



university of  
 groningen

faculty of economics  
 and business

**2020010-EEF**

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

**June 2020**

Ziwei Rao  
 Max Groneck  
 Rob Alessie



SOM is the research institute of the Faculty of Economics & Business at the University of Groningen. SOM has six programmes:

- Economics, Econometrics and Finance
- Global Economics & Management
- Innovation & Organization
- Marketing
- Operations Management & Operations Research
- Organizational Behaviour

Research Institute SOM  
Faculty of Economics & Business  
University of Groningen

Visiting address:  
Nettelbosje 2  
9747 AE Groningen  
The Netherlands

Postal address:  
P.O. Box 800  
9700 AV Groningen  
The Netherlands

T +31 50 363 9090/7068/3815

[www.rug.nl/feb/research](http://www.rug.nl/feb/research)



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

Ziwei Rao

University of Groningen, Faculty of Economics and Business, Department of Economics, Econometrics and Finance

[z.rao@rug.nl](mailto:z.rao@rug.nl)

Max Groneck

University of Groningen, Faculty of Economics and Business, Department of Economics, Econometrics and Finance

Rob Alessie

University of Groningen, Faculty of Economics and Business, Department of Economics, Econometrics and Finance

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

Ziwei Rao<sup>†</sup>      Max Groneck<sup>‡</sup>      Rob Alessie<sup>§</sup>

May 27, 2020

## Abstract

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

*JEL Classification: D13, J13, J14*

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

---

\*We are grateful to Viola Angelini, Yi Zhang, Gregory Veramendi, and participants at the Network for Studies on Pensions, Aging and Retirement (Netspar) Pension Day and the PhD conference at University of Groningen, the Netherlands for their valuable comments and discussions.

<sup>†</sup>Ziwei Rao, University of Groningen (z.rao@rug.nl).

<sup>‡</sup>Max Groneck, University of Groningen, Netspar, and Aletta Jacobs School of Public Health (m.groneck@rug.nl).

<sup>§</sup>Rob Alessie, University of Groningen and Netspar (r.j.m.alessie@rug.nl)

# 1 Introduction

Intergenerational family ties are an important element to sustain well-being in old age. Old-age support from younger family members is especially important in countries with less developed public social security and formal long-term care systems. Family ties are often reciprocal: the children's help is rewarded by parental inter-vivo transfers or bequests. In addition to contemporary transfers, transfers and investments earlier in the children's life might also shape their duty to take care of their parents at old-age. Yet, the question arises, whether these early-life transfers – such as education, buying a house, or a marriage – affect their caregiving behavior in the same way, or rather differently.

In this paper, we analyze intergenerational reciprocity by focusing on early life transfers and particularly highlighting the importance of residential choice. We study the reciprocal behavior of parental transfers to children earlier in life and the children's decision to migrate, which in turn influence their possibilities to take care of their parents when they become old. We use data from the China Health and Retirement Longitudinal Study (CHARLS). We aim to contrast the impact of two different kinds of parental transfers on children's behavior: marital transfers and educational transfers. We hypothesize, that both transfers act very differently in the child's residential decision and, hence, on the propensity to support their parents. Investments into education potentially incentivize children to move away from the parents to a place with better job possibilities. These children tend to be financially well-off and support their parents financially at older ages. On the other hand, if parents provide marital transfers, such as a house, then children are rather incentivized to stay close to their parents. This, in turn, would lead to more time that children are able to spend with their parents and allows for potential caregiving for parents in need of long-term care.

In China, supporting children's education and marriage gifts are the two most important early-life transfers to children (Anderson, 2007; Wei & Zhang, 2011). In rural China, the bride-price amounts to 82 percent of the value of households' major durable goods, on average (Brown, 2009). In addition, 15 percent of parents 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; Brown & Park, 2002). In addition, sending one's children to school might imply high opportunity costs. In many rural families children start to work early to contribute to family earnings. Investing into the children's education makes it more likely that these children move away from the rural areas into the cities for better earning potentials. In 2016, 136 million rural migrants are working in urban areas in China, which amounts to around 10 percent of the total population.<sup>1</sup> A strict household registration system (*Hukou*) discourages migrants from bringing the whole family as major social benefits cannot be transferred. As a result, old parents are often left-behind while migrants are able to provide financial help to parents through

---

<sup>1</sup>Data sources: National Bureau of Statistics of China (NBSC)

remittances.

Old-age support in China still heavily relies on money and time transfers from descendants due to not only economic reasons, but also the belief in Confucian filial piety.<sup>2</sup> 49% (73%) of urban (rural) elderly parents in China receive either care or money from their children (Lee & Xiao, 1998). Staying close to one's parents allows for more help in time, fulfills the principal of filial piety in China and improves the well-being of the parents (Chen & Silverstein, 2000).

We first present descriptive statistics on intergenerational family ties in China. Since less than 10 percent in our sample are a single-child we can focus on the heterogeneity between siblings. We show that marital transfers are substantial but they are very unequally distributed within families: in 25 percent of the families, only one child receives a marital gift whereas all other children receive nothing. Similarly, in more than 60 percent of families, siblings attained different educational degrees. Child support is also substantial but heterogeneous among siblings. Almost all children visit their parents and around 75 percent of children provide financial transfers. However, transfer amounts and visit frequencies differ greatly among siblings.

In our estimations, we make use of the panel dimension of CHARLS at the child-level. We employ a linear family-time fixed effect model which allows us to control for unobserved time-varying child characteristics. As our first main result, we find past marital transfers to the children to be positively associated with time support while educational transfers encourage monetary support of the parents later in life. Children who received a house as marital gifts spend 3 more visits per month with their parents, on average. They have a 3 percentage points (p.p.) higher probability of providing future help. Further, they provide 25% less material transfers, compared with siblings who did not receive a marital gift. In contrast, children who received educational transfers – proxied with the educational attainment of the child – spend less time with their parents but provide more financial support. Children with a financed college degree spend almost 4 fewer visits per month, on average, while the transfer probability is 16 p.p. higher and the transfer amount is more than twice as much, compared to illiterate children who received no educational transfer.

As our second main set of results, we show that parental transfers matter for the residential choices of children to stay close to the parents or to move further away. Applying a linear family-time fixed effect model, we find that received marital transfers discourages migration: children who received a money gift for their marriage are 6.5 p.p. more likely to live in the same neighborhood, while this is even 16 p.p. higher if they received a house. In contrast, they are 9.2 and 15.7 p.p. less likely to live in a different town if they received a money gift or a house, respectively. Further, high levels of educational transfers decrease the chance of living close to one's parents. We find that the higher educated the child is, the lower the probability that the child lives in the same neighborhood, and conversely, the higher the probability to live in a different town. For

---

<sup>2</sup>Filial piety (*xìào*) 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.

a child with a financed college degree, the likelihood to live in the same neighborhood is 21.4 p.p. lower – compared to an illiterate child, while the probability to live in another town is 27.4 p.p. higher. We complement these findings with estimations on the college sub-sample which allows us to use monetary transfers into education instead of our proxy variable of educational attainment. Finally, we study heterogeneous effects which broadly confirm our main findings.

There exists a long-standing literature on inter-generational family transfers.<sup>3</sup> The majority of studies focus on inter-vivo transfers and bequests behavior of the parents in exchange for children’s support at older ages, see, e.g., Alessie, Angelini, and Pasini (2014), Norton, Nicholas, and Huang (2013) and Groneck (2016). We complement this work by studying the impact of parental transfers to their children at early life on the child’s support to their parents at old-age. By making use of recall questions we are able to link transfers from the past to behavior happening many years later. Our study is related to a small line of research with similar data availability, see Ho (2019), Ciani and Deiana (2017), and Cunningham, Yount, Engelman, and Agree (2013). Most closely related to our study of China is Ho (2019), who studies the gender-differences of the impact of parental investments in college education and marriage on old-age support. We extend this work in several dimensions. First, we highlight the channel of residential decision through which the reciprocal exchange is likely to work. Second, based on the hypothesized mechanism, we focus on the differential effects of these two kinds of transfers on children’s help in time versus help in money. Third, we focus on the whole population by adopting educational attainment to proxy educational investment and improve methodologically by controlling for time-varying family fixed effect.

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

## 2 Data and Descriptive Statistics

### 2.1 Data

We use data from China Health and Retirement Longitudinal Study (CHARLS), an ongoing micro-longitudinal survey which is nationally representative of Chinese older population aged 45 and above. CHARLS is the sister data set of Health and Retirement Study (HRS), Survey of Health, Aging and Retirement in Europe (SHARE) and English Longitudinal Study of Aging (ELSA). CHARLS contains rich information on demographic characteristics, health status, health care and insurance, retirement and pensions, work and incomes, as well as on the family structure and interpersonal transfers. The main surveys start from 2011, and they are conducted biennially by face-to-face

---

<sup>3</sup>See Becker (1974), Cox (1987), Cigno (1993), and Bernheim, Shleifer, and Summers (1986). Nugent (1985) and Cigno (1993) study the importance of children for old-age security

Table 1: **Family Size – Distribution at the Household-level**

No. of children	1	2	3	4	5	6+	Obs
Rural	4.8%	32.7%	27.7%	17.4%	10.4%	7.1%	5,078
Urban	12.8%	35.3%	23.5%	15.5%	7.2%	5.7%	2,949
Overall	7.7%	33.7%	26.1%	16.7%	9.2%	6.6%	8,027

*Note:* Fraction of families depending on the number of children for rural and urban families and overall.

computer-assisted interviews. Details of the survey design, sampling procedure and samples please see Zhao et al. (2013) and Chen, Smith, Strauss, Wang, and Zhao (2017).

Since living arrangement and intergenerational transfers information in 2011 wave are not comparable with those in later waves, we employ data from 2013 and 2015 waves to conduct child-level analyses. We treat respondents as parents. There is one family respondent per household in each interview and the respondent’s spouse (if present). Questions related to children, intergenerational transfers between parents and each child and past marriage gifts offered to each child (if the child has ever married) are asked to the family respondent. The data allows us to treat each child in a family as the unit of observation and to analyze the child-level and variation between siblings.

Important sample selections are made, such as excluding never married children and co-resident children, keeping only biological children, and dropping single child families, which results in a final sample of 29,604 child-year observations of 18,017 children from 7,406 families, cf. Table A1 in Appendix A. Table 1 shows the distribution of family size by rural/urban households. Contrary to common belief, the generation that we study does not mainly consist of one-child families in either rural area or urban area. On the contrary, only 7.7% of families have only one child. Children in our sample were mostly (i.e. 66%) born prior to the introduction of the one-child policy which was introduced in 1979. In addition, various exemption rules especially for rural households, and ethnic minorities applied (Wu & Li, 2011). In our fixed-effects analysis, we explore within-family variation such that single-child families are not taken into account. This amounts to dropping 3% of observations.

