The Role of Social Norms in Old-age Support: Evidence from China

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Abstract

Intergenerational old-age support within families is an important norm in developing countries, which typically lack comprehensive pension coverage. The transmission mechanism for this norm is potentially influenced by socioeconomic factors internal and external to the family, which the norm may in turn influence. This paper studies the inter-generational transmission of this social norm in China, focusing on the role of gender. The mechanism behind this transmission is that parents, by their provision of support to their elderly parents, shape their same-gender children's preference for future old-age support. Given that the gender ratio of Chinese children is not random, I use an interaction term of the timing of the ban on sex-selective abortions in China and the gender of the first-born child as the instrumental variable for the gender of the children to alleviate the possible endogeneity. The empirical results, using two Chinese datasets, show that parents with more same-gender children provide more support to their ageing parents than parents with more cross-gender ones, controlling for their household size. The father effect is more significant in rural subsamples, and the mother effect is mainly seen in the urban ones. The urban-rural difference in the results may indicate a normative shift accompanying economic and demographic changes.

Keywords— Old-age support, Intergenerational transfers, Social norms, Indirect reciprocity

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1 Introduction

Family support provided by adult children often acts as a major income source for ageing parents in developing countries. This social norm of providing support to the elderly is traditional and common, especially in China.[1] Usually, the norm is gender-specific: sons provide more support than daughters (Lee et al., 1993). It helps to offset possible risks and expected income drops for the elderly in countries with underdeveloped public pension systems and incomplete financial markets. As a large developing country with an estimated share of the elderly population due to reach 25% in 2030, China is feeling the weight on its public finances of sustaining, improving, and complementing its current pension schemes.[2] Family old-age support has served as a complement for the incomplete public pension system in sustaining the welfare of the elderly in China. A major topic of debate here has been how the norm of providing old-age support can continuously be the complement for the public pension in future generations. Given the decline in population growth and the potential problem of ageing in other developing countries, a study of the transmission of social norms of support for the elderly in China may help many developing countries understand better how to encourage such support in the future.

This paper studies the inter-generational transmission of the social norm of old-age support provision in China, focusing on the same-gender channel. Parents convey the social norm of old-age support provision to their same-gender children, in the way that they provide support to their elderly parents. The hypothesised mechanism behind this norm transmission is the same-gender "demonstration effect". It is based on the demonstration effect by Cox and Stark (1996). The demonstration effect means that parents treat their parents well if they have "their own children to whom to demonstrate the appropriate behaviour" (Cox and Stark, 2005). This inter-generational demonstration meets the anthropologists' description of an upward and positive indirect reciprocity (Arrondel and Massaon, 2006). Anthropologists believe the indirect reciprocity is an important channel of cultural norm transmission (Mauss, 1950, 1968). I improve Cox and Stark's demonstration effect by adding the same-gender transmission channel for two reasons. First, there is good evidence in sociology and psychology that children are largely influenced by their same-sex parent in their learning of gender norms in society (Lytton and Romney, 1991; Bussey and Bandura, 1999; McHale et al., 1999). Economists have recently found empirical evidence for same-gender intergenerational transmissions in individual preferences and social norms (Alesina et al., 2013; Kleven et al., 2018). The second reason is that the gender is prominent in the norm of old-age support provision in China and other developing cultures (Gupta et al., 2003). Traditionally, sons are responsible for supporting their elderly parents in China (Lee et al., 1993; Chan et al., 2002).

In my proposed mechanism, parents provide old-age support to their parents, and they expect to be recompensed by their same-gender children. A key assumption in this mechanism is that parents internalise the fact that their behaviours regarding old-age support provision may affect their same-gender children (Eccles et al., 1990; Bussey and Bandura, 1999). Under this mechanism, a parent should provide more old-age support

[1] In the Chinese Household Finance Survey, 74% of the respondents believed that their children should be fully or at least partly responsible for their care in old age.

[2] United Nations (2015) estimated that, in 2030, the share of the population in China aged 60 and older will be 25%. The current share of the population aged 60 and older in the U.K. is 23.9% and in China is 16.2% (United Nations, 2017). The total number of people aged 60 or above is 222 million, which is around 4 times the current population of the United Kingdom.

when the household includes more same-gender children than the case when this parent has more cross-gender children. The same-gender effects are general larger than the cross-gender in the role-model setting (Breda et al., 2018). This channel of inter-generational transmission of the norm does not only exist in the theoretical framework created by academic researchers, but there are also real-world examples for it. Public service announcement posters in China in Figure 1 show the same-gender demonstration effect described. These posters show the government's efforts to promote the norm of providing family support in old age, which indicates the importance of this norm in Chinese society. By studying the same-gender inter-generational transmission of the norm in old-age support provision, this paper seeks to demonstrate how changes in economic and demographic conditions affect the norm and its transmission in China, both financially and non-financially.

I provide novel evidence for the same-gender transmission of this social norm of support in old age and show that the decision-making regarding old-age support provision involves three generations. Most of the family old-age support studies assume by default that children will provide old-age support when their parents retire because of altruism or direct reciprocity (Shubik, 1981; Guttman, 2001). These channels limit the effect of old-age support to two generations, the parents and the children. However, there is a gap in the literature: only a few researchers focus on how the social norm of providing old-age support is transmitted to the next generation. Cox and Stark (1996, 2005) provide a theoretical framework for the inter-generational transmission of the norm of providing support in old age. The only relevant empirical evidence has been collected by Wolff (2001) and Mitrut and Wolff (2009). The present paper helps to fill this gap by providing empirical evidence for the gender-specific effect demonstrated in support for the elderly in China. The empirical results show the importance of the future generation in the process of transmitting the social norm of old-age support. The paper also contributes to the literature by first documenting a normative shift with economic and demographic changes during China's transformation into a modern nation, thanks to the wide urban-rural differences.

When studying the effects of the gender of children on the support for the elderly provided by their parents in China, an empirical difficulty is that the gender of the children is endogenous. The gender ratio of new-borns has been increasing since 1990 (China Population and Employment Statistics Yearbooks, Online Appendix Figure A.1). The increasing gender ratio of newborns in China corresponds to the imbalance in the gender ratio of the children in the datasets. Sex-selective abortion is one of the main reasons (Chen et al., 2014). The non-random gender ratio of the children could positively or negatively affect the support for the elderly provided by parents. To address this problem, I utilise two facts: the gender of the first child in households and the timing of a policy ban on sex-selective abortions.

I use the interaction term of whether or not a household is affected by the policy ban on gender-selective abortion and the gender of the first child in a household as the instrumental variable (IV) for the gender ratio of the children. This IV exploits two facts. First, a policy was introduced to reduce the gender ratio to its natural level, so the gender of children who were born in or after the year of the policy ban should be random. The policy banned the use of ultrasound for prenatal sex determination and imposed fines on those who conduct sex-selective abortions. It was initiated by the National Family Planning Commission (NFPC) in 2003 affecting

all households that have at least one child born in or after 2003. Yet, given policy implementation conditions in China, the gender ratio for children born on or after 2003 is still higher than the natural rate. Second, the gender of the first child is closer to the natural rate than the gender ratio for all new-borns in China, especially for households with more than one child (Ebenstein, 2010; Wei and Zhang, 2011). Scholars usually regard the gender of the first child as random in studies of other developing countries (Jayachandran and Pande, 2017; Heath and Tan, 2018). The IV utilises the differences caused by the affected compliers before and after the policy change. They have not conducted sex-selective abortions since the policy ban and have children of the opposite sex to their preferences.

The main empirical findings indicate that parents increase probabilities of providing financial and non-financial support in old age with more same-gender children, controlling for the household size. I only compare the difference within parents' gender for the old-age support provided by them in the paper. In the datasets, the father and the mother both show gender-specific demonstration behaviours. The results from the robustness checks and the heterogeneity analyses are mostly consistent with the expected results under the demonstration effect channel. The 'father' demonstration effect is generally more significant in low-income and rural subsamples. The 'mother' effect is most significant for the outcome variables in low-income and urban subsamples. The empirical evidence implies that support for the elderly is closely linked to the composition of the gender of parents and their children, which suits the assumption that the norm of providing support for the elderly is likely to be transmitted to offspring of the same gender.

However, the two datasets exhibit different gender-dominated demonstration behaviours. The CHARLS (the China Health and Retirement Longitudinal Study) mainly presents the father demonstration effect. The mother effect has a more substantial role in the CHFS (the China Household Finance Survey). One explanation for this difference is that the CHARLS contains more rural samples than the CHFS. It is consistent with results from the urban-rural heterogeneity analysis and subsample check. The discrepancy between the urban and rural subsample results has implications for the norm-shift of providing support for the elderly together with the development of China. Urban areas in China are more developed than rural areas: they have higher pension/insurance coverage, better public infrastructure, and, in particular, fewer gender inequalities and higher female bargaining powers given more single-child households (Fong, 2002; Lee, 2012). The results may suggest that higher female household bargaining power may lead to more significant mother demonstration effects. The mechanism checks also show that the co-existence of other possible mechanisms, such as altruism and direct reciprocity, does not largely affect the demonstration effect channel in the results.

The paper proceeds as follows. More background information on support for the elderly from children in China is in Section 2. Section 2 also provides the theoretical background for the same-gender social norm transmission. This is followed by Section 3, which provides the identification strategy and the empirical findings, with subsample checks and heterogeneity analyses. Section 4 provides the robustness and mechanism checks for the key findings. Section 5 offers some concluding thoughts.

2 Background

2.1 Old-age support in China

The provision of financial and non-financial support to ageing parents is a pro-social norm in China and other countries that are influenced by Confucianism. This family support for the elderly has been acting as an alternative way of sustaining the welfare of elderly to the incomplete public pension system. Table 1 shows that in 2005 less than 50% of the urban elderly viewed public pensions as their major source of income. In rural areas, the percentage was only around 5%. 54% of the rural elderly and around 37% of their urban counterparts believed their major source of income to be family support. Even with the development of the public pension in both urban and rural areas in China, the percentage of rural elderly choosing pensions as their main income source in 2010 was unchanged, although the percentage of those who chose family support declined to 47%. The pension schemes in urban areas have been improved since 2005: around 70% of the urban elderly in 2010 relied on a public pension while only around 20% of them lived mainly on family support. Inferring from the statistics, the public pension coverage shows a large urban-rural difference. Rural areas in China do not seem to have had an effective pension scheme before 2013, so the elderly there were still depending on the norm of private old-age support.[3]

A large proportion of the elderly in China lives on support from their family members, especially from their adult children. The social norm of providing support for the elderly is then important to those who try to secure their income after their retirement. First, they have to know which characteristics affect the amount of support that they can depend on in old age. The number and the gender of the adult children are two major aspects studied in the relevant literature on China. In the standard old-age support literature, such as Becker and Lewis (1973), people believe that more children in a household will lead to more income for the household in the future. Cai et al. (2006) and Oliveira (2016) both verify this common belief among Chinese people. As regards the gender of the children, traditionally, males are responsible for providing support, both time and money, to their parents in their old age. Hence the early literature believed males provide more than females due to culture and labour market restrictions (Lee et al., 1993; Chan et al., 2002). The value of male offspring in providing support for the elderly is one of the reasons behind the persistent son preference in China and other developing countries (Gupta et al., 2003). It was common in China for households to have at least one son, right up to the "One-Child" Policy (OCP) implementation (Milwertz, 1997; Ebenstein and Leung, 2010).

The gender division of in terms of old-age support provision in China is not as clear as the common belief of the gender role, which is that females provide more time support and males provide more monetary support. Traditionally in China, males took all the responsibility to provide financial and non-financial support to their elderly parents. The situation has gradually changed in modern China society. With the increasing women's labour force participation rate in urban China, Xie and Zhu (2009) find that females were providing more

[3]The New Rural Pension Scheme implemented in 2009 and was announced to have complete coverage by 2013. There are many working papers on the effectiveness of the new pension scheme, and the preliminary conclusion is that the new scheme is not very effective at least by 2013 given its low premium.

financial support to elderly parents in urban areas, and Oliveira (2016) finds no gender differences in the provision of financial old-age support and the co-residence with the elderly. These empirical results infer that females in China are not necessarily more likely to provide non-financial support than males. The gender difference in old-age support provision is decreasing. But, given the high gender ratio for newborns in China, especially in rural areas, it is reasonable to assume that this gender difference still exists, though it may head in different directions in rural and urban areas.

Once those who rely on family support for income in old age know the factors affecting their future income, it is highly likely that they will try to manipulate these characteristics. For many families in China, the number of children is difficult to manipulate. With the strict implementation and high fines of the OCP, Ebenstein (2010) has found that the policy reduced fertility. Gender, however, was a characteristic that was easier for people to manipulate, with the help of advanced technologies before 2003. Chen et al. (2013) have inferred that the increasing gender ratio could be attributed to increased gender selection before birth, thanks to gender-selection technology. For example, B-mode ultrasound allowed people to know the sex of a foetus and was in common use all over the world after 1980 (White, 2001). Qian (2008) has discovered that an increased future income for females also improved the female survival rate. Ebenstein and Leung (2010) also have studied the effects of having a public pension system on the sex ratio at birth in China. They find that when a region is covered by a public pension scheme, its gender ratio is more balanced than it is in regions without such coverage. From the literature, it seems that in China, support for the elderly is important enough to affect fertility decisions, especially the gender of people's future children. Parents who internalise future support that they will receive might try to alter the characteristics that could affect future support received.

2.2 Indirect reciprocity

It is important to learn how to best support the elderly, given their situation. First, we should understand the possible mechanisms for doing so. Altruism and exchange are the two main motives in the standard theoretical models analysing intergenerational transfer. Altruism, in the context of supporting the elderly means that people are generally willing to support their ageing and retired parents. The theoretical framework for altruistic individuals, especially altruistic parents, is developed by Barro (1974) and Becker (1976, 1981). The models with altruistic children are advanced by others, such as Shubik (1981), Kimball (1987), and Stark (1993). The exchange mechanism is also referred to as (direct) reciprocity. It describes support for the elderly as reciprocal payments for the financial and/or non-financial investment made in the donors' childhood (Bernheim et al., 1985; Cox, 1987). However, the existing empirical results are not robust enough to support these two motives in theoretical models (Arrondel and Masson, 2006). The theory of indirect reciprocity may serve to reconcile the motives of altruism and exchange. Indirect reciprocity is also the theoretical support for the inter-generational transmission of the norm of giving support to the elderly.

The concept of indirect reciprocity is usually attributed to Mauss (1950, 1968), a French anthropologist. He expands the common "gift-return" reciprocity relationship between two parties, the giver and the beneficiary,

to three parties. He states that indirect reciprocities involving three successive generations will lead to infinite chains of transfers. He observes that the givers do not get direct payback from the beneficiary but receive it from a third person (Arrondel and Masson, 2001). The channel works for any type of transfer: upward, downward, positive or negative. Cox and Stark (1996) provide a model to describe similar behaviours in the provision of support in old age, which coincides with the upward and positive indirect reciprocity channel. In the context of supporting the elderly, the interaction between three parties is that parents educate their children by providing support for the elderly to their parents so that the parents when elderly will receive support from their children. It is usually referred to as the "demonstration effect". The model predicts that transfers from individuals to their parents are positively affected by the presence of their children. Cox and Stark (2005) test the prediction using U.S. data. Wolff (2001) and Mitrut and Wolff (2009) also find that the existence of granddaughters increases the visits paid to the grandparents; Becker et al. (2016) believe that parents can "manipulate" the preferences of children, an assumption underlying the demonstration effect.

Bau (2019) studies the connection between the cultural norm and support for the elderly and suggests that support for the elderly is a product of cultural norms. Godelier (1982) describes indirect reciprocity as gender-specific when it functions as a channel for the transmission of cultural traits and norms. A gender-specific social norm would also be a channel for passing on this gender norm in society. Given the gender difference regarding support for the elderly and preference for sons in China and other developing countries, the demonstration effect may also be linked with the gender of the third generation. Except for Mitrut and Wolff (2009), the relevant literature considers only the role of the children in the transmission of the norm of old-age support, without any consideration of the role of gender of the third generation, especially in China.

If providing support for the elderly links with gender norms, one vital assumption is that parents should be able to influence their same-gender children more effectively than cross-gender children. Children would also mimic the behaviours of their same-gender parent in the future, a phenomenon which is known in psychology and sociology as "gender socialisation/specification". Many sociologists and psychologists believe that the same-sex parent is the main source for ensuring that children to learn the corresponding gender role that fits social expectations and that the children will perform gender-related behaviours when they become adults (Lytton and Romney, 1991; Bussey and Bandura, 1999; McHale et al., 1999). Also, in the relevant psychology and sociology literature, the influence from the same-gender parent is larger than the cross-gender parents (Ardelt and Eccles, 2001). In the recent economics literature, several papers focus on same-gender intergenerational transmission. Alesina et al. (2013) find that paternal ancestors affect the perspectives of males on the gender role and the female labour market participation. Jayachandran and her colleagues show that the effects of same-sex parent on gender attitudes are greater than the peer effects (Dhar et al., 2018). Kleven et al. (2018) reveal that preferences over family and career for females are largely influenced by their mother's preferences observed during their childhood in Denmark. The same-gender effects also are sometimes addressed as the role-model effect in the economics literature. Related studies find girls are more pro-active in male-dominated fields when they are exposed to information on same-gender role models in the field (Breda et al, 2018; Del

Carpio and Guadalupe, 2018), which implies at least for the minority groups, the same-gender role-model effects are larger than the cross-gender effects. The existing literature in economics and other social sciences show that the same-gender effects are larger than the cross-gender effects.

