLS. 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 main explanatory variables used in the full sample analysis is an indicator variable *Any marital gift*, representing whether the child received any marital transfer. In a sensitivity analysis we separately study the monetary marital transfers and the transfer of a house.

The marital gift question is a recall variable from a time potentially many years ago and might suffer from measurement error. The average birth year of the parents is 1948 and the average year when the child first get married is 1998. It implies that parents at an age of 65 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 arguably more reliable binary variable in our baseline specification.

We take the natural logarithm of (one plus) the amount of the marital gift in the college subsample analysis. We convert values to 2015 prices using the GDP deflator

[11] The survey question is *"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."*

[12] The variables are constructed from the question with regard to each child: " *Where does the child normally live now?*" allowing for these three answer options. Note, there are slight differences between the 2011 wave and the other waves. In 2011, household members are always treated as co-residing even if they were living apart from the family for most of the year, while in later waves they are still asked the question about the place of residence. In our sample this accounts for roughly 5 percent of observations in 2011. Therefore, we do not have information on residential choice for these children in the 2011 wave, and they are dropped from the sample consequently.

from Index Mundi for years prior to 1986 and the CPI from World Bank for years 1986 onward.[13]

Educational Investments We use the *Years of education* as a proxy for parental investment into the children's education. We view this variable as a good indicator both for schooling related costs and for indirect opportunity costs. Similar proxies have been used in other studies in developing contexts, cf. P. H. Brown and Park (2002) and Cunningham et al. (2013), for example. For a subsample of children who went to college, we have information about the parental investment for the college education, where we use the natural logarithm of (one plus) the amount of college expenses paid by parents, deflated to 2015 prices.[14]

Control Variables As our control variables, we have important child and parental characteristics, as well as 27 provinces dummies and two wave dummies.

The control variables of the child are age and age squared, gender, birth order, birth order among same sex siblings, marital status, whether received grandchild care, and the (log) amount of material transfers received from parents during the past year. Differentiating children based on their birth order among same sex siblings takes into account both the anecdotal traditional role of the eldest son as the main care provider and the first-mover advantage of older siblings in making location decisions (Konrad, Künemund, Lommerud, & Robledo, 2002; Maruyama & Johar, 2017). Controlling for contemporaneous parental help in forms of grandchild care and inter-vivos transfers addresses the potential concern of reciprocal current exchanges between generations. 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 of the parents which are constructed at the household level. As parental characteristics, we include age and age square of the older parent, an indicator whether any parent is currently working (*work*), the gender of the respondent, 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 (cf. private and public), 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. We use the inverse hyperbolic sine (IHS) transformation of parental wealth in regression analysis.

3.3 Descriptive Statistics

Table 3 gives an overview of the main variables of interest, descriptive statistics of the control variables are relegated to the Appendix Table A2 and Table A3.

The table shows that marital transfers are very prevalent in China: 62 percent of children receive marital gifts. Marital transfers, on average, amount to 22,359 yuan. Further, children in our sample have around seven and a quarter years of schooling corresponding

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

[14]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.

Table 3: **Descriptive Statistics on Main Variables**

		Standard Deviation		
	Mean	Between	Within	Overall
Parental transfers				
Any marital transfer	0.62	0.40	0.28	0.49
Amt. marital transfer if > 0	22,359	56,113	32,825	57,756
Years of education	7.26	3.20	2.13	3.79
Amt. college expenses if > 0	66,115	70,905	16,971	70,110
Old-age support				
Monthly visits	7.23	8.25	8.15	11.45
Any future help	0.68	0.44	0.16	0.47
Any material support	0.66	0.41	0.24	0.47
Amt. material support if > 0	1,840	3,380	2,046	3,674
Residential choice				
Distance	1.95	0.61	0.51	0.78

Note: Monetary values are measured in RMB yuan in 2015 value (1000 yuan equals approx. 150USD). The full sample consists of 30,827 observations.

to secondary school education on average. For children who received financial help for their college education, the amount was 66,115, on average. Turning to the support variables of the child, we again see very prevalent interactions between generations: there are 7 monthly visits on average per adult child – so almost two visits per week. In addition, roughly two thirds of children are expected to help with Activities of Daily Living (ADL) of the parent. Finally, 66 percent provide financial support with an average of 1,840 yuan.

The table further shows that there is considerable within household variation in all variables – albeit generally lower than the between household variation – which makes an analysis of sibling variations suitable for this sample.

Table 4 reveals 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 12pp less likely to provide financial aid to their parents compared to children live in a different town. 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 4 shows that children who live close by their parents are 10pp more likely to receive 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 with children living close by. In contrast, children with higher educational attainment tend to live further away from their parents. Children live in the same neighborhood have 1.6 fewer

Table 4: **Living Proximity, Parental Transfers, and Old-age Support**

	Same neighborhood	Same town	Diff town
Old-age support in Time			
Monthly visits	16.03	4.15	1.02
Any future help	0.70	0.67	0.64
Old-age support with Money			
Any material support	0.59	0.69	0.71
Amt. material support (if > 0)	1,216	1,510	2,888
Marital transfers			
Any marital transfer	0.68	0.59	0.58
Amt. marital transfer (if > 0)	22,390	19,749	26,002
Educational investment			
Years of education	6.60	7.20	8.15
Amt. college expenses (if > 0)	55,888	59,636	72,381
Observations	10,276	11,881	8,670
Fraction	33.3%	38.5%	28.1%

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) in 2015 values.

years of education compared to those live the furthest. More pronounced, though not reported in the table, the fraction of children with high-school education or above is twice as large (28 versus 14 percent) if the child lives in a different town compared to a child living in the same neighborhood than its parents.

Overall, the results in Table 4 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 financially. In contrast, children who received more 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 Main Results

4.1 Full Sample

Our main results are depicted in Table 5. Panel A to panel C are disentangled by different outcome variables according to equations (1)-(3), contrasting the family fixed effect (FE) model and the FE model augmented with a Hausman-Taylor approach (FE-IV).

Panel A shows the total effect of parental transfers on children's time support. Children who received any marital gift are spending 0.9–1.2 additional visits per month with their parents, on average. The effect on the probability of providing future help is also positive in the fixed effect specification, but not significantly different from zero. Reversely, an additional year of education is associated with 0.3-0.9 fewer visits. Again the effect on future ADL help is negative but only significant in the Hausman-Taylor model. Results are similar for both specifications.