## 2.2 Variables

### 2.2.1 Dependent Variables

We next describe the variables used to estimate the two main regression equations which uses two sets of dependent variables: In the first equation, we estimate parental transfers on various variables of support by the children. Second, we estimate transfers from the parents on various measures on the proximity of children’s residence with respect to their parents.

**Support Variables from the Child** There are four measures of support from the child to the parent, including time transfers and material transfers. The variable *Visit frequency* represents the number of monthly visits to parents from non-coresident chil-

dren. Recall that we drop cohabiting children, since this variable would not be defined for them. Paying visits to parents incurs time cost especially for those who live far away from their parents. The variable *Whether future help* is an indicator variable taken from the following question:

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

The variable represents parent’s expectations about the help in activities of daily living (ADL) they expect to receive from their children in the future when they are in need of long term care.

Material support is measured at the extensive and the intensive margin. *Whether material support* is an indicator variable whether children transferred money or in kinds to the parents in the year before the interview. The *amount of material support* is the amount of money and in kind transfers provided over the previous year in 10,000 yuan.<sup>4</sup> These questions are:

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

**Residential Choice** To measure residence choice, we use three dummy variables that represent an increasing distance between children and their parents. The closest and the furthest measures are taken as the outcome variables of children’s residence decisions for our analysis. *Same neighborhood* is an indicator variable which equals one when the child lives in the same village/neighborhood as their parents. *Same town* equals one when the child lives in the same county/city, but not in the same village/neighborhood with their parents. *Different town* takes a value of one when the child and parents live in different counties/cities, which represents the furthest child-parent distance that we measure. These three dummy variables cover all living proximity possibilities, and depict an increasing distance to parents. Respondents were asked *”Where does the child normally live now?”*.

### 2.2.2 Main Independent Variables: Transfer Variables from Parent

**Marital Transfers** Marriage gifts are past intergenerational transfers taken from the main questionnaire of CHARLS. It is mainly transferred by parents to their own children, for a support purpose. The transfer is taken as the marriage investment that parents make in each child. Marriage transfers are composed of two parts, namely money transfers and a house as a gift. Such variables are based on the following questions:

---

<sup>4</sup>Natural logarithm of the actual amount is used in empirical analysis.

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

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

It is important to note, that the marital gift question is a recall variable from a time potentially many years ago. The average birth year of the parents is 1946 and the average year when the child first get married is 1997. It means that 69 years old parents have to remember the amount of marital transfers that is 18 years ago, on average. In addition, most families have more than one child, as showed before, which makes it more difficult for old parents to recall the exact number transferred to each child. It is noticeable in the panel data that many parents reported different values for the same child across waves.<sup>5</sup> The marital transfer amount might also suffer from measurement error as other self-reported monetary variables, such as wealth, income and expenditure. The binary variables are chose as main explanatory variables, as they are considered as more reliable.<sup>6</sup>

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

In our main analysis, we proxy parental investment into children’s education by the educational outcome of each child, reflecting the intrahousehold resource allocation in education, especially between siblings.<sup>7</sup> As mentioned above, we do have information about parental investment into college education for the subsample of children who went to college. In order to analyse the full sample of children across all educational groups, we combine both information into a six-category variable. These categories are (1) illiterate, (2) primary school, (3) secondary school, (4) high school degree, (5) college degree without financial help from parents, and (6) college degree with financial help from parents.

As a second variable, we additionally use the natural logarithm of the actual amount of investment into college education which we analyze for the subsample of children with college degree only.

---

<sup>5</sup>We take the average value of these children when the amount variable is used in analysis.

<sup>6</sup>Binary variables are able to capture sufficient variation within families, as presented later in descriptive statistics.

<sup>7</sup>Similar proxies have been used in other studies, e.g. Brown and Park (2002) measure educational investment with the number of years of schooling.

### 2.2.3 Control Variables

As our control variables, we use important child characteristics such as age, gender, marital status, birth order, and having siblings with the same gender. Gender is highly correlated with parental transfers, since sons receive much higher educational investment and marital transfers than daughters. Birth order captures part of the innate ability, given the findings that birth order affects earnings and intelligence quotient (Black, Devereux, & Salvanes, 2005; Barclay, 2015).<sup>8</sup> Whether having same gender sibling is relevant in the sense that only children in their gender group, especially only sons, culturally carry support duties.

## 2.3 Descriptive Statistics

In the following, we present some statistics about the distribution of marital transfers, old age-support and living proximity within families.

Table 2: Marital Transfers and its Distribution\*

Child level	
No transfer	38.8%
Prop. money transfer	52.5%
Amount (if > 0)	12,634
Prop. house transfer	8.8%
Amount (if > 0)	108,115
Family level	
No transfer to any child	24.7%
Prop. money transfer	59.9%
Amount (if > 0)	23,221.51
Prop. house transfer	15.4%
Amount (if > 0)	155,124
Families with positive transfers	
Equal positive amounts	6.7%
Unequal positive amounts**	48.8%
Some zero, equal positive amts	3.1%
Some zero, unequal positive amts**	18.2%
Some zero, one positive	23.1%

*Note:* Monetary values are measured in RMB yuan in 2015 value (1000 yuan equals approx. 150USD). \*Child is ever married such that the marital transfer decision has been made. \*\*Within the group of families with at least two unequal positive transfers, the largest positive transfer is at least twice as much as the smallest positive transfer in 71% of families.

**Parental Investments** Table 2 shows the transfer behavior of parents for the marriage of their children and the within household distribution. The table reveals that marital

<sup>8</sup>Innate ability of the child would cause an endogeneity problem, which will be discussed later.

transfers are very prevalent in China: gifts are granted in 80% of families and 60% of children receive it. On average, children receive 25,418 yuan. Turning to families with positive transfers allows to analyze the distribution of gifts. Interestingly, the vast majority of families – 93 percent – distributes marital gifts unequally among the children. Further, 44 percent of parents only support some of their children while others receive nothing, whose variance could be captured by the gift/no gift dummy variable.

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

<b>Child</b>	
<i>Lowly educated:</i>	
Illiterate	6.7%
Primary School	38.0%
<i>Medium educated:</i>	
Secondary School	32.8%
High School	13.1%
<i>Highly educated:</i>	
College and above	9.5%
<hr/>	
Children with College degree	
College financed by parents	63.8%
Amount (if > 0)	70,117
<hr/>	
<i>Family**</i>	
Equal education	38.2%
No higher than medium education	45.7%
Some medium education, some highly educated	11.1%
Some lowly educated, some highly educated	5.0%

*Note:* Monetary values are measured in RMB yuan in 2015 value (1000 yuan equals approx. 150USD). \*Child is at least 20 such that education is likely to be completed. \*\*Equal education is calculated based on the six categories from illiterate to college financed. Category "No higher than medium education" contains families with children who are all unequally lowly educated, all unequally medium educated, and some lowly educated, some medium educated.

Table 3 shows the educational investment received by children and the within household distribution. Most children, 77% of all children, have secondary school degree or less. Less than 10 percent of children are highly educated, namely attended college and above. When we look at the group who are influenced by the mandatory education law, there are still around 40% of them do not obtain secondary school degree.<sup>9</sup> The middle part of Table 3 shows that among those children with a college degree 64 percent were supported by their parents with 70,000 yuan, on average.

Educational investment is also unevenly distributed within families. Only 38 percent of families have equal educational investment. There are even 5% of families have both primary or less educated children and college educated children. The summary statistics support the argument that many children stopped schooling early, sometimes even earlier than required, and that parents make unequal investment decisions in children's

<sup>9</sup>The mandatory education law was introduced in 1985, and it is supposed to impact those who were younger than 15 at the time (Fang, Eggleston, Rizzo, Rozelle, & Zeckhauser, 2012).

education at all levels.

Table 4 shows that marital transfers are correlated with children’s demographics, in particular with gender and birth order. Our statistics show that sons and older siblings tend to have a higher probability of receiving marital support from parents. If a child has no same-gender sibling, s/he has a higher probability of receiving marital gifts. We do not see a substitution effect between marital transfers and educational ‘investments’ by parents in the descriptive statistics of Table 4. Higher educated children are more likely to receive marriage related gifts than their less educated counterparts. However, this might be driven by generally better economic conditions of the families with higher educated children.

Table 4: **Marital Transfers and Child Characteristics**

	Gifts	No gifts	Diff
Age	39.52	41.12	***
Prop. male	0.49	0.31	***
Birth order	2.20	2.48	***
Only son/daughter	0.25	0.20	***
Nr. of children in family	3.71	4.17	***
Educational investment			***
Prop. illiterate	0.05	0.09	
Prop. primary school	0.37	0.40	
Prop. secondary school	0.35	0.29	
Prop. high school	0.14	0.12	
Prop. college unfinanced	0.03	0.04	
Prop. college financed	0.06	0.06	
Observations	18,420	11,184	

*Note:* Means, and the significance of the difference between means are reported. The significance of means difference is based on S.E. clustered at the household level. Received gifts is defined as received either monetary or house gift.

**Support from Children** Table 5 shows that most children support parents in forms of time and money. Almost every child pays visits to parents, and half of children are expected to provide care to parents in the future when help is needed. Since the proportion of children who do not visit parents is very small, we do not consider a two part model for visit frequency. 74 percent of children support parents financially, with an average amount of 1962 yuan in the last year. The conditional mean of the amount of financial transfer is much greater than the median, and there are some children transfer rather large amounts of financial support. The right-skewed distribution of financial transfer suggests a logarithmic transformation in later empirical analysis.

The distribution of support within families show quite large between-siblings differences. Most siblings visit parents and provide material support to parents, but with different frequencies (84% of families) and different amounts (83% of families). Future

help is expected from only half of children, while it is more evenly distributed within families. It seems that parents tend to believe that all children would provide ADL help in the future, if they expect help from children. Parents might also expect more equal help than they actually receive.

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

Table 5: **Child Support**

Support in Time - Child	
No visits	3.2%
Visit frequency (if > 0)	7.2
Future help expected	48.2%
Support in Money - Child	
Financial transfers	74.0%
Mean (if > 0)	1,962
Median (if > 0)	1,000
75th percentile (if > 0)	2,000
85th percentile (if > 0)	3,000
95th percentile (if > 0)	7,000
99th percentile (if > 0)	20,000
Family	
Unequal visit behavior	84.3%
Unequal exp. future help	21.5%
Unequal financial transfers*	83.0%

*Note:* Monetary values are measured in RMB yuan (1000 yuan equals approx. 150USD). Visit frequency refers to the number of visits per month. Financial transfer refers to the material support during the past year of the interview. \*Within the group of families with unequal financial transfers, the largest transfer is at least twice as much as the smallest positive transfer in 68% of families.