Parents should also internalise the fact their children's future behaviours will be affected by theirs. This internalisation means that parents will influence their offspring in order to form their children's preferences. Becker (1996), Bisin and Verdier (2000), Guttman (2001), Bronnenberg et al., (2012), and Becker et al. (2016) study whether parents show certain behaviours to or spend more resources on their children to formalise their children's preferences. With the relevant evidence supporting the demonstration effect and same-gender intergenerational norm transmission, it is reasonable to assume that the demonstration effect works in a more gender-specific way when there is a wide gender difference in the planned support for the elderly. People will demonstrate the norm of support in old-age to their same-gender offspring by providing support to their elderly parents. Figure 1 exhibits posters in China that promoting the same-gender demonstration in old-age support.

3 Data and empirical results

3.1 Model description

I construct a simple two-period consumption model to illustrate the same-gender demonstration effect. It describes the interactions between three generations in terms of providing old-age support. The model includes inter-household transfers (Banerjee et al., 2014) and a demonstration effect (Cox and Stark, 1996). The new factor in the model is the intra-household bargaining component. The key assumption for the same-gender demonstration effect is that old-age support provided by parents in the first period positively affects their same-gender children more than their cross-gender children. Other assumptions described in the literature review part are also included in the model, such as parents know their old-age support behaviours will shape their children's behaviour in future. The model concludes that the parent who holds higher bargaining power in a household is more likely to demonstrate the norm of old-age support to offspring of the same gender, which provides a possible explanation and simple theoretical support for the different gender-dominated demonstration effects in the empirical results. The key link with the empirical method is that the gender ratio in the households should be exogenous. The baseline model has many restrictive assumptions. Similar conclusions hold under certain conditions in models with relaxed assumptions, but given the length limitation, I did not include these models in this paper.[4] Figure 2 gives a simple graphical illustration for the model.

3.2 Data

Two datasets are used to assess the gender effects of children on the norm transmission of old-age support, more specifically, how the gender of children affects the support for the elderly provided by their parents. The first dataset is the China Health and Retirement Longitudinal Study (the CHARLS). The CHARLS is a

[4]The baseline model part is online. Link: https://xuezhushi.weebly.com/uploads/1/2/0/0/120028070/model_short.pdf.

longitudinal survey of 28 out of the 34 provinces of the country for three waves in the years 2011, 2013 and 2015 up to the present day. It collects a representative sample of residents aged 45 or above. The wave used in this paper is the 2011 wave. The data set contains information on each respondent's family, work, retirement, wealth, health and income. The main demographic group in the survey is people aged 45 or above. In the 2011 sample, this covered about 17,708 individuals in 10,257 households from 28 provinces. The sample was randomly selected from four samplings at different levels: county-level, neighbourhood-level, household-level and respondent-level.[5] The CHARLS provides detailed information on inter-generational and inter-household transfers. One advantage of this dataset is that it clearly distinguishes between the transfers from different children of the respondents. I have to reconstruct the CHARLS to a new dataset that regards the adult children of the original survey respondents as the main observations.[6] In the newly constructed sample, the sample size decreases to about 14,000 observations, but the demographic information on the respondents' children and grandchildren is limited. The gender ratio of the respondents' grandchildren is only available in 2011, limited my analyses for the CHARLS to cross-sectional analyses only.

I used a second dataset to verify the generalisation of the results from the CHARLS and also to provide supplementary evidence for the demonstration effect. The dataset is the China Household Finance Survey (the CHFS), which is organised and collected by Southwestern University of Finance and Economics. The CHFS is a panel dataset covering 25 provinces in China and focuses on household-level financial behaviours. It currently has four waves that are publicly available: the year 2011, 2013, 2015, and 2017. The survey does not have age limitation on the survey respondents; hence, there is no need to reconstruct the dataset. In the CHFS, I treated the main respondents of the survey as the parents who are providing old-age support. The sample in the 2011 wave includes only 8,438 households, and its questionnaire includes only the gender of the children who are living together with the respondents. In the 2013 wave, the number of observations increased significantly: 28,142 households and 97,916 individuals, and it provides information for all children of the respondents. Accordingly, I used the 2013 wave in the CHFS for more observations and more precise information on the gender ratio of the children and the demographics for all three generations.

I include only the main respondent for each household in my CHFS sample for regression. The main respondents know the household financial situation best (Li et al., 2015). They are responsible for answering the household-level financial questions, which includes the questions regarding inter-household transfers. If I included only the main respondents, there would be a selection bias. In this sample, the parents are in charge of household finances. So, one possible effect would from females who were in charge of the household finances, who may have a higher power in their household than is held by females who are not in charge. A possible result of this selection would be that the females in the sample transferred more to their parents, which makes the results an upper bound of the female demonstration effect. However, regarding the households' support for the elderly, the main respondents may know only the exact amount of their own transfers, and not that of their partner. Their partner may hide the information from them (Ashraf, 2009). Moreover, the CHFS only

[5]The detailed sampling method at each level and distribution in provinces and counties is included in the *User's guide* documents on http://charls.pku.edu.cn/pages/data/2011-charls-wave1/en.html.

[6]A detailed discussion of the dataset reconstruction and the reason is in Online Appendix A.4.

asks detailed demographic information for the main respondents' parents. Each dataset has its advantages and disadvantages. A comprehensive interpretation of the results from both datasets is necessary.

3.3 Main regression

The paper sets out to examine the gender effects of the children on the support for the elderly provided by their same-sex parent. Given the data structure, the main regression includes the gender of the parents, the gender ratio of their children in their household, and their interaction term. The main regression is:

$$y_i = \alpha + \beta sex\_ratioK_i + \gamma maleP_i + \delta(maleP_i \times sex\_ratioK_i) + \mathbf{X_i'\Theta} + \phi_c + \varepsilon_i. \quad (1)$$

In the equations, i stands for a parent i. y_i represents the outcome variables testing various aspects of old-age support. The error term is ε_i is clustered at the prefecture city-level for the CHARLS and the province-level for the CHFS.[7] The different cluster-levels for the CHARLS and the CHFS is because the CHFS only has information on province-level. ϕ_c is the province fixed effects. For the main regressors, I use the three-generation setting: P is the mid-age parents (the main observations in the datasets), K represents the children of P, and O is the parents of P, which is the elderly generation. $maleP_i$ is the gender of a parent i in the P generation. It equals 1 if P is male and 0 otherwise. The regressor sex_ratioK_i is the actual male-to-female gender ratio of the children in parent i's household. The gender ratio of K equals the number of sons for a parent i divided by the total number of K in the household if i has more than one child. For i with one child, if the only child is a boy, then $sex\_ratioK_i = 1$; if otherwise, $sex\_ratioK_i = 0$. $sex\_ratioK_i \times maleP_i$ is the interaction term, and $\mathbf{X_i}$ is the set of demographic variables for P and O to be controlled for in the regression.[8] I run separated regressions for the CHARLS and the CHFS, since the difference between the two datasets is large. Using this regression equation, I calculate the within-parent gender differences in terms of providing support for the elderly caused by the gender ratio of their children, controlling for the P's own gender and household-size.

There are three consistent main outcome variables in both datasets: the dummy indicating whether P provide any financial transfer to O (*any-transfer*), the amount of any transfer provided (*amount*), and the number of days spent on P's visits paid to O per year (*visit days*). The transfers provided to P's parents are the pecuniary old-age support provided. For the amount of the transfer, I unify it to the annual amount and the amounts are capped.[9] The summary statistics for the outcome variables, key regressors, and control variables in different datasets are shown in Table 2. The amount of any transfer provided in the CHARLS is the sum of the regular and the non-regular transfer, which will be discussed later in Section 3.5.

The OLS results from Equation (1) for the CHARLS and the CHFS are shown in Panel A Table 3. Before interpreting the results, I refer to females in the P generation as mothers, and their male counterparts as fathers. I only focus on the gender effects of K within a certain gender of P. In Equation (1), $-\beta$ indicates, for mothers,

[7] The results are similar when the error terms clustered at the individual-level and also the province-level. The choice of the cluster level is discussed in the following section discussing the instrumental variable.

[8] The controls are different in the CHARLS and the CHFS. I try to make the controls consistent between the two datasets. The control variables for O are more in the CHARLS than in the CHFS, but information on P and K is more precise in the CHFS.

[9] The amount of transfers are capped at 100,000 per year in the CHARLS and 10,000 in the CHFS. The cap is for only a few outliers in the two datasets.

the change of old-age support provision corresponding to decreases in the gender of K in their households. The decrease in the gender of K means there are more daughters in one's household, controlling for the total household size. So I name $-\beta$ as the mother demonstration effect. $\beta + \delta$ shows the same change for fathers corresponding to increases in the gender of K in their households, which is the father demonstration effect. If the same-gender channel works, the expected coefficients of β should be negative and significant for the mother demonstration effect. The coefficients of $\beta + \delta$ should be positive and significant to show the father effect. For the CHARLS results, the mother demonstration effect, which represented by $-\beta$, is only significant for *visit days*. The mother and father demonstration effect on the probability of providing any transfer are insignificant. The father demonstration effects are significant for visits paid and the amount of transfer. The coefficients for β and $\beta + \delta$ are all insignificant in the CHFS results, yet the signs mostly fit the prediction of the same-gender effects. In general, I cannot imply that both demonstration effects exist in the CHFS results, but there might be corresponding demonstration effects in the CHARLS results. I also include the coefficients for the P household size in Table 3. A large household size implies more children in one's household. The impacts of household-size on fathers are generally consistent with the demonstration effect by Cox and Stark (1996), yet for mothers, the effects are only significant for the visits paid.

3.4 Identification strategy

The OLS results in both datasets do not appear to support the proposed demonstration effect. It may be that the results under the OLS model suffer from biases caused by various possible endogenous problems. One main endogeneity problem comes from the gender selection issue affecting the gender ratio of the children, sex_ratioK. According to the China Population and Employment Statistics Yearbooks, the yearly national-level gender ratio of new-borns has been increasing since the late 1980s.[10] The yearbook in 2011 shows the ratio of boys to girls to be as high as 1.25 to 1, revealing the gender selection problem as quite severe. Households with son preference would be likely to conduct selective abortions, and these are usually the households holding the traditional stereotypes of daughters. In my sample, the gender ratio of the parents is almost free from this problem. It is around 0.50 in both datasets. In the CHARLS the average age of the parents in the sample is 40 and in the CHFS, it is 48. When they were born, gender selection technology was not yet available in China (Chen et al., 2013). The endogeneity problem of sex_ratioK is a larger one, and it may affect the OLS outcomes in two opposite ways as illustrated by males with a preference for sons. First, if a male is eager to have a boy only to secure his future support, gender-selection will lead to an upward bias for the father demonstration effect. Second, if, alternatively, a father wants to have a boy to enhance the household's prosperity, he will invest more family resources in a son's upbringing. So the father effect is downwardly biased. The effect of the endogeneity is ambiguous in this setting for the fathers. If a mother is eager to have sons in her households, it is likely she will not ask for more old-age support from her daughters had she had sons, so the mother demonstration effect will be biased downward.

To alleviate the bias, I use the instrumental variable (IV) method and construct an IV utilising two factors,

[10] The yearly national level gender ratio of new-borns is shown in Online Appendix Figure A.1.

the timing of a regulation ban sex-selective abortions and also the gender of the first child in a household. The regulation was announced in late 2002 by the Ministry of Health, State Food and Drug Administration together with the National Family Planning Commission (NFPC). It bans the use of B-scan ultrasonography and other technologies for determining foetal sex from January 1st, 2003 (Bo, 2018). It states that all methods of gender selection should be banned and imposes fines for different levels of violation of the regulation. Fines are imposed on individuals who choose the sex of a foetus allowed to survive and on the hospitals that conduct scans and abortions. The policy was designed to bring the gender ratio of new-born males to females closer to the natural rate, so it would be relevant to the average gender ratio of children in households, which is sex_ratioK in the main regression. Figure A.1 presents the estimated yearly gender ratios of new-borns and the first-born children in the CHARLS and the CHFS respectively. Both estimated gender ratios fall after the year 2003.

I use mainly the timing of the policy change to construct the first part of the instrumental variable employed in the paper. The policy covers most of the provinces, and the provincial congresses passed the policy at much the same time,[11] with no great time difference between them. I assign the value of the policy timing variable to 1 for P with at least one child born in or after 2003, and 0 otherwise. The increasing gender ratio of male to female new-borns is a heated social issue that usually attracts public attention. So public discussion may accompany the agenda-setting process of the policy. However, Hu (1998) and Shen (2008) declare that detailed information and plans are rarely revealed to the Chinese public in the policy planning stage. Thus, the timing of the policy implementation is exogenous to the general public. Regarding this policy, in particular, most of the relevant news on Baidu.com or Google.com appears after the provincial governments or the central government passed the associated regulation. The policy ban on gender-selective abortions is designed mainly for adjusting the high male-to-female gender ratio for the newborns in China (Bo, 2018).[12] The exclusion restriction of using the policy variation is satisfied policy-wise because the policy design does not include the concern of the old-age provision. To conclude, the exogeneity assumption of the policy timing is in general reasonable in my setting. However, some people might still violate this policy ban and pay high fines to conduct gender-selective abortions. This could, in turn, affect that total expenditure of the households, and affect old-age support provision due to household budget limitations.

Although Figure A.1 shows the gender ratio in the CHARLS and the CHFS decreased after 2003, Online Appendix Figure A.1 indicates that the national gender ratio has been stagnating at a high level since 2003. It implies a slight chance that the policy does not ban sex-selective abortions outright. To address this concern, I combined the dummy indicating the timing of the policy implementation together with the gender of the first-born child in the households surveyed. The gender ratio of the oldest child in a family is relatively balanced in China. The One-Child Policy (OCP) does not strictly require all households to have only "one child", especially in rural areas and households with more than one child (Ebenstein, 2010). In Online Appendix Figure A.2, the national statistics show the ratio of new-born boys who are not the eldest to their girl counterparts are all larger than the gender ratio among first-born babies. The gender of the oldest child is correlated with the

[11] The provincial congresses all passed the policy at some time between November 2002 and January 2003. The information was collected from the provincial government websites.

[12] Website (in Chinese): http://www.gov.cn/banshi/2005-10/24/content_82759.htm. Latest access: March 2020.

gender ratio of children in households (Angrist and Evans, 1998; Heath and Tan, 2018), which satisfies the relevance condition. Together with the timing of the policy ban, my instrumental variable can plausibly satisfy the exclusion condition. The IV is an interaction term of two dummies: one dummy equals 1 for households with at least one child born in or after 2003 and one dummy equals 1 if the oldest child in a household is a son. The constructed instrumental variable is used for two datasets.[13]

This instrumental variable borrows the concept of the instrumented difference-in-differences design (DDIV) (Dulfo, 2001; Hudson et al., 2017).[14] The key variation comes from the affected policy compliers. There are two different types of compliers: affected and unaffected. The affected compliers are those who have children of the opposite sex to their wishes. They capture the time variation of the policy. For example, after 2003, the affected compliers who would have been willing, had no ban existed, to conduct sex-selective abortions, have daughters, and this decreases the gender ratio of their children. Unaffected compliers who have sons after 2003 by natural chance provide no variation. The gender ratio of the children in the affected compliers' households will decrease after the policy implementation.

One additional assumption that should be stated is that the support for the elderly provided by the parents does not change over time after controlling for the demographic variables, because the DDIV variables are usually time-variant. Due to the data limitation, I manage to get only cross-sectional datasets, so I use the CHFS dataset to compute the average probability of providing old-age support for the elderly for groups of P who have their last child in the same year. If there is no increasing trend in these averages in the different years of the last childbirth, the DDIV assumption is likely to be satisfied in the datasets. The graphs for plotting the "time-trend" are shown in Figure A.2. They show that for the P generation, there is no significant decrease in the trend in the year of birth of the last child in households until the last two years before 2013.

I also construct another instrumental variable to proxy for the household-level gender ratio for the CHARLS only. It is the prefecture-level compliance index of the policy implementation/enforcement. Only the CHARLS has detailed prefecture cities level information. The component included in the index concerns a campaign in early 2005 initiated by the Ministry of Health with the NFPC targeting illegal clinics and under-qualified doctors in prefecture-level cities.[15] The illegal clinics are usually the ones which illegal conduct sex-selective abortions. The policy acts to complement the policy ban of 2003. Both the central and the provincial governments decide to implement this campaign at prefectural city-level because the local governments may have better control over the detailed implementation. The campaign enforcement-level varies in different prefecture-level cities: Some cities have mounted this campaign every year since the campaign started. Others may have implemented the campaign in 2005 for only one year or may even have started the campaign later than the NFPC requirement. The number of years that a city has enforced the campaign and the year each city started the campaign are

[13] As noted above, the CHARLS gives limited information on the children of the parents that it surveys. Hence, constructing the gender of the first child in a household using the CHARLS entails a few assumptions, which are included in Online Appendix A.4.

[14] Using of the interaction term of the gender of the first child and whether a household is affected by the policy as IV is necessary. I cannot use only the subsample of households that are affected by the policy ban when using the gender of the first children as IV. This is because, even with the policy ban, the gender ratios in some provinces are still higher than the natural rate. A more detailed explanation in Online Appendix A.4 and the sub-sample regression results are shown in Online Appendix Table A.14.

[15] Website (content in Chinese): http://www.gov.cn/zwgk/2006-08/02/content_352694.htm. The regulation date was in 2006, but in the content, it states that the campaign started early in 2005.

indicators of the strictness of the prefecture-level implementation. I take the relevant information from various prefectural government websites and also from newspapers and generate an index showing the various compliance levels of the listed prefectural cities regarding this campaign. The constructed compliance index varies from 0 to 2, where 2 is the highest level of allegiance to the aims of the campaign.

The policy implementation levels at the prefectural city-level also link to the choice of the cluster level in the main regression for the CHARLS. As the policy compliance level varies in different prefectural cities, the residuals for the regressions for the CHARLS are likely correlated at the prefecture-level. So, it is reasonable to cluster the stander errors at the prefecture-level for the regression results in the CHARLS. For the CHFS, because the data does not offer any information on prefectural cities, I cluster the standard errors at the province-level. There is another argument that the error terms should be clustered at the household-level in generation O in the CHARLS. Under the data reconstruction, some P and their sibling P are from the same family in O. Also, given the provision of the old-age support is a household-level decision, the stander errors in the CHFS should be clustered at the household level. The main results are similar to the results when clustering at different levels.[16] I use the prefecture-level cluster for the CHARLS and the province-level cluster for the CHFS for conservative clustered standard errors.