Table 5: **Old-age Support and Residential Choice**

Panel A: Support in Time

	Monthly visits		Any future help	
	FE	FE-IV	FE	FE-IV
Any marital transfer	1.167***	0.862**	0.008	-0.011
	(0.294)	(0.392)	(0.005)	(0.008)
Years of education	-0.304***	-0.923*	-0.000	-0.039***
	(0.039)	(0.507)	(0.001)	(0.011)
First-stage F-stat		9.703		9.703
Hansen J P-val		0.228		0.010
Endog test P-val		0.129		0.000
Observations	30,827	30,827	30,827	30,827

Panel B: Support in Kind

	Any material support		Amount material support	
	FE	FE-IV	FE	FE-IV
Any marital transfer	-0.008	-0.001	-0.134***	-0.236***
	(0.008)	(0.011)	(0.026)	(0.053)
Years of education	0.011***	0.025	0.049***	-0.150**
	(0.001)	(0.017)	(0.003)	(0.076)
First-stage F-stat		9.703		4.995
Hansen J P-val		0.017		0.000
Endog test P-val		0.528		0.005
Observations	30,827	30,827	20,391	20,391

Panel C: Residential Choice

			Distance Parent-Child	
			FE	FE-IV
Any marital transfer			-0.188***	-0.167***
			(0.019)	(0.025)
Years of education			0.031***	0.073**
			(0.003)	(0.031)
First-stage F-stat				9.703
Hansen J P-val				0.197
Endog test P-val				0.122
Observations			30,827	30,827
Family-time fixed effect	Yes	Yes	Yes	Yes
Child controls	Yes	Yes	Yes	Yes

Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Notes: Panel A, B and C presents results from equations (1),(2), and (3), respectively. FE is the family-time fixed effects model. FE-IV is the FE model augmented with an instrumental variable approach following Hausman and Taylor (1981), where years of education is instrumented. Child controls consist of child's age, age square, birth order, birth order same sex, marital status, and contemporaneous parental help of grandchild care and downward inter-vivos transfers. *Amount material support* is the natural logarithm of the actual amount. The P-value of Hansen's J statistic provides inferences for the overidentification test. The P-value of the endogeneity test, see Hayashi (2000), of the instrumented regressor is reported. Standard errors are clustered at the household level. Full set of results can be found in Table B1 in the Appendix.

Turning to children's in-kind support in Panel B we again find support in favor of our hypotheses where the impact of both transfers is turned around: In the FE model, the educational variable yields significantly positive results for both the incidence and the amount of monetary transfers. One more year of education increases the incidence by 1.1 pp and the conditional amount by 5 percent.[15] Marital transfers however are negatively associated with the incidence and the amount of children's money support, for instance, receiving marital gifts reduces the child's annual material transfers by around 13 percent.

Results for the Hausman-Taylor model (FE-IV) are insignificant at the extensive margin but highly significant at the intensive margin. Similar with the FE model, marital transfer has a negative impact on the amount of material support. In contrast, more years of education reduce the amount of material support, which contradicts our hypothesis and the FE results. We suspect the result to suffer from an weak instrument issue, given the relatively small first stage F-statistic of 5.

In line with our hypotheses, marital transfers seem to incentivize more time or physical support, but discourage monetary transfers while this is reversed for educational transfers. Regression results including the full set of control variables are relegated to Table B1 in the Appendix. Results show insignificant effects for age and marital status, yet very significant effects for the gender variable. 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 and provide material support, and transfer higher amounts of material support.

Panel C shows how different parental transfers toward their children impacts the children's place of residence. We find a clear association according to our hypotheses: Receiving marital gifts significantly decrease the distance to ones parents, while educational investments increase the distance, and this is true for both the FE and the FE-IV model. Children who received marital gifts are 18.8pp (16.7pp) less likely to increase the distance measure by one unit, e.g. transit from living in the same neighborhood to living in the same town, in the FE (FE-IV) model. Receiving an additional year of schooling, on the other hand, increases the probability to live further away by 3.1pp and 7.3pp in the FE and FE-IV model, respectively.

Again, Table B1 in the Appendix depicts coefficients for the control variables. The results show that 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 as the birth order among same sex siblings has a negative impact on the living distance. Similar gender and birth order patterns have also been documented in the literature (Lei, Strauss, Tian, & Zhao, 2015; Ma & Wen, 2016).

The results from the family fixed-effect model are in general quite close to the results from the fixed effects augmented with the Hausman-Taylor approach. This can be interpreted as a sign that the household effects already pick up considerable unobserved heterogeneity across children.

First stage statistics report F-statistics close to the threshold value of 10 for most outcome variables, which is suggested as a rule of thumb by Stock and Yogo (2002), except for the amount of material support. In addition, the validity of internal IVs can

[15]The percentage change is calculated based on a exponential transformation of the coefficient, i.e., $100 \cdot (\exp(0.049) - 1) = 5.02\%$.

be questioned in some cases as the over identification test of Hansen J-statistic is rejected. Moreover, the endogeneity test is not rejected in regressions of visits, material support incidence and distance, which again supports the use of family fixed effects. Therefore, the results of the FE-IV model have to be interpreted against the backdrop of these limitations and we prefer the family-time fixed effect model as our main specification.

4.2 College Sample

In order to study the actual amounts of both kinds of parental investments and focus on a more homogeneous group of children, we focus on the subsample of children with a college degree. College expenses are the only available schooling expenditure, thus information simultaneously on the amount of both marital transfer and educational investments is only available for this subsample.

We again show results for two different models which are modified as described in Section 2. In particular, we show results from a family-time random effect model and from an instrumental variable approach following Hausman and Taylor (1981). The analysis of the amount of parental transfers allows us to compute the marginal returns of parental transfers. A full set of results are reported in Table B2 in the appendix.

Results shown in Panel A in Table 6 indicate that a 10 percent increase in marital transfers increases the frequency of monthly visits by 0.01 and 0.10 respectively, in RE and IV models. However, the impact of marital transfers on providing future help is less clear. In contrast, the amount of college expenses has a statistically significant negative impact on both monthly visits and the probability of providing future help, albeit quantitatively rather small.

Turning to Panel B, marital transfers only have a negative impact on material support at the intensive margin. A 10 percent increase in marital transfers predicts a reduction of material support amount by around 0.1 percent in the RE model and 0.6 percent in the IV model. Both the probability and the amount of material support are increased by college expenses, albeit insignificantly.

In general, consistent with our hypotheses, a larger amount of marital transfers induces more time support but less material support, and the amount of college investment is found to be negatively linked with time help. We also find the marginal returns of parental investments to be economically small.

If children's residential choice is taken as the outcome variable we also find supporting evidence in line with our hypotheses. Panel C in Table 6 shows that higher marital transfer increases the probability of living closer. In contrast, a child who received more college expense is more likely to move further away from the parents.

Although the results of the IV estimation are broadly in line with the RE results, there are some notable differences for certain variables. Our conclusion is to be cautious when interpreting the results from the Hausman-Taylor model, as we are likely to be confronted with a problem of weak instruments. According to the first stage statistics in table, the F-statistic is around 7.3, which is lower than the threshold of 10, which is suggested as a rule of thumb by Stock and Yogo (2002).

