ACCESS TO PENSIONS, OLD-AGE SUPPORT, AND CHILD INVESTMENT IN THE PEOPLE'S REPUBLIC OF CHINA

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ABSTRACT

This paper studies how access to public pensions affects old-age support and child investment in traditional societies. Guided by predictions from an overlapping generations model, we analyze the influences of a new pension program in rural People's Republic of China, using a difference-in-differences approach. We find that the program crowds out transfers from working-age adults, especially men, to their elderly parents. Interestingly, the impact on child investment significantly differs by child gender. While adult parents increase educational investment in sons, their investment in daughters appears to decrease. Our findings highlight the unintended consequences of public pensions on parental investment.

Keywords: altruism, pension, old-age support, rural PRC, intergenerational transfers

JEL codes: D64, H55, J14, J16

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1. Introduction

Many people in developing countries have no access to old-age pensions. Traditional pension schemes financed by employers and employees usually do not cover rural farmers and workers in the informal sector. This has led a growing number of countries to introduce public pension programs.[1] Such pension reforms have, for the first time, made pensions widely available to people who traditionally rely upon children for support in old age. As the expected reliance on children for old-age support also motivates parents' investment in their children, the introduction of pensions may irrevocably alter the interdependence between parents and children.

In this paper, we examine how access to pensions affects two dimensions of intergenerational transfers—old-age support and child investment. The setting for our study is the People's Republic of China (PRC), which introduced the New Rural Pension Scheme (NRPS) in 2009. The scheme expanded over time until it covered the entire rural population.[2] The NRPS features matched voluntary contributions as well as a social pension component. Participants aged above 60 receive government-financed pension payments right away, despite never having contributed to the program. Participants younger than 60 need to pay an annual premium matched by a

[1] For instance, Chile introduced the non-contributory solidarity pension system in 2008 to cover the poorest elderly people with no, or very little, pensions. In the same year, the Republic of Korea introduced the Basic Old-Age Pension, which provides a monthly pension payment to elderly people. In 2011, the Philippines introduced a social pension for people aged 77 and older, and later expanded the benefits to the population aged 65 and older.

[2] By 2015, more than 450 million rural residents had participated in the program (Government of the PRC, Ministry of Human Resources and Social Security 2016). Before the NRPS, there were some unsuccessful pilots of rural pension schemes from 1986 to 1999. Owing to inappropriate design and lack of financial support, the participation rate was very low. In 2000, only about 7% of rural residents over the age of 60 received pension benefits or social insurance (Salditt et al. 2007).

government subsidy, and receive pension payments starting at age 60.[3]

Although pensions undermine the role of children in providing old-age support, it is not obvious whether pensions crowd out private transfers between generations. First, the incentive for transfers can be multifaceted. Apart from the self-interested exchange motive, people can make transfers due to altruism.[4] Second, a pension program affects three generations in a family simultaneously but differently: elderly grandparents receive pension payments right away; working-age parents need to pay contributions before retirement; the child also gets access to pensions but only receives parental investment in the short run. Third, depending on the kinship system and cultural norms, the parent–child relationship can have large gender differences. For example, in societies with patrilineal traditions, parents tend to have closer relations with and be more altruistic toward sons than daughters. Consequently, the impacts of pensions on intergenerational transfers can be gender-specific.

To capture multiple generations and incentives in a single framework and help uncover the channels through which pensions affect intergenerational transfers, we develop a simple life-cycle model with three overlapping generations: an elderly

[3] For participants aged above 60, the level of pension payment is CNY55 (approximately $8.50) per month at minimum and varies across regions. In some provinces, it was as high as CNY2,000 in 2018. For participants under age 60, the annual premium ranges from CNY100 to CNY500—the upper bar has been raised gradually since 2009. The pension payment that they will receive after retirement positively correlate with the premiums. Refer to the Appendix A for more details about the NRPS. The Appendixes are available in this link: http://dx.doi.org/10.22617/WPS230161-2.

[4] Previous studies have explored the exchange incentive in intergenerational support and discussed various forms of exchanges. For example, elderly parents help take care of grandchildren for monetary returns from working children (Cox 1987 and Secondi 1997). Adult children help take care of parents if they expect to receive later bequests (Horioka et al. 2016). Parents' early investment in children has also been recognized as an instrument to maximize future returns (Becker and Tomes 1976). The altruism incentive means that people provide transfers because they care about the well-being of receivers, or they derive a warm-glow utility from giving itself (Andreoni 1989). The altruism incentive implies a negative correlation between the recipient's income and the probability and amount of transfers (Becker 1974), which is empirically documented in different countries (Altonji et al. 1997, Cai et al. 2006, and Park and Porter 2014).

grandparent, a working-age parent, and a child. The parent provides upward transfers toward the grandparent, and invests in the child's human capital. A new pension program brings windfall income for the grandparent and provides the parent with a subsidized saving tool with a higher rate of return. The model predicts a crowd-out effect of pension access on upward transfers, because the grandparent becomes wealthier.

The predicted impact of access to pensions on child investment can be ambiguous in sign, because of two opposing effects. On the one hand, an increase in the grandparent's wealth means a decrease in their need of old-age support. Thus, the parent has more resources to invest in the child, which we call the income effect. On the other hand, as the return to savings goes up with a new pension program, the parent may save more for their own retirement and invest less in the child—the substitution effect. Thus, the impact on child investment can be both positive and negative, depending on the relative magnitude of the income effect and substitution effect.