To summarise, the instrumental variables used in the paper are the gender of the first child for households having at least one child in or after 2003 and the prefecture-level compliance index. The IV method exploits three facts: first, that the gender of the first child is closer to the natural rate than the total gender ratio for all new-borns, especially in households with more than one child; second, that the gender of children, especially the first-born children, who were born in or after the year of the policy ban is closer to the natural ratio;[17] third, that the prefecture-level policy compliance level is higher when the gender ratio of the children is lower. The results from the IV regressions are shown in Panel B, Tables 3. The first stage results are in Table A.1.

3.5 Main results

The first three columns of Panel B, Tables 3 shows the results for the CHARLS. For *any-transfer*, the coefficients of $maleP$ and $maleP \times hh\text{-}size$ have opposite signs compared to the corresponding coefficients in OLS results, but all four coefficients are insignificant. The coefficients of $maleP$ and $maleP \times hh\text{-}size$ for the amount of any transfers provided and $maleP \times hh\text{-}size$ for the visits paid are consistent with the OLS results. The $maleP$ coefficient for *visit days* is negative and significant in the IV results. The CHARLS IV results show that the father demonstration effects are positive for all three outcomes, and significant for the probability of providing any transfer and the visits paid. One unit increase in the actual gender ratio of K in fathers' households increases the fathers' probability of providing old-age support to their parents by 7.9%. A simple interpretation is that, compared to fathers with only daughters, fathers with only sons are 7.9% more likely

[16] The results with different clustering-level is in Online Appendix Table A.1

[17] It would be desirable to use the gender of the first child born on or after 2003 as IV directly. Yet this would impose more assumptions when constructing the IV for the CHARLS. The desired IV is applied in the CHFS. The results using this IV give me larger and more significant results than the main results presented. This is because the desired IV is a subset of the IV used. So the results in this paper is a lower-bound of the demonstration effect in terms of the IV used. Also, the CHFS data also tells me that the gender ratio of the first child is lower in households having at least one child in or after 2003 compared to the gender ratio of the first child born on or after 2003.

to provide support of any support to their own parents. They also pay 72 days of annual visits more to their own parents. For the mother demonstration effect, the coefficients of sex_ratioK are negative yet insignificant for all outcomes. These results indicate there might be some potential mother demonstration effects, but the effects are less significant compared to the father demonstration effects. It implies that mothers may also try to demonstrate filial piety to their daughters, as the fathers in the CHARLS do.

The demonstration effect in the CHFS is different from the father demonstration effect in the CHARLS. The mother demonstration effect is stronger and more significant than the father counterpart.[18] The coefficients for sex_ratioK are negative and significant for the probability of providing any support and visits paid to O, and negative for the amount of transfer. Similar interpretations, mothers with only daughters are 7.3% more likely to provide any support to their own parents than mothers with only sons. They will also devote 46.9 more days per year visiting their own parents. In the CHFS, it is difficult to draw any conclusion about the father effect. The coefficients for $sex\_ratioK + maleP \times sex\_ratioK$ are insignificant for all outcomes, and the signs of these coefficients are also inconsistent.

The gender ratio of the third generation is the actual gender ratio of children in P's households. Using the actual gender ratio, I impose a linear assumption on the gender ratio when interpreting the results. It is possible that the linear interpretation would be violated when the gender ratio changes from values below 0.5 to values above 0.5. So I create a variable, $more\_sons$, which is a dummy variable equals 1 if the gender ratio is greater or equal to 0.5, and 0 otherwise. The coefficients are very similar to and consistent with the ones in Panel B Table 3, and the results are presented in Online Appendix Table A.2. So I continue to use the actual gender ratio sex_ratioK as my main regressor in the later analyses. It is also possible the definition of the outcome variables, especially for financial old-age support, could affect the results. I discuss about different ways to present the financial old-age support and show the demonstration effect under the different representations. The signs of the father or mother demonstration effects are mostly consistent with the main results in Panel B Table 3, yet the significance-level varies.[19] Another problem that might arise from the controls is the household size variable. The size of each household might be endogenous with the gender ratio of the children. To deal with this possible endogeneity, I calculate two counter-factual household sizes using Qian's method in 2009. Given the data limitation, this household-size adjustment is only applied to the CHFS results. The IV results utilising the counterfactual household size are consistent with the main results.[20] The results using Qian's adjustment suggest that there are certain endogeneities between the household size and the gender ratio of the children. But the corresponding bias is not large enough to affect the main results.

The IV results from the CHARLS and the CHFS show a very interesting phenomenon. The fathers in the CHARLS and the mothers in the CHFS both demonstrate to their same-gender children. Their counterpart demonstration effects insignificantly appear in the corresponding dataset. One possible explanation may be that the CHARLS and the CHFS focus on different samples. As shown in the summary statistics, one major

[18] The difference between the mother demonstration effects and the father demonstration effect is $-2\beta - \theta$, which are significant for the outcomes *any-transfer* and *visit days* in the CHFS results.

[19] The results are in Online Appendix Table A.3.

[20] The results are in Online Appendix Table A.4.

difference between the CHARLS and the CHFS is the proportion of urban samples in each dataset. The CHFS has a sample of which 65.2% live in an urban area, while the sample in the CHARLS contains 33.2% urban dwellers. In the CHARLS OLS results, fathers, in general, support their own parents more than mothers do. This result is consistent with the hypothesis that sons in rural areas are still preferred for their propensity to provide old-age support. In China's rural areas, a higher proportion of people accept traditional gender discrimination/stereotype, and females have less bargaining power in their households than males (Wang and Zhang, 2018). Urban areas contain more households with a single child than rural areas do as a result of the "1.5" Child Policy implemented in China (Rosenzweig and Zhang, 2009; Wang and Zhang, 2018).[21] If a urban household only has a daughter, mothers are more likely to demonstrate to this daughter so that they can look forward to receiving support when they grow old. Urban areas in China have higher female labour market participation and higher gender equality compared to rural areas, which indicates higher females bargaining power in the households. My predictions for the discrepancies between the CHARLS and the CHFS are an urban-rural difference and/or a single-K/nonsingle-K household difference. The significant female or male demonstration effect might be driven by the corresponding subsamples with more observations.

There is an another possible channel that could explain the results that I found. Fathers with only or more sons might anticipate receiving more old-age support in future, thus they are able to provide more old-age support to their own parents because they do not need to save for their old age. Analogously, it could happen to mothers in the urban areas as well, if their daughters are the possible future old-age support. They could have more money to provide support to their own households. This channel works in the same directions with the demonstration effect. It is likely that they co-exist in the real world scenario as well as in the empirical results. The key component that distinguishes the demonstration effect from this possible channel is that the demonstration behaviours from fathers and mothers need to be observed by their same-gender children. In the CHARLS, there are two different types of transfer: regular transfer and non-regular transfer. The regular transfer is the fixed-amount transfers that parents make to their elderly parents at fixed times, which suits the definition of old-age support but less visible to their children. The non-regular transfer represents transfers provided by the parents at festivals, birthdays, weddings, funerals, and for medical treatments, and also for other non-regular but important social events. In these family-gathering situations, the provisions of transfer are more visible to their children. If the channel described and the demonstration effect co-exist, then I would expect both coefficients representing the father or mother demonstration effects are significant when using the regular and non-regular transfer as outcome variables. Also, the magnitudes of these demonstration effects should be larger for the more visible transfer compared to the less visible one.

Table 4 shows the corresponding results for four different outcomes: the probability of providing regular and non-regular transfer, and the amount of regular and non-regular transfer. Focusing on the IV results in Panel B, the father demonstration effect is 5.6% for the probability of providing non-regular support and 3.2% for the corresponding probability for the regular transfer. For the transfer amount, both father demonstration effects are insignificant, but, the magnitude of the effect for the regular support is larger than the one for the

[21] The daughter preference in urban areas in the CHFS is 10% more than rural areas. The results in Online Appendix Table A.5.

non-regular. The mother demonstration effect for the probability of providing non-regular support is positive and insignificant; while the mother effect is negative and significant for the regular one. The significant mother demonstration effect shows up for the amount of non-regular transfer compared to the insignificant effect for the amount of regular transfer. The results from Table 4 show that the possible channel discussed could exist, but the larger effects for the probability of providing more visible old-age support indicate that it coexists with the demonstration effects.

In the main results, I notice the demonstration effects of visits paid to the parents are larger than other outcomes when compared to their corresponding mean. Cohabitation with the elderly parents would be one of the possible explanations for the large effect on visits paid. Living together with the elderly parent is one important and common way to take care of them. Although cohabitation may count as mutual care of the family members, it seems that P is more likely to take care of their elderly parents in terms of income-earning. In my specification, the probability of providing monetary support and the *visit days* partially capture the cohabitations. In the literature, cohabitation with one's ageing parents is generally used as an outcome variable. I also use cohabitation with O as a dummy outcome variable for both datasets. The prediction of the results would be similar: the same-gender demonstration effects of cohabitation. The results is in Table 5. Both mothers and fathers are more likely to cohabit with their parents to demonstrate filial piety to their same-gender children, except for the father demonstration effect in the CHFS results. The father demonstration effects of cohabitation are significantly larger than the mother effects in the CHARLS. The same-gender demonstration effect has a higher significant level for this outcome variable than the main CHARLS results.

In summary, the results from each dataset show up specific gender demonstration effects for various old-age support outcome variables. With more rural samples, the CHARLS results indicate the father effects, and the mother effect exists in the urban-sample dominated CHFS. However, the conclusion here is not that there is no mother nor father demonstration effect from the CHARLS and the CHFS correspondingly. Different sumsamples might lead to different demonstration effects.

3.6 Subsample check and heterogeneity analysis

To verify the effect of the gender composition of K on old-age support working mostly through the demonstration mechanism, I use results from the subsample analysis and the heterogeneity check to show whether, in different circumstances, the results are still consistent with the predicted results from this mechanism. The analyses are conducted for both or only one of the datasets, depending on the available information. I mainly describe the subsample analysis results and then mention the consistency of the results with the corresponding heterogeneity checks. Since the CHARLS data exhibits the father demonstration effect, and the CHFS shows the mother effect, I focus only on the father effect for the CHARLS and the mother effect for the CHFS in different subsamples. Six categories are used for the analysis: high or low income-level, singleton or non-singleton households regarding the children, urban or rural residence, parents with or without older brothers, and the pension coverage of the parents. The category for the singleton or non-singleton households and the urban-rural residence are the two categories that may provide possible explanations for the discrepancies between the results from the CHARLS

and the CHFS. The subsample results for whether the parents belong to the *Han*/non-*Han* ethnic group is also discussed in the Online Appendix Section A.3. This is to check whether the social influence saves the effort for the parents demonstrating filial piety to their children. The results merely show that the demonstration effects and the social influence co-exist.

3.6.1 Income-level difference

As the future support for the elderly received from the offspring acts as an economic incentive to have children (Banerjee and Duflo, 2011; Alfano, 2017), households at different income levels should have various patterns for the demonstration effect. People in the high-income group will have enough savings, investments, and pension income to support their consumption after retirement. For the pecuniary old-age support, if the demonstration effect is to obtain secure private old-age support in future, the subsample results would show larger or more significant demonstration effects for people in the lower-income group than those with higher income. Regarding the non-pecuniary support, the high-income group may demand it as much as or even more than the other group, so larger or more significant father and mother demonstration effects are also expected for *visit days* in the high-income group. The reason for the possible higher demand for non-pecuniary support for the high-income group is that the time and monetary support are substitutes.

The subsample IV regression results for the CHARLS and the CHFS are in Table 6. The CHARLS only have one categorical variable of the household income level of the parents. To get a balanced subsample in the CHARLS, I classify those whose household income level above the 20,000 RMB per year category as the high-income group. The father effects in the low-income group are significant for the two pecuniary outcomes; while for the high-income, the father demonstration effects are not significant for these outcomes. For the non-pecuniary outcome, the father demonstration effect is also significant in both high and low-income group, but the magnitude of the effect is greater in the high-income group. The mother demonstration effects for visits paid in the high-income group are positive, yet they are negative in the other group. But the mother effects are insignificant for all outcomes and subgroups in the CHARLS. The coefficients seem to be consistent with the prediction. The evidence for the mother effects of pecuniary outcomes is that mother insignificantly signal these behaviours to their daughters in the CHARLS.

With the detailed income information in the CHFS data, I classify those who have above the average income in the high-income group and the rest of the sample in the low-income group. The last three columns of Table 6 show that in the low-income group, mothers increase their visits paid to their parents with more daughters, which implies a mother demonstration effect in the non-pecuniary old-age support. While in the high-income group, the mother demonstration effects are insignificant for all outcomes. The mother demonstration effect for *amount* is even positive. For the insignificant mother effects for *visit days*, one of the possible reasons could be the urban living pattern. Usually, the middle-age parents are not living together with their ageing parents in urban areas, which might result in the insignificant mother effect in CHFS.

The heterogeneity check provides similar results to those of the subsample analysis. It can also check whether

there are significant differences in the demonstration effect between the high and low-income groups.[22] The CHARLS results show that the father demonstration effects for pecuniary outcomes are positive and significant in the low-income group, while they are negative and significant in the high-income group. The differences in the father demonstration effect between these two subgroups are significant for the two pecuniary outcomes, which indicates the low-income group has a larger father demonstration effect than the high-income group. Both groups show positive and significant father effects for the visits paid, yet the difference is insignificant.

In CHFS heterogeneity results, an important coefficient is the coefficient for $sex\_ratioK \times high\ income$. It is the difference between the mother demonstration effects for P with high-level income and with low-level income, which should be negative and significant if the mother demonstration effects for P with high-level income are larger than the effects for P with low-level income. The absolute value of the coefficient of sex_ratioK is now the mother demonstration effect for P with low-level income. The mother demonstration effect in the high-income group is insignificant for the pecuniary outcomes and positive and significant for the visits paid. The coefficient for $sex\_ratioK \times high\ income$ is positive and significant for the amount of transfer and the visits paid, which implies the mother demonstration effect for P with low-level income is larger than the effect in the high-level income group. The CHARLS heterogeneity results are mostly consistent with the subsample analysis, yet the CHFS heterogeneity analyses fit the prediction better than the subsample results. Both of these CHFS results show the low-income group has larger father demonstration effects.

3.6.2 The number of the children

The number of children could be an explanation for the discrepancies between the CHARLS and the CHFS samples. Most of the households with only one child ('singleton households') are the households that strictly complied with the OCP. These households may hold modern views of gender roles; hence, females in these households may be able to enjoy higher bargaining powers. The number of children is a good indicator of whether a household has more traditional views on gender roles. Such households are likely to violate the OCP (or comply with "1.5" Child Policy) to have a second child if their first child is a girl. Females in these households have less intra-household bargaining power. If the existence of the father and mother demonstration effects depends on the intra-household bargaining, then larger and more significant mother demonstration effects come from singleton households and father effects from non-singleton households. Table 7 displays the results for both datasets. The first three columns of Table 7 indicate P with non-singleton households show significant and positive father demonstration effect for the probability of providing any transfer and the visits paid, while the corresponding father effect is insignificant or smaller in the households with a single child. The singleton households in the CHARLS try to show up a mother demonstration effect for two pecuniary old-age support outcomes. The corresponding magnitudes of the coefficients of sex_ratioK are larger in this subsample than the magnitudes in the non-singleton households, but both are insignificant.

The CHFS results in Table 7 show significant mother demonstration effects in singleton households in terms of the probability of providing any transfers and the visits paid. But in terms of the amount of provision and

[22] The results of the heterogeneity check for the income-level are shown in Online Appendix Table A.8.

the visits paid, the non-singleton households also show significant mother demonstration effects. The father demonstration effects are insignificant for both subsamples. The heterogeneity analysis results are generally consistent with the subsample analysis.[23] The CHARLS results show that the father demonstration effect in terms of the visits paid is on average greater in non-singleton households than in singleton households, yet the difference is insignificant. The results from the heterogeneity check also show that in the CHFS the mother demonstration both exists in the singleton and the non-singleton households. But, for the amount of transfer provided, the non-singleton group has a larger and significant mother demonstration effect compared to the singleton group. Higher bargaining power for mothers in singleton households may be one of my conjectures for explaining the difference between the CHARLS and the CHFS results. But the CHFS results do not support this conjecture completely. I need to explain the discrepancy of the results between the CHARLS and the CHFS by the urban-rural difference.

3.6.3 Urban-rural differences

Another conjecture in explaining the discrepancies between the CHARLS and the CHFS results is the urban-rural difference. Residences in urban areas in China enjoy more developed public pension systems, more opportunities for females to be employed and higher gender equality. Like the previous argument, with increases in females' social status and household bargaining power in urban areas, the mother demonstration effect should show up more in urban subsamples, and the father effect should appear in the rural one. Table 8 presents the regression results for the urban and rural subsamples in the CHARLS and the CHFS using the IV regressions. In the urban and rural areas in the CHARLS, the gender effects of the children are insignificant for pecuniary and non-pecuniary outcomes of the mother demonstration effect. While in the rural subsamples, the father demonstration effects are significant for *any-transfer* and *visit days* for. In urban areas, the CHARLS results only show up a significant father demonstration effect for the visits paid. The heterogeneity analysis shows the father demonstration effect for the amount of transfer and the visits paid are significantly larger in the rural areas.[24] The heterogeneous analysis findings may indicate that the fathers' bargaining power in terms of supporting the elderly is not strong in urban areas compared to rural areas.