Table 6: **Old-age Support from Children, College Sample**

Panel A: Support in Time

	Monthly visits		Any future help	
	RE	IV	RE	IV
ln(Amt marital transfers+1)	0.110**	1.040***	0.003	-0.011
	(0.043)	(0.228)	(0.002)	(0.010)
ln(Amt college expense+1)	-0.202***	-0.233***	-0.004**	-0.004*
	(0.062)	(0.070)	(0.002)	(0.002)
First-stage F-stat		7.310		7.310
Hansen J P-val		0.009		0.343
Endog test P-val		0.000		0.219
Observations	3,566	3,566	3,566	3,566

Panel B: Support in Kind

	Any material support		Amount material support	
	RE	IV	RE	IV
ln(Amt marital transfers+1)	0.001	-0.002	-0.013**	-0.060*
	(0.002)	(0.011)	(0.006)	(0.035)
ln(Amt college expense+1)	0.003	0.003	0.009	0.012
	(0.002)	(0.003)	(0.008)	(0.009)
First-stage F-stat		7.310		6.103
Hansen J P-val		0.107		0.952
Endog test P-val		0.895		0.139
Observations	3,566	3,566	2,409	2,409

Panel C: Residential Choice

			Distance Parent-Child	
			RE	IV
ln(Amt marital transfers+1)			-0.013***	-0.046***
			(0.003)	(0.015)
ln(Amt college expense+1)			0.019***	0.021***
			(0.005)	(0.005)
First-stage F-stat				7.310
Hansen J P-val				0.041
Endog test P-val				0.011
Observations			3,566	3,566
Family-time random effect	Yes	No	Yes	No
Child controls	Yes	Yes	Yes	Yes
Parental controls	Yes	Yes	Yes	Yes
Region Dummies	Yes	Yes	Yes	Yes
Wave Dummies	Yes	Yes	Yes	Yes

Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Notes: RE is the family-time random effects model, IV is the Hausman-Taylor model where the amount of marital gifts is instrumented. Child controls consist of child's age, age square, birth order, birth order same sex, marital status, and contemporaneous parental help of grandchild care and downward inter-vivos transfers. Parental controls consist of 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), and pension type. First stage statistics as given in Table 5. Standard errors are clustered at the household level. The full set of results can be found in Table B2 in the Appendix.

5 Further Analysis and Robustness

In the following we present additional results and robustness checks of our main analysis. Throughout this section we solely focus on the family-time fixed effect model.

5.1 Mediation Analysis

We follow Imai, Keele, and Yamamoto (2010) and present a mediation analysis that allows to determine the *indirect* effect of parental investment on children's support that operates through the children's location decision. However, the necessary assumption of *sequential ignorability* can be viewed as quite restrictive. The assumptions can be summarized as (i) no unmeasured treatment-outcome confounding, (ii) no unmeasured treatment-mediator confounding, and (iii) no unmeasured mediator-outcome confounding. For our analysis, assumptions (i) and (ii) require exogeneity of the parental investment variables, and of the children's location decision if children's support is the outcome variable, cf. Equations (1) and (2). While our proposed FE and IV models addressed endogeneity concerns with the parental investment variables, these seem to be even more severe if we would use the children's location as our explanatory variable. Moreover, Assumption (iii) additionally requires that there are no unobserved characteristics that simultaneously affect the location decision and the children's helping behavior. This assumption is hard to defend since it is likely that individual specific unobserved characteristics from the child simultaneously determine the location decision and the children's support behavior.

With these caveats in mind we still present results of a mediation analysis estimated via ordinary least squares on within-transformed variables in order to account for unobserved family characteristics. We view this as suggestive evidence pointing to the relative importance of the location decision for the total effect that we report in our main analysis.

To estimate the indirect effect for the nexus between a treatment, $treat = (marit, educ)$, on an outcome, $outcome = (timesupport, moneysupport)$, that operates through a mediator, *distance*, we set up the following regressions:[16]

$$\widetilde{outcome}_{iht} = \tilde{\beta}_1 \widetilde{treat}_{ih} + \tilde{\boldsymbol{x}}'_{iht}\tilde{\boldsymbol{\beta}} + \tilde{u}_{iht1} \quad (4)$$

$$\widetilde{mediator}_{iht} = \delta_1 \widetilde{treat}_{ih} + \tilde{\boldsymbol{x}}'_{iht}\tilde{\boldsymbol{\delta}} + \tilde{u}_{iht2} \quad (5)$$

$$\widetilde{outcome}_{iht} = \iota_1 \widetilde{treat}_{ih} + \iota_2 \widetilde{mediator}_{iht} + \boldsymbol{x}'_{iht}\tilde{\boldsymbol{\iota}} + \tilde{u}_{iht3} \quad (6)$$

where we perform within transformations for all variables denoted with a tilde, e.g., $\tilde{\boldsymbol{x}}_{iht} = \boldsymbol{x}_{iht} - \bar{\boldsymbol{x}}_{ht}$. The coefficient ι_1 measures the direct effect of the treatment on the outcome. The indirect effect is $\iota_2\delta_1$, and combines the effect of the treatment on the mediator and the effect of the mediator on the outcome. Finally, the total effect is estimated with $\tilde{\beta}_1$ that corresponds to our main FE specification described in Section 2. Table 7 shows results from the mediation analysis.[17]

[16] Note, that when estimating *marit* as the treatment variable we add *educ* as a control variable in $\boldsymbol{x}_{iht}$ and vice verse.

[17] For the estimation we make use of the Stata command *medeff*, cf. Hicks and Tingley (2011). The estimation makes use of equations (5) and (5) only (equation (4) is redundant and was only added to ease exposition) and the total effect is determined by means of $\iota_1 + \iota_2\delta_1$. This parametric estimates yield almost identical coefficients and significance for the total effect than shown in Panel A and B in Table 5, minor differences are due to the different estimation approaches.

Table 7: **Mediation Analysis**

	Time support		Money support	
	Monthly visits	Any Future help	Any material support	Amount material support
Treatment: Marital transfers				
Indirect Effect ($\iota_2\delta_1$)	1.447**	0.004**	-0.006**	-0.036**
	[1.157,1.742]	[0.003,0.006]	[-0.007,-0.004]	[-0.047,-0.027]
Direct Effect (ι_1)	-0.280	0.004	-0.003	-0.099**
	[-0.722,0.170]	[-0.006,0.014]	[-0.017,0.012]	[-0.146,-0.051]
Total Effect ($\tilde{\beta}_1$)	1.167**	0.008	-0.008	-0.134**
	[0.661,1.667]	[-0.001,0.018]	[-0.022,0.006]	[-0.181,-0.088]
Fraction Mediated	1.236**	0.490	0.542	0.269**
	[0.868,2.188]	[-2.599,5.112]	[-5.051,6.608]	[0.201,0.412]
Treatment: Years of Schooling				
Indirect Effect ($\iota_2\delta_1$)	-0.241**	-0.001**	0.001**	0.006**
	[-0.279,-0.200]	[-0.001,-0.001]	[0.001,0.001]	[0.005,0.008]
Direct Effect (ι_1)	-0.063**	0.001	0.010**	0.042**
	[-0.122,-0.004]	[-0.001,0.002]	[0.008,0.012]	[0.036,0.048]
Total Effect ($\tilde{\beta}_1$)	-0.304**	0.000	0.011**	0.049**
	[-0.374,-0.237]	[-0.001,0.001]	[0.009,0.013]	[0.042,0.055]
Fraction Mediated	0.792**	0.645	0.082**	0.128**
	[0.644,1.013]	[-14.09,17.42]	[0.070,0.101]	[0.113,0.146]

95%-confidence interval brackets, ** $p < 0.05$

Note: Mean effect from the mediation analysis using within-transformed variables. Indirect effect is $\iota_2\delta_1$ from Equations (5) and (6), the direct effect is ι_1 from Equation (6), the total effect is $\iota_1 + \iota_2\delta_1$ which corresponds to $\tilde{\beta}_1$ from Equation (4). *Fraction Mediated* is the ratio of the indirect and the total effect. Standard errors are clustered at the household level. *Amount material support* is the natural logarithm of the actual value. Control variables comprise of observed (within-transformed) child characteristics, see A2 for a full variable list.