With the model predictions as our guide, we then empirically examine how the new pension program in rural PRC simultaneously affects old-age support and child investment. Our main identification strategy employs a difference-in-differences (DID) approach, exploiting the region-time variation in the introduction of the program. Nationally representative survey data revealed that in 2011, more than 80% of people over age 45 in rural PRC depend on children for old-age support, while less than 10% depend on pensions.[5] However, we find that access to the NRPS for just 2 years reduces the share of people who rely upon children by 7 percentage points, and increases the share relying on pensions by a similar magnitude.

[5] Data source: 2011 China Health and Retirement Longitudinal Study (CHARLS).

We also find that the pension program crowds out upward transfers from adult children to elderly parents. Overall, the amount of net upward transfers decrease by close to CNY100, or about 30% of the baseline level in the control group. The crowd-out effect is driven by adult sons. While their upward transfers decrease by around CNY200 (*p*-value=0.001), adult daughters' transfers toward parents are not significantly affected by the NRPS. This gender gap in the impact is significant at the 1% level and consistent with adult daughters being more altruistic toward elderly parents.

Next, we study how access to pensions affects adults' educational investment in children.[6] We focus on two outcome variables: enrollment status and the amount of educational expenditures. Results show that the new pension program has opposite directions of influence on the investment in daughters and sons. Due to the NRPS, daughters become 7 percentage points (or 9.5%) less likely to attend school, while sons become 9 percentage points (or 12%) more likely to be enrolled in school. For educational expenditures, we also find a positive and significant effect of the pension program on sons but a negative effect on daughters. The gender differences are statistically significant at the 1% level and are primarily driven by children in non-compulsory education stages.

This paper first relates to the literature studying the impact of public transfers, especially pensions, on private transfers. Starting with Barro (1974) and Becker (1974), many researchers have explored the crowd-out hypothesis in different settings.

[6] In the PRC, children start pre-school education around age 3 and then the primary school at age 6 or 7. Compulsory education, including primary school and middle school (lower secondary school), typically lasts for 9 years. After that, if a student continues education, he or she usually attends 3 years of high school (higher secondary school) and 4 years of undergraduate study. Students can also attend vocational high schools and colleges. The high dropout rate in Chinese schools, especially in poor rural areas, had been a troubling issue until very recently. Based on a large-scale survey in rural PRC, Shi et al. (2015) found a cumulative dropout rate across middle school between 17.6% and 31%.

Regarding old-age support, Cox and Jimenez (1992) found that social security benefits displaced upward transfers in Peru. Similarly, Jensen (2004) found a 25% to 30% decrease in transfers from children as a result of an expanded pension program in South Africa. Regarding child investment, Mu and Du (2015) found that parents increased educational investment in children when a pension program is expanded in urban PRC. More recently, Bau (2021) studied the influences of pension programs on kinship practices and parental investment from a cultural perspective. She found that pensions reduce educational investment in children who traditionally live with parents. The fact that Mu and Du (2015) and Bau (2021) found opposite impacts of pensions on child investment is consistent with the co-existence of a positive income effect and a negative substitution effect, as predicted by our simple model.[7]

We contribute to the literature mainly in three ways. First, rather than looking at old-age support or investment in children separately, we study the impact of pensions on upward and downward transfers within a single framework. We consider three generations and examine the simultaneous decisions of old-age support and child investment. Second, we focus on gender differences in parent–child relations and show that a new pension program can have gender-specific impacts on intergenerational transfers. Finally, we develop a simple model featuring multiple generations, a pension shock, and gender-specific preferences. The model helps clarify the different effects of a pension program and sheds light on how the effects may vary with child gender.

[7] In another related study, Ebenstein and Leung (2010) focused on the pilots of the old rural pension program of the PRC in the 1990s. As mentioned, these early-stage pilots were mostly short-lived and unsuccessful due to management and financial issues. Ebenstein and Leung (2010) found that parents with sons were less likely to participate in these pilots, and in places where the participation rate is lower, the sex ratio at birth (males against females) appeared to increase more.

This paper also contributes to the literature studying the socioeconomic impact of the NRPS, perhaps the largest pension program in the world, benefiting a large share of rural residents in the PRC.[8] Existing studies have examined the influences of the NRPS on the elderly's health, labor supply, cognition, and living arrangements (Cheng et al. 2018, Nikolov and Adelman 2019, and Huang and Zhang 2021), as well as migration and employment decisions of their children (Sun et al. 2014). This paper shows that the NRPS also affects child investment in rural PRC.[9]

The rest of the paper is organized as follows. Section 2 presents the conceptual framework, from which we derive predictions for the effects of pensions on intergenerational transfers. Section 3 introduces the data and empirical strategy. Section 4 presents empirical results—the impact of the NRPS on expectations of old-age support, upward transfers, and child investment. We conclude in Section 5.