The difference in the gender effects of the children in rural and urban areas in the CHFS mostly corresponds to my prediction. The last three columns of Table 8 show that the mother demonstration effect is significant except for *amount* in the urban subsample. In the rural subsample, there is no significant demonstration effect for mothers to their daughters nor fathers to their sons in terms of the pecuniary outcomes. Mothers in rural areas may have little bargaining power over the pecuniary outcomes, but the results show that they attempt to demonstrate to their daughters in terms of the non-pecuniary outcomes, which they may have higher control over. But the differences between the rural and urban mother effects are insignificant in the heterogeneity checks. The father effect for *visit days* in the rural subsample is significantly larger than the corresponding coefficients in the urban subsample with the supporting evidence from the heterogeneity checks. The magnitude of the

[23] The results of the heterogeneity check for the singleton/non-singleton households are shown in Online Appendix Table A.9.
[24] In Online Appendix Table A.10.

mother demonstration effect from the rural sample is larger than the corresponding effects in the urban areas in Table 8, which might be explained by different residence patterns in urban and rural areas.

The urban-rural subsample analysis generally supports my prediction of more mother demonstration effects and fewer father effects in urban areas. Scholars believe that females have higher bargaining power in urban areas in China (Fong, 2002). However, certain urban households where the first-born is a girl would still pay the high fine to have a son (Ebenstein, 2010). Lee (2012) and Hu and Shi (2018) find that the human capital investment for boys and girls is not significantly different in singleton households, but the gap is still wide in multiple-child households. Fong (2002) also limits the rising female empowerment in urban China only to daughters in singleton households. I run a simple urban-singleton and other types of household subsample in CHARLS. The results for this simple subsample are in Online Appendix Table A.11 and are mostly consistent with Table 8. The similar results between urban-rural and urban-singleton subsample results show that the urban-rural difference in females' intra-household bargaining power is the possible explanation for the discrepancies between the CHARLS and the CHFS results.

3.6.4 Siblings of the parents

Supporting ageing parents is crucial for most males in China owing to the enduring cultural impact of Confucianism. Some people have to support their own parents, regardless of the gender of their children. This is especially true for many males who are the eldest son. It may also be the case for some females if they are the eldest child and/or have no older brothers. If people are not fully responsible for the support of their elderly parents and only want to demonstrate the norm of providing support for the elderly to their children, there may be greater effects from the gender ratio of the children. I use the same regression equations and the identification methods to obtain the separate results for those who with and without older brothers. The results are shown in Table 9. The CHFS provides only the number of siblings for the main respondents in households, but no information on his or her rank among his/her siblings. So this subsample analysis is conducted in the CHARLS dataset only. The results indicate that, for the probability of providing any support and also the visits paid, the father demonstration effects are all significant for those with older brothers and for those without. However, the heterogeneity results shows the difference is insignificant for the visit days paid.[25] For the probability of providing any transfer, the group without older brother shows up significantly lager father effect than the other group. I cannot draw any conclusions on the subsample check results in this part.

3.6.5 Pension coverage

Family support for the elderly can be a supplement for the public pension scheme. Under the demonstration channel, if parents do not have public pension coverage, then they are more likely to provide more support to their elderly parents with more same-gender children to secure future old-age support. The demonstration effect will be larger or more significant for parents without any pension coverage, especially for the pecuniary old-age

[25] In Online Appendix Table A.12.

support. To check this hypothesis, I conduct heterogeneity analysis on parents with and without a pension scheme. In the CHARLS, I have no information on P's pension coverage due to the data reconstruction. However, I use P's occupation as a proxy for their pension status. The CHARLS provides six occupation categories for the parents.[26] Of these six categories, the agricultural, forestry, husbandry, and fishery producers are less likely to be covered by public pension schemes, as indicated in Table 1. I create a dummy, $pensionP$, that equals 0 if a parent is classified as an agricultural, forestry, husbandry, or fishery producer, and 1 otherwise. The results from this heterogeneity analysis are shown in Table 10 and they show that the father demonstration effect is larger for parents if they are less likely to be covered by a pension system for the visits paid. But for *amount*, it is the other group showing up the father effect. The difference between the father demonstration effects in the group with pension coverage and without is insignificant for the probability of providing any transfer. The empirical results from the CHARLS only fit a small part of the description of the relationship between pension coverage and family old-age support. It may due to the incomplete information in the dataset.

In the CHFS, the information is available for defining the exact pension status of the parents. I create a dummy which equals 1 if a parent is covered by at least one pension scheme, and 0 otherwise. The heterogeneity check results are shown in the last three columns of Table 10. Yet mothers, both with and without any pension coverage, have two out of three significant negative coefficients corresponding to positive mother demonstration effects. The differences between them show that the mother demonstration effects for P without any pension coverage are larger the effects in the other sub-group, although only the difference for *amount* is significant. The CHFS results in Tables 10 might provide a piece of suggestive evidence on the relationship between pension coverage and family support for the elderly suggested previously in the paper. Similar conclusions are difficult to draw from the CHARLS results.

4 Robustness check

4.1 Mechanism check

Other different channels may also explain the effects of children on the support for the elderly provided by their parents. The results from the subsample check and the heterogeneity analysis only show a few possible drivers behind the demonstration effect. In this section, I check other mechanisms discussed in the literature review section and try to disentangle the demonstration effects from these additional mechanisms. I first discuss the channels of altruism and direct reciprocity that may affect my empirical results and go on to discuss the effectiveness of the demonstration effect.

4.1.1 Investment in K and household budget constraint

One of the possible explanations for the mother demonstration effect is that, given the household budget constraint, higher investment in sons might lead to less old-age support provided by the elderly generation. The

[26] They are managers; professionals and technicians; clerks, commercial and service workers; agricultural, forestry, husbandry, and fishery producers; and production and transportation workers.

education investment in children would be a suitable example for the investment in children that are highers for sons and lower for daughters in China, except for urban singleton households (Fong, 2002). Having daughters in households, mothers may invest less in daughters' human-capital such that they can provide more for their parents, leading to the significant mother demonstration effects in the CHFS. However, this argument does not work for the significant father effects from the CHARLS results.

Checking from the dataset, I run the main regressions on three new outcome variables presenting the investment in the education of K, which only available in the CHFS. If the household budget constraint is the main reason behind the mother demonstration effect, the results should show that mothers with more daughters have less education investment on their children. The evidence from the CHFS is in Table A.2. It implies that mothers with more daughters increase the amount of education investment and the percentage of education investment in the household expenditure, and decrease the probability of investing in K's education, controlling for the household size. For fathers with more sons, fixing the household size, they increase the probability of investing in K's education, yet decrease the amount of education investment and the percentage of education investment in the household expenditure. From the results, the gender of K affects the total amount of education investment and the probability of providing education investment in different ways, so I cannot draw the concrete conclusion on whether mothers and fathers invest more on their daughters or their sons. Households invest more on daughters regarding the absolute and the percentage amount of education investment, regardless of the gender of the parents. Different investments in sons and daughters of P might not be the main channel for the mother demonstration effect in the CHFS results.

4.1.2 Altruism and Direct reciprocity channel

The main mechanism of providing old-age support is altruism (Shubik, 1981). The only reason behind the parents providing support to their elderly parents due to altruism is that parents are poor and in need of help. There should not be any significant coefficients for the gender of the adult children, the gender ratio of the children or their interaction term after controlling for the income of the elderly parents in the regression. I run heterogeneity checks on the elderly parents' income-level as the information is provided by the CHARLS only. In the sample, most of the elderly parents observed have no income. I create a dummy *income of O* equals 1 if the elderly parents have some income, and 0 otherwise. The results are in Table 11. They reveal that for *any-transfer* and *visit days*, the father effect is significant for O without any income, whereas for the high-income O group, the effects are positive but insignificant except for the father effect for *visit days*. However, the key is that the difference between these two groups is insignificant. Both father demonstration effect are significant for *visit days*. I may conclude that there is a certain degree of altruism among the motives of providing old-age support, but it is not the main channel working behind the results in this paper.

Another mechanism discussed in the previous section is direct reciprocity. One kind of direct reciprocities in the context of old-age support is the parents support their ageing parents to repay the investment received in their childhood. I name this kind of direct reciprocity as sequential direct reciprocity. It may explain why females provide less support to the elderly to their parents in the CHARLS: they did not get enough

financial nor non-financial investment from their parents during their childhood. Only the CHARLS provides the relevant information. If sequential direct reciprocity is the only channel for old-age support to flow along, then controlling in the regression for the financial and non-financial investment received by the parents in their childhood should confirm that males and females in the P generation should provide the same amount of old-age support. Moreover, the gender of the children should not have different effects on the transfers provided by the parents. I control for different variables that indicate the financial investment and non-financial investment the P received during their childhood in the regression. The results are in Table 12.

There are two variables represent the time investment (non-financial support) during the parents' childhood. *awaytime* is the variable representing how long a P has been away from his or her parents in childhood, and *awayage* indicates the age when the parent left her/his parents. The *log edu expense* indicates the financial investment in education that P received in their childhood. I also show the coefficients for *edu level* in the table, which is the education level controlled in the main regression. It is another indicator of the size of the financial investment. Table 12 shows that, after controlling for the non-financial, financial investment, and their interaction terms with $maleP$, the coefficients that represent the demonstration effect are still similar to the results in Table 3. With most of the coefficients representing the father demonstration effect being still significant, it also suggests that the same-gender demonstration effect is still the main channel as described. Most of the coefficients regaring the financial and non-financial childhood investment received are insignificant as well. In addition to the results in Table 12, the CHFS main results may also demonstrate that this sequential direct reciprocity channel is not the main mechanism. In general, mothers provide more to their own parents in the CHFS than fathers, given the fact that females on average have a lower education level than males.

Another direct reciprocity channel works through the current-period transfers from the elderly parents to the parents. This is a type of non-sequential direct reciprocity. In the main results in the CHARLS and the CHFS, I control the transfer from the elderly parents to the parents. This variable would, in theory, have positive effects on the outcome variable, and vice versa. I also control for the time that the elderly parents spend on taking care of the children of the parents and also the transfer from the elderly to the grandchildren in the regressions in the CHARLS. For the robustness check, I show the results without these controls in Online Appendix Table A.13, also their corresponding coefficients in Table A.3. The key results are similar to the main results, except for the mother effect for *any-transfer* in the CHFS.

The rationale behind the non-sequential direct reciprocity is that if the parents with more same-gender children receive more from their elderly parents, then they provide more old-age support than those receiving less. However, when I run the same regression on the transfer received by the parents from their elderly parents, the CHARLS results in Table 13 show that people who provide more to their elderly parents, namely fathers with more sons, receive less. Also, for the corresponding CHFS show the fathers, who are more likely to receive transfers from their parents with more sons, are not more likely to provide transfer to their parents. Also, in the CHFS, mothers increase the probability of old-age support provision with more daughters but are less likely to receive transfers from O. The results may fit the explanation by Li et al. (2010): the elderly parents may show more altruism toward their adult children in P, who do not provide more transfer than others, rather than

expecting commensurate paybacks from the parents who receive their support. To conclude, the non-sequential direct reciprocity may exist, but there is still room for the proposed mechanism: the demonstration effect.

The CHARLS results in Table A.3 show that the coefficients for both time and financial transfer from elderly parents to their grandchildren are mostly positive. This may suggest another form of indirect reciprocity. The elderly can transfer to their favourite grandchildren. If the favourite grandchildren receive more, their parents are more likely to provide support to their corresponding grandparents, O, in return. This indirect reciprocity has no time lag for the payback, unlike the demonstration effect studied in the paper. The preferred grandchildren are usually grandsons, which might lead to the significant father demonstration effect in the CHARLS. If the indirect reciprocity works in this way, male parents with more sons should have more transfers from their elderly parents to their sons. However, the third column of Table 13 shows that, statistically, sons of males with more sons do not receive more than daughters of males with more daughters. These grandchildren gender effects are not significant for transfers from elderly parents. So, it is less likely to be the main channel driving the results.

4.2 Effectiveness of the same-gender demonstration effect

Apart from verifying the possible channels, I also test for the effectiveness of the same-gender demonstration effect. The previous results imply only that the parents demonstrate filial piety to their children, but they do not show whether the children go on to provide old-age support to their parents in the future. Using the CHARLS dataset only, I obtain the information on support in old age that is provided by the elderly generation to their parents, who are the grandparents of the parent generation. I run a simple OLS regression to regress the upward-transfers of males and females among the elderly parents to their parents on the outcome variables used for the CHARLS results. I run the regression separately for male and female parents to also observe whether the same-gender demonstration effect is larger than the cross-gender one. The types of transfer provided by the elderly parents to their parents on the right-hand side of the equation match the outcomes. The outcomes are the probability of providing any, regular, and non-regular transfer, and the logarithm of the amount of regular and non-regular transfer from the P generation to the O generation. The control variables are mostly consistent with the controls in Table 2. One extra control that I have for the particular regressions is the average self-reported health of the grandparents of the parents. The health problems of P's grandparents may affect the support provided, given their old age.

The results are combined in Table 15. The key regressors for male and female P panels are *father's transfer* and *mother's transfer*. For male and female P, the demonstration effects seem to take into account the effects from the same gender channel: females are more affected by the support for the elderly provided by their mothers than their fathers'. The converse is partially true for males. The same-gender demonstration effect is more significant for female members of P than the cross-gender demonstration effect. The magnitude and also the significance level for *father's transfer* are much smaller than the *mother's transfer* for female P; while for males P, the difference is not large. The results show that if O provide more to their parents, they are more likely to receive more from their children, P, which match the demonstration effect.

4.3 Panel results: Event study

The main regression results mainly show the cross-sectional empirical evidence of the demonstration effect. The conclusion will be more convincing if there is empirical evidence from a panel dataset. Both the CHARLS and the CHFS are longitudinal datasets, but CHARLS only provides information on the gender composition of the children for the 2011 wave. The CHFS contains this necessary information in all four waves. The reason for using this four-wave dataset is to gain more yearly data before and after the event. The drawback of using the CHFS is that I can only test the demonstration effect on one consistent outcome variable - the probability of providing old-age support - for four different waves. With the limited consistent information of four waves in the CHFS, I use only the panel result as a robustness check for the main results.

I use the event study approach to examine the yearly effect of having a son or a daughter on old-age support. The event is the birth of the first child. The event usually causes sharp changes in several outcomes for the parents, especially labour market outcomes (Kleven et al., 2018). I apply a similar event study approach to that used by Kleven et al. (2018) and aim to show even possible causal results. In the panel dataset, the sample is still limited to household respondents. Given the event study approach setting, the panel sample includes only those respondents whose first child was born between 2011 and 2017. For each household respondent, I set the event time $e = 0$ for the year in which the respondent has his or her first child. The value of other years is set relative to Year 0. Using the specification in Kleven et al. (2018), the regression is:

$$y_{ite} = \sum_j \alpha_j \times \mathbf{I}[j = e] + \sum_k \beta_k \times \mathbf{I}[k = age_{it}] + \sum_l \gamma_l \times \mathbf{I}[l = t] + \sum_p \gamma_p \times \mathbf{I}[p = province_p] + \varepsilon_{ite}, \quad (2)$$

where i stands for individual i, t for wave t, p for province p and e for the event time e. y_{ite} is the probability of providing support to elderly parents. $\mathbf{I}[j = e]$ represents the event time dummies, $\mathbf{I}[k = age_{it}]$ is for the age dummies, $\mathbf{I}[p = province_p]$ is the province fixed effects and $\mathbf{I}[l = t]$ is the wave fixed effects. By controlling the age dummies, I can control the non-parametrical underlying life-cycle trend (Kleven et al., 2018). I also control for the dummy representing whether the elderly parents are still alive. I run this regression separately for four different groups: fathers with a first son (father-son), fathers with a first daughter (father-daughter), mothers with a first son (mother-son), and mothers with a first daughter (mother-daughter). Then I compare the results for the parents within a certain gender and observe that the effect of having a first son/daughter on the father/the mother. The reason why the results may be causal is that I examine the variation in the results caused by the gender of the first child. As noted in the previous section, the gender of the first child is almost exogenous. The timing of the birth for the first child is after 2003, which is after the ban on the use of ultrasonography techniques for sex-detective abortions. The regression results are shown in Table 14. The sample size for each group is around 800 observations, which also indicates that the gender of the first child in the event study sample is satisfactorily balanced.

The results in Table 14 show that after the birth of a first child, the probability of providing old-age support for the mothers with the first daughter is significantly larger than zero, compared to mostly insignificant

coefficients for the mothers with the first son. For the fathers, the coefficients are insignificant for both groups. The event study results are in general consistent with the main results. Yet some coefficients are larger than zero yet insignificant for the pre-event time trend, which indicates that the results may provide limited insights into the effects of the gender of the children on the old-age support provided by their same-gender parents. It could also be due to the lack of demographic and time-trend controls in the regression. The graphs for the plot of the event time dummies coefficients are in Figure 3, Panel A. In Panel A, the graph on the left shows the event coefficients for fathers with a son and fathers with a daughter, and the right one is for the mothers. The actual differences between having first son and first daughter within parents' gender is difficult to observe in Panel A. To plot the differences, I add the gender of the first child (dummy, 1 for male and 0 otherwise) and its interaction with the event dummies to Equation (2). The new regression equation is:

$$\begin{aligned} y_{ite} \quad = \quad & \textstyle\sum_j \alpha_j \times \mathbf{I}[j=e] + \omega_i \times k1\_gender_i + \sum_j \theta_j \times k1\_gender_i \times \mathbf{I}[j=e] \\ & + \textstyle\sum_k \beta_k \times \mathbf{I}[k = age_{it}] + \sum_l \gamma_l \times \mathbf{I}[l=t] + \sum_p \gamma_p \times \mathbf{I}[p = province_p] + \varepsilon_{ite}. \end{aligned}$$

The coefficient plot for θ_j for different values of j is in Panel B, Figure 3, with 90% confidence intervals. The coefficients should be negative and significant after the birth of the first child for the positive mother demonstration effect. The graph shows positive and significant mother demonstration effects in the CHFS up to the third year after the event, while positive but insignificant father demonstration effects for all periods. The results correspond mostly to the main CHFS result, which shows significant mother effect.