The table shows strong and significant indirect effects throughout, indicating that the location decision plays a significant role for the nexus between parental investment and children's support. In addition, the signs of the indirect effects are all in line with our hypotheses: the indirect effects of marital transfers on time support that operate through the location variable are positive, while they are negative for the money support variable. Analogously, the indirect effects of the educational variable are negative for time support and positive for money support of the parents. The direct effect of the parental investment variables are much less strong. For marital transfers, the negative signs of the coefficients are contradicting our hypotheses. We predicted, a positive direct effect of marital transfers on children's support both in time and with money due to a positive income effect. All but one coefficients are insignificantly different from zero, though. The direct effect of the educational variable is more in line with our predictions. In particular, it shows a positive direct effect on money support.The mediation analysis allows us to assess the relative importance of the indirect relative to the total effect shown as the fraction mediated in Table 7. The results reveal that the indirect effect is particularly strong for the time-support variables. For instance, 79 percent of the effect of schooling on monthly visits is mediated by the location variable.[18] In contrast, the fraction mediated is somewhat smaller for the money support variables, ranging from 13 percent for education and 27 percent for marital transfers on the amount of material support.

5.2 Disentangling Investments

The variables that we use in our main specification can be further disentangled to study heterogeneous effects. In particular, we split the marital investment variable into two different indicator variables whether the child received money for the marriage, or whether the child received a house.[19] Descriptive statistics indicate that the incidence of receiving a house is lower (9 percent of children compared to 53 percent who receive money), while the value is higher (89,591 yuan versus 10,644 as money gifts).

In addition, we disentangle the two categorical variables *educ* and *distance*. We construct four indicator variables for educational attainment depending on the degree received. Finally, we disentangle the distance measure by constructing an indicator for the closest distance (*same neighborhood*) and the furthest distance (*different town*) between children and parents.

Results from the family-time fixed effects model for the full sample are shown in Table 8. The results confirm a stronger effect in line with our hypotheses of transferring a house, compared to money as a marital gift. This is the case for the number of visits, the future help with ADL, the amount of financial transfers, and for the decision of the children to live close to ones parents. The results are inconclusive for the incidence of financial transfers.

In addition, there appears to be a clear gradient over the indicator variables for the educational attainment on the magnitude of visits, the probability to provide material transfers, and the amount of material transfers, going in opposite directions. It seems that our proposed hypotheses are present for all educational levels. For instance, received educational support until college decreases the number of monthly visits by 4.9, compared

[18]For marital transfers, the fraction mediated (1.235) is larger than one, which is due to opposing signs from the indirect and the direct effect.

[19]Note, that the indicator variable for the house does not exclude additional monetary transfers.

to illiterate siblings. However, it increases the probability of providing material support by 15.5pp and the conditional amount of material transfer by 103 percent.[20,21]

Finally, we find that parental investments work in the proposed directions when using the two location indicators: We find significantly positive effects of marital transfers for living in the same neighborhood and a negative association with living in a different town. The opposite signs appear for the educational investment variable.

Table 8: **Disentangling Marital transfers and Educational Investments**

	Old-age support				Residence choice	
	Monthly visits	Any future help	Any material support	Amount material support	Same neighborhood	Different town
Marital transfers						
Money	0.830***	0.006	-0.007	-0.108***	0.062***	-0.101***
	(0.297)	(0.005)	(0.008)	(0.026)	(0.012)	(0.011)
House	3.306***	0.019**	-0.012	-0.300***	0.171***	-0.176***
	(0.528)	(0.009)	(0.013)	(0.043)	(0.021)	(0.017)
Educational investments (ref. group: Illiterate)						
Primary school	-0.041	0.005	0.029***	0.074***	-0.018	0.032***
	(0.342)	(0.006)	(0.009)	(0.029)	(0.014)	(0.012)
Secondary school	-0.768**	0.011*	0.052***	0.147***	-0.045***	0.064***
	(0.378)	(0.006)	(0.010)	(0.031)	(0.015)	(0.013)
High school	-1.771***	0.010	0.089***	0.332***	-0.104***	0.095***
	(0.478)	(0.007)	(0.012)	(0.040)	(0.018)	(0.017)
College and above	-4.905***	-0.011	0.155***	0.708***	-0.249***	0.259***
	(0.529)	(0.009)	(0.015)	(0.047)	(0.021)	(0.022)
Observations	30,827	30,827	30,827	20,391	30,827	30,827

Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Note: Results from family-time fixed effects specification. *Amount material support* is the natural logarithm of the actual value. Child controls consist of child's age, age square, birth order, birth order same sex, marital status, and contemporaneous parental help of grandchild care and downward inter-vivos transfers. Full set of results can be found in Table B3 in the Appendix.

5.3 Co-Residence

Co-residence of an adult child and his or her family with the parents in one house is a peculiar form of support. Co-residence can be viewed as a combination of the child's location decision and support towards the parent. In addition, it makes it hard to quantify both time- and monetary support: we have no clear information how much time children and their parents spend with each other when living together in the same house. It is

[20]The percentage change is calculated based on a exponential transformation of the coefficient, i.e., $100 \cdot (\exp(0.708) - 1) = 102.99\%$.

[21]The pattern is less clear for *Any future help*, where the coefficients are first significantly positive and then they turn negative for college educated children.

also hard to measure the transfers when there are shared finances.[22]

Around 20 percent of child-level observations in our sample are co-resident children which makes it a quantitatively large subsample. Comparing observable characteristics for co-resident children we observe similar averages. Notable differences of co-resident children are that they are younger (35 vs. 39, on average), less likely to be illiterate (-7pp) but also less likely to be college graduates (-3pp), they tend to have younger parents (63 vs. 67) and fewer siblings (one less on average).

In order to investigate the children who co-reside with their parents we add *co-residence* as an addition decision for the child's location decision, assuming co-residence as a closer form of living arrangement compared to living in the same neighborhood. In Table 9, we compare co-residence and non co-residing in the same neighborhood, then we discuss the alternative inclusive near-residence measure, in a sample with co-resident children.

Table 9: **Co-residing or Living close by?**

	(1) Co-Residing	(2) Non co-residing same neighborhood	(3) Same neighborhood incl. co-residing
Money	0.004	0.050***	0.053***
	(0.008)	(0.010)	(0.011)
House	-0.076***	0.185***	0.109***
	(0.014)	(0.018)	(0.018)
Years of education	-0.009***	-0.010***	-0.019***
	(0.001)	(0.001)	(0.001)
Observations	39,917	39,917	39,917
Family-time fixed effect	Yes	Yes	Yes
Child controls	Yes	Yes	Yes

Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Note: Results from family-time fixed effects specification. Children controls as given in Table 8.