2. Conceptual Framework

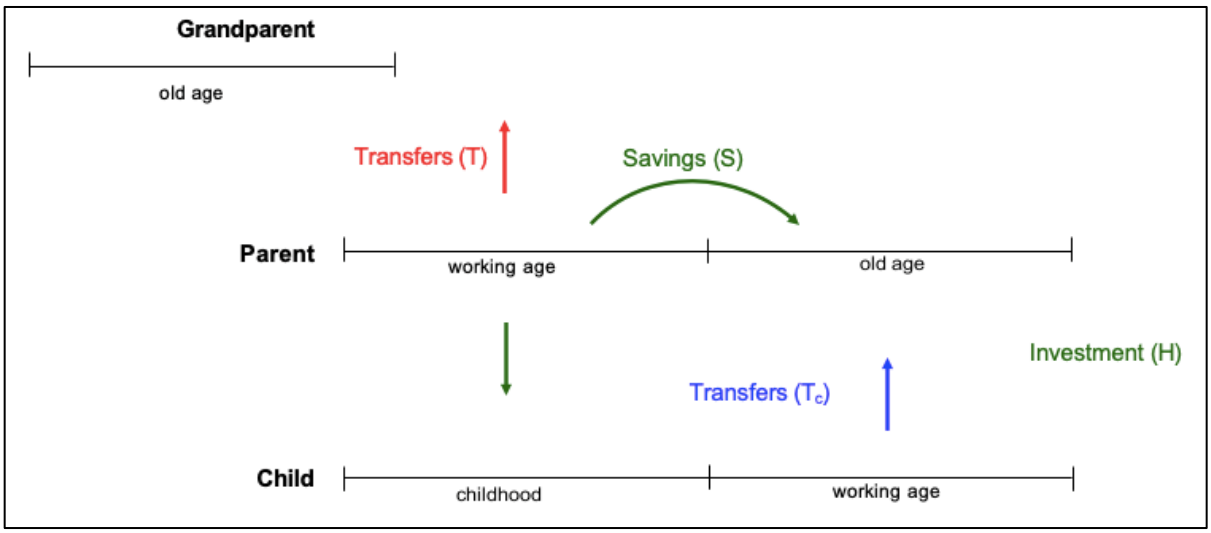
We consider a simple static model with three overlapping generations in a family: a grandparent, a parent, and a child. We first focus on the scenario (traditional society) where public pensions are not available, and agents rely on intergenerational resource transfers for human capital accumulation and old-age care. Then, we discuss how the introduction of pensions affects resource transfers within a family. The purpose of the model is to show in which directions and through what channels pension availability

[8] Poverty among rural residents, especially elderly residents, remains a big issue in the PRC. In 2010, around 22% of the rural elderly lived under the poverty line (HelpAge 2010).

[9] More broadly, this paper adds to the literature on the effects of pension reforms. For example, Attanasio and Brugiavini (2003), Attanasio and Rohwedder (2003), and Lachowska and Myck (2018) studied the impact of pension wealth on household savings. Mastrobuoni (2009), Staubli and Zweimüller (2013), and Hernæs et al. (2016) examined the effects of pension reforms on labor supply and retirement decisions.

impacts child investment and old-age support. The model will also shed some light on how the impact varies with child gender.

Figure 1: A Three-Generation Family with Intergenerational Support



Source: Authors.

Setup. In this multi-generation family, the grandparent in old age is retired and relies on predetermined wealth $(\bar{E})$ and transfers from the parent (child of the grandparent). The parent in working age earns a total income of $\bar{W}$, which depends on their predetermined human capital. The income is used for the parent's own consumption, savings (S), human capital investment in the child (H), and transfers to the grandparent (T). When getting old, the parent receives returns to savings and transfers from the child (T_c). Figure 1 shows different formats of resource transfers between generations and across periods.

The parent's problem. The parent derives utility from their own consumption in two periods (C_1, C_2), the grandparent's consumption (C_g), and the child's consumption in

working age (C_c). At the beginning of their working age, the parent maximizes the total utility by deciding H, S, T, given $\bar{E}, \bar{W}$:

$$\max_{H,S,T} \quad \ln(C_1) + \beta \ln(C_2) + \alpha \ln(C_g) + \beta\gamma \ln(C_c) \tag{1}$$

$$s.t. \quad C_1 = \bar{W} - S - H - T; \qquad C_2 = RS + T_c \tag{2}$$

$$C_g = \bar{E} + T; \qquad C_c = W_c(H) - T_c \tag{3}$$

In Equation (1), $\alpha \in (0,1)$ denotes the parent's altruism toward the grandparent, $\gamma \in (0,1)$ denotes the parent's altruism toward the child, and $\beta \in (0,1)$ is the discount factor. As Equations (2) and (3) show, we assume that people consume everything in old age and leave no inheritance to their children. $R > 1$ denotes the rate of return to savings. $W_c(H)$ is the child's wage income, which depends on the received human capital investment. For simplicity, we assume that $W_c = wH$, where $w > 1$ represents the wage rate or rate of return to human capital.

The decision rule for upward transfers (T) is straightforward. The optimal transfers will equalize C_g and αC_1. Thus, transfers increase with the parent's net wealth but decrease with the grandparent's wealth: $T = \frac{\alpha(\bar{W}-H-S)}{1+\alpha} - \frac{\bar{E}}{1+\alpha}$. This is consistent with the standard altruism theory about private transfers (Becker 1974).[10]

Optimal child investment. The parent's decisions about H and S, two investment strategies for the old age, depend on their expectations about future transfers from the child. We assume that the parent is relatively myopic and does not consider the child's

[10] We assume that $\alpha > 0$ and $\alpha(H+S) < \alpha\bar{W} - \bar{E}$, such that the amount of transfers is positive. In the special case when $\alpha = 0$, that is, when the parent does not care about the grandparent's consumption, T will be equal to zero. In this case, a new pension program naturally has no impact on transfers.

future decisions. However, the parent expects T_c to depend on W and E, as does T depend on $\bar{W}$ and $\bar{E}$. Specifically, T_c increases with W and decreases with E. For simplicity, we assume that T_c is a linear function of W and E, and there is no interaction effect between W and E: $\frac{\partial T_c}{\partial W} > 0$, $\frac{\partial T_c}{\partial E} < 0$, $\frac{\partial^2 T_c}{\partial W \partial E} = 0$. Under this assumption, we can derive the first-order conditions for S and H:

$$H\text{: } \frac{1}{C_1} = \frac{\beta\omega\frac{\partial T_c}{\partial W}}{C_2} + \frac{\beta\gamma\omega\left(1-\frac{\partial T_c}{\partial W}\right)}{C_c}; \tag{4}$$

$$S\text{: } \frac{1}{C_1} = \frac{\beta R\left(1+\frac{\partial T_c}{\partial E}\right)}{C_2} + \frac{-\beta\gamma R\frac{\partial T_c}{\partial E}}{C_c}. \tag{5}$$

In both equations, the left-hand side represents the marginal cost of savings or child investment, while the right-hand side represents the marginal benefit. Child investment is motivated by both self-interest and altruism: future transfers provided by the child will increase with the investment (the "exchange motive"), and the parent also derives utility from the child's consumption (the "altruism motive").