There is a concern that the mother demonstration effect from the event study takes off from the birth year of the child. For the demonstration effect, K have to observe the corresponding behaviour of their same-gender P. More likely to provide old-age support during the very early stage of K's life would not help with the interpretation of the demonstration effect. However, the birth of a new child is a big change in household composition. According to Heath and Tan (2018), "a daughter raises her mother's participation in household decisions", and the mothers with daughters seek more female autonomy in their households at the time of the birth. A newborn girl in the family, the mother realises that she needs to participate more in the decisions on the household resources allocation and to provide more old-age support to her own parents, so she could affect her daughters' norm formation later and receive more old-age support in her old age. It is also possible that a mother with a newborn daughter will receive more support from her parents so that she provides old-age support to her parents accordingly. If this is the case, fathers with a newborn son should get more support from his parent, yet the old-age support by them is not significantly more than those with a newborn daughter.

5 Conclusions

The existence of a younger generation plays an essential role in parents' decisions on the support that they provide for the elderly. This paper finds that the gender of the children affects the support for the elderly provided by their parents in China. The parents are more likely to provide financial and non-financial support to their ageing parents when they have more same-gender offspring, which lead by the same-gender demonstration

effect. However, the demonstration effects by mothers and fathers are exhibited in different areas in China. Rural areas show the father demonstration effects while mother demonstration effects appear in urban areas. The urban-rural difference may be due to female empowerment in urban areas, but this needs to be verified by future studies. The demonstration effect is a way for the gender-specific norm of providing support in old age to be conveyed to future generations.

This paper theoretically predicts that support for the elderly provided by a father increases when more sons in his family and when he has greater bargaining power than his wife, fixing his household size constant. The support for the elderly provided by mothers increases with the advent of more daughters and when mothers earn more income. The empirical results of the gender ratio for the household's children match the predictions of the model. In China, urban females have more bargaining power in their households than females in rural areas have. The findings indicate that the mother demonstration effect mainly shows up in the dataset with more urban samples. The heterogeneity analysis for urban households further suggests that the assumption of intra-household bargaining is valid. The theoretical model supports the empirical results.

The empirical evidence shows that the gender of the parents and their children in China jointly affect the likelihood and the amount of old-age support, both financial and non-financial, that they provide. The story behind this is more complicated than any pure gender effect from the children. The proposed mechanism is indirect reciprocity, or the demonstration effect, with the same-gender intergenerational transmission. It carries the social norm of providing private support for the elderly across the generations. Given the heavy financial burden of the public pension system facing the central government in China, the government has realised that private support for the elderly is a crucial complement to the public pension. In 2017, the central government started a pilot implementation of "homebased old-age care services". One of the expected goals of this pilot implementation is to collect information on the demographics of all households with ageing parents and use the information to set future policies or incentives for completing the home-based system of care services for the elderly.[27] The empirical results in the present paper can offer some insights into the demographics of those who provide or do not provide support to their ageing parents: policy-makers could introduce diverse incentives to target different groups. The rural-urban discrepancies in the results can help the government to set targeted policies in rural and urban areas.

Although the Chinese government has become aware of the importance of private support for the elderly and has started to promote "filial piety", there may be a hidden hazard behind this action. As this paper shows, sons in rural areas in China provide more support for the elderly than daughters do. The previous literature also states that economic incentives, especially old-age support, provide one reason for sex selection before birth (Qian, 2008; Ebenstein and Leung, 2010). The gender ratio might stagnate at a high level, to create a damaging equilibrium. The government needs to promote gender equality by legislating to protect the right of females to inherit, own property and compete in the labour market, especially in rural areas. In urban areas, there is already a healthier balance in the gender ratio of new-borns. Mother demonstration effects showing in urban areas alone may also be due to female empowerment and higher bargaining powers in the household for females.

[27] Website: http://xinhuanet.com/gongyi/yanglao/2017-04/17/c_129543350.htm

More research is needed to confirm this possible mechanism.

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6 Figures and Tables

Figure 1: Public service announcement posters in China

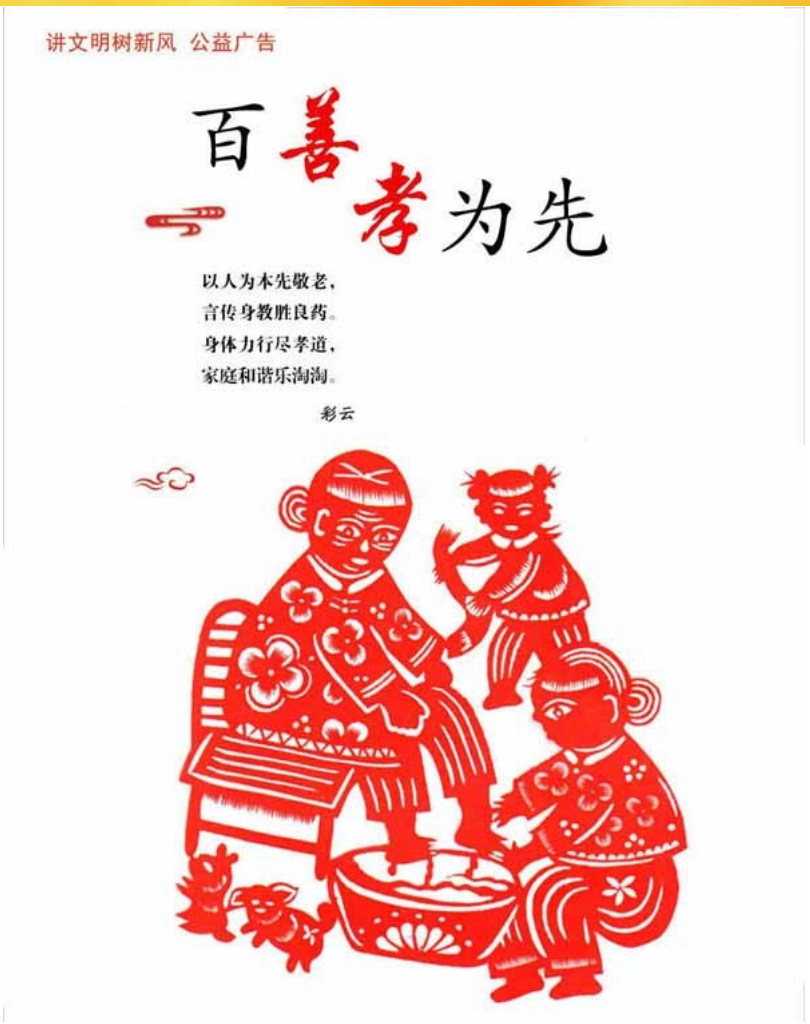
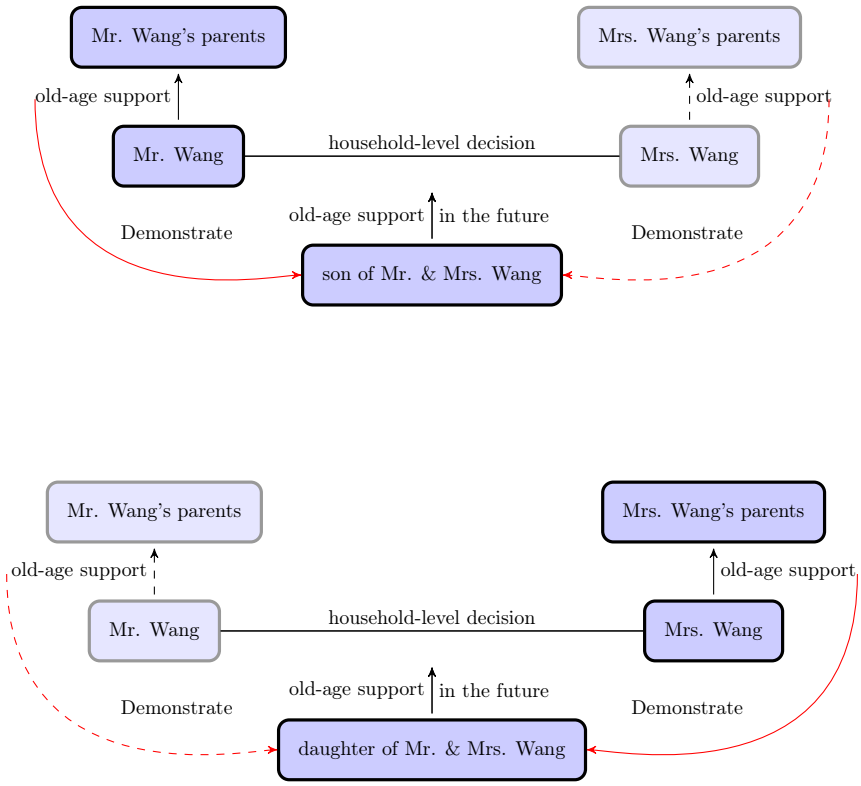


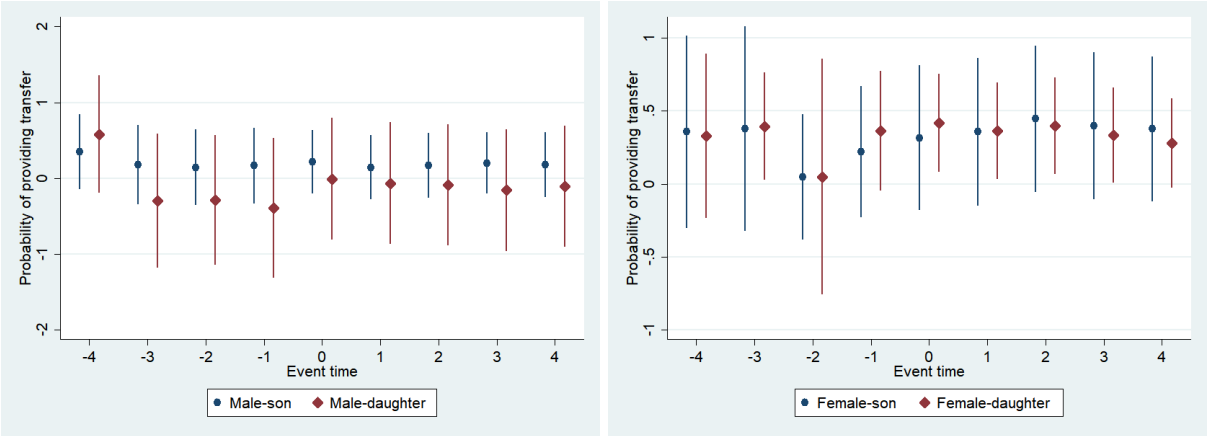
Figure 2: Simple graphical illustration of the basic model



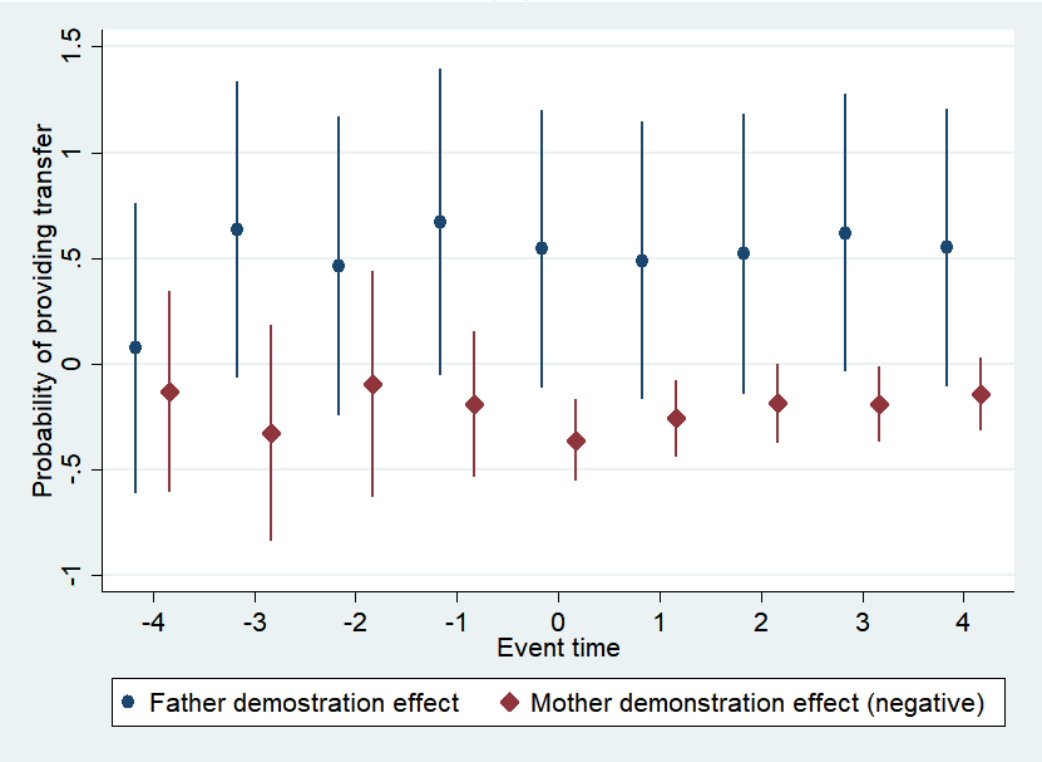
Note: This graphic illustration is for a simple scenario of the baseline model. I assume in this graph that each household has one child only. Mr. and Mrs. Wang have different degrees of influence on their child depending on its gender. The solid curve line represents a larger influence compared to the dashed curve line. Also, the dashed lines from Mr.or Mrs. Wang to their respective parents indicate Mr.or Mrs. Wang provide less old-age support than their partner in the household.

Figure 3: Impact of the gender of the first child on old-age support provision

Panel A



Panel B



Note: The graphs are the plot of the coefficients in Table 14. y-axis is the probability of providing any transfer to O in Panel A and B, and x-axis is the event time. The event is the birth of the first child in households. The graph on the left is the coefficients for males and the right graph is the results for females. The round dot coefficients represent people with first child as a son. The diamond dot coefficients are for people with first child as a daughter. The coefficients in Panel B are the differences between male-son and male-daughter (round dot) and female-son and female-daughter (diamond dot).

Table 1: Primary source of support of China's elderly, 2005 and 2010

2005

	Urban			*Rural*		
Source of support	Average	Male	Female	Average	Male	Female
Labour income	13.0	18.4	7.9	37.9	48.5	27.5
Pensions	45.4	56.9	34.6	4.60	8.1	1.3
Dibao	2.4	1.8	2.9	1.3	1.8	0.9
Insurnace and subsidy	0.3	0.3	0.2	0.1	0.2	0.0
Property income	0.5	0.5	0.5	0.2	0.2	0.1
Family support	37.0	20.7	52.3	54.1	39.3	68.5
Other	1.5	1.4	1.6	1.8	2.0	1.7

Source: NBS, 2006. Most significant share of support reported.

2010

	Urban			*Rural*		
Source of support	Average	Male	Female	Average	Male	Female
Labour income	6.16	9.72	3.75	41.18	50.53	32.14
Pensions	66.30	74.21	58.99	4.60	7.19	2.09
Dibao	2.33	1.76	2.87	4.48	5.14	3.85
Insurnace and subsidy	-	-	-	-	-	-
Property income	0.68	0.75	0.62	0.19	0.21	0.16
Family support	22.43	12.13	31.95	47.74	35.13	59.93
Other	1.64	1.44	1.83	1.81	1.79	1.83

Source: NBS, 2011. Most significant share of support reported.