**The Importance of Residential Choice** Living close to one's parents not only increases the probability of providing instrumental help (Yan, Chen, & Yang, 2003), but also fulfills the filial piety and improves parental well-being in China (Chen & Silverstein, 2000). There are on average 44% of children living in the same household or neighborhood as their parents. Having at least one child living close is the case for the vast majority of 72 percent of families.<sup>10</sup>

Table 6 shows how various measures of children's support, marital gifts and educational attainments differ by living proximity to one's parents. We depict averages for three sets of children, which includes living in the same neighborhood with their parents,

<sup>10</sup>Statistics are based on the sample without the co-resident children selection.

Table 6: **Living Proximity, Parental Transfers, and Old-age Support**

	Same neighborhood	Same town	Diff town
<i>Old-age support</i>			
Frequency of visits	15.71	4.43	1.23
Prop. future help	0.51	0.48	0.46
Prop. material transfer	0.67	0.77	0.77
Amt material transfer (if > 0)	1,340	1,599	3,020
<i>Marital transfers</i>			
Prop. money transfer	0.65	0.60	0.57
Prop. house transfer	0.16	0.05	0.07
Prop. either transfer	0.68	0.61	0.58
<i>Educational investment</i>			
Illiterate	0.08	0.08	0.04
Primary	0.45	0.36	0.33
Secondary	0.33	0.32	0.33
High	0.11	0.14	0.13
College unfinanced	0.02	0.04	0.05
College financed	0.02	0.05	0.12
Observations	9,274	11,543	8,787
Fraction of all children	31.3%	39.0%	29.7%

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

living in the same town, but a different neighborhood, and living in another town than their parents.

As expected, children's living proximity to parents is correlated with the kind and the amount of old-age support the children provide. Living in a different town with one's parents, rather than living in the same neighborhood, indicates a reduction of 14 visits per month, and a 5 percentage point lower expected probability of receiving care in case needed in the future. In contrast, children who live in the same neighborhood with their parents are 10 pp less likely to provide financial aid to their parents. This might be due to the fact that children who live close give up better job opportunities in other places implying lower earnings than their migrated siblings.

Consistent with previous discussion, Table 6 shows that children who received marital gifts from their parents are more likely to live close by their parents - the proportions of children who received marital gifts are larger in groups living closer. The largest difference is 10 percentage points. In contrast, children with higher educational attainment tend to live further away from their parents. Only 4% of children are college educated among those who live in the same neighborhood, whereas the number amounts to 17% among children living in another town.

### 3 Empirical Model

As our main analysis we investigate the impact of parental support for the marriage and for the education of the child on (a) the children’s support to their parents later in life, and (b) the children’s location decision as the main mechanism affecting the kind of old-age support by the children.

In particular, we estimate three main regressions: First, we estimate the impact of parental investment into the children via marital transfers and via educational support on the children’s decisions to support the parents both in time and with money. Second, we estimate both parental investment decisions on the child’s decision to migrate. For both of these equations, we focus on whether parents gave gifts for the children’s marriage, as well as the educational degree of the children as a proxy for the outcome of parental investment into children’s education. This is due to the fact that the absolute amount of marital gifts is not fully reliable. In addition, the absolute amount of investment into children’s education is only available for a small subset of households. To specifically analyze the impact of actual amounts both for marital transfers and for educational investment, we, third, analyze the amount of parental investment by focusing on the subsample of children with college degree. Here, we can estimate the monetary amount both for a marital gift and for financing the children’s college education on the child’s reciprocal behavior towards the parent, both in terms of time and money, and on the child’s residence choice.

Estimating parental investment variables on children’s support and on children’s residential decisions suffer from endogeneity problems. In more altruistic families, parents might invest more into their children and children might simultaneously help their parents more. An estimated impact of parental investment decisions on children’s help might, hence, be biased by this unobserved endogeneity. To control for these unobserved variables, we employ a family fixed effect model, which we also allow to change over time. Hence, in effect, we set up a family-time fixed effect model.

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

$$support_{iht} = \alpha_{ht} + \mathbf{m}'_{ih}\boldsymbol{\beta}_1 + \mathbf{e}'_{ih}\boldsymbol{\beta}_2 + \mathbf{x}'_{iht}\tilde{\boldsymbol{\beta}} + \varepsilon_{iht}. \quad (1)$$

The dependent variable  $support_{iht} \in \{Visiting\ frequency, Whether\ future\ help, Whether\ material\ support, Ln\ amount\ of\ material\ support\}$  denotes intergenerational old age support provided by child  $i$  from family  $h$  in year  $t$  to the parents. As outlined in Section 2.2.1, we investigate four different variables. Two variables, *Visiting frequency*, and *Whether future help* represent the help in time. *Material support* - both at the extensive and at the intensive margin - represents the children’s help in kind and with money.

The amount of material support is censored at zero given that many children did not provide material support. Thus, a two-part model is employed in analyses of material support. A linear probability model is used in the first part. In the second part, an OLS with natural logarithm transformed dependent variable is employed on the sample with

positive transfers. We estimate the extensive and the intensive margins independently.<sup>11</sup>

Our main independent variables are the parents investment variables. Denote by  $\mathbf{m}_{ih} \in \{\textit{Marital money transfer}, \textit{Marital house transfer}\}$  two indicator variables whether child  $i$  received a marital gift - either monetary, or a house - in family  $h$ .  $e_{ih}$  are binary variables indicating the educational attainment of the child, ranging from illiterate - which will be the reference group that is left out -, primary-, secondary-, and high school, to unfinanced and financed college degree, cf. Section 2.2.2. These variables are our proxies for the parental investment into the children's education.

We expect  $\beta_1 > 0$  for the children's help in time, represented by *Visiting frequency*, and *Whether future help*, whereas we expect  $\beta_1 < 0$  for the children's help in money. We conjecture that parents can influence the children's help in time by generous marital transfers. At the same time, we hypothesize that the coefficients  $\beta_2$  for (higher) educational attainment will be negative for children's help in time relative to illiterate children, while it will be positive with respect to children's help in money.

$\mathbf{x}_{iht}$  captures child characteristics, including child's age, age square, gender, birth order, whether having same gender siblings dummy, and marital status.

$\alpha_{ht}$  denotes the unobserved family-time effect and represents time-variant unobserved fixed family shared values which may determine both parental investments and old-age support. Family-time fixed effect  $\alpha_{ht}$  represents time-variant observed characteristics such as parental wealth and unobserved shared family values which may determine parental investments and also influence old age support. For example, in a more altruistic family, parents invest more in children and children tend to repay more. This generosity or altruism not only generate positive correlation between investments and return, but also reinforce the estimated correlation. The time-variant feature further allows such generosity to change over time. Note, that introducing this time-fixed effect implies that we only analyze variation between siblings within a household. However, all variation over time and all fixed family characteristics are captured in the term  $\alpha_{ht}$ .

$\varepsilon_{iht}$  is an idiosyncratic error term. Identification assumption that  $mg_{ih}$  and  $e_{ih}$  may not be correlated with the error term  $\varepsilon_{iht}$  needs to be made. In the family-time fixed effect model, family-time effect  $\alpha_{ht}$  is allowed to be correlated with the explanatory variables.

As our second main equation, we estimate the impact of parental investments on children's decision to live close by or far away from one's parents by applying the same model:

$$residence_{iht} = \alpha_{ht} + \mathbf{m}'_{ih}\beta_1 + \mathbf{e}'_{ih}\beta_2 + \mathbf{x}'_{iht}\tilde{\beta} + \varepsilon_{iht}. \quad (2)$$

To study the main mechanism of the parental investment decision on children's helping behavior, we here use  $residence_{iht} \in \{\textit{same neighborhood}, \textit{different town}\}$  as our dependent variable which indicates the child's place of residence compared to the parents. As outlined in Section 2.2.1,  $residence_{iht}$  consist of two indicator variables representing

---

<sup>11</sup>Tobit is not adopted since it requires estimates on transfer decision and conditional transfer amount to be in the same direction, which is likely to be violated by the predictions of exchange motive. The logarithmic transformation is employed because of the right-skewed distribution of positive transfers.

the shortest and the furthest distance to one’s parents. The remaining elements are the same as in Equation (1).

As our main hypothesis, we expect positive coefficients for  $\beta_1$  if *same neighborhood* is used as the dependent variable, while we expect  $\beta_1 < 0$  for *different town*. Analogously, we expect increasingly negative coefficient for higher educational attainments for *same neighborhood* as the dependent variable, while the opposite gradient is expected for *different town*.

Finally, we use the monetary amount of the parental gift as well as for the investment into the college education for the subsample of children with a college degree. We estimate a random effect model instead of a preferred fixed effect model, since there are only few families with multiple college educated children would contribute effectively to the estimation.

$$Outcome_{iht} = \beta_0 + mg_{ih}^{amt} \beta_1 + e_{ih}^{amt} \beta_2 + \mathbf{x}'_{iht} \tilde{\beta} + \mathbf{z}'_{ht} \gamma + \alpha_{ht} + \varepsilon_{iht}. \quad (3)$$

where  $Outcome_{iht}$  refers to  $support_{iht}$  and  $residence_{iht}$  defined above.  $mg_{ih}^{amt}$  and  $e_{ih}^{amt}$  stand for the natural logarithm of the monetary amount paid for the marital gift and for the children’s college education. Note, that here, we do not distinguish between monetary transfers and a house gift and simply take the absolute value.<sup>12</sup> The additional term  $\mathbf{z}_{ht}$  represents parental level information, including the eldest parental age, age square, responding parental gender, work status, marital status, the number of children, parental highest educational attainment, residence type urban or rural, pension type, and region dummies.  $\alpha_{ht}$  denotes the time-variant family effect, which is assumed to be uncorrelated with explanatory variables, thus random. We check the validity of the assumption by running the robust version of Hausman test as proposed by Mundlak (1978) and Wooldridge (2010), see section 10.7.3 in Wooldridge (2010). Test results support the random family effect assumption in the college subsample in almost all regressions, except the regression on the incidence of material support, where fixed effect and random effect results are found to be nevertheless qualitatively the same.