As assumed above, transfers from the child is a linear function: $T_c = \theta\omega H - \tau RS + t$, where $\theta \equiv \frac{\partial T_c}{\partial W}$, $\tau \equiv \frac{\partial T_c}{\partial E}$, and t is a constant. To solve the problem with closed-form solutions, we further assume that $t = 0$. From Equations (4) and (5), we can derive S as a function of H:

$$S(H) = \frac{x\omega}{R}H \tag{6}$$

where $x = \frac{(1-\theta)[R(1-\tau)-\theta\omega]-\gamma\theta[\omega(1-\theta)-R\tau]}{\gamma(1-\tau)[\omega(1-\theta)-R\tau]-\tau[R(1-\tau)-\omega\theta]} > 0$.[11] Plugging this into Equation (4), we can derive the decision rule for the optimal child investment:

[11] We assume $\frac{\gamma\theta}{1-\theta} < \frac{R(1-\tau)-\theta\omega}{(1-\theta)\omega-R\tau} < \frac{\gamma(1-\tau)}{\tau}$ such that RS and ωH are positively correlated. The model's main predictions do not reply on the assumption that $t = 0$.

$$\underbrace{\frac{1+\alpha}{\bar{W}+\bar{E}-\left(\frac{x\omega}{R}+1\right)H}}_{MC}=\underbrace{\frac{\beta\theta}{[1+(1-\tau)x]H}}_{MB_E}+\underbrace{\frac{\beta\gamma(1-\theta)}{(1-\theta+\tau x)H}}_{MB_A} \tag{7}$$

The left-hand side of the equation captures the marginal cost of child investment. The right-hand side captures the marginal benefit, which is composed of two parts: the exchange benefit of child investment (MB_E) and the altruism motivated benefit (MB_A).

Finally, we can solve the optimal child investment as follows:

$$H^*=\frac{\bar{W}+\bar{E}}{\frac{(1+\alpha)\omega}{y}+\frac{x\omega}{R}+1}, \tag{8}$$

where $y=\frac{\beta\omega\theta}{\theta+(1-\tau)x}+\frac{\beta\gamma\omega(1-\theta)}{1-\theta+\tau x}$, and the optimal transfers to the grandparent as follows:

$$T^*=\frac{\bar{W}}{\frac{1+\alpha}{\alpha}+\frac{xy}{\alpha R}+\frac{y}{\alpha\omega}}-\frac{\bar{E}}{1+\frac{\alpha/y}{1/\omega+x/R+1/y}}. \tag{9}$$

Access to pensions. Suppose now a new pension scheme becomes available, and it creates two shocks: (i) a "windfall shock" for the old-age grandparent ($\Delta E>0$), as they receive pension payments right away; (ii) a "saving shock" for the parent ($\Delta R>0$), as the pension program serves as a new saving tool with a higher rate of return: people can voluntarily save money in the pension account and receive pension payments after retirement.[12] Next, we analyze how ΔE and ΔR affect the parent's transfers to the grandparent and investment in the child.

Prediction 1. Pension availability crowds out upward transfers through the windfall shock. The magnitude of crowd-out effect decreases with the parent's upward altruism

[12] We assume that both R and ΔR are exogenously determined in a setting like rural PRC, where rural households' savings are almost negligible compared to savings from urban households, enterprises, and the government. We model pensions as voluntary savings because in our empirical setting, participation in the pension program and the amount of premiums (except for the lower bar) are both voluntary and free choices. Also, due to government subsidies, the overall return rate to savings in the pension account is higher than normal bank deposits. In Appendix E.2, we use a simple example to illustrate how the new pension program in rural PRC raises the overall rate of return to private savings.

toward the grandparent (α) and increases with the grandparent's downward altruism toward the child (γ). Specifically, the impact on transfers is:

$$\Delta T = -\frac{\Delta E}{1+\frac{\alpha/y}{1/\omega+x/R+1/y}} < 0. \tag{10}$$

It is straightforward to see that ΔT is negative, and its absolute value decreases with α and increases with γ.

Prediction 2. Access to pensions has an ambiguous impact on child investment, due to (i) a positive effect of the windfall shock—"income effect (IE)," and (ii) a negative effect of the saving shock—"substitution effect (SE)." Specifically, the net effect of the new pension scheme on child investment is:

$$\Delta H = \underbrace{\frac{\partial H^*}{\partial \bar{E}}\Delta E}_{IE>0} + \underbrace{\frac{\partial H^*}{\partial R}\Delta R}_{SE<0}, \tag{11}$$

where $\frac{\partial H^*}{\partial \bar{E}} = \frac{1}{\frac{(1+\alpha)\omega}{y}+\frac{x\omega}{R}+1} \equiv \frac{1}{f(R)}$ and $\frac{\partial H^*}{\partial R} = -\frac{f'(R)}{f(R)^2}$. It is straightforward to see *IE* is positive. In Appendix B, we show proof that $f'(R) > 0$, which implies that *SE* is negative.