Table 2: Summary statistics: Key variables

	CHARLS				CHFS			
VARIABLES	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
whether P provides								
any transfers	0.284	0.306	0	1	0.265	0.441	0	1
regular transfer	0.105	0.272	0	1	-	-	-	-
non-regular transfer	0.243	0.308	0	1	-	-	-	-
amount of								
total transfer	831.2	4598.6	0	100000	599.2	1649.8	0	10,000
regular transfer	354.6	3873.1	0	100,000	-	-	-	-
non-regular transfer	476.6	3065.6	0	100,000	-	-	-	-
visit days	118.7	2.374	0	365	91.66	145.4	0	365
gender of P	0.513	0.500	0	1	0.499	0.500	0	1
gender ratio of K	0.562	0.405	0	1	0.567	0.416	0	1
household size of P	3.643	0.774	2	10	3.662	0.889	2	11
age of P	39.73	9.287	21	65	48.17	10.71	21	65
income level of P	5.078	1.420	1	11	-	-	-	-
income of P	-	-	-	-	21779	43639	0	1649439
education of P	0.892	0.496	0	2	0.832	0.646	0	2
whether P has a rural *hukou*	0.680	0.466	0	1	0.546	0.498	0	1
P living in rural areas	0.652	0.476	0	1	0.332	0.471	0	1
No. of siblings of P	3.758	1.612	1	10	3.218	1.856	0	16
marital status of P	0.998	0.040	0	1	0.763	0.425	0	1
professional title/occupation of P	0.105	0.547	0	4	0.902	1.717	0	8
any transfers from O	0.037	0.190	0	1	0.144	0.351	0	1
average education level of O	2.898	1.665	1	9.5	1.894	1.104	0	7
P's ranking in siblings	2.391	1.396	1	10	-	-	-	-
working status of P	-	-	-	-	0.688	0.463	0	1
distance from O	3.265	1.837	0	7	-	-	-	-
gender of household head of O	0.439	0.496	0	1	-	-	-	-
average age of O	63.94	10.441	42	101	-	-	-	
No. of O alive	-	-	-	-	1.230	0.929	0	2
average working status of O	0.568	0.453	0	1	-	-	-	-
average pension of O	0.185	0.388	0	1	-	-	-	-
who should support O	1.626	1.042	1	5	-	-	-	-
have O retired	1.875	0.301	1	2	-	-	-	-
whether O are party members	-	-	-	-	2.086	0.9291	0	3
whether O have deposit	0.137	0.347	0	1	-	-	-	-
hukou status of O	-	-	-	-	2.086	0.9291	0	3
household income of O	157661	4336359	0	2.00e+8	-	-	-	-
hours of O taking care of K	530.901	1816.5	0	17136	-	-	-	-

Table 3: The demonstration effect on the provision of old-age support: OLS & IV

Panel A	OLS: CHARLS (mostly rural)			OLS: CHFS(mostly urban)		
VARIABLES	*any-transfer*	*amount*	*visit days*	*any-transfer*	*amount*	*visit days*
maleP	0.0104	-95.90	14.51***	-0.0325**	-99.75	23.70***
	(0.0281)	(233.8)	(5.201)	(0.0153)	(63.95)	(6.275)
sex_ratioK	0.00471	-7.627	-4.680**	-0.0119	-38.61	-1.326
	(0.0172)	(136.6)	(2.352)	(0.00968)	(51.97)	(3.441)
maleP × *sex_ratioK*	-0.0108	271.2	10.39***	0.00977	41.14	6.089
	(0.0215)	(175.7)	(3.853)	(0.0116)	(62.96)	(5.324)
hh-size	-0.00910	-12.69	-4.398**	-0.00527	-20.49	-7.979***
	(0.0129)	(89.94)	(1.829)	(0.00527)	(18.53)	(1.263)
maleP× *hh-size*	-0.000565	327.5**	12.22***	-0.00299	30.36	14.73***
	(0.0120)	(152.5)	(2.837)	(0.00675)	(24.30)	(2.843)
sex_ratioK+	-0.006	263.6*	5.713*	-0.002	2.535	4.762
maleP × *sex_ratioK*	(0.013)	(142.8)	(3.251)	(0.009)	(38.86)	(4.208)
R-squared	0.205	0.050	0.628	0.282	0.203	0.168

Panel B	IV: CHARLS (mostly rural)			IV: CHFS(mostly urban)		
VARIABLES	*any-transfer*	*amount*	*visit days*	*any-transfer*	*amount*	*visit days*
maleP	-0.0802	-230.5	-29.89***	-0.0518	-237.7	-3.363
	(0.0499)	(316.5)	(11.24)	(0.0448)	(173.5)	(16.57)
sex_ratioK	-0.0450	-273.3	-4.315	-0.0733**	-96.20	-46.92***
	(0.0437)	(399.4)	(7.493)	(0.0343)	(135.4)	(10.82)
maleP × *sex_ratioK*	0.125**	472.9	76.49***	0.0412	259.2	49.37**
	(0.0579)	(442.2)	(14.13)	(0.0645)	(291.9)	(24.53)
hh-size	-0.0116	-35.25	-3.153	-0.00878	-21.63	-10.35***
	(0.0139)	(73.55)	(2.005)	(0.00599)	(18.06)	(1.259)
maleP× *hh-size*	0.0085	340.3**	16.66***	-0.00180	39.99	16.52***
	(0.0132)	(147.0)	(2.910)	(0.00789)	(26.58)	(3.048)
sex_ratioK+	0.079***	200.0	72.17***	-0.032	163.0	2.455
maleP × *sex_ratioK*	(0.026)	(190.6)	(11.72)	(0.045)	(203.9)	(17.92)
R-squared	0.201	0.050	0.610	0.280	0.203	0.159
P demographics	Yes	Yes	Yes	Yes	Yes	Yes
O demographics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,232	12,232	12,232	19,509	19,509	19,509
Mean	0.401	831.2	118.7	0.303	489.1	91.66

Notes: Robust standard errors in parentheses. Stars indicate statistical significance. *** p<0.01, ** p<0.05, * p<0.1. *maleP* is the gender of P. *sex_ratioK* is the gender ratio of K in the household of P and represents the mother demonstration effect. *sex_ratioK* + *maleP* × *sex_ratioK* shows the father demonstration effect. The three outcome variables are the dummy indicating whether parents provide any financial transfer to their elderly parents (*any-transfer*), the amount of any transfer provided (*amount*), and the number of days spent on visits paid to their elderly parents per year (*visit days*). The key controls are P's household-size, gender, age, income education, *hukou* status, whether live in urban areas, siblings, marital status, occupation, distance from O, and O's transfer to P, age, education, working status, retirement status, any deposit, *hukou* status, household income and hours of O taking care of P's K, depending on the availability of the information in the CHARLS and the CHFS. The standard error is clustered at the prefectural city level for the CHARLS and the cluster-level is the province-level in the CHFS. The IVs are the gender of the first child for households having at least one child in or after 2003 and the prefectural compliance index for the CHARLS and the gender of the first child for households having at least one child in or after 2003 for the CHFS.

Table 4: Visibility of the provision of financial old-age support

Panel A	OLS: CHARLS (mostly rural)			
VARIABLES	*regular*	*nonregular*	*amount reg*	*amount nonreg*
maleP	0.00117	0.000998	-161.2	65.27
	(0.0138)	(0.0267)	(205.9)	(110.0)
sex_ratioK	-0.00141	0.00227	-39.45	31.82
	(0.00744)	(0.0177)	(110.0)	(70.37)
maleP × *sex_ratioK*	-0.00503	-0.00224	110.2	161.1*
	(0.00976)	(0.0215)	(139.5)	(93.03)
hh-size	-0.0147**	0.000577	-55.72	43.03
	(0.00636)	(0.0133)	(63.71)	(52.53)
maleP× *hh-size*	0.0211***	-0.0166	222.6	104.9*
	(0.00670)	(0.0114)	(137.3)	(60.95)
sex_ratioK+	-0.006	0.000	70.71	192.9**
maleP × *sex_ratioK*	(0.007)	(0.134)	(105.4)	(81.46)
R-squared	0.077	0.141	0.043	0.025
Panel B	IV: CHARLS (mostly rural)			
VARIABLES	*regular*	*nonregular*	*amount reg*	*amount nonreg*
maleP	-0.0149	-0.0848*	-165.8	-64.68
	(0.0241)	(0.0480)	(254.7)	(235.5)
sex_ratioK	0.0126	-0.0697	79.85	-353.1**
	(0.0218)	(0.0447)	(337.7)	(166.9)
maleP × *sex_ratioK*	0.0190	0.126**	116.9	356.1
	(0.0248)	(0.0561)	(355.6)	(230.1)
hh-size	-0.0129*	-0.00421	-43.84	8.588
	(0.00671)	(0.0145)	(49.49)	(46.01)
maleP× *hh-size*	0.0228***	-0.00816	223.5*	116.8*
	(0.00738)	(0.0126)	(132.9)	(68.68)
sex_ratioK+	0.032***	0.056**	196.7	2.929
maleP × *sex_ratioK*	(0.012)	(0.024)	(165.0)	(101.9)
R-squared	0.075	0.139	0.043	0.023
P demographics	Yes	Yes	Yes	Yes
O demographics	Yes	Yes	Yes	Yes
Observations	12,232	12,232	12,232	12,232
Mean	0.105	0.243	354.6	476.6

Notes: Robust standard errors in parentheses. Stars indicate statistical significance. *** p<0.01, ** p<0.05, * p<0.1. *maleP* is the gender of *P*. *sex_ratioK* is the gender ratio of *K* in the household of *P* and represents the mother demonstration effect. *sex_ratioK* +*maleP* × *sex_ratioK* shows the father demonstration effect. The four outcome variables are the dummy indicating whether parents provide any regular and non-regular financial transfer to their elderly parents (*regular* and *nonregular*) and the amount of any regular and non-regular transfer provided (*amount reg* and (*amount nonreg*). The key controls are *P*'s household-size, gender, age, income education, *hukou* status, whether live in urban areas, siblings, marital status, occupation, distance from *O*, and *O*'s transfer to *P*, age, education, working status, retirement status, any deposit, *hukou* status, household income and hours of *O* taking care of *P*'s *K*. The standard error is clustered at the prefectural city level for the CHARLS. The IVs are the gender of the first child for households having at least one child in or after 2003 and the prefectural compliance index for the CHARLS.

Table 5: The demonstration effect on cohabitation

	IV: CHARLS (mostly rural)	IV: CHFS (mostly urban)
VARIABLES	Ageing parents cohabitation	
$maleP$	-0.564***	0.003
	(0.047)	(0.031)
sex_ratioK	-0.039**	-0.059**
	(0.018)	(0.023)
$maleP \times sex\_ratioK$	0.883***	0.109**
	(0.064)	(0.048)
$maleP \times sex\_ratioK$	0.843***	0.049
$+sex\_ratioK$	(0.061)	(0.034)
P demographics	Yes	Yes
O demographics	Yes	Yes
Observations	12,232	19,509
R-squared	0.183	0.141

Notes: Robust standard errors in parentheses. Stars indicate statistical significance. *** p<0.01, ** p<0.05, * p<0.1. $maleP$ is the gender of P. sex_ratioK is the gender ratio of K in the household of P and represents the mother demonstration effect. $sex\_ratioK + maleP \times sex\_ratioK$ shows the father demonstration effect. The outcome variable is a dummy that equals 1 if P is living together with their own parents. The key controls are P's household-size, gender, age, income education, *hukou* status, whether live in urban areas, siblings, marital status, occupation, distance from O, and O's transfer to P, age, education, working status, retirement status, any deposit, *hukou* status, household income and hours of O taking care of P's K, depending on the availability of the information in the CHARLS and the CHFS. The standard error is clustered at the prefectural city level for the CHARLS and the cluster-level is the province-level in the CHFS. The IVs are the gender of the first child for households having at least one child in or after 2003 and the prefectural compliance index for the CHARLS and the gender of the first child for households having at least one child in or after 2003 for the CHFS.

Table 6: Subsample analysis: Income-level

	IV: CHARLS (mostly rural)			IV: CHFS (mostly urban)		
VARIABLES	*any-transfer*	*amount*	*visit days*	*any-transfer*	*amount*	*visit days*
Low income group						
maleP	-0.0982	-533.8*	-5.406	-0.0375	-339.8*	-18.91
	(0.0694)	(299.2)	(13.90)	(0.0599)	(205.2)	(19.64)
sex_ratioK	-0.0680	-226.6	5.073	-0.0757	-285.5	-86.57***
	(0.0623)	(151.2)	(10.75)	(0.0481)	(192.7)	(14.78)
maleP × *sex_ratioK*	0.131**	0.0166	0.122**	247.4	125.1	47.07***
	(0.0614)	(0.0296)	(0.0581)	(297.2)	(158.3)	(11.61)
sex_ratioK+	0.080**	376.4***	56.12***	-0.057	140.5	16.57
maleP × *sex_ratioK*	(0.031)	(196.7)	(11.67)	(0.062)	(249.3)	(22.45)
Observations	7,048	7,048	7,048	12,663	12,663	12,663
R-squared	0.177	0.021	0.626	0.288	0.168	0.177
High income group						
maleP	-0.0636	-107.4	-55.53***	-0.0538	-57.27	-7.504
	(0.0651)	(691.3)	(15.59)	(0.0568)	(236.4)	(25.08)
sex_ratioK	-0.0168	-320.0	-12.74	-0.0631	113.6	-3.169
	(0.0534)	(796.2)	(10.61)	(0.0432)	(204.0)	(11.90)
maleP × *sex_ratioK*	0.0935	569.3	114.2***	0.0457	-75.62	-1.974
	(0.0749)	(975.3)	(21.93)	(0.0875)	(411.6)	(33.00)
sex_ratioK+	0.077	249.3	101.5***	-0.017	37.94	-5.143
maleP × *sex_ratioK*	(0.046)	(507.0)	(19.06)	(0.059)	(290.6)	(25.97)
Observations	5,184	5,184	5,184	6,846	6,846	6,846
R-squared	0.238	0.080	0.160	0.259	0.220	0.126
P demographics	Yes	Yes	Yes	Yes	Yes	Yes
O demographics	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Robust standard errors in parentheses. Stars indicate statistical significance. *** p<0.01, ** p<0.05, * p<0.1. *maleP* is the gender of *P*. *sex_ratioK* is the gender ratio of *K* in the household of *P* and represents the mother demonstration effect. *sex_ratioK* + *maleP* × *sex_ratioK* shows the father demonstration effect. The three outcome variables are the dummy indicating whether parents provide any financial transfer to their elderly parents (*any-transfer*), the amount of any transfer provided (*amount*), and the number of days spent on visits paid to their elderly parents per year (*visit days*). The key controls are *P*'s household-size, gender, age, income education, *hukou* status, whether live in urban areas, siblings, marital status, occupation, distance from *O*, and *O*'s transfer to *P*, age, education, working status, retirement status, any deposit, *hukou* status, household income and hours of *O* taking care of *P*'s *K*, depending on the availability of the information in the CHARLS and the CHFS. The standard error is clustered at the prefectural city level for the CHARLS and the cluster-level is the province-level in the CHFS. The IVs are the gender of the first child for households having at least one child in or after 2003 and the prefectural compliance index for the CHARLS and the gender of the first child for households having at least one child in or after 2003 for the CHFS. The sample is split based on the income-level of *P*.

Table 7: Subsample analysis: Single-K family

	IV: CHARLS (mostly rural)			IV: CHFS (mostly urban)		
VARIABLES	*any-transfer*	*amount*	*visit days*	*any-transfer*	*amount*	*visit days*
Single child family						
$maleP$	-0.0437	26.27	0.900	-0.0751**	-121.7	31.15**
	(0.0379)	(299.0)	(8.138)	(0.0355)	(133.6)	(12.90)
sex_ratioK	-0.0540	-323.9	-0.0551	-0.0891**	50.33	-18.69*
	(0.0402)	(395.0)	(8.140)	(0.0348)	(155.5)	(10.46)
$maleP \times sex\_ratioK$	0.0852	431.4	51.12***	0.0737	94.86	12.40
	(0.0518)	(444.6)	(11.76)	(0.0588)	(252.6)	(21.59)
$sex\_ratioK+$	0.031	107.4	51.07***	-0.015	145.2	-6.285
$maleP \times sex\_ratioK$	(0.025)	(255.3)	(8.782)	(0.038)	(265.5)	(15.85)
Observations	5,909	5,909	5,909	12,144	12,144	12,144
R-squared	0.209	0.064	0.650	0.270	0.210	0.148
Non-single child family						
$maleP$	-0.175*	19.53	-64.56**	0.0280	-405.2	-43.86
	(0.106)	(701.5)	(26.02)	(0.0934)	(383.3)	(47.88)
sex_ratioK	-0.0175	0.151	-13.72	-0.0266	-534.2**	-146.9***
	(0.111)	(674.3)	(17.47)	(0.0669)	(236.6)	(39.24)
$maleP \times sex\_ratioK$	0.184	29.52	145.0***	-0.110	766.6	167.0**
	(0.140)	(919.2)	(32.91)	(0.151)	(650.6)	(73.58)
$sex\_ratioK+$	0.167***	29.67	131.3***	-0.137	232.4	20.09
$maleP \times sex\_ratioK$	(0.060)	(416.4)	(26.24)	(0.110)	(525.8)	(56.69)
Observations	6,323	6,323	6,323	7,365	7,365	7,365
R-squared	0.198	0.046	0.566	0.293	0.149	0.175
P demographics	Yes	Yes	Yes	Yes	Yes	Yes
O demographics	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Robust standard errors in parentheses. Stars indicate statistical significance. *** p<0.01, ** p<0.05, * p<0.1. $maleP$ is the gender of P. sex_ratioK is the gender ratio of K in the household of P and represents the mother demonstration effect. $sex\_ratioK + maleP \times sex\_ratioK$ shows the father demonstration effect. The three outcome variables are the dummy indicating whether parents provide any financial transfer to their elderly parents (*any-transfer*), the amount of any transfer provided (*amount*), and the number of days spent on visits paid to their elderly parents per year (*visit days*). The key controls are P's household-size, gender, age, income education, *hukou* status, whether live in urban areas, siblings, marital status, occupation, distance from O, and O's transfer to P, age, education, working status, retirement status, any deposit, *hukou* status, household income and hours of O taking care of P's K, depending on the availability of the information in the CHARLS and the CHFS. The standard error is clustered at the prefectural city level for the CHARLS and the cluster-level is the province-level in the CHFS. The IVs are the gender of the first child for households having at least one child in or after 2003 and the prefectural compliance index for the CHARLS and the gender of the first child for households having at least one child in or after 2003 for the CHFS. The sample is split based on whether P have only one child in the household or not.