## 4 Main Results

### 4.1 Old-age Support

Results of our first equation (1) are presented in Table 7. Compared to siblings who received no gift, children who received a house transfer are spending 3 additional visit per month with their parents, on average, they have a 3 p.p. higher probability of providing future help, and they reduce material transfer by 25% per year to their parents, conditional on transferring.<sup>13</sup> Children who received money gifts behave in a similar way with smaller absolute magnitudes of changes. In line with our hypotheses, marital

<sup>12</sup>Note, that we add one yuan to each observation in order to include zeroes which would otherwise not be defined

<sup>13</sup>The percentage change is calculated based on a exponential transformation of the coefficient, i.e.,  $100 \cdot (\exp(-0.292) - 1) = -25.3\%$ .

transfers seem to incentivize more time or physical support, but discourage monetary transfers.

On the contrary, higher educational degrees of the children - used as our measure of parental investment into education - is associated with a lower frequency of visits, but seems to greatly stimulate financial support. For instance, received educational support until high school decreases the number of monthly visits by 1, compared to illiterate siblings. However, it increases the probability of providing material support by 10 p.p.. There is a clear gradient of the level of educational attainment on the magnitude of visits, the probability to provide material transfers, and the amount of material transfers, going in opposite directions: the higher educated the child, the lower the number of visits and the higher the probability and the amount to provide financial transfers to the parents. This pattern, albeit less clear-cut, is also visible for *whether future help*, in particular when comparing college vs. non-college educated children: the coefficients turn significantly negative for college educated children.

To sum up, the results show the different returns of marital transfer and educational investment, where the former contributes to time support and the latter stimulates material transfer.

## 4.2 Residential Choice

The child's decision of where to live directly influences potential support possibilities of the parents. Children who move further away - likely due to higher earning potentials - are more likely to help their parents in kinds whereas children who stayed close to their parents are more likely to help in time. In this section, we explore residential choice as the underlying mechanism of the associations between parental transfers and old-age supports observed in the previous section. We again apply a family time-fixed effect model, and show the effect of parental transfers on residential choice in Table 8.

Received money transfer is associated with a 7 p.p. higher probability of living in the same neighborhood, and a 9 p.p. lower probability of living a different town, compared to received no transfer. Received a house as marital gifts correlates with living in the same neighborhood and living in a different town in the same directions as received money transfer does, but the absolute magnitudes are much larger. Hence, marital transfers in the past have increased the likelihood of children to stay close to their parents. The results indicate that living within the town boarder, especially in the same neighborhood, could be considered as staying close.

Children's educational attainment which we use as a proxy for parents investment into children's education shows a pronounced gradient with respect to the place of residence of children relative to their parents. Overall, higher educational attainments are significantly correlated with a higher probability of migrating to a different town, and a lower probability of staying in the same neighborhood. Compared with children with no formal education, children with a high school degree have a 10 p.p. higher likelihood of migrating to a different town, and a 8 p.p. lower likelihood of living in the same neighborhood. Children who attended college with (without) financing from their parents are 21 (23) p.p. less likely of living in the same neighborhood and 27 (21) p.p. more likely

Table 7: Parental Transfers and Old-age Support

	Visit frequency	Whether future help	Whether material support	Ln amount of material support if > 0
<i>Marital transfers</i>				
Money	0.853*** (2.96)	0.012* (1.84)	-0.002 (-0.17)	-0.122*** (-4.73)
House	2.828*** (5.47)	0.029** (2.49)	-0.004 (-0.24)	-0.292*** (-6.75)
<i>Educational investments</i> (reference group: Illiterate)				
Primary school	0.637 (1.44)	0.006 (0.67)	0.028** (1.98)	0.092** (2.26)
Secondary school	-0.041 (-0.08)	0.011 (1.02)	0.058*** (3.73)	0.200*** (4.52)
High school	-1.186** (-2.07)	0.011 (0.95)	0.095*** (5.53)	0.368*** (7.40)
College unfinanced	-4.375*** (-5.96)	-0.026 (-1.62)	0.150*** (6.34)	0.635*** (9.27)
College financed	-3.959*** (-5.93)	-0.027* (-1.77)	0.160*** (7.56)	0.798*** (12.79)
Family-time fixed effect	Yes	Yes	Yes	Yes
Child controls	Yes	Yes	Yes	Yes
Observations	29,604	29,604	29,604	21,905
R-squared*	0.067	0.034	0.029	0.062

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

*Note:* Dependent variable old-age support includes visit frequency, whether providing future help, whether transferring material support, and the amount of material support if transfer. Control variables of the child consist of child's gender, age, age square, birth order, whether having same gender siblings, and marital status. Standard errors are clustered at the household level. \*Within R-squared is reported.

Table 8: Parental Transfers and Residential Choice

	Same neighborhood	Different town
<i>Marital transfers</i>		
Money	0.065*** (5.59)	-0.092*** (-8.56)
House	0.161*** (7.93)	-0.157*** (-9.33)
<i>Educational investments</i> (reference group: Illiterate)		
Primary school	0.014 (0.76)	0.031* (1.94)
Secondary school	-0.031 (-1.53)	0.068*** (3.73)
High school	-0.084*** (-3.68)	0.101*** (4.84)
College unfinanced	-0.227*** (-7.57)	0.212*** (6.67)
College financed	-0.214*** (-8.23)	0.274*** (10.01)
Family-time fixed effect	Yes	Yes
Child controls	Yes	Yes
Observations	29,604	29,604
R-squared*	0.133	0.042

*t* statistics in parentheses, \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$   
*Note:* Dependent variable residential choice includes living in the same village/neighborhood and living in a different county/city. Control variables of the child consist of child's gender, age, age square, birth order, whether having same gender siblings, and marital status. Standard errors are clustered at the household level. \*Within R-squared is reported.

of living in a different town than their parents. Overall, our results show that living proximity decreases with educational investment.

### 4.3 Amount of Parental Transfers

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

The analysis of the amount of parental transfers allows us to compute the marginal return of transfers in old-age support and living proximity. Results shown in Panel A in Table 9 indicate that a 1 percent increase of marital transfers increases the frequency of visits by 0.15 significantly. The effect of marital transfers on material support is close to zero at the extensive margin and slightly negative, but both coefficients are highly insignificant.

Consistent with our hypothesis, a 1 percent increase in college expenses is significantly associated with a 0.02 percent increase in the amount of material support, and the probability of material support is increased by college expenses, albeit only significant at the 10 percent level. Moreover, both time supports tend to be negatively correlated with college expenses. In essence, the amount of college investment is found to be negatively linked with time help, but positively correlated with material support.

The association with residence choice is more significantly in line with our hypotheses, as shown in Panel B in Table 9. Higher marital transfer decreases the probability of living in a different town. In contrast, a child who received more college expense is less likely to live in the same neighborhood, but has a higher probability of moving to a different town.

### 4.4 Discussion of the Mechanism

Consistent with our proposed mechanism, marital transfer and educational investment have differential relations with residence choice, as shown in both the full sample and the college subsample. Marital transfer decreases the opportunity cost of time by encouraging close living proximity, thus allows more time transfer. High educational investment, in contrast, is linked with a larger distance between children and parents due to migration, which brings higher child income and higher in kind transfer.

A mediation analysis is performed by including living proximity variables as mediators in the support regressions, to test the residential choice pathway. Comparing results before and after the mediation in Table B4, living proximity seems to explain away a large part of the associations, especially the positive association between marital gifts and time support. Marital gifts increase time support mainly, if not entirely, through encouraging closer residences of children. The negative impact of educational investment

Table 9: **The Amount of Parental Transfers**

**Panel A: Old-age Support**

	Visit frequency	Whether future help	Whether material support	Ln amt of material support if >0
ln(Amt marital gifts+1)	0.153*** (3.05)	0.003 (1.37)	0.001 (0.35)	-0.010 (-1.41)
ln(Amt college expense+1)	-0.080 (-1.46)	-0.001 (-0.55)	0.004* (1.72)	0.023*** (3.64)
Family-time random effect	Yes	Yes	Yes	Yes
Child controls	Yes	Yes	Yes	Yes
Parental controls	Yes	Yes	Yes	Yes
Observations	2,258	2,258	2,258	1,775
R-squared*	0.133	0.066	0.058	0.112

**Panel B: Residential Choice**

	Same neighborhood	Different town
ln(Amt marital gifts+1)	0.002 (1.39)	-0.014*** (-4.96)
ln(Amt college expense+1)	-0.006*** (-3.35)	0.011*** (4.00)
Family-time random effect	Yes	Yes
Child controls	Yes	Yes
Parental controls	Yes	Yes
Observations	2,258	2,258
R-squared*	0.089	0.142

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

*Note:* Dependent variable old-age support includes visit frequency, whether providing future help, whether transferring material support, and the amount of material support if transfer. Dependent variable residential choice includes living in the same village/neighborhood and living in a different county/city. Child controls include child's gender, age, age square, birth order, whether having same gender siblings, and marital status. Controlled parental characteristics include parental age, age square, gender, work status, marital status, the number of children, educational attainment, residence type urban or rural, pension type, and region dummies. Standard errors are clustered at the household level. \*Overall R-squared is reported.

on time transfer is also largely gone due to the inclusion of residential choice. The living proximity measures powerfully determinate children’s time support.

The indirect impact through residence choice is less strong in determining material transfer. Around a quarter of marital gifts’ negative impact on the amount of material transfer could be accounted by living proximity, while the positive impact of educational investment on monetary support is only slightly influenced by the inclusion of living proximity terms. It is possible that the measures of living proximity we take, which are classified based on neighborhood and town, are less accurate in representing the income effect of job-related migration. Distinguishing children by more accurate distance measure or by detailed migration destination information would help further explaining the observed pattern.<sup>14</sup>

Among siblings who live similarly close, those who received higher educational investment still provide more material support. The reason can be various. First of all, higher educational investment contributes to higher educational attainment and thus higher income among siblings who live in the same proximity. In addition to the income effect from migration, the higher income regardless of living proximity likely discourages physical care provision by higher opportunity cost, and encourages monetary transfer due to lower marginal cost. Higher educated children may further choose to substitute time support with money.

Second, children who received more educational investment may transfer more money due to greater altruism towards parents, in addition to the residence pathway and the direct income effect. Parental investment can shape children’s preference in younger age, and children can be manipulated to be more altruistic towards parents (Becker, Murphy, & Spenkuch, 2016). Therefore, more support would be provided by children who are manipulated to be more altruistic, which is unnecessarily a result of higher income. Additionally including child income as a mediator only explains part of the remaining correlation, which supports both the direct income effect and the altruism effect discussed above.<sup>15</sup>

The remaining negative correlation between marital gifts and monetary transfer after mediation points to potential endogeneity.<sup>16</sup> Although we adopt family time fixed effect to account for time-variant unobserved fixed family shared values, and include child controls such as birth order and gender, it is difficult to control for child-level unobserved factors. Unobserved child characteristics, such as endowed altruism and ability, are likely to be observable to parents and consequently impact parental investment decisions. Old-

---

<sup>14</sup>For instance, siblings who are classified as living the furthest can still be heterogeneous in the sense that some may live in the neighbor town whereas some may live in a metropolis. Consequently, the income gain brought by migration would be different.