The intuition of the income effect is that, as the grandparent becomes wealthier and needs less support, the parent has more income to invest in the child. The intuition of the substitution effect is twofold. First, the saving shock (ΔR) raises the marginal cost of child investment because the ratio of S to H increases with R, and as the left-hand side of Equation (7) shows, the working-age consumption (C_1) goes down. Second, (ΔR) lowers the marginal benefit of child investment (both MB_E and MB_A) because similarly, as $S(H)$ goes up, both the parent's old-age consumption (C_2) and the child's working-age consumption (C_c) go up.

Gender differences. Intergenerational investment and support can be gender-specific because the parent–son relationship may differ from the parent–daughter relationship. Due to variations in social norms and cultural practices, the gender differences may also vary across countries and regions. In this paper, we focus on rural PRC, the less developed and more traditional part of the country. Although displaying cross-region variations, rural PRC largely features patrilocal traditions and son preference (Das Gupta et al. 2003, Murphy et al. 2011, and Ebenstein 2014). This means that parents have stronger ties with sons than with daughters: parents on average invest more in sons, and sons also play a more important role in providing old-age support—Wang (2005) and Hannum et al. (2009) have some observational evidence. These gender gaps are consistent with parents being more altruistic toward sons (greater γ), sons being more altruistic toward parents (greater α), or parents expecting sons to earn higher wages (greater ω).

In the empirical part of the paper, we will focus on monetary transfers from adult children to parents (T) and parental investment in children's education (H) and examine how they are affected by a new pension program, separately for sons and daughters. First, we find that the crowd-out impact on upward transfers is stronger for adult sons, which is consistent with sons being less altruistic toward elderly parents or elderly parents being more altruistic toward sons ($\alpha^s < \alpha^d$ or $\gamma^s > \gamma^d$). Second, we find that pensions appear to crowd out working-age parents' educational investment in daughters but significantly raise their investment in sons. This means that for investment in daughters, the substitution effect of the pension program dominates the income effect of the program,

while for investment in sons, the income effect is stronger than the substitution effect.[13]

3. Data and Empirical Strategy

To empirically study the impact of pension access on old-age support and child investment, we exploit the region-time variation in the implementation of the NRPS in the PRC and use DID as the identification strategy. Note that our analysis only captures economic transfers between generations but neglects non-monetary support or investment.

3.1. Data

We mainly use two data sets for the empirical analysis: the China Health and Retirement Longitudinal Study (CHARLS) and the China Family Panel Studies (CFPS). Both the CHARLS and CFPS are nationally representative longitudinal surveys conducted by Peking University.

The CHARLS surveys the older population (age 45 and older) of the PRC (Zhao et al. 2012). The national baseline survey was conducted in 2011, including about 10,000 households and 17,500 individuals in 150 counties. Respondents are followed every 2 years. Apart from demographics, family structure, income, and consumption, the CHARLS questionnaire also covers topics like within-family transfers, retirement, and pensions. The CFPS (Institute of Social Science Survey 2015) was launched in 2010. The baseline survey interviewed almost 15,000 families and 30,000 individuals in these

[13] We do not aim to pin down why the sign of ΔH differs between sons and daughters, because it is not obvious how the substitution effect varies with different parameters. It is unambiguous, however, that the income effect alone increases with the parent's altruism toward the child (γ). Also, both the income effect and substitution effect decrease in value with the parent's altruism toward the grandparent (α)—meaning that if a parent with a son is less altruistic toward the grandparent than a parent with a daughter, ΔH^s can be greater than ΔH^d.

families. The respondents are then tracked bi-annually. The survey covers a wide range of topics such as demographics, employment, education, family relations, wealth, and health.

Data for old-age support. To study the impact of the NRPS on old-age support, we use the first two waves of the CHARLS, in 2011 and 2013. We examine both the expectations about future old-age support (Section 4.1) and economic transfers between generations within a family (Section 4.2). Regarding expectations, the CHARLS respondents report their expected primary source of old-age support, which can be children, savings, pensions, etc.[14] We are mainly interested in the choice between children and pensions. Regarding transfers, the survey documents detailed monetary and in-kind transfers between generations. Parents report how much economic support they have received from each child in the past year, and how much support they have given to each child.[15] As transfers can go either way, we also calculate the net upward transfers (upward transfers minus downward transfers) as an outcome.

We present descriptive statistics for the CHARLS sample in Table 1. Panel A presents summary statistics for parents in 2011 and 2013. Our analysis includes parents

[14] The exact wording of the question is, "Whom do you think you can rely on for old-age support?" The options include: (1) children, (2) savings, (3) pension or retirement salary, (4) commercial pension insurance, and (5) other. We combine (3) and (4) as pensions, because some respondents may mistakenly perceive the NRPS as commercial pension insurance.

[15] To be more specific, the survey includes four types of economic support from adult children: (i) regular monetary support on a monthly, quarterly, half-yearly, or annual basis; (ii) regular in-kind support in monetary values; (iii) non-regular monetary support for several important festivals (e.g., Chinese Spring Festival and Mid-Autumn Festival) and other important purposes (education, medical conditions, weddings, birthday, etc.); and (iv) non-regular in-kind support in monetary values. We calculate the total amount of transfers in the previous year by summing the four types of support.

satisfying the following criteria: (i) with a local agricultural Hukou,[16] because only residents with the agricultural Hukou are eligible to participate in the NRPS; (ii) aged 60 or above at baseline, because the windfall shock of pension payments only takes place for this group; (iii) with at least one child whose baseline age is between 25 and 50; (iv) with at least one child not living in the same household, because the survey only documents economic transfers between parents and living-apart children. On average, these parents are aged 69, have 3.2 years' education, and have around 4 children.[17] More than 70% of them receive transfers from children, and the average amount of transfers received is about CNY1,700 (about $260) for a year.