Table 8: Subsample analysis: Urban-rural differences

	IV: CHARLS (mostly rural)			IV: CHFS (mostly urban)		
VARIABLES	*any-transfer*	*amount*	*visit days*	*any-transfer*	*amount*	*visit days*
Urban						
maleP	-0.0306	-973.8	-16.20	-0.0658*	-318.9*	-9.214
	(0.0621)	(758.0)	(16.74)	(0.0391)	(188.2)	(16.84)
sex_ratioK	0.00798	-475.3	1.422	-0.0846**	-193.8	-30.11***
	(0.0614)	(931.6)	(16.47)	(0.0386)	(154.7)	(9.295)
maleP × *sex_ratioK*	0.0471	657.9	34.88*	0.0681	357.3	25.96
	(0.0779)	(1,074)	(20.65)	(0.0613)	(319.1)	(24.20)
sex_ratioK+	0.055	182.7	36.31**	-0.016	163.5	-4.149
maleP × *sex_ratioK*	(0.048)	(504.4)	(15.61)	(0.042)	(236.4)	(19.56)
Observations	3,869	3,869	3,869	12,979	12,979	12,979
R-squared	0.231	0.067	0.587	0.260	0.200	0.132
Rural						
maleP	-0.125**	105.4	-30.25*	0.115	286.8	-79.63
	(0.0620)	(377.7)	(15.61)	(0.130)	(288.7)	(49.30)
sex_ratioK	-0.0677	-141.7	-3.406	0.0443	287.3	-155.2***
	(0.0550)	(321.2)	(8.393)	(0.0944)	(216.2)	(37.84)
maleP × *sex_ratioK*	0.179***	226.9	91.59***	-0.226	-445.5	240.9***
	(0.0688)	(391.1)	(18.96)	(0.172)	(410.6)	(67.97)
sex_ratioK+	0.111***	85.27	88.18***	-0.181	-158.1	85.71*
maleP × *sex_ratioK*	(0.030)	(209.3)	(15.21)	(0.113)	(306.1)	(46.12)
Observations	8,363	8,363	8,363	6,530	6,530	6,530
R-squared	0.195	0.046	0.622	0.312	0.076	0.217
P demographics	Yes	Yes	Yes	Yes	Yes	Yes
O demographics	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Robust standard errors in parentheses. Stars indicate statistical significance. *** p<0.01, ** p<0.05, * p<0.1. *maleP* is the gender of *P*. *sex_ratioK* is the gender ratio of *K* in the household of *P* and represents the mother demonstration effect. *sex_ratioK* + *maleP* × *sex_ratioK* shows the father demonstration effect. The three outcome variables are the dummy indicating whether parents provide any financial transfer to their elderly parents (*any-transfer*), the amount of any transfer provided (*amount*), and the number of days spent on visits paid to their elderly parents per year (*visit days*). The key controls are *P*'s household-size, gender, age, income education, *hukou* status, whether live in urban areas, siblings, marital status, occupation, distance from *O*, and *O*'s transfer to *P*, age, education, working status, retirement status, any deposit, *hukou* status, household income and hours of *O* taking care of *P*'s *K*, depending on the availability of the information in the CHARLS and the CHFS. The standard error is clustered at the prefectural city level for the CHARLS and the cluster-level is the province-level in the CHFS. The IVs are the gender of the first child for households having at least one child in or after 2003 and the prefectural compliance index for the CHARLS and the gender of the first child for households having at least one child in or after 2003 for the CHFS. The sample is split based on whether *P* lives in urban areas or rural areas.

Table 9: Subsample analysis: P with or without brothers (CHARLS)

	IV: CHARLS (mostly rural)		
VARIABLES	*any-transfer*	*amount*	*visit days*
With older brothers			
maleP	-0.0795	-594.8	-49.85***
	(0.0742)	(616.8)	(16.75)
sex_ratioK	-0.0425	210.5	-7.118
	(0.0681)	(669.6)	(14.63)
maleP × *sex_ratioK*	0.132	595.4	96.13***
	(0.0806)	(829.5)	(20.22)
hh-size	-0.0176	-103.2	-2.210
	(0.0210)	(91.64)	(3.102)
maleP × *hh-size*	0.0195	557.4**	20.80***
	(0.0209)	(245.8)	(3.993)
sex_ratioK+	0.090**	805.8	89.01***
maleP × *sex_ratioK*	(0.045)	(555.0)	(16.16)
Observations	5,283	5,283	5,283
R-squared	0.202	0.040	0.566
Without older brothers			
maleP	-0.0788	-63.51	-7.773
	(0.0558)	(479.5)	(11.14)
sex_ratioK	-0.0417	-588.3	1.403
	(0.0498)	(466.3)	(8.813)
maleP × *sex_ratioK*	0.121*	451.5	49.05***
	(0.0654)	(542.4)	(14.51)
hh-size	-0.00345	38.00	-4.284*
	(0.0138)	(93.56)	(2.585)
maleP × *hh-size*	-0.00234	196.5	14.03***
	(0.0153)	(137.0)	(3.548)
sex_ratioK+	0.078**	-136.7	50.45***
maleP × *sex_ratioK*	(0.031)	(198.3)	(10.43)
Observations	6,912	6,912	6,912
R-squared	0.207	0.065	0.647
P demographics	Yes	Yes	Yes
O demographics	Yes	Yes	Yes

Notes: Robust standard errors in parentheses. Stars indicate statistical significance. *** p<0.01, ** p<0.05, * p<0.1. *maleP* is the gender of P. *sex_ratioK* is the gender ratio of K in the household of P and represents the mother demonstration effect. *sex_ratioK* + *maleP* × *sex_ratioK* shows the father demonstration effect. The three outcome variables are the dummy indicating whether parents provide any financial transfer to their elderly parents (*any-transfer*), the amount of any transfer provided (*amount*), and the number of days spent on visits paid to their elderly parents per year (*visit days*). The key controls are P's household-size, gender, age, income education, *hukou* status, whether live in urban areas, siblings, marital status, occupation, distance from O, and O's transfer to P, age, education, working status, retirement status, any deposit, *hukou* status, household income and hours of O taking care of P's K. The standard error is clustered at the prefectural city level for the CHARLS. The IVs are the gender of the first child for households having at least one child in or after 2003 and the prefectural compliance index for the CHARLS. The sample is split based on whether P have any older brothers.

Table 10: Heterogeneity Check: Parents' pension coverage

	IV: CHARLS (mostly rural)			IV: CHFS (mostly urban)		
VARIABLES	*any-transfer*	*amount*	*visit days*	*any-transfer*	*amount*	*visit days*
maleP	-0.120*	35.20	-59.80***	0.0243	4.783	5.230
	(0.0626)	(514.2)	(12.73)	(0.0625)	(174.3)	(30.80)
sex_ratioK	-0.0808	-362.6	6.448	-0.0912	-375.5**	-59.71***
(Without pension mother	(0.0565)	(585.4)	(10.15)	(0.0647)	(166.5)	(20.62)
demonstration effects)						
pensionP	-0.0894	-300.8	8.126	0.0131	-152.5	-6.875
	(0.0580)	(341.1)	(8.636)	(0.0351)	(151.5)	(14.70)
maleP × *sex_ratioK*	0.183*	-171.5	106.1***	-0.0497	0.968	45.57
	(0.101)	(860.9)	(19.01)	(0.0981)	(309.3)	(47.91)
maleP × *pensionP*	0.0907	-498.3	39.13**	-0.0872	-249.2	-7.197
	(0.104)	(587.3)	(15.93)	(0.0592)	(235.1)	(32.88)
sex_ratioK × *pensionP*	0.0692	192.3	-17.39	0.0366	470.0*	22.06
(Difference in mother	(0.0961)	(517.2)	(13.85)	(0.0594)	(272.1)	(25.15)
demonstration effects)						
sex_ratioK × *maleP*	-0.109	1,172	-26.08	0.104	238.5	-0.917
×*pensionP*	(0.169)	(960.7)	(23.87)	(0.104)	(426.6)	(56.75)
With pension father	0.063	829.7**	69.07***	-0.000	334.0	7.002
demonstration effects	(0.058)	(392.2)	(17.35)	(0.057)	(259.1)	(22.69)
Without pension father	0.103	-534.1	112.5***	-0.140**	-374.4	-14.14
demonstration effects	(0.072)	(509.5)	(15.74)	(0.067)	(231.8)	(42.81)
Difference in father	-0.040	1363*	-43.47**	0.141	708.4**	21.14
demonstration effects	(0.118)	(803.7)	(17.60)	(0.088)	(329.4)	(52.64)
With pension mother	-0.012	-170.2	-10.94	-0.054**	94.55	-37.65***
demonstration effects	(0.072)	(342.8)	(10.30)	(0.027)	(203.8)	(13.28)
P demographics	Yes	Yes	Yes	Yes	Yes	Yes
O demographics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,232	12,232	12,232	19,509	19,509	19,509
R-squared	0.202	0.049	0.600	0.281	0.201	0.160

Notes: Robust standard errors in parentheses. Stars indicate statistical significance. *** p<0.01, ** p<0.05, * p<0.1. The three outcome variables are the dummy indicating whether parents provide any financial transfer to their elderly parents (*any-transfer*), the amount of any transfer provided (*amount*), and the number of days spent on visits paid to their elderly parents per year (*visit days*). The key controls are P's household-size, gender, age, income education, *hukou* status, whether live in urban areas, siblings, marital status, occupation, distance from O, and O's transfer to P, age, education, working status, retirement status, any deposit, *hukou* status, household income and hours of O taking care of P's K, depending on the availability of the information in the CHARLS and the CHFS. The standard error is clustered at the prefectural city level for the CHARLS and the cluster-level is the province-level in the CHFS. The IVs are the gender of the first child for households having at least one child in or after 2003 and the prefectural compliance index for the CHARLS and the gender of the first child for households having at least one child in or after 2003 for the CHFS. *pensionP* is a dummy representing whether P have any types of pension, and it interacts with key regressors. *maleP* is the gender of P. *sex_ratioK* is the gender ratio of K in the household of P and is the mother demonstration effect for P without pension. *sex_ratioK* × *pensionP* represents the difference between the mother demonstration effects for P with pension and the mother demonstration effects for P without pension coverage, which should be negative and significant if the mother demonstration effects for P with pension coverage is larger than the mother demonstration effects for P without pension coverage.

Table 11: Heterogeneity Check: Income of generation O

	IV: CHARLS (mostly rural)		
VARIABLES	*any-transfer*	*amount*	*visit days*
maleP	-0.0877	-249.4	-30.60*
	(0.0624)	(372.4)	(17.26)
sex_ratioK	-0.0520	-572.3	5.128
(Low-income O's mother	(0.0664)	(445.7)	(11.20)
demonstrate effect)			
income of O	-0.0141	-529.4	16.14
	(0.0592)	(418.1)	(10.13)
sex_ratioK× income of O	0.00973	804.0	-15.20
(Differences in mother	(0.0938)	(688.9)	(17.02)
demonstrate effects)			
maleP × sex_ratioK	0.141*	646.0	80.50***
	(0.0840)	(590.1)	(22.24)
maleP× income of O	0.0169	91.57	-14.40
	(0.0831)	(672.2)	(15.66)
maleP × sex_ratioK	-0.0384	-469.8	12.06
× income of O	(0.146)	(1,153)	(23.06)
High-income O's father	0.060	407.9	82.49***
demonstrate effect	(0.072)	(577.5)	(12.36)
Low-income O's father	0.089**	73.66	85.63***
demonstrate effect	(0.043)	(340.5)	(17.35)
Differences in father	-0.029	334.2	-3.143
demonstrate effects	(0.100)	(825.1)	(15.14)
High-income O's mother	-0.042	231.7	-10.07
demonstrate effect	(0.059)	(608.5)	(11.48)
P demographics	Yes	Yes	Yes
O demographics	Yes	Yes	Yes
Observations	12,232	12,232	12,233
R-squared	0.202	0.050	0.601

Notes: Robust standard errors in parentheses. Stars indicate statistical significance. *** p<0.01, ** p<0.05, * p<0.1. The three outcome variables are the dummy indicating whether parents provide any financial transfer to their elderly parents (*any-transfer*), the amount of any transfer provided (*amount*), and the number of days spent on visits paid to their elderly parents per year (*visit days*). The key controls are P's household-size, gender, age, income education, *hukou* status, whether live in urban areas, siblings, marital status, occupation, distance from O, and O's transfer to P, age, education, working status, retirement status, any deposit, *hukou* status, household income and hours of O taking care of P's K. The standard error is clustered at the prefectural city level for the CHARLS. The IVs are the gender of the first child for households having at least one child in or after 2003 and the prefectural compliance index for the CHARLS. *income of O* is a dummy representing whether O have any income sources, and it interacts with key regressors. *maleP* is the gender of P. *sex_ratioK* is the gender ratio of K in the household of P and is the mother demonstration effect for P whose O have income. *sex_ratioK× income of O* represents the difference between the mother demonstration effects for P whose O have income and the mother demonstration effects for P whose O do not have income, which should be negative and significant if the mother demonstration effects for P whose O have income is larger than the mother demonstration effects for P whose O do not have income.

Table 12: Effects of education and time investment on the provision of old-age support

	IV: CHARLS (mostly rural)		
VARIABLES	*any-transfer*	*amount*	*visit days*
maleP	-0.0996*	-417.1	-22.01
	(0.0562)	(337.8)	(15.09)
sex_ratioK	-0.0459	-244.3	-2.669
	(0.0438)	(388.1)	(7.441)
maleP × *sex_ratioK*	0.126**	424.7	88.30***
	(0.0582)	(429.2)	(15.88)
awayage	0.0675**	-13.89	-0.0725
	(0.0291)	(140.0)	(4.325)
awaytime	-0.0110	35.12	0.200
	(0.00903)	(82.48)	(1.040)
ln(edu_expense)	0.00175	125.0*	0.0899
	(0.00421)	(72.07)	(0.586)
edu level	-0.00137	24.90	9.006***
	(0.0194)	(128.2)	(3.137)
maleP × *awayage*	-0.0824***	202.5	-7.187
	(0.0319)	(274.8)	(5.885)
maleP × *awaytime*	0.00531	-116.7	0.0528
	(0.0110)	(95.28)	(2.161)
maleP × *ln(edu_expense)*	-0.00768	-99.08	-1.089
	(0.00471)	(93.84)	(0.775)
maleP × *edu-level*	0.0283	292.3	-13.92***
	(0.0223)	(211.8)	(5.011)
sex_ratioK+	0.080***	180.4	85.63***
maleP × *sex_ratioK*	(0.027)	(191.9)	(13.83)
P demographics	Yes	Yes	Yes
O demographics	Yes	Yes	Yes
Observations	12,232	12,232	12,232
R-squared	0.202	0.051	0.642

Notes: Robust standard errors in parentheses. Stars indicate statistical significance. *** p<0.01, ** p<0.05, * p<0.1. *maleP* is the gender of *P*. *sex_ratioK* is the gender ratio of *K* in the household of *P* and represents the mother demonstration effect. *sex_ratioK* + *maleP* × *sex_ratioK* shows the father demonstration effect. The three outcome variables are the dummy indicating whether parents provide any financial transfer to their elderly parents (*any-transfer*), the amount of any transfer provided (*amount*), and the number of days spent on visits paid to their elderly parents per year (*visit days*). The key controls are *P*'s household-size, gender, age, income education, *hukou* status, whether live in urban areas, siblings, marital status, occupation, distance from *O*, and *O*'s transfer to *P*, age, education, working status, retirement status, any deposit, *hukou* status, household income and hours of *O* taking care of *P*'s *K*. The standard error is clustered at the prefectural city level for the CHARLS. The IVs are the gender of the first child for households having at least one child in or after 2003 and the prefectural compliance index for the CHARLS. *awayage* is the age that *P* were away from their parents during *P*'s childhood. *awaytime* is the length of time that *P* were away from their parents during *P*'s childhood. *edu − level* is the education-level of *P* and *ln(edu_expense)* is the log of the education investment that *P* received from their parents during *P*'s childhood.

Table 13: The demonstration effect on upward and downward transfer

	IV: CHARLS (mostly rural)			IV: CHFS (mostly urban)	
VARIABLES	*any transfer*	*any receipt by P*	*any receipt by K*	*any transfer*	*any receipt by P*
maleP	-0.0802	0.0368**	0.101**	-0.0518	0.00864
	(0.0499)	(0.0164)	(0.0450)	(0.0448)	(0.0363)
sex_ratioK	-0.0450	-0.0397***	0.0353	-0.0733**	0.173***
	(0.0437)	(0.0144)	(0.0288)	(0.0343)	(0.0278)
maleP × *sex_ratioK*	0.125**	0.00392	-0.0912	0.0412	-0.00716
	(0.0579)	(0.0168)	(0.0577)	(0.0645)	(0.0607)
any receipt by P	-0.0200	-	0.170***	0.357***	-
	(0.0331)	-	(0.0261)	(0.0151)	-
any transfer	-	-0.00442	0.0901***	-	0.242***
	-	(0.00653)	(0.0113)	-	(0.0108)
sex_ratioK+	0.080***	-0.036***	-0.056	-0.032	0.166***
maleP × *sex_ratioK*	(0.027)	(0.009)	(0.047)	(0.045)	(0.047)
P demographics	Yes	Yes	Yes	Yes	Yes
O demographics	Yes	Yes	Yes	Yes	Yes
Observations	12,232	12,232	12,232	19,509	19,509
R-squared	0.201	0.040	0.086	0.280	0.229

Notes: Robust standard errors in parentheses. Stars indicate statistical significance. *** p<0.01, ** p<0.05, * p<0.1. *maleP* is the gender of *P*. *sex_ratioK* is the gender ratio of *K* in the household of *P* and represents the mother demonstration effect. *sex_ratioK* +*maleP* × *sex_ratioK* shows the male dominated demonstration effect. *any-transfer* is the probability of *P* providing any transfer to *O*, and *anyreceiptbyP* and *anyreceiptbyK* are the transfer from *O* to *P*'s household and *P*'s children *K*. The key controls are *P*'s household-size, gender, age, income education, *hukou* status, whether live in urban areas, siblings, marital status, occupation, distance from *O*, and *O*'s transfer to *P*, age, education, working status, retirement status, any deposit, *hukou* status, household income and hours of *O* taking care of *P*'s *K*, depending on the availability of the information in the CHARLS and the CHFS. The standard error is clustered at the prefectural city level for the CHARLS and the cluster-level is the province-level in the CHFS. The IVs are the gender of the first child for households having at least one child in or after 2003 and the prefectural compliance index for the CHARLS and the gender of the first child for households having at least one child in or after 2003 for the CHFS.