<sup>15</sup>Results are available upon request. When additionally controlling for last year’s income of the child and the child’s spouse, the higher educated still provide more monetary support. One possible reason could be that the income we measure is a bad proxy for life-time income. Highly educated children would support parents financially due to their higher prospective life-time income, however, their early stage career during the survey implies a low contemporary income.

<sup>16</sup>Similar to the argument of Ho (2019), part of the negative impact between marital transfers and material support can be potentially accounted by the higher bargaining power of children-in-law resulting from higher marital transfer.

age support led by these child characteristics would then be mistaken for a result of parental transfers. If children who received marital gifts are those with low ability, even after controlling for their residence, they would be less capable of providing material support.

The observed relationship between different parental transfers and different supports is likely to be a mixed outcome of the potential mechanisms mentioned above. Although the motive could be mixed, the residence pathway certainly provides insights on the observed intergenerational interaction. As illustrated in our analysis, residential choice shows significant correlation with two different kinds of parental investment, and reflects crucial elements which determine the kind and the amount of old-age support. Residence decision also explains away a large part of the observed differential correlations between parental investments and supports as expected.

## 5 Heterogeneity

After having established our main results we want to investigate heterogeneous effects in this section. We do so in two dimensions: First, we conjecture that evidence from rural families and rural-urban migration can better support our proposed mechanism, since a large fraction of rural residents migrate into cities which prevents them from taking care (in time) of their parents but allows remittances back home. Second, given the traditional gender role of sons as supporters to old parents in China, it is of question whether the hypothesized pattern can only be observed among sons and whether sons' marginal support return is greater than daughters'.

### 5.1 Living Proximity and Rural-urban Migration

We consider the rural sample, whose parents live in rural areas, to study the unique location choice of rural children – both physical distance with parents and rural/urban residence. To obtain better job opportunities and a higher income, usually by working in a non-agricultural sector, a rural child would move to an urban area. Urban places can either be close, such as a town center in the same county, or be further, such as a city in another province. Therefore, rural children can opt for urban lives whereas still stay relatively close. To explore how parental transfer impact rural children's residence choices, we take the rural-urban migration into consideration.<sup>17</sup>

Many rural children choose to migrate to urban areas whereas stay relatively close to take care of parents. This is especially true nowadays with the popular rural-urban migration and strong filial values in China. In Table 10, we consider the residence choice of children whose parents currently live in villages (19305). Around 1/3 of rural children

---

<sup>17</sup>A household is classified as a rural household if parents have current rural residence, which comes from the interviewer recorded residence type of the household during surveys. We define rural-urban migrants as children who come from rural households and currently live in urban regions outside the village.

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

	Same village	Same county	Diff. county	Obs
Rural-urban migrant	0	60.6%	39.4%	6,619
Non rural-urban migrant	48.3%	38.0%	13.7%	12,686
Fraction	31.7%	38.5%	29.8%	19,305

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

moved from rural to urban (6619), and 60.6% of them live in the same county. Among those who stayed in rural places (12686), only 13.7% live in a different county.

Different kinds of parental transfer may function differently on residence type and distance choice, although moving to urban cities and living further are positively correlated. Our theory suggests that marital gifts mainly shorten the physical distance between children and parents, which allows more time support, rather than discouraging urban residence. Therefore, conditional on the rural/urban residence type, marital gifts should still have a significantly positive impact on living proximity. In contrast, the impact of educational investment on living proximity could largely come from encouraging rural-urban migration. Moving to urban areas could be more necessary for those higher educated due to job matching and education obtaining purpose.

Corresponding to rows in Table 10, Table 11 reports the relationship between parental transfers and residential choice, among all rural children, rural children who stay in rural areas, and rural children who migrate to urban regions, respectively. The first two columns of all rural children show the link between parental transfers and residential choice, which contains both residence type and distance choice. Residential decision of the later two subgroups, rural-urban and non rural-urban migrants, represents only the distance choice, since their residence type of rural or urban is predetermined.

Within all rural households, received marital transfers significantly increase the probability of living in the same neighborhood and decrease the probability of living in a different town, compared with siblings who received no gift. Meanwhile, conditional on the rural/urban residence choice, marital transfer still increases living proximity. Among siblings who stay in rural areas, children have a 5 p.p. (11 p.p.) higher chance of living in the same village, and a 7 p.p. (6 p.p.) lower probability of living in a different county, if they received money gifts (house gift). Among siblings who migrate to urban towns or cities, a 7 p.p. (18 p.p.) lower probability of living in a different county is associated with received money gifts (a house gift). Results show that children who received marital transfers are encouraged to live closer, despite of the rural-urban migration decision.

In contrast, the size of the negative impact of educational investment on residential choice becomes smaller when conditional on rural/urban residence type. Siblings from rural households who received higher educational investment are less likely to live in the same village with parents, and they are more likely to move out of their parents’ county. However, when comparing siblings who currently live in villages or siblings who live in urban cities, educational investment plays a less important role in determining living

Table 11: **Parental Transfers and Living Proximity: Rural-urban Migration**

VARIABLES	All rural children		Non rural-urban migrants		Rural-urban migrants
	Same village	Diff county	Same village	Diff county	Diff county
<i>Marital transfers</i>					
Money	0.060*** (4.16)	-0.104*** (-7.97)	0.051*** (2.73)	-0.069*** (-5.15)	-0.074*** (-3.32)
House	0.163*** (6.64)	-0.172*** (-8.51)	0.110*** (3.68)	-0.057*** (-3.23)	-0.180*** (-4.15)
<i>Educ. investments</i> (ref. group: Illiterate)					
Primary school	0.009 (0.44)	0.025 (1.39)	-0.008 (-0.39)	0.012 (0.75)	0.026 (0.57)
Secondary school	-0.052** (-2.25)	0.061*** (2.94)	-0.047* (-1.92)	0.025 (1.34)	-0.004 (-0.09)
High school	-0.125*** (-4.58)	0.103*** (4.09)	-0.041 (-1.28)	0.030 (1.34)	0.008 (0.15)
College unfinanced	-0.302*** (-7.78)	0.223*** (4.61)	-0.129 (-1.49)	0.042 (0.63)	0.045 (0.59)
College financed	-0.254*** (-8.15)	0.298*** (9.03)	0.044 (0.54)	0.149** (2.33)	0.115* (1.89)
Family-time FE	Yes	Yes	Yes	Yes	Yes
Child controls	Yes	Yes	Yes	Yes	Yes
Observations	19,305	19,305	12,686	12,686	6,619
R-squared*	0.166	0.049	0.329	0.018	0.035

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

*Note:* Dependent variable living proximity includes whether live in the same village and whether live in a different county. Control variables of the child consist of child's gender, age, age square, birth order, whether having same gender siblings, and marital status. Standard errors are clustered at the household level. \*Within R-squared is reported.

proximity. It suggests that children are driven to further locations by education largely through the rural-urban migration channel.

By focusing on the rural sample, we exclude potential migrant parents who either move with their children or move alone, from rural to urban areas. Since we discuss children’s moving decision and its trade-off in better lives and taking care of parents by analyzing living proximity, we imply that parents stay. If parents currently live in villages, living proximity more accurately reflects children’s migration decisions.

## 5.2 Gender Differences

Considering the gender norm in China, sons and daughters might act in a different way. Since sons usually received more transfers and also provide more support, it is uncertain whether their marginal reciprocity is higher than their sisters. Conducting the same group of old-age support regressions by introducing interaction terms between parental transfers and child’s gender, the gender specific marginal return are visualized in Figures B1-B2 in appendix.<sup>18</sup> The above described patterns are present for both sons and daughters, albeit more pronounced for sons.

There is no statistically significant difference in the return of marital gifts on supports between sons and daughters, except on the incidence of material transfer.<sup>19</sup> Different from Ho (2019), who found marriage investment only significantly increases ADL help among daughters, we find a larger and more significant positive impact on future help among sons. The difference in findings indicates that there are more sons who received marital transfers would, or at least being expected by parents to, provide help in the future. Our result thus suggests no gender difference in the long-term return of marital gifts in terms of ADL help.

In contrast, the marginal return of educational investment is less equal. Daughters reciprocate more to parental educational investment in terms of visits and future help, and sons reciprocate with higher probability of providing financial transfer. However, sons show a more representative and supportive pattern to our hypotheses, since educational investment has a more negative impact on sons’ time transfer as hypothesized. The monetary impact of educational investment is shown to be significantly positive among both sons and daughters. Noticeably different from our results, Ho (2019) finds insignificant results in terms of monetary transfer by using college expenses to measure educational investment, which neglects a large proportion of variation in the educational investment of non-college-educated children.

Our proposed pathway of residence choice offers an explanation to the observed gender difference, as shown in Table B3. Daughters’ and sons’ residential choices are alike in terms of marital gift. Received marital gifts increases the probability of living in the same neighborhood and decreases the chance of living in a different town among

---

<sup>18</sup>The main explanatory variable of marital gifts changes to *Whether received either money or house gift*, since very few daughters received a house.

<sup>19</sup>The interaction term between marital gifts and gender is only marginally significant in the transfer incidence regression.

both daughters and sons by same amounts.<sup>20</sup> However, only sons' educational investment strongly discourages living in the same neighborhood, which is argued to be a crucial predictor of providing care (Giles & Mu, 2007). Consequently, the negative impact of educational investment on time support is found among sons.

## 6 Conclusion

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

We find that the two transfer decisions that parents make, educational investment and marital transfers, have a very different impact on the children's location decision and hence on their earnings potential. This leads to a different behavior of the children to helping their parents later in life. In effect, these transfers have complementary effects on children's help: investments in education incentivize children to move away from the parents to places with better employment opportunities. These children tend to be financially well-off and support their parents with financial transfers in old age. On the other hand, if parents provide marital transfers, such as a house, then children are more likely to stay close to their parents. This, in turn, allows for more attention and more potential long-term care from children. Investigating heterogeneous effects in the population we find that these results tend to be present among both daughters and sons whereas more representative among sons, and the positive impact of marital gifts on living proximity is present even when rural-urban migration is controlled.