Panel B shows summary statistics for observations of adult children in both waves. Similarly, we include adult children with a local agricultural Hukou and between ages 25 and 50 at baseline. We also limit the sample to adult children (the parent generation in the model) with at least one child, so that the empirical analysis is more consistent with our three-generation framework.[18] On average, these adult children are 40.5 years old and have 6 years' education, 3 siblings, and 1.8 children. More than half of these adult children provide transfers to parents, and the average amount of transfers is about CNY580. Panel C of Table 1 shows the gender differences in adult children's provision of upward transfers. We find that adult daughters are about 20 percentage points more likely to provide transfers to elderly parents. Conditional on providing transfers, the amount of transfers is not statistically different between daughters and sons.

[16] Hukou refers to the household registration system in the PRC. A PRC citizen's Hukou is typically categorized as either agricultural or rural or non-agricultural or urban. By "local," we mean that the registration place of Hukou is within the county or city where the survey is conducted.
[17] For parents aged 67 in 2010 (or 37 in 1980), the one-child policy (introduced in early 1980s) does not have much impact on their fertility decisions.
[18] Our estimation results are very similar if we do not impose this condition. This is consistent with the model: the decision of transfers to the grandparent does not strictly rely on the presence of the grandchild.

Data for child investment. To study the impact of the NRPS on educational investment, we use the first two waves of the CFPS, in 2010 and 2012. We use two proxies of educational investment: school attendance and educational expenditures. Attendance is a dummy variable indicating whether a child is enrolled in any stage of education (from preschool to tertiary education). Expenditures are the total expenses that the family spends for a child's education in a year. The expenditures include the following items: tuition fees, nursery fees, costs of textbooks and education software, transportation costs for schooling, boarding fees, food expenses at school, extracurricular tutoring costs, sponsorship for kindergartens or schools, and other education-related costs.[19]

We present descriptive statistics for the sample of children in Table 2. We focus on children between ages 3 and 22 at baseline (covering education from kindergarten to college), and with at least one parent holding a local agricultural Hukou. We further limit the sample to children with at least one grandparent alive at baseline, so that our empirical analysis is more consistent with our three-generation theoretical framework. 47% of these children are female. On average, their parents are 39 years old and have 6 years' schooling—the typical length of primary school. Overall, 78% of these children are enrolled in schools or colleges, and the annual educational expenditures are around CNY1,800. Panel B shows the gender differences in enrollment and expenditures. We find that compared to sons, daughters are more likely to attend school and receive slightly more expenditures, but these gender gaps disappear once we control for the child age and county fixed effects.

[19] Note that even if a child is not formally registered at school, the education expenditures can be positive—the child is receiving extracurricular education or informal training programs.

3.2. Empirical Strategy

Our main identification strategy uses a DID approach, which exploits the county-time variation in the rollout of the NRPS. The NRPS expanded in the PRC gradually from 2009 to 2013. We use two waves of panel data from the CHARLS and CFPS, and focus on two groups of counties: (i) counties covered by the NRPS only in the second wave—the treatment group, and (ii) counties covered by the NRPS in both waves—the control group. Based on the definition of treatment, we compare individual decisions in the treatment group and control group, and estimate the intention-to-treat effect (ITT) of the NPRS on old-age support and educational investment.

We do not use counties without the NRPS in both waves ("No-No") as the control group because most counties in our data have access to the program by the second wave. This is especially the case for the CHARLS, the second wave of which was conducted in 2013. For the CFPS, we have a small fraction of counties without access to the pension program in both waves. We find similar patterns when using these counties as the control group, although the analysis has lower statistical power (Appendix Section B). Using counties with the pension program in both waves ("Yes-Yes") as the control group could bias our results—more likely a downward bias in magnitude.[20]

We define the availability of the NRPS in each county by using self-reported participation in the program because there is no document showing the exact timing of

[20] Our identification assumption is that treatment effect (TE) equals zero for the Yes-Yes group, as for the No-No group. However, the pension program can have lasting effects, and the effect can change in direction and magnitude. Consider three stages: 1 (No-No), 2 (No-Yes), and 3 (Yes-Yes). Our estimation of the TE is biased toward zero (underestimated in magnitude) if the pension program has positive or negative effects in both stages 2 and 3—regardless of whether the effect increases or decreases in magnitude. If the program has opposite direction or signs of effects in stages 2 and 3, using the Yes-Yes group as the control group leads to overestimation. This is the case when people reverse their behavior in stage 3 (e.g., they decrease transfers in stage 2 but increase transfers in stage 3)—we consider this a less likely scenario. In Appendix Figure A1, we use a stylized example to show how our estimations could be biased.

the NRPS implementation across regions.[21] In both the CHARLS and CFPS, respondents report their access to various pension programs, including the NRPS. Restricting attention to counties with at least 20 adult respondents with the local agricultural Hukou—the eligible group, we classify a county as covered by the NRPS if at least five respondents report having participated in the program; otherwise, we classify the county as not covered. In Appendix Section C, we provide details on how we define the NRPS availability and show that our results are robust to the following modifications and tests: (i) restricting the sample to counties with more or less than 20 respondents, (ii) defining counties with at least 10 participants as covered and counties with less than five participants as not covered, and (iii) cross-checking the NRPS availability status with online news reports and correcting possible misclassifications.