Results shown in Table 9 column (1) show a significantly negative coefficient for transferring a house as a marital gifts on the child's decision to co-reside. This is, however, not necessarily contrary to our proposed mechanism. It seems unlikely that parents would transfer the house as a marital gifts to their children where they still live in by the time of the marriage. Rather it is likely that parents would financially support children in buying a house nearby, which is consistent with the large and positive coefficient in column (2). Co-residing children might still eventually get the house from their parents ex-post as a bequest. This, however, cannot be analyzed with our data.

Near-residence is considered as a potentially more important living arrangement as it serves privacy and independence needs beyond providing inter-generational family supports (Giles & Mu, 2007; Lei et al., 2015). Compton and Pollak (2015) also shows that the

[22] As outlined above this is the reason why we did not include co-resident children in our main analysis. Note, however, that our main results largely stay the same when including co-resident children in our analysis. However, we have to proxy the number of visits to 'every day' and we can only use two of the three waves due to data availability for co-resident children in one wave. Results are available upon request.

correlates of co-residence and proximity between parents and children are very different, so that co-residence should not be treated as a limiting case of close proximity. Near residence supplements proximate living for a large proportion of parents with no co-residing children, and there is an increasing trend in living close instead of cohabitation (Zimmer & Korinek, 2008; Lei et al., 2015). Accordingly, we examine the inclusive measure of near residence in Column (3) in Table 9. Results show that, marital gifts significantly increase child's probability of proximate living, which includes co-residence, and receiving a house rather than only monetary gifts has a greater impact in magnitude. Results support our proposed mechanism even when the special group of co-resident children are considered.

5.4 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).[23] An additional gender division is in the type of support: sons often provide financial support while daughters (in law) provide physical assistance (Whyte, 2003).

Table 10: **Inter-generational transfers by gender**

	Sons	Daughters
Marital transfers		
Prop. money transfer	52.4%	53.0%
Amount (if > 0)	14,281	7,744
Prop. house transfer	19.8%	0.6%
Amount (if > 0)	86,885	172,386
Educational investment		
Years of Education	8.0	6.7
College financed by parents	*76.8%*	*78.7%*
Amount (if > 0)	*71,016*	*60,404*
Inter-generational support		
Visits, incidence	97.1%	96.5%
Monthly visits (if > 0)	10.1	5.3
Future help expected	71.0%	64.7%
Material transfers	63.0%	68.7%
Amount (if > 0)	2,226	1,554
Observations	13,788	17,039

Note: Monetary values are measured in RMB yuan in 2015 value (1000 yuan equals approx. 150USD).

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

[23]For instance, sons are preferred through prenatal selection (Ebenstein, 2010), and they enjoy a higher school enrollment rate and more schooling related expenditures (Song, Appleton, & Knight, 2006; Gong, Van Soest, & Zhang, 2005).

has surpassed sons' contributions (Xie & Zhu, 2009). 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).

Theoretically, albeit the indirect impact of martial gifts may operate via traditionally different mechanisms between sons and daughters, it could apply to both genders in the contemporary context. Unlike sons, among whom the link between parental help with settling down and living proximity is established in the patrilineal tradition, daughters tend to live closer to their own parents indirectly through a higher bargaining power enhanced by a dowry. However, children regardless of the sex are in general more likely to migrate for higher income in the modern society. Marital gifts thus homogeneously incentivize closer residence by inducing a child's guilt of leaving parents behind with little companionship and care.

Similarly, educational investment facilitates job related migration for both sons and daughters. Although it is documented that daughters are more likely to migrate to wealthier regions through marriage (Das Gupta & Shuzhuo, 1999), higher educational attainment may still enlarge the physical distance by facilitating marriage-related migration through matching in the marriage market.

In brief, the hypothesized differential impacts of educational and marital investments apply both to sons and to daughters, but potentially stronger among sons as male descendants are the traditional care providers.

The descriptive statistics by gender shown in Table 10 reveal surprisingly comparable transfer behavior within the family, with notable exceptions. The incidence of receiving a monetary marital gift is very similar across genders. However, sons receive 1.5 times the amount compared to daughters, on average. Most notably, almost exclusively sons receive a house as a marital gift. Similar pattern has been documented in P. H. Brown (2009), where the bride price paid by the groom's family is more than twice as large as the dowry paid by the bride's family on average. Further, daughters have 1.3 years of education less than sons, yet the incidence and amount that gets support for college education is remarkably similar.

The lower part of the Table also shows that daughters are an important provider of support for their parents at old-age, even after they are married and traditionally join the husbands family. Almost all daughters pay visits to parents, and around 65 percent of them are expected to provide long-term care in the future. The incidence of providing material support is even higher for daughters (69 percent) compared to sons (63 percent).

It is an empirical question whether our proposed hypotheses are relevant for both males and females, given both the traditional role of sons as care providers and the increasing female power.

We employ the same family-time fixed effects model extended by introducing interaction terms of the child's gender (*son*) with *all* control variables in our model. The results in Table 11 suggest that the patterns found in the baseline specification are present both for sons and daughters, as seen by the significant coefficients for marital transfers and years of schooling alone.

However, we find that our proposed mechanism is clearly stronger for sons compared to daughters. The correlation between marital transfers and the number of visits is 0.8

Table 11: **Gender Differences**

	Monthly visits	Any future help	Any material support	Amount material support	Distance
Any marital transfer	0.729**	0.003	0.002	-0.132***	-0.166***
	(0.335)	(0.006)	(0.009)	(0.031)	(0.022)
Any marital transfer # Son	0.834*	0.011	-0.024*	-0.015	-0.041
	(0.478)	(0.009)	(0.012)	(0.042)	(0.031)
Years of education	-0.084*	0.002***	0.008***	0.050***	0.020***
	(0.043)	(0.001)	(0.001)	(0.004)	(0.003)
Years of education # Son	-0.583***	-0.005***	0.008***	-0.001	0.031***
	(0.054)	(0.001)	(0.001)	(0.005)	(0.003)
Son	0.957	0.184***	-0.275***	1.690***	0.420*
	(3.581)	(0.070)	(0.103)	(0.368)	(0.229)
Observations	30,827	30,827	30,827	20,391	30,827

Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Note: Results from family-time fixed effects specification where every covariate is interacted with the gender index *son*. *Amount material support* is the natural logarithm of the actual value. Children controls as given in Table 8.

higher if the child is a son (significance at the 10% level). Similarly, the probability for a financial upward transfer is lower for sons compared to daughters after receiving a marital gift.[24] An even stronger gender difference can be found for the education variable: here education has a stronger negative effect on time support for sons (seen by the significant negative coefficients of the interaction term on visit frequency and future ADL help) and a more pronounced positive effect for the incidence of money support. Also the interaction term is important if distance is taken as the outcome variable: the positive association between education and the distance towards one's parents is even stronger for sons.[25]

5.5 Rural versus Urban Parents

We next investigate whether there is a difference in our proposed mechanism for rural areas in contrast to urban areas. We define an indicator variable which is one if the parent lives in a city and zero if the parents come from a town or a village. We again perform the family-time FE regression including interaction terms of our indicator variable *city* with all control variables. Note that *city* is a fixed household-level variable which is captured in the fixed effect, though the interaction term is child-varying.