Future work could examine the reciprocity more precisely with comprehensive transfer information. Other early life transfers, such as parents' help with health shocks and starting a business, are potentially correlated with marriage and education investments. McGarry (2016), for example, shows that the distribution of transfers across siblings becomes more unequal for a longer observation period. Without considering other transfers, the return of specific transfers might be overestimated (more unequal distribution) or underestimated (equal distribution).

Although intergenerational reciprocity seems to benefit both parents and children, parents' need for care potentially discourages children's education and career enhancements. Better education of children increases spatial dispersion of families by encouraging migration, which leaves behind parents who might become in need of care. Completing a long-term care system would not only improve living quality of the old, but also help mitigating inequality by encouraging children from less developed regions to migrate for better job opportunities, since it reduces parents' need for informal care from offspring and frees children from heavy care responsibility.

---

<sup>20</sup>The interaction terms between gender and marital gifts are statistically insignificant.

## A Sample Selection

It is an unbalanced panel with an original sample of 13,105 families with 38,897 children and 66,192 child-year observations. Children across waves are first matched through householdID and child ID. Children with inconsistent gender, and large differences in age and educational attainment after the matching are further removed. We restrict the sample to living biological children because adopted or fostered children could be essentially different. Since marriage gifts questions are asked for the child's first marriage, we exclude children who were never married in all waves. Finally, we discard children who co-resident with their parents as in these family arrangements intergenerational transfers (time spend together, financial support) is hard to disentangle. Apart from these selections, missing values of variables cause a further reduction in regression sample sizes.

Table A1: Sample Selection

Selection	Family	Child	OBS
original	13,105	38,897	66,192
wrongly matched	-175	-2,453	-4,906
non living biological	-2,691	-9,238	-10,121
age under 20	-167	-772	-1,843
never married	-997	-3,169	-5,451
coresident	-626	-2,734	-8,132
missing values	-422	-1,893	-5,203
single child families	-621	-621	-932
selected sample	7,406	18,017	29,604

## B Results

Table B1: Old-age Support and Residential Choice: Family\*time FE

	Old-age support				Residence choice	
	Visits	Future help	Transfer	Ln amt transfer	Same neighborhood	Diff town
Money	0.853*** (2.96)	0.012* (1.84)	-0.002 (-0.17)	-0.122*** (-4.73)	0.065*** (5.59)	-0.092*** (-8.56)
House	2.828*** (5.47)	0.029** (2.49)	-0.004 (-0.24)	-0.292*** (-6.75)	0.161*** (7.93)	-0.157*** (-9.33)
Primary school	0.637 (1.44)	0.006 (0.67)	0.028** (1.98)	0.092** (2.26)	0.014 (0.76)	0.031* (1.94)
Secondary school	-0.041 (-0.08)	0.011 (1.02)	0.058*** (3.73)	0.200*** (4.52)	-0.031 (-1.53)	0.068*** (3.73)
High school	-1.186** (-2.07)	0.011 (0.95)	0.095*** (5.53)	0.368*** (7.40)	-0.084*** (-3.68)	0.101*** (4.84)
College unfinanced	-4.375*** (-5.96)	-0.026 (-1.62)	0.150*** (6.34)	0.635*** (9.27)	-0.227*** (-7.57)	0.212*** (6.67)
College financed	-3.959*** (-5.93)	-0.027* (-1.77)	0.160*** (7.56)	0.798*** (12.79)	-0.214*** (-8.23)	0.274*** (10.01)
Son	4.326*** (17.51)	0.079*** (12.95)	-0.105*** (-14.46)	0.179*** (7.62)	0.245*** (25.62)	0.058*** (6.87)
Age	0.050 (0.46)	0.000 (0.09)	0.003 (0.92)	0.001 (0.12)	0.005 (1.21)	-0.014*** (-3.31)
Agesqr	-0.000 (-0.24)	-0.000 (-0.89)	-0.000 (-1.52)	-0.000 (-1.32)	-0.000 (-0.54)	0.000** (2.19)
Only son/dau	-1.175*** (-3.85)	0.008 (0.99)	-0.004 (-0.45)	0.154*** (4.84)	-0.076*** (-6.13)	0.026** (2.26)
Birth order	-0.154 (-0.99)	-0.004 (-1.13)	-0.008* (-1.72)	-0.000 (-0.00)	-0.010* (-1.72)	-0.001 (-0.11)
Marital status	0.483 (1.20)	0.012 (1.11)	0.058*** (3.81)	-0.033 (-0.73)	0.011 (0.70)	-0.087*** (-5.43)
Observations	29,604	29,604	29,604	21,905	29,604	29,604
R-squared	0.067	0.034	0.029	0.062	0.133	0.042

Robust t-statistics in parentheses

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

Table B2: Parental transfers and old-age support by gender

	Visit		Future help		Transfer		Ln amt transfer	
	Dau	Son	Dau	Son	Dau	Son	Dau	Son
Marital gift	0.815** (2.437)	1.222*** (2.997)	0.00859 (1.089)	0.0199** (2.133)	0.00906 (0.904)	-0.0146 (-1.151)	-0.132*** (-4.376)	-0.154*** (-4.170)
Primary school	0.760 (1.639)	-3.165*** (-3.022)	-0.00356 (-0.344)	0.0189 (0.856)	0.0220 (1.424)	0.0971*** (2.829)	0.0899** (2.066)	-0.0481 (-0.479)
Secondary school	0.632 (1.224)	-4.604*** (-4.289)	0.0114 (0.976)	0.00879 (0.385)	0.0485*** (2.812)	0.133*** (3.777)	0.229*** (4.837)	0.0208 (0.204)
High school	0.453 (0.729)	-6.525*** (-5.798)	0.0279** (2.007)	-0.00255 (-0.107)	0.0601*** (3.095)	0.190*** (5.250)	0.433*** (7.798)	0.162 (1.511)
College unfinanced	-0.814 (-0.893)	-11.03*** (-8.819)	0.00605 (0.330)	-0.0483* (-1.759)	0.0894*** (3.412)	0.259*** (6.077)	0.656*** (8.371)	0.479*** (3.908)
College financed	-0.0651 (-0.0850)	-10.82*** (-9.155)	0.00104 (0.0568)	-0.0448* (-1.680)	0.113*** (4.576)	0.258*** (6.590)	0.856*** (11.23)	0.616*** (5.330)
Observations	29,604	29,604	29,604	29,604	29,604	29,604	21,905	21,905

z-statistics in parentheses

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

Table B3: Parental transfers and living proximity by gender

	Same neighborhood		Diff town	
	Dau	Son	Dau	Son
Marital gift	0.0646*** (4.753)	0.0799*** (5.105)	-0.104*** (-8.215)	-0.0938*** (-6.302)
Primary school	0.00974 (0.479)	-0.135*** (-3.701)	0.0145 (0.831)	0.111*** (4.116)
Secondary school	0.000354 (0.0163)	-0.230*** (-6.073)	0.0499** (2.501)	0.145*** (5.036)
High school	-0.00668 (-0.264)	-0.318*** (-8.022)	0.117*** (4.808)	0.151*** (4.855)
College unfinanced	-0.0503 (-1.454)	-0.528*** (-11.68)	0.212*** (5.324)	0.283*** (6.368)
College financed	-0.0229 (-0.798)	-0.524*** (-12.92)	0.263*** (7.921)	0.354*** (9.407)
Observations	29,604	29,604	29,604	29,604

z-statistics in parentheses

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

Figure B1: By gender: marital gifts and old-age support

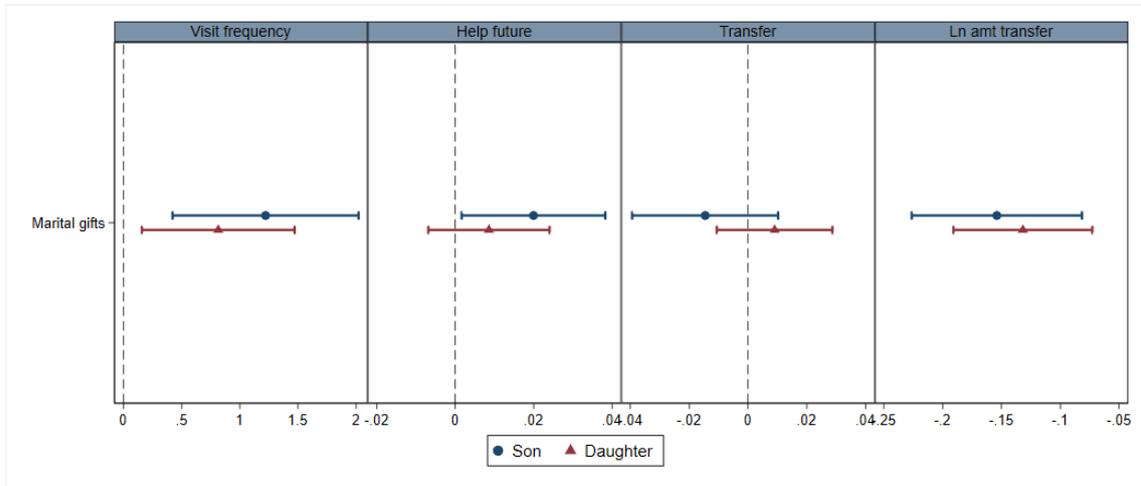
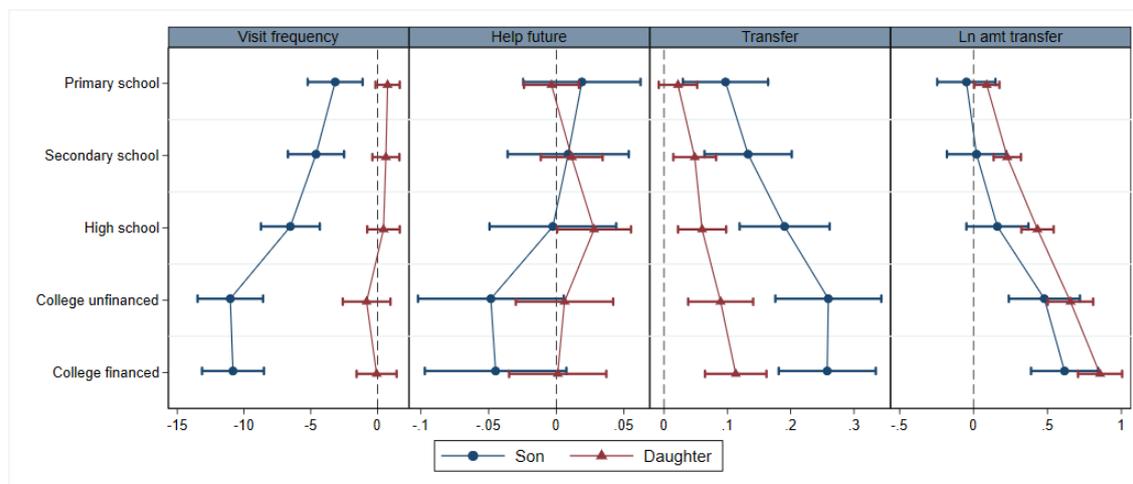