More specifically, the DID specification is as follows:

$$Y_{ict} = \alpha + \beta Treat_c \times Post_t + \gamma X_{ict} + \delta_c + \theta_{pt} + \varepsilon_{ict}. \quad (12)$$

Y_{ict} is the outcome of individual i in county c and year t. We are mainly interested in three outcomes: expectations of old-age support, transfers from adult children to elderly parents, and working-age parents' educational investment in children. On the right-hand side, $Treat_c = 1$ if county c is in the treatment group. $Post_t = 1$ if t represents the second wave. In X_{ict}, we control for individual-level and household-level characteristics like age, gender, schooling years, and family structure. To rule out aggregate-level shocks and cross-county differences, we also control for county fixed effects (δ_c) and province-year

[21] Officially, the central government does announce pilot counties from 2009 to 2012, without detailed information on the month. The actual implementation can precede or lag behind the timing of the announcement. The NRPS is financed by the central government and local governments, and local governments have the authority to decide their subsidy level. Some local officials may strive to start as early as possible, as encouraged by the central government. Some counties may postpone the piloting to bargain for more financial support from the central government.

fixed effects (θ_{pt}). Finally, ε_{ict} is the residual term. The coefficient of interest is β, which estimates the relative change in the outcome from wave 1 to wave 2 in the treatment group, compared to the change in the outcome in the control group. We cluster standard errors at the county level.

An important assumption of the DID strategy is that no omitted confounding factors influence the treatment group and control group differently from the first wave to the second wave, so that the difference in trends between the treatment and control group is only due to the NRPS. However, due to the lack of household data in the pretrend period, we are unable to directly test whether outcomes in the treatment group and control group have parallel pretrends. We do the following things to mitigate this concern.

First, for the CFPS data, we link the counties in our sample to county-level data from other sources, and compare the pretrends of aggregate socioeconomic characteristics. We collect the following county-level variables from the *CEIC Global Database* and *China County (City) Socioeconomic Statistical Yearbooks*: gross domestic product (GDP), population, government revenues and expenditures, income per capita for rural residents, rural population, the number of students in compulsory education (primary school and lower secondary school), and the total retail sales of consumer goods. Figure 2 plots the trends of differences in these variables between the treatment and control group, with 95% confidence intervals. The differences of all socioeconomic characteristics remain very stable in the pre-NRPS period, suggesting that the treatment group and control group have similar pretrends of socioeconomic development. Huang and Zhang (2021) used a similar DID framework to analyze the impact of the NRPS on household income, labor supply, health, and so on. They showed that counties

announced as pilot counties for the program in different waves have similar pretrends of aggregate economic variables.[22]

Second, although we cannot gather more county-level data in the pre-NRPS period,[23] we further use data from the 2010 Chinese Census to check whether cross-cohort variations in gender ratio and education level are similar in the treatment and control group. The Figure 3(a) shows the trend of treatment–control differences in the gender ratio of the population. The lower panel of Figure 3(b) shows the trend of differences in the gender education gap. We find that the differences in gender ratio and gender education gap fluctuate across cohorts, but do not display a clear downward or upward trend. The point estimates are not statistically significantly different from each other—even between the largest and smallest estimates.

Additionally, we control for county-level contemporary trends and pretrends in the DID regression, when estimating the impact of the NRPS on child investment. As Equation (13) shows, we first control for time-varying characteristics of counties in 2010 and 2012 (Z_{ct}): the contemporary trends. Then we allow the 2010–2012 difference to vary flexibly with pretrends by including the interaction of county-level controls lagged for l years $\left(W_{c,t-l}\right)$ and the $Post_t$ dummy. Both Z_{ct} and $W_{c,t-l}$ include $\log(GDP)$,

[22] Based on documents from the State Council of the PRC, the authors found that 320 counties (12%) were announced as pilot counties for the NRPS in 2009, followed by 450 counties in 2010, 1,075 counties in 2011, and all the rest in 2012. Besides the variables included in Figure 2, Huang and Zhang (2021) also show the parallel trends for the number of doctors and hospital beds, which are less relevant for this paper.

[23] We did not manage to test the pretrends of other relevant variables such as the number of students enrolled in high school, educational expenditures from the government, and private transfers in family, because county-level statistics are very scarce in the PRC. We also tried using other individual or household surveys (e.g., China Household Income Project, Chinese General Social Survey) to check the trends of socioeconomic conditions for the counties covered by the CFPS. However, only a small number of counties are covered by both the CFPS and other surveys.

$\log(population)$, $\log(government\ revenue)$, and $\log(government\ expenditure)$.[24] We find the results are generally robust to the inclusion of county-level controls as well as the selection of pretrend periods (l).

$$Y_{ict} = \alpha + \beta Treat_c \times Post_t + \gamma X_{ict} + \delta_c + \theta_{pt} + \eta Z_{ct} + \kappa W_{c,t-l} \times Post_t + \varepsilon_{ict} \quad (13)$$

Finally, for the CHARLS data, we cannot link the sample of counties to other data due to the lack of county identifiers. For robustness, we estimate the causal effects of pension payments on old-age support, using another identification strategy—the regression discontinuity (RD) design. According to the NRPS policy, access to pension payments is discontinuous at age 60. Participants aged above 60 receive the payments, while those below 60 must make contributions to the program. As Figure 4 shows, we do find that only people older than age 60 receive pension payments. Given that the participation rate is lower than 100%, we use the fuzzy RD design. The windfall shock of pension payments, as predicted by the model, induces an increase in elderly parents' income, which may crowd out transfers from adult children. Therefore, we expect to see a discontinuous drop of transfers at the cutoff age.