Table 14: Impact of the gender of the first child on the probability of providing any old-age support

VARIABLES	*any-transfer* in CHFS (mostly urban)			
	father-son	father-daughter	mother-son	mother-daughter
Event time				
-4	0.350	0.581	0.357	0.327
	(0.253)	(0.395)	(0.336)	(0.287)
-3	0.180	-0.298	0.376	0.394**
	(0.267)	(0.450)	(0.357)	(0.186)
-2	0.145	-0.288	0.0464	0.0488
	(0.254)	(0.435)	(0.219)	(0.410)
-1	0.167	-0.392	0.222	0.362*
	(0.253)	(0.470)	(0.229)	(0.208)
0	0.218	-0.00940	0.315	0.416**
	(0.214)	(0.408)	(0.253)	(0.170)
1	0.144	-0.0639	0.356	0.362**
	(0.216)	(0.407)	(0.257)	(0.168)
2	0.166	-0.0873	0.446*	0.397**
	(0.217)	(0.408)	(0.255)	(0.167)
3	0.199	-0.158	0.398	0.334**
	(0.206)	(0.407)	(0.257)	(0.166)
4	0.180	-0.107	0.375	0.279*
	(0.218)	(0.405)	(0.253)	(0.156)
Age fixed-effect	Yes	Yes	Yes	Yes
Wave fixed-effect	Yes	Yes	Yes	Yes
O alive	Yes	Yes	Yes	Yes
Observations	792	758	892	881
R-squared	0.195	0.198	0.144	0.151

Notes: Robust standard errors in parentheses. Stars indicate statistical significance. *** p<0.01, ** p<0.05, * p<0.1. *any-transfer* is the probability of providing any transfer to O. The event is the birth of the first child in the respondents' household. The event time equals 0 in the year of the birth of the first child. All the other event times are adjusted accordingly. male-son is the male group with the first child as a son, male-daughter is the male group with the first daughter. female-son and female-daughter are the corresponding female groups. The outcome variable is the probability of providing any transfer to elderly parents. The results are for the CHFS only and use 2011, 2013, 2015 and 2017 wave. The error term is clustered at household-level.

Table 15: The demonstration effect by generation O

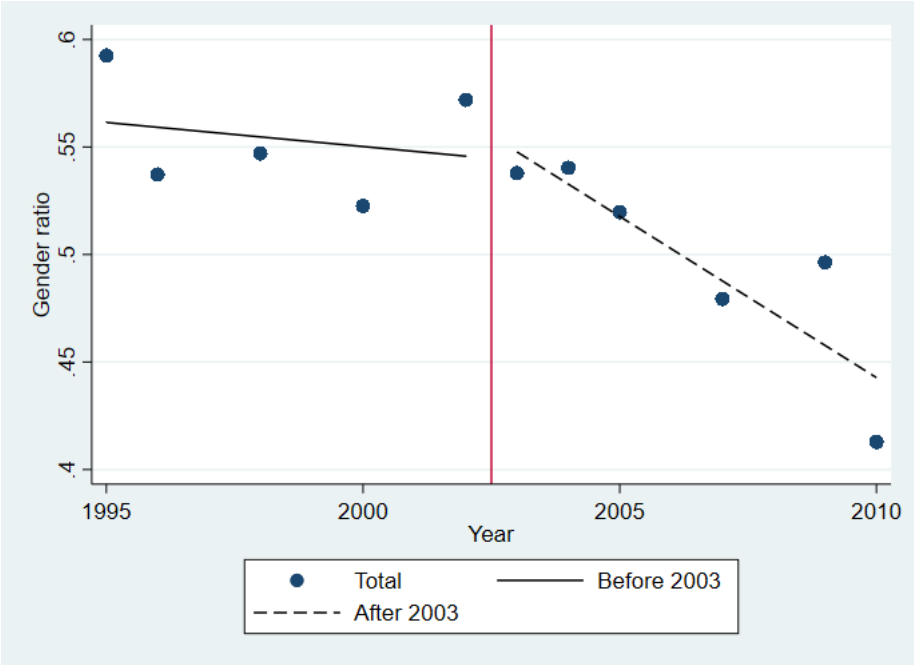
	OLS: CHARLS (mostly rural)				
VARIABLES	$any\text{-}transfer$	$regular$	$nonregular$	$log(regular)$	$log(nonregular)$
Male P					
$father's\ transfer$	0.064**	0.103***	0.102***	0.114***	0.102***
	(0.027)	(0.030)	(0.029)	(0.037)	(0.035)
$mother's\ transfer$	0.048**	0.067**	0.109***	0.111**	0.116***
	(0.021)	(0.028)	(0.023)	(0.045)	(0.027)
Observations	6,688	6,688	6,688	6,688	6,688
Female P					
$father's\ transfer$	0.056	0.031	0.112***	0.058*	0.113**
	(0.035)	(0.025)	(0.039)	(0.030)	(0.045)
$mother's\ transfer$	0.108***	0.075**	0.185***	0.171***	0.206***
	(0.048)	(0.031)	(0.030)	(0.054)	(0.034)
Observations	5,540	5,540	5,540	5,540	5,540
P demographics	Yes	Yes	Yes	Yes	Yes
O demographics	Yes	Yes	Yes	Yes	Yes

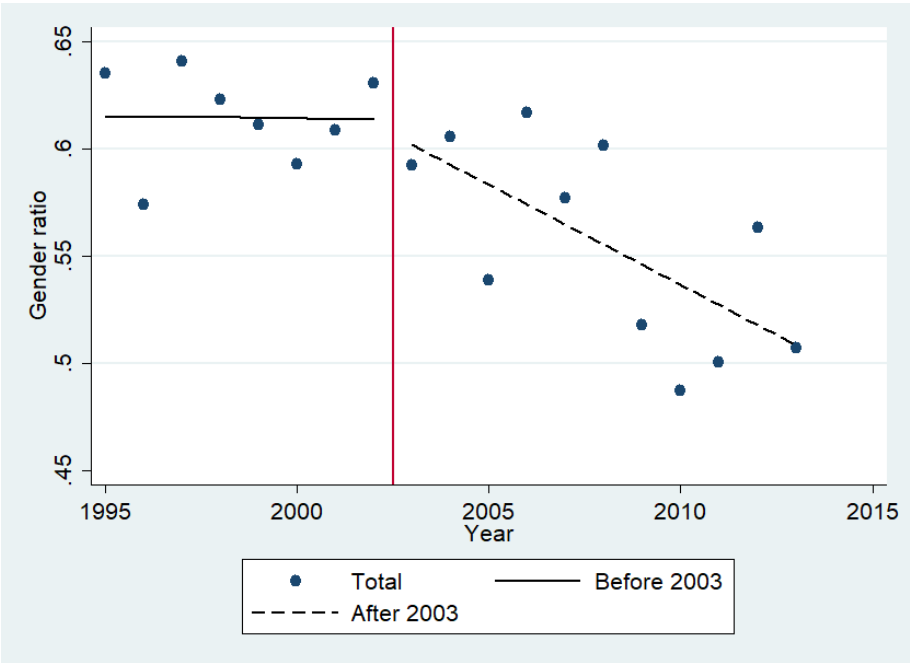
Notes: Robust standard errors in parentheses. Stars indicate statistical significance. *** p<0.01, ** p<0.05, * p<0.1. The $father's\ transfer$ and $mother's\ transfer$ are the transfer provided by O to P's paternal and maternal grandparents. The outcome variables are the probability of providing any, regular, and non-regular transfer to O ($any\text{-}transfer$, $regular$, and $nonregular$), and the log of the amount of regular and non-regular transfer ($log(regular)$ and $log(nonregular)$). The controlling variables for P are age, marital status, rural *hukou*, provinces, education, professional title, income level, whether P lives with parents and the distant to parents place, visit frequency to O, the number and rank of siblings and the number of children. And also O's transfer to P, age, education, working status, retirement status, any deposit, *hukou* status, household income and hours of O taking care of P's K. The standard error is clustered at the prefectural city level.

Appendix

A.1 Figures and Tables

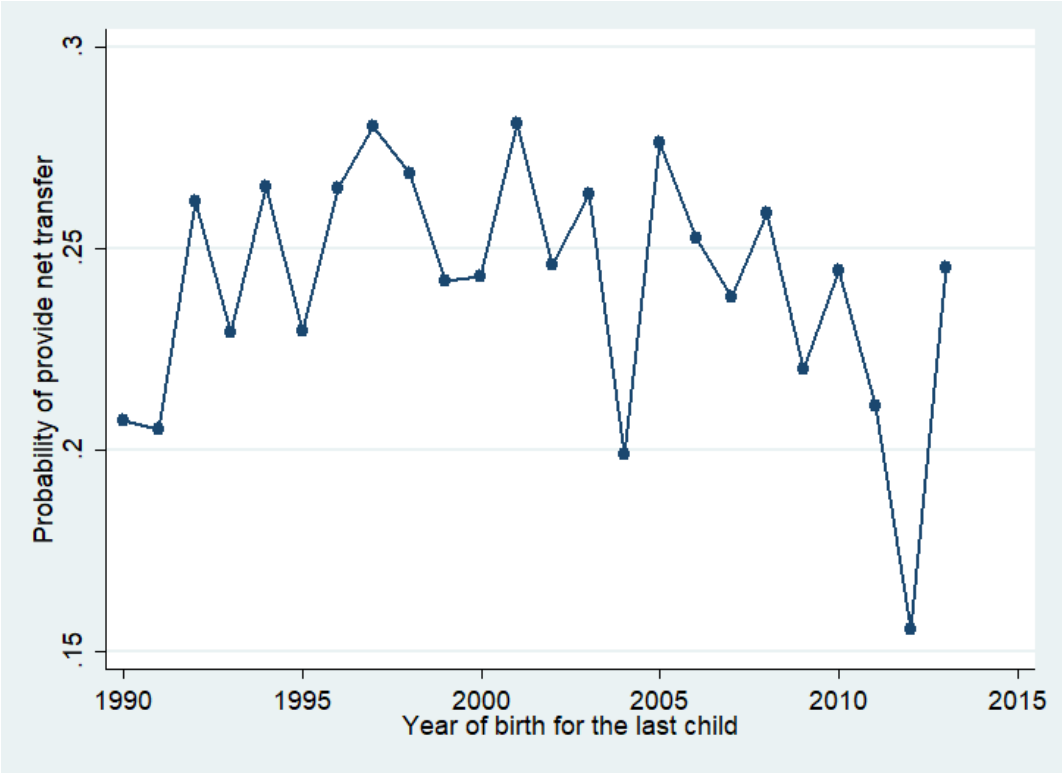
Figure A.1: Estimated gender ratios for the newborns in China: the yearly trend





Note: The graphs are the estimated male-to-female gender ratio for the newborns in China using the 2011 CHARLS wave (above), and the estimated male-to-female gender ratio for the first-born child in the 2013 CHFS wave (below). y-axis is the male-to-female gender ratio (male newborns divided by the total number of newborns). x-axis is the year from 1995 to 2011 for the CHARLS and from 1995 to 2013 for the CHFS. The dots represent the estimated gender ratio for each year. The red vertical line represents the implementation of the policy ban on gender-selective abortion. The solid line is the linear estimation of the gender ratio trend before 2003, and the dashed line is the estimated linear trend after 2003.

Figure A.2: Trend assumption for the instrumental variable (DDIV)



Note: x-axis is the year of birth for the last child in households and y-axis shows the average probability of providing net old-age support for people who have their last child born in the same year. The graph is generated from the CHFS only.

Table A.1: First stage for two constructed instrumental variables

VARIABLES	*sex_ratioK*	
	CHARLS	CHFS
sex_ratioK_1st_2003	0.263***	0.430***
	(0.007)	(0.007)
prefectural_index	-0.039**	-
	(0.009)	-
P demographics	Yes	Yes
O demographics	Yes	Yes
Observations	12,232	19,509
F-test	199.88	512.63
Under-identification test		
Kleibergen-Paap rk LM statistic	65.17	25.715
Weak identification test		
Cragg-Donald Wald F-stat.	678.83	2100.56
Kleibergen-Paap Wald rk F test	199.88	512.63
Over-identification test		
Hansen J statistic	0.858	-

Notes: Robust standard errors in parentheses. Stars indicate statistical significance. *** p<0.01, ** p<0.05, * p<0.1. The coefficient presented here for first stage coefficients for the IV regression. *sex_ratioK* is the gender ratio of K in the household of P. *sex_ratioK_1st_2003* is the gender of the first-born child in households with at least one child born in or after 2003 together and *prefectural _index* is the index that indicating how strict the cities on the gender selection behaviours at prefecture-level. The key controls are P's household-size, gender, age, income education, *hukou* status, whether live in urban areas, siblings, marital status, occupation, distance from O, and O's transfer to P, age, education, working status, retirement status, any deposit, *hukou* status, household income and hours of O taking care of P's K, depending on the availability of the information in the CHARLS and the CHFS.

Table A.2: The demonstration effect and the education investment in generation K

	IV: CHFS (mostly urban)		
VARIABLES	the amount of the education investment	any education investment in K	percentage of edu. investment in total expense
maleP	-29.39	-0.0879**	-0.0342**
	(1,071)	(0.0422)	(0.0169)
sex_ratioK	-3,360***	0.0914**	-0.0838***
	(959.8)	(0.0416)	(0.0190)
maleP × *sex_ratioK*	791.2	0.143**	0.0437*
	(1,275)	(0.0669)	(0.0254)
maleP× *hh-size*	-323.0*	-0.00354	-0.00103
	(185.8)	(0.00952)	(0.00412)
hh-size	491.8***	0.0280***	0.00443
	(144.5)	(0.00688)	(0.00382)
amount of old-age support	-0.539	-	-
	(0.483)	-	-
any old-age support	-	0.0452***	-0.0299***
provided	-	(0.00997)	(0.00443)
sex_ratioK +	-2,568**	0.235***	-0.040*
maleP × *sex_ratioK*	(1,024)	(0.066)	(0.023)
(Male with sons-males with daughters)			
maleP +	761.7	0.055*	0.010
maleP × *sex_ratioK*	(478.2)	(0.031)	(0.011)
(Male with sons-females with sons)			
P demographics	Yes	Yes	Yes
O demographics	Yes	Yes	Yes
Observations	19,509	19,509	19,509
R-squared	0.308	0.144	0.051

Notes: Robust standard errors in parentheses. Stars indicate statistical significance. *** p<0.01, ** p<0.05, * p<0.1. *maleP* is the gender of P. *sex_ratioK* is the gender ratio of K in the household of P and represents the mother demonstration effect. *sex_ratioK* + *maleP* × *sex_ratioK* shows the father demonstration effect. The three outcome variables are the amount of the education investment on K from$P$, the probability of P providing any education investment for K, and the percentage of the education expenditure on K in the total household expenses. The key controls are P's household-size, whether provide any old-age support to O and the corresponding amount, gender, age, income education, *hukou* status, whether live in urban areas, siblings, marital status, occupation, distance from O, and O's transfer to P, age, education, working status, retirement status, any deposit, *hukou* status, household income and hours of O taking care of P's K. The standard error is clustered at the province level for the CHFS. The IV is the gender of the first child for households having at least one child in or after 2003 for the CHFS.

Table A.3: The direct downward transfer from generation O

	IV: CHARLS (mostly rural)			IV: CHFS(mostly urban)		
VARIABLES	*any-transfer*	*amount*	*visit days*	*any-transfer*	*amount*	*visit days*
maleP	-0.0962*	-283.6	-29.82***	-0.0518	-237.7	-3.363
	(0.0505)	(320.7)	(11.18)	(0.0448)	(173.5)	(16.57)
sex_ratioK	-0.0503	-291.0	-4.282	-0.0733**	-96.20	-46.92***
	(0.0434)	(403.1)	(7.485)	(0.0343)	(135.4)	(10.82)
maleP × *sex_ratioK*	0.138**	518.3	76.39***	0.0412	259.2	49.37**
	(0.0577)	(450.1)	(14.08)	(0.0645)	(291.9)	(24.53)
hh-size	-0.0115	-34.99	-3.152	-0.00878	-21.63	-10.35***
	(0.0135)	(73.16)	(2.005)	(0.00599)	(18.06)	(1.259)
maleP× *hh-size*	0.00947	343.5**	16.65***	-0.00180	39.99	16.52***
	(0.0133)	(147.5)	(2.907)	(0.00789)	(26.58)	(3.048)
sex_ratioK+	0.088***	227.3	72.11***	-0.032	163.0	2.455
maleP × *sex_ratioK*	(0.028)	(190.6)	(11.70)	(0.045)	(203.9)	(17.92)
transfer from O to P	-0.0491	-401.3	-3.679	0.357***	598.4***	62.91***
	(0.0322)	(267.9)	(5.636)	(0.0151)	(49.66)	(4.418)
O taking care for K	7.61e-06***	0.0627***	0.000929	-	-	-
	(2.40e-06)	(0.0240)	(0.000614)	-	-	-
transfer from O to K	0.173***	568.7***	-0.273	-	-	-
	(0.0178)	(214.0)	(2.715)	-	-	-
P demographics	Yes	Yes	Yes	Yes	Yes	Yes
O demographics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,232	12,232	12,232	19,509	19,509	19,509
R-squared	0.201	0.050	0.610	0.280	0.203	0.159
Mean	0.401	831.2	118.7	0.303	489.1	91.66

Notes: Robust standard errors in parentheses. Stars indicate statistical significance. *** p<0.01, ** p<0.05, * p<0.1. *maleP* is the gender of P. *sex_ratioK* is the gender ratio of K in the household of P and represents the mother demonstration effect. *sex_ratioK* + *maleP* × *sex_ratioK* shows the father demonstration effect. The three outcome variables are the dummy indicating whether parents provide any financial transfer to their elderly parents (*any-transfer*), the amount of any transfer provided (*amount*), and the number of days spent on visits paid to their elderly parents per year (*visit days*). The key controls are P's household-size, gender, age, income education, *hukou* status, whether live in urban areas, siblings, marital status, occupation, distance from O, and O's transfer to P, transfer to P's K, age, education, working status, retirement status, any deposit, *hukou* status, household income and hours of O taking care of P's K, depending on the availability of the information in the CHARLS and the CHFS. The standard error is clustered at the prefectural city level for the CHARLS and the cluster-level is the province-level in the CHFS. The IVs are the gender of the first child for households having at least one child in or after 2003 and the prefectural compliance index for the CHARLS and the gender of the first child for households having at least one child in or after 2003 for the CHFS.