Table B4: Parental transfers and old-age support: the pathway through living proximity

	Visit	Future help	Transfer	Ln amt transfer
<b>Living proximity</b>				
(ref. Same nbh)				
Same town	-11.49***	-0.04***	0.06***	0.14***
Different town	-14.62***	-0.07***	0.05***	0.42***
<b>Marital gifts</b>				
Money	0.85***	0.01*	-0.00	-0.12***
House	2.83***	0.03**	-0.00	-0.29***
<b>Educ investment</b>				
Primary school	0.64	0.01	0.03**	0.09**
Secondary school	-0.04	0.01	0.06***	0.20***
High school	-1.19**	0.01	0.09***	0.37***
College unfinanced	-4.37***	-0.03	0.15***	0.64***
College financed	-3.96***	-0.03*	0.16***	0.80***
Family-time FE	Yes	Yes	Yes	Yes
Child controls	Yes	Yes	Yes	Yes
Observations	29,604	29,604	29,604	21,905
R-squared	0.067	0.303	0.029	0.062
	*** p<0.01, ** p<0.05, * p<0.1			

*Note:* In the mediation regressions, the closest residence choice *Same neighborhood* is omitted as a reference group. The association between parental transfers and children's time support largely disappears and the link between parental transfers and old-age material support become weaker, when living proximity is controlled.

Figure B2: By gender: education and old-age support



## References

- Alessie, R., Angelini, V., & Pasini, G. (2014). Is it true love? Altruism versus exchange in time and money transfers. *De Economist*, 162(2), 193–213.
- Anderson, S. (2007). The economics of dowry and brideprice. *Journal of Economic Perspectives*, 21(4), 151–174.
- Barclay, K. J. (2015). A within-family analysis of birth order and intelligence using population conscription data on Swedish men. *Intelligence*, 49, 134–143.
- Becker, G. S. (1974). A theory of social interactions. *Journal of Political Economy*, 82(6), 1063–1093.
- Becker, G. S., Murphy, K. M., & Spenkuch, J. L. (2016). The manipulation of children’s preferences, old-age support, and investment in children’s human capital. *Journal of Labor Economics*, 34(S2), S3–S30.
- Bernheim, B. D., Shleifer, A., & Summers, L. H. (1986). The strategic bequest motive. *Journal of Labor Economics*, 4(3, Part 2), S151–S182.
- Black, S. E., Devereux, P. J., & Salvanes, K. G. (2005). The more the merrier? The effect of family size and birth order on children’s education. *The Quarterly Journal of Economics*, 120(2), 669–700.
- Bray, M. (1996). *Counting the full cost: arental and community financing of education in East Asia*. Washington, DC: The World Bank.
- Brown, P. H. (2009). Dowry and intrahousehold bargaining evidence from China. *Journal of Human Resources*, 44(1), 25–46.
- Brown, P. H., & Park, A. (2002). Education and poverty in rural China. *Economics of Education Review*, 21(6), 523–541.
- Chen, X., & Silverstein, M. (2000). Intergenerational social support and the psychological well-being of older parents in China. *Research on aging*, 22(1), 43–65.

- Chen, X., Smith, J., Strauss, J., Wang, Y., & Zhao, Y. (2017). China Health and Retirement Longitudinal Study (CHARLS). *Encyclopedia of Geropsychology*, 463–469.
- Chi, W., & Qian, X. (2016). Human capital investment in children: an empirical study of household child education expenditure in China, 2007 and 2011. *China Economic Review*, 37, 52–65.
- Ciani, E., & Deiana, C. (2017). No free lunch, buddy: past housing transfers and informal care later in life. *Review of Economics of the Household*, 16(4), 1–31.
- Cigno, A. (1993). Intergenerational transfers without altruism: family, market and state. *European Journal of Political Economy*, 9(4), 505–518.
- Cox, D. (1987). Motives for private income transfers. *Journal of Political Economy*, 95(3), 508–546.
- Cunningham, S. A., Yount, K. M., Engelman, M., & Agree, E. (2013). Returns on lifetime investments in children in Egypt. *Demography*, 50(2), 699–724.
- Fang, H., Eggleston, K., Rizzo, J., Rozelle, S., & Zeckhauser, R. (2012). *The returns to education in China: evidence from the 1986 compulsory education law* (NBER Working Paper No. 18189). National Bureau of Economic Research. Retrieved from <https://www.nber.org/papers/w18189>
- Giles, J., & Mu, R. (2007). Elderly parent health and the migration decisions of adult children: Evidence from rural china. *Demography*, 44(2), 265–288.
- Groneck, M. (2016). Bequests and informal long-term care: evidence from HRS exit interviews. *Journal of Human Resources*, 52(2), 531–572.
- Ho, C. (2019). Child’s gender, parental monetary investments and care of elderly parents in China. *Review of Economics of the Household*, 17(3), 741–774.
- Lee, Y.-J., & Xiao, Z. (1998). Children’s support for elderly parents in urban and rural China: results from a national survey. *Journal of Cross-Cultural Gerontology*, 13(1), 39–62.
- McGarry, K. (2016). Dynamic aspects of family transfers. *Journal of Public Economics*, 137, 1–13.
- Mundlak, Y. (1978). On the pooling of time series and cross section data. *Econometrica*, 46(1), 69–85.
- Norton, E. C., Nicholas, L. H., & Huang, S. S.-H. (2013). Informal care and inter-vivos transfers: results from the National Longitudinal Survey of Mature Women. *The BE Journal of Economic Analysis & Policy*, 14(2), 377–400.
- Nugent, J. B. (1985). The old-age security motive for fertility. *Population and Development Review*, 11(1), 75–97.
- Wei, S.-J., & Zhang, X. (2011). The competitive saving motive: evidence from rising sex ratios and savings rates in China. *Journal of Political Economy*, 119(3), 511–564.
- Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data* (2e ed.). Cambridge, MA: The MIT Press.
- Wu, X., & Li, L. (2011). Family size and maternal health: evidence from the one-child policy in China. *Journal of Population Economics*, 25(4), 1341–1364.
- Yan, S., Chen, J., & Yang, S. (2003). Living arrangements and old-age support. In

- M. K. Whyte (Ed.), *China's revolutions and intergenerational relations* (pp. 143–166). Ann Arbor: Center for Chinese Studies, University of Michigan.
- Zhao, Y., Strauss, J., Yang, G., Giles, J., Hu, P., Hu, Y., ... Wang, Y. (2013). *China Health and Retirement Longitudinal Study 2011–2012 national baseline users' guide*. Beijing, China: National School of Development, Peking University.



## List of research reports

15001-EEF: Bao, T., X. Tian, X. Yu, Dictator Game with Indivisibility of Money

15002-GEM: Chen, Q., E. Dietzenbacher, and B. Los, The Effects of Ageing and Urbanization on China's Future Population and Labor Force

15003-EEF: Allers, M., B. van Ommeren, and B. Geertsema, Does intermunicipal cooperation create inefficiency? A comparison of interest rates paid by intermunicipal organizations, amalgamated municipalities and not recently amalgamated municipalities

15004-EEF: Dijkstra, P.T., M.A. Haan, and M. Mulder, Design of Yardstick Competition and Consumer Prices: Experimental Evidence

15005-EEF: Dijkstra, P.T., Price Leadership and Unequal Market Sharing: Collusion in Experimental Markets

15006-EEF: Anufriev, M., T. Bao, A. Sutin, and J. Tuinstra, Fee Structure, Return Chasing and Mutual Fund Choice: An Experiment

15007-EEF: Lamers, M., Depositor Discipline and Bank Failures in Local Markets During the Financial Crisis

15008-EEF: Oosterhaven, J., On de Doubtful Usability of the Inoperability IO Model

15009-GEM: Zhang, L. and D. Bezemer, A Global House of Debt Effect? Mortgages and Post-Crisis Recessions in Fifty Economies

15010-I&O: Hooghiemstra, R., N. Hermes, L. Oxelheim, and T. Randøy, The Impact of Board Internationalization on Earnings Management

15011-EEF: Haan, M.A., and W.H. Siekman, Winning Back the Unfaithful while Exploiting the Loyal: Retention Offers and Heterogeneous Switching Costs

15012-EEF: Haan, M.A., J.L. Moraga-González, and V. Petrikaite, Price and Match-Value Advertising with Directed Consumer Search

15013-EEF: Wiese, R., and S. Eriksen, Do Healthcare Financing Privatisations Curb Total Healthcare Expenditures? Evidence from OECD Countries

15014-EEF: Siekman, W.H., Directed Consumer Search

15015-GEM: Hoorn, A.A.J. van, Organizational Culture in the Financial Sector: Evidence from a Cross-Industry Analysis of Employee Personal Values and Career Success

15016-EEF: Te Bao, and C. Hommes, When Speculators Meet Constructors: Positive and Negative Feedback in Experimental Housing Markets

15017-EEF: Te Bao, and Xiaohua Yu, Memory and Discounting: Theory and Evidence

15018-EEF: Suari-Andreu, E., The Effect of House Price Changes on Household Saving Behaviour: A Theoretical and Empirical Study of the Dutch Case



15019-EEF: Bijlsma, M., J. Boone, and G. Zwart, Community Rating in Health Insurance: Trade-off between Coverage and Selection

15020-EEF: Mulder, M., and B. Scholtens, A Plant-level Analysis of the Spill-over Effects of the German *Energiewende*

15021-GEM: Samarina, A., L. Zhang, and D. Bezemer, Mortgages and Credit Cycle Divergence in Eurozone Economies

16001-GEM: Hoorn, A. van, How Are Migrant Employees Manages? An Integrated Analysis

16002-EEF: Soetevent, A.R., Te Bao, A.L. Schippers, A Commercial Gift for Charity

16003-GEM: Bouwmeester, M.C., and J. Oosterhaven, Economic Impacts of Natural Gas Flow Disruptions

16004-MARK: Holtrop, N., J.E. Wieringa, M.J. Gijsenberg, and P. Stern, Competitive Reactions to Personal Selling: The Difference between Strategic and Tactical Actions

16005-EEF: Plantinga, A. and B. Scholtens, The Financial Impact of Divestment from Fossil Fuels