Table 12 reveals no significant differences between rural and urban households for the nexus that we propose: almost no interaction term is significantly different from zero. We only see a slightly stronger effect of education on the distance towards ones parents, indicated by a significantly negative interaction term of -0.017. This, in turn, goes along

[24]Note that we find the gender difference to be insignificant when the outcome variable changes to expected future help which somewhat contradicts the findings by Ho (2019), who studies current ADL help and allows only the interested parental investments to differ across genders.

[25]We also found evidence that the gender differences are more pronounced (in terms of significant interactions) for different subgroups. We indeed found strong gender difference among the group of children with lower educated parents, while there were only very little gender differences for children with highly educated parents. Results are available upon request.

Table 12: **Rural-Urban Differences**

	Monthly visits	Any future help	Any material support	Amount material support	Distance
Any marital transfer	1.031***	0.008	-0.007	-0.134***	-0.192***
	(0.308)	(0.005)	(0.008)	(0.027)	(0.020)
Any marital transfer # City	1.021	0.003	-0.004	-0.010	0.068
	(0.972)	(0.021)	(0.024)	(0.095)	(0.064)
Years of education	-0.334***	-0.000	0.011***	0.046***	0.033***
	(0.041)	(0.001)	(0.001)	(0.003)	(0.003)
Years of education # City	0.172	0.001	0.003	0.017*	-0.017**
	(0.132)	(0.003)	(0.003)	(0.009)	(0.008)
Observations	30,827	30,827	30,827	20,391	30,827

Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Note: Results from family-time fixed effects specification where every covariate is interacted with the urban index *City*. *Amount material support* is the natural logarithm of the actual value. Child controls as given in Table 8.

with a stronger effect of education for the amount of marital transfers when a child has parents that live in a city. But the overall conclusion from this result is that our proposed mechanism clearly holds both for children with parents from rural and from urban areas.

6 Conclusion

This study analyzes whether and how parental early life transfers affect children's support to 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 unobserved family factors.

Our results suggest that strong inter-generational 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 make their location decisions 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, extended public social security and long-term care systems might generate positive effects on economic growth and mitigate inequality in society.

7 Declarations

7.1 Funding

None

7.2 Conflicts of interest/Competing interests

None

7.3 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`

7.4 Code availability

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

7.5 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 and Descriptives

The original unbalanced sample consist of 13,755 families with 40,871 children and 93,590 child-year observations. Children across waves are first matched through the household ID and the 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 the 2013 wave, new children that entered in 2015 are excluded. We consider children at age 20 or older or who have finished school such that their education is likely to be completed. Marital gift questions are asked with regard to the child's (first) marriage, we thus exclude children who were never married. Apart from these selections, missing values of variables cause a further reduction in sample sizes. We also discard children who co-reside with their parents as in these family arrangements inter-generational transfers (time spend together, financial support) is hard to disentangle. 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 effectively excluded in fixed-effects analysis as there is no within-family variation.

Table A1: Sample Selection

Selection	2011	2013	2015	Total
Original Sample	27,398	31,348	34,844	93,590
Inconsistencies after matching	-3,441	-4,449	-4,323	12,213
Non living biological	-1,032	-1,659	-7,092	-9,783
Age under 20 or in school	-1,639	-1,529	-977	-4,115
Never married	-3,415	-3,353	-2,819	-9,587
Missing values	-3,804	-3,382	-3,229	-10,415
Co-resident	-2,282	-3,178	-3,357	-8,817
Single-child families	-2,331	-2,657	-2,815	-7,803
Selected FE sample	9,454	11,141	10,232	30,827
Selected college subsample	9,26	1,280	1,360	3,566

Notes: Number of observations (child-level) per wave and total number of child-year observations (Total) that are dropped from the original sample in order to construct our final selected sample.

Table A2: Descriptive statistics: full sample

Variable	Mean	SD	Min	Max
Child characteristics				
Age	40.44	8.44	20	72
Age2	1706	704	400	5184
Son	0.45	0.50	0	1
Birth order	2.41	1.37	1	10
Birth order same sex	1.72	0.92	1	9
Marital status	0.97	0.18	0	1
Grandchild care	0.11	0.32	0	1
Ln amt inter-vivo	0.83	2.28	0.00	11.91
Parent characteristics				
P Nr. children	4.09	1.52	2	10
P male	0.50	0.50	0	1
P working	0.63	0.48	0	1
P age	68.80	8.67	45	100
P age sqr	4808	1199	2025	10000
P married	0.73	0.45	0	1
P Nr. ADL	1.88	2.70	0	12
P urban	0.33	0.47	0	1
P educ: primary school	0.45	0.50	0	1
P educ: secondary	0.19	0.39	0	1
P educ: high and above	0.10	0.30	0	1
P pension: government	0.06	0.23	0	1
P pension: firm	0.07	0.26	0	1
P pension: private	0.03	0.17	0	1
P pension: public	0.55	0.50	0	1
P wealth IHS	10.47	3.50	-13.76	15.55
Province	17.40	10.62	1	34
Wave	2013.05	1.60	2011	2015

Notes: Full sample with 30,827 observations.

Table A3: Descriptive statistics: college sample

Variable	Mean	SD	Min	Max
Child characteristics				
Age	35.79	7.60	22	68
Age2	1,338	597	484	4,624
Son	0.51	0.50	0	1
Birth order	1.91	1.18	1	10
Birth order same sex	1.44	0.78	1	9
Marital status	0.98	0.14	0	1
Grandchild care	0.20	0.40	0	1
Ln amt inter-vivo	1.89	3.47	0.00	11.84
Parent characteristics				
P Nr. children	2.85	1.43	1	10
P male	0.53	0.50	0	1
P working	0.59	0.49	0	1
P age	64.00	8.85	45	93
P age sqr	4,174	1,174	2,025	8,649
P married	0.87	0.34	0	1
P Nr. ADL	1.06	2.13	0	12
P urban	0.58	0.49	0	1
P educ: primary school	0.27	0.44	0	1
P educ: secondary	0.29	0.45	0	1
P educ: high and above	0.37	0.48	0	1
P pension: government	0.15	0.36	0	1
P pension: firm	0.22	0.41	0	1
P pension: private	0.08	0.27	0	1
P pension: public	0.47	0.50	0	1
P wealth IHS	11.57	3.77	-13.61	15.61
Province	17.99	10.36	1	34
Wave	2,013.24	1.58	2,011	2,015