Note that the RD design is different from the DID approach in a few ways. DID estimates the overall impact of the NRPS availability on parents aged above 60, while the RD design compares parents above 60 to those below 60. Therefore, if the pension program affects transfers through both the windfall shock (ΔE) and the savings shock (ΔR), then DID captures the aggregate effect of the two shocks, while RD only

[24] We have not included other variables like GDP per capita and rural income per capita in the regressions, because some counties do not report those statistics. The missing values shrink the sample size greatly.

identifies the effect of the windfall shock. Lastly, RD relies on the assumption that people are budget constrained—they cannot borrow from the future.[25]

4. Empirical Results

4.1. Cultural Change: Expectations of Old-Age Support

A key conjecture of this paper is that the availability of pension programs undermines the importance of children for old-age support, causing a transition from relying on children to relying on pensions. In this section, we provide more direct evidence that the new pension program in rural PRC indeed changes people's beliefs or expectations about old-age support. This is consistent with Bau (2021), who showed that pensions can induce cultural changes in co-residence practice—an important proxy for old-age support in traditional societies.

We use the DID estimation strategy as outlined in Equation (12). The outcome variable is an indicator of relying on pensions or children for old-age support. The coefficient of the interaction term, $Treatment \times Post$, estimates the intention-to-treat effect of pension availability on the probability of relying on children or pensions. We use simple ordinary least squares regressions and control for county fixed effects, province-year fixed effects, as well as individual age, schooling years, indicator for whether spouse is alive, the number of children and male children, and the average age of children.

Table 3 presents the estimation results. Columns (1)–(2) show the results for all respondents. Overall, access to the NRPS lowers the likelihood of relying on children for old-age support by 7.4 percentage points and increases the likelihood of relying on

[25] We can only apply the RD design when using the CHARLS data, because the CFPS does not provide detailed information on elderly parents—or better called grandparents—when studying child investment.

pensions by 7.1 percentage points. The similar magnitude of change suggests that pensions primarily replace the roles of children for old-age support. Columns (3)–(4) show the results for respondents younger than 60 and columns (5)–(6) for people older than age 60. This comparison suggests that pensions especially change the perceptions of people already in their old age. They become 8 percentage points less likely to depend on children and 9 percentage points more likely to depend on pensions.

4.2. Upward Transfers

In this section, we examine the impact of the NRPS on actual old-age support—upward transfers from adult children to elderly parents. We employ DID to estimate the intention-to-treat effect. Given that a parent can have multiple children, we first look at transfers provided by each child, then look at the total transfers received by a parent.

Transfers provided by adult children. We first look at transfers provided by adult children, using observations of adult children from the CHARLS. We use the same DID estimation as specified in Equation (12). The outcome variable, Y_{ict}, is an indicator for any transfers or the amount of transfers provided by child i in county c and year t. We winsorize the amount of transfers at the top 1 percentile to avoid extreme values driving the results.[26]

We present results in Table 4. In columns (1)–(2), we examine only upward transfers from children to parents, and in columns (5)–(6), we examine net upward transfers—transfers provided by children minus transfers from parents. The dependent

[26] Note that we do not exclude children living together with parents for two reasons. First, the living arrangement can change over time. Second, we also observe some transfers between parents and non-co-resident children, although very few. When we exclude children who live with parents in both waves, we find similar results (Appendix Table A1).

variables are, respectively, an indicator for any upward transfers, the amount of upward transfers, and the amount of net upward transfers. In odd columns, we only include county and province-year fixed effects. In even columns, we further control for individual characteristics. On the child side (the provider), we control for the gender, age, schooling years, number of siblings and children. On the parent side (the receiver), we control for their average schooling years, age, and whether both parents are alive. Focusing on results in even columns, we find that access to pensions reduces the likelihood of children providing any transfers, but this extensive-margin impact is not statistically significant. In terms of the amount of transfers, we find that the NRPS crowds out upward transfers by CNY80 and net upward transfers by close to CNY100 (or 30% of the control group baseline level).

Next, in Table 5, we present the estimated effect of the NRPS on transfers provided by adult daughters and sons separately. For robustness, we look at three outcome variables: an indicator for any upward transfers, the amount of transfers winsorized at the top 1 percentile, and transfers winsorized at the top 5 percentiles. We find that the negative impact on transfers is primarily driven by adult sons. When using the 1-percentile winsorized transfers, we find that adult sons reduce transfers by more than CNY190 or 55% of the control group baseline level. In contrast, the NRPS does not significantly affect adult daughters' transfers toward parents. Wald tests show that the gender difference in the impact the NRPS on the amount of transfers is significant at the 1% level.

How large is the crowd-out impact? Based on the NRPS policy, the windfall shock (Δ_E) is at least and in most cases equal to CNY660 per year for one participant. In our sample, an adult child has on average 1.68 elderly parents alive, so the parents' total

windfall shock is about CNY1,100. The estimated impact on transfers has a smaller magnitude than this amount, suggesting that the crowd-out effect of pensions on transfers is less than one-to-one.

Transfers received by elderly parents. Considering that a parent can have multiple children and transfers from different children may respond differently to pensions, we also study how the NRPS influences the total transfers received by a parent. If both parents are alive, we only observe transfers received by the couple together. In this case, we divide transfers by two and take each parent as an observation. Similarly, we look at the following proxies for old-age support: an indicator for receiving any (net) transfers and the amount of (net) transfers received. Each proxy corresponds to a column in Table 6.

Results show that the NRPS reduces the overall amount of transfers that parents receive, but the impact on the probability of receiving any transfers is not statistically significant. On average, with access to the pension program, the amount of net transfers received by elderly parents decreases by more than CNY350 (p-value<0.01). As a placebo test, we also show the DID results for transfers received by parents aged below 60. Because access to the NRPS does not bring an instant increase in wealth for the below-60 age group (suppose they cannot borrow from the future), we should not observe a negative effect of the NRPS on transfers they received