16006-GEM: Hoorn, A. van, Trust and Signals in Workplace Organization: Evidence from Job Autonomy Differentials between Immigrant Groups

16007-EEF: Willems, B. and G. Zwart, Regulatory Holidays and Optimal Network Expansion

16008-GEF: Hoorn, A. van, Reliability and Validity of the Happiness Approach to Measuring Preferences

16009-EEF: Hinloopen, J., and A.R. Soetevent, (Non-)Insurance Markets, Loss Size Manipulation and Competition: Experimental Evidence

16010-EEF: Bekker, P.A., A Generalized Dynamic Arbitrage Free Yield Model

16011-EEF: Mierau, J.A., and M. Mink, A Descriptive Model of Banking and Aggregate Demand

16012-EEF: Mulder, M. and B. Willems, Competition in Retail Electricity Markets: An Assessment of Ten Year Dutch Experience

16013-GEM: Rozite, K., D.J. Bezemer, and J.P.A.M. Jacobs, Towards a Financial Cycle for the US, 1873-2014

16014-EEF: Neuteleers, S., M. Mulder, and F. Hindriks, Assessing Fairness of Dynamic Grid Tariffs

16015-EEF: Soetevent, A.R., and T. Bružikas, Risk and Loss Aversion, Price Uncertainty and the Implications for Consumer Search



- 16016-HRM&OB: Meer, P.H. van der, and R. Wielers, Happiness, Unemployment and Self-esteem
- 16017-EEF: Mulder, M., and M. Pangan, Influence of Environmental Policy and Market Forces on Coal-fired Power Plants: Evidence on the Dutch Market over 2006-2014
- 16018-EEF: Zeng, Y., and M. Mulder, Exploring Interaction Effects of Climate Policies: A Model Analysis of the Power Market
- 16019-EEF: Ma, Yiqun, Demand Response Potential of Electricity End-users Facing Real Time Pricing
- 16020-GEM: Bezemer, D., and A. Samarina, Debt Shift, Financial Development and Income Inequality in Europe
- 16021-EEF: Elkhuizen, L, N. Hermes, and J. Jacobs, Financial Development, Financial Liberalization and Social Capital
- 16022-GEM: Gerritse, M., Does Trade Cause Institutional Change? Evidence from Countries South of the Suez Canal
- 16023-EEF: Rook, M., and M. Mulder, Implicit Premiums in Renewable-Energy Support Schemes
- 17001-EEF: Trinks, A., B. Scholtens, M. Mulder, and L. Dam, Divesting Fossil Fuels: The Implications for Investment Portfolios
- 17002-EEF: Angelini, V., and J.O. Mierau, Late-life Health Effects of Teenage Motherhood
- 17003-EEF: Jong-A-Pin, R., M. Laméris, and H. Garretsen, Political Preferences of (Un)happy Voters: Evidence Based on New Ideological Measures
- 17004-EEF: Jiang, X., N. Hermes, and A. Meesters, Financial Liberalization, the Institutional Environment and Bank Efficiency
- 17005-EEF: Kwaak, C. van der, Financial Fragility and Unconventional Central Bank Lending Operations
- 17006-EEF: Postelnicu, L. and N. Hermes, The Economic Value of Social Capital
- 17007-EEF: Ommeren, B.J.F. van, M.A. Allers, and M.H. Vellekoop, Choosing the Optimal Moment to Arrange a Loan
- 17008-EEF: Bekker, P.A., and K.E. Bouwman, A Unified Approach to Dynamic Mean-Variance Analysis in Discrete and Continuous Time
- 17009-EEF: Bekker, P.A., Interpretable Parsimonious Arbitrage-free Modeling of the Yield Curve
- 17010-GEM: Schasfoort, J., A. Godin, D. Bezemer, A. Caiani, and S. Kinsella, Monetary Policy Transmission in a Macroeconomic Agent-Based Model



17011-I&O: Bogt, H. ter, Accountability, Transparency and Control of Outsourced Public Sector Activities

17012-GEM: Bezemer, D., A. Samarina, and L. Zhang, The Shift in Bank Credit Allocation: New Data and New Findings

17013-EEF: Boer, W.I.J. de, R.H. Koning, and J.O. Mierau, Ex-ante and Ex-post Willingness-to-pay for Hosting a Major Cycling Event

17014-OPERA: Laan, N. van der, W. Romeijnders, and M.H. van der Vlerk, Higher-order Total Variation Bounds for Expectations of Periodic Functions and Simple Integer Recourse Approximations

17015-GEM: Oosterhaven, J., Key Sector Analysis: A Note on the Other Side of the Coin

17016-EEF: Romensen, G.J., A.R. Soetevent: Tailored Feedback and Worker Green Behavior: Field Evidence from Bus Drivers

17017-EEF: Trinks, A., G. Ibikunle, M. Mulder, and B. Scholtens, Greenhouse Gas Emissions Intensity and the Cost of Capital

17018-GEM: Qian, X. and A. Steiner, The Reinforcement Effect of International Reserves for Financial Stability

17019-GEM/EEF: Klasing, M.J. and P. Milionis, The International Epidemiological Transition and the Education Gender Gap

2018001-EEF: Keller, J.T., G.H. Kuper, and M. Mulder, Mergers of Gas Markets Areas and Competition amongst Transmission System Operators: Evidence on Booking Behaviour in the German Markets

2018002-EEF: Soetevent, A.R. and S. Adikyan, The Impact of Short-Term Goals on Long-Term Objectives: Evidence from Running Data

2018003-MARK: Gijsenberg, M.J. and P.C. Verhoef, Moving Forward: The Role of Marketing in Fostering Public Transport Usage

2018004-MARK: Gijsenberg, M.J. and V.R. Nijs, Advertising Timing: In-Phase or Out-of-Phase with Competitors?

2018005-EEF: Hulshof, D., C. Jepma, and M. Mulder, Performance of Markets for European Renewable Energy Certificates

2018006-EEF: Fosgaard, T.R., and A.R. Soetevent, Promises Undone: How Committed Pledges Impact Donations to Charity

2018007-EEF: Durán, N. and J.P. Elhorst, A Spatio-temporal-similarity and Common Factor Approach of Individual Housing Prices: The Impact of Many Small Earthquakes in the North of Netherlands

2018008-EEF: Hermes, N., and M. Hudon, Determinants of the Performance of Microfinance Institutions: A Systematic Review



2018009-EEF: Katz, M., and C. van der Kwaak, The Macroeconomic Effectiveness of Bank Bail-ins

2018010-OPERA: Prak, D., R.H. Teunter, M.Z. Babai, A.A. Syntetos, and J.E. Boylan, Forecasting and Inventory Control with Compound Poisson Demand Using Periodic Demand Data

2018011-EEF: Brock, B. de, Converting a Non-trivial Use Case into an SSD: An Exercise

2018012-EEF: Harvey, L.A., J.O. Mierau, and J. Rockey, Inequality in an Equal Society

2018013-OPERA: Romeijnders, W., and N. van der Laan, Inexact cutting planes for two-stage mixed-integer stochastic programs

2018014-EEF: Green, C.P., and S. Homroy, Bringing Connections Onboard: The Value of Political Influence

2018015-OPERA: Laan, N. van der, and W. Romeijnders, Generalized alpha-approximations for two-stage mixed-integer recourse models

2018016-GEM: Rozite, K., Financial and Real Integration between Mexico and the United States

2019001-EEF: Lugalla, I.M., J. Jacobs, and W. Westerman, Drivers of Women Entrepreneurs in Tourism in Tanzania: Capital, Goal Setting and Business Growth

2019002-EEF: Brock, E.O. de, On Incremental and Agile Development of (Information) Systems

2019003-OPERA: Laan, N. van der, R.H. Teunter, W. Romeijnders, and O.A. Kilic, The Data-driven Newsvendor Problem: Achieving On-target Service Levels.

2019004-EEF: Dijk, H., and J. Mierau, Mental Health over the Life Course: Evidence for a U-Shape?

2019005-EEF: Freriks, R.D., and J.O. Mierau, Heterogeneous Effects of School Resources on Child Mental Health Development: Evidence from the Netherlands.

2019006-OPERA: Broek, M.A.J. uit het, R.H. Teunter, B. de Jonge, J. Veldman, Joint Condition-based Maintenance and Condition-based Production Optimization.

2019007-OPERA: Broek, M.A.J. uit het, R.H. Teunter, B. de Jonge, J. Veldman, Joint Condition-based Maintenance and Load-sharing Optimization for Multi-unit Systems with Economic Dependency

2019008-EEF: Keller, J.T. G.H. Kuper, and M. Mulder, Competition under Regulation: Do Regulated Gas Transmission System Operators in Merged Markets Compete on Network Tariffs?

2019009-EEF: Hulshof, D. and M. Mulder, Renewable Energy Use as Environmental CSR Behavior and the Impact on Firm Profit

2019010-EEF: Boot, T., Confidence Regions for Averaging Estimators



2020001-OPERA: Foreest, N.D. van, and J. Wijngaard. On Proportionally Fair Solutions for the Divorced-Parents Problem

2020002-EEF: Niccodemi, G., R. Alessie, V. Angelini, J. Mierau, and T. Wansbeek. Refining Clustered Standard Errors with Few Clusters

2020003-I&O: Bogt, H. ter, Performance and other Accounting Information in the Public Sector: A Prominent Role in the Politicians' Control Tasks?

2020004-I&O: Fisch, C., M. Wyrwich, T.L. Nguyen, and J.H. Block, Historical Institutional Differences and Entrepreneurship: The Case of Socialist Legacy in Vietnam

2020005-I&O: Fritsch, M. and M. Wyrwich. Is Innovation (Increasingly) Concentrated in Large Cities? An International Comparison

2020006-GEM: Oosterhaven, J., Decomposing Economic Growth Decompositions.

2020007-I&O: Fritsch, M., M. Obschonka, F. Wahl, and M. Wyrwich. The Deep Imprint of Roman Sandals: Evidence of Long-lasting Effects of Roman Rule on Personality, Economic Performance, and Well-Being in Germany

2020008-EEF: Heijnen, P., On the Computation of Equilibrium in Discontinuous Economic Games

2020009-EEF: Romensen, G.J. and A.R. Soetevent, Improving Worker Productivity Through Tailored Performance Feedback: Field Experimental Evidence from Bus Drivers

2020010-EEF: Rao, Z., M. Groneck, and R. Alessie, Should I Stay or Should I Go? Intergenerational Transfers and Residential Choice. Evidence from China



[www.rug.nl/feb](http://www.rug.nl/feb)