Notes: college subsample with 35,66 observations

B Additional Results

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

VARIABLES	Old-age support								Residence choice	
	Monthly visits		Any future help		Any material support		Amount material support		Distance	
	FE	FE-IV	FE	FE-IV	FE	FE-IV	FE	FE-IV	FE	FE-IV
Parental investments										
Any marital transfer	1.167***	0.862**	0.008	-0.011	-0.008	-0.001	-0.134***	-0.236***	-0.188***	-0.167***
	(0.294)	(0.392)	(0.005)	(0.008)	(0.008)	(0.011)	(0.026)	(0.053)	(0.019)	(0.025)
Years of education	-0.304***	-0.923*	-0.000	-0.039***	0.011***	0.025	0.049***	-0.150**	0.031***	0.073**
	(0.039)	(0.507)	(0.001)	(0.011)	(0.001)	(0.017)	(0.003)	(0.076)	(0.003)	(0.031)
Child controls										
Age	0.096	-0.012	-0.000	-0.007**	0.004	0.006	0.002	-0.039*	-0.025***	-0.017*
	(0.116)	(0.147)	(0.002)	(0.003)	(0.003)	(0.005)	(0.011)	(0.021)	(0.008)	(0.010)
Agesqr	-0.002	-0.001	-0.000	-0.000	-0.000	-0.000*	-0.000	-0.000	0.000**	0.000**
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Son	4.814***	5.876***	0.047***	0.114***	-0.086***	-0.110***	0.084***	0.447***	-0.221***	-0.293***
	(0.243)	(0.860)	(0.005)	(0.019)	(0.006)	(0.029)	(0.021)	(0.137)	(0.015)	(0.053)
Birth order	-0.403**	-0.499**	-0.006*	-0.012***	-0.009*	-0.007	0.023	-0.016	0.027**	0.034***
	(0.189)	(0.209)	(0.004)	(0.005)	(0.005)	(0.006)	(0.017)	(0.026)	(0.011)	(0.013)
Birth order same sex	0.085	0.058	0.001	-0.001	0.006	0.007	-0.063***	-0.069***	-0.027***	-0.025**
	(0.157)	(0.161)	(0.003)	(0.004)	(0.004)	(0.004)	(0.014)	(0.018)	(0.010)	(0.010)
Marital status: married	0.476	0.520	0.010	0.012	0.079***	0.078***	0.059	0.084	-0.101***	-0.104***
	(0.474)	(0.484)	(0.010)	(0.011)	(0.015)	(0.015)	(0.046)	(0.056)	(0.030)	(0.030)
Any grandchild care	1.350***	0.987***	0.046***	0.023***	0.020**	0.028**	0.238***	0.123***	0.005	0.030
	(0.320)	(0.350)	(0.006)	(0.008)	(0.009)	(0.012)	(0.032)	(0.046)	(0.020)	(0.021)
Ln amt inter-vivo	-0.039	-0.080*	-0.000	-0.003**	-0.005***	-0.004**	-0.012**	-0.018***	-0.004	-0.001
	(0.047)	(0.047)	(0.001)	(0.001)	(0.002)	(0.002)	(0.005)	(0.006)	(0.003)	(0.003)
First-stage F-stat		9.703		9.703		9.703		4.995		9.703
Hansen J P-val		0.228		0.010		0.0177		0.000		0.197
Endogeneity test P-val		0.129		0.000		0.528		0.005		0.122
Observations	30,827	30,827	30,827	30,827	30,827	30,827	20,391	20,391	30,827	30,827

Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note: FE is the family-time fixed effects model, FE-IV is the FE model augmented with an instrumental variable approach following Hausman and Taylor (1981) where years of education is instrumented. The P-value of Hansen's J statistic provides inferences for the overidentification test of all instruments. The P-value of endogeneity test, see Hayashi (2000), of the instrumented regressor is reported. *Amount material support* is the natural logarithm of the actual value. Standard errors are clustered at the household level.

Table B2: **Old-age Support and Residential Choice: college RE and IV**

VARIABLES	Old-age support								Residence choice	
	Monthly visits		Any future help		Any material support		Amount material support		Distance	
	RE	IV	RE	IV	RE	IV	RE	IV	RE	IV
Parental investments										
ln(Amt marital+1)	0.110**	1.040***	0.003	-0.011	0.001	-0.002	-0.013**	-0.060*	-0.013***	-0.046***
	(0.043)	(0.228)	(0.002)	(0.010)	(0.002)	(0.011)	(0.006)	(0.035)	(0.003)	(0.015)
ln(Amt college+1)	-0.202***	-0.233***	-0.004**	-0.004*	0.003	0.003	0.009	0.012	0.019***	0.021***
	(0.062)	(0.070)	(0.002)	(0.002)	(0.002)	(0.003)	(0.008)	(0.009)	(0.005)	(0.005)
Child controls										
Age	-0.018	-0.021	-0.002	-0.000	0.018	0.013	0.042	0.037	-0.029	-0.031
	(0.261)	(0.292)	(0.009)	(0.011)	(0.011)	(0.012)	(0.039)	(0.042)	(0.020)	(0.021)
Agesqr	0.002	0.002	0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.000
	(0.003)	(0.004)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Son	-1.269***	-3.145***	0.026*	0.042	-0.061***	-0.061**	0.074	0.180**	0.081***	0.145***
	(0.418)	(0.676)	(0.014)	(0.026)	(0.015)	(0.027)	(0.058)	(0.090)	(0.032)	(0.044)
Birth order	0.247	0.078	-0.005	0.007	-0.019*	-0.024*	0.027	0.040	-0.010	0.002
	(0.327)	(0.373)	(0.011)	(0.013)	(0.011)	(0.012)	(0.045)	(0.049)	(0.026)	(0.028)
Birth order same sex	-0.103	0.291	0.021*	0.001	0.009	0.017	-0.022	-0.077	0.059**	0.047
	(0.362)	(0.414)	(0.012)	(0.014)	(0.013)	(0.016)	(0.054)	(0.059)	(0.029)	(0.030)
Marital status: married	1.766	1.487	0.101	0.092*	0.047	0.054	-0.007	0.019	-0.088	-0.073
	(1.162)	(1.330)	(0.062)	(0.053)	(0.051)	(0.056)	(0.170)	(0.183)	(0.103)	(0.107)
Any grandchild care	4.969***	4.074***	0.054***	0.072***	0.019	0.018	0.070	0.142*	-0.110***	-0.075**
	(0.520)	(0.549)	(0.017)	(0.022)	(0.020)	(0.023)	(0.065)	(0.077)	(0.030)	(0.031)
Ln amt inter-vivo	0.038	-0.130**	0.003	0.005*	0.003	0.006**	-0.016*	-0.006	-0.003	0.003
	(0.051)	(0.052)	(0.002)	(0.003)	(0.002)	(0.003)	(0.008)	(0.009)	(0.004)	(0.003)
Parental characteristics										
P Nr. children	-0.491**	-0.302	0.011	0.005	0.022**	0.019*	-0.129***	-0.119***	-0.004	-0.013
	(0.229)	(0.273)	(0.009)	(0.010)	(0.010)	(0.011)	(0.035)	(0.037)	(0.020)	(0.021)
P (respondent) male	-1.284***	-0.746*	-0.006	-0.015	-0.041**	-0.044**	0.072	0.050	0.006	-0.016
	(0.368)	(0.406)	(0.017)	(0.018)	(0.017)	(0.018)	(0.057)	(0.061)	(0.027)	(0.027)
P working	-1.830***	-1.274**	0.015	0.024	0.024	0.024	-0.209***	-0.208***	0.081**	0.061*
	(0.483)	(0.528)	(0.021)	(0.023)	(0.023)	(0.024)	(0.073)	(0.071)	(0.036)	(0.036)
P age	0.374	0.765**	0.012	0.008	0.055***	0.061***	0.097*	0.083	-0.015	-0.028
	(0.315)	(0.377)	(0.013)	(0.015)	(0.015)	(0.016)	(0.054)	(0.061)	(0.026)	(0.028)
P age square	-0.003	-0.006**	-0.000	-0.000	-0.000***	-0.000***	-0.001*	-0.001	0.000	0.000
	(0.002)	(0.003)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
P married	-0.419	-0.674	0.111***	0.099***	0.001	0.013	0.003	-0.001	0.054	0.069
	(0.701)	(0.778)	(0.028)	(0.029)	(0.030)	(0.031)	(0.094)	(0.094)	(0.049)	(0.051)
P Nr. ADL	0.037	0.127	-0.019***	-0.022***	0.005	0.006	-0.009	-0.012	-0.003	-0.007
	(0.080)	(0.093)	(0.004)	(0.004)	(0.004)	(0.004)	(0.013)	(0.015)	(0.006)	(0.007)
P urban residence	3.035***	2.225***	-0.012	-0.000	-0.090***	-0.083***	0.056	0.100	-0.186***	-0.162***
	(0.455)	(0.566)	(0.020)	(0.023)	(0.022)	(0.024)	(0.079)	(0.087)	(0.039)	(0.042)
P educ: primary school	0.264	0.134	-0.017	-0.016	-0.040	-0.046	0.088	0.100	0.074	0.086
	(0.802)	(0.951)	(0.035)	(0.035)	(0.036)	(0.038)	(0.109)	(0.114)	(0.069)	(0.073)
P educ: secondary	-0.333	-1.208	-0.010	-0.010	-0.073**	-0.074*	0.128	0.169	0.051	0.090
	(0.817)	(1.007)	(0.037)	(0.039)	(0.037)	(0.040)	(0.114)	(0.125)	(0.069)	(0.074)
P educ: high and above	-0.115	-1.418	0.019	0.031	-0.090**	-0.090**	0.213*	0.300**	0.085	0.139*
	(0.853)	(1.075)	(0.037)	(0.040)	(0.039)	(0.043)	(0.120)	(0.140)	(0.071)	(0.077)
P pension: government	0.886*	0.978*	-0.003	0.015	-0.025	-0.024	-0.050	-0.090	-0.055	-0.064
	(0.531)	(0.575)	(0.026)	(0.027)	(0.025)	(0.026)	(0.089)	(0.093)	(0.038)	(0.039)
P pension: firm	0.297	-0.221	-0.006	0.011	0.026	0.025	0.020	0.087	-0.003	0.020
	(0.504)	(0.548)	(0.024)	(0.024)	(0.024)	(0.025)	(0.079)	(0.084)	(0.035)	(0.036)

Continued on next page

Table B2 – *Continued from previous page*

VARIABLES	Old-age support								Residence choice	
	Monthly visits		Any future help		Any material support		Amount material support		Distance	
	RE	IV	RE	IV	RE	IV	RE	IV	RE	IV
P pension: private	-0.090	-0.969	0.028	0.040	0.072***	0.069**	0.104	0.160	0.040	0.074
	(0.587)	(0.667)	(0.032)	(0.034)	(0.028)	(0.030)	(0.103)	(0.104)	(0.046)	(0.048)
P pension: public	-0.383	-0.643	0.048**	0.056***	0.060***	0.055***	-0.006	0.010	-0.054*	-0.042
	(0.423)	(0.463)	(0.019)	(0.020)	(0.020)	(0.021)	(0.065)	(0.067)	(0.029)	(0.030)
P wealth IHS	0.051	-0.000	0.002	0.002	0.004*	0.003	0.025**	0.029***	-0.000	0.002
	(0.036)	(0.044)	(0.002)	(0.002)	(0.002)	(0.002)	(0.010)	(0.011)	(0.003)	(0.003)
Province dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
First-stage F-stat		7.310		7.310		7.310		6.103		7.310
Hansen J P-val		0.009		0.343		0.107		0.952		0.041
Endogeneity test P-val		0.000		0.219		0.895		0.139		0.011
Observations	3,566	3,566	3,566	3,566	3,566	3,566	2,409	2,409	3,566	3,566

Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note: RE is the family-time random effects model, IV is the Hausman-Taylor model where the amount of marital gifts is instrumented. First stage statistics as given in Table B1. *Amount material support* is the natural logarithm of the actual value. Standard errors are clustered at the household level.

Table B3: **Disentangling Marital transfers and Educational Investments**

	Old-age support				Residence choice	
	Monthly visits	Any future help	Any material support	Amount material support	Same neighborhood	Different town
Marital transfers						
Money	0.830***	0.006	-0.007	-0.108***	0.062***	-0.101***
	(0.297)	(0.005)	(0.008)	(0.026)	(0.012)	(0.011)
House	3.306***	0.019**	-0.012	-0.300***	0.171***	-0.176***
	(0.528)	(0.009)	(0.013)	(0.043)	(0.021)	(0.017)
Educational investments (ref. group: Illiterate)						
Primary school	-0.041	0.005	0.029***	0.074***	-0.018	0.032***
	(0.342)	(0.006)	(0.009)	(0.029)	(0.014)	(0.012)
Secondary school	-0.768**	0.011*	0.052***	0.147***	-0.045***	0.064***
	(0.378)	(0.006)	(0.010)	(0.031)	(0.015)	(0.013)
High school	-1.771***	0.010	0.089***	0.332***	-0.104***	0.095***
	(0.478)	(0.007)	(0.012)	(0.040)	(0.018)	(0.017)
College and above	-4.905***	-0.011	0.155***	0.708***	-0.249***	0.259***
	(0.529)	(0.009)	(0.015)	(0.047)	(0.021)	(0.022)
Children controls						
Age	0.101	-0.000	0.004	-0.000	0.009**	-0.016***
	(0.116)	(0.002)	(0.003)	(0.011)	(0.005)	(0.005)
Agesqr	-0.001	-0.000	-0.000*	-0.000	-0.000	0.000**
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Son	4.292***	0.044***	-0.081***	0.138***	0.242***	0.062***
	(0.252)	(0.005)	(0.006)	(0.022)	(0.010)	(0.008)
Birth order	-0.368*	-0.006	-0.010**	0.018	-0.021***	0.003
	(0.188)	(0.004)	(0.005)	(0.016)	(0.007)	(0.006)
Birth order same sex	0.103	0.001	0.006	-0.064***	0.016***	-0.011**
	(0.156)	(0.003)	(0.004)	(0.014)	(0.006)	(0.005)
Marital status: married	0.504	0.010	0.079***	0.058	0.010	-0.092***
	(0.475)	(0.010)	(0.015)	(0.046)	(0.018)	(0.017)
Any grandchild care	1.199***	0.045***	0.020**	0.249***	0.025**	0.041***
	(0.320)	(0.006)	(0.009)	(0.032)	(0.012)	(0.011)
Ln amt inter-vivo	-0.040	-0.000	-0.006***	-0.013***	-0.001	-0.005***
	(0.047)	(0.001)	(0.002)	(0.005)	(0.002)	(0.002)
Observations	30,827	30,827	30,827	20,391	30,827	30,827

Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Note: Results from family-time fixed effects specification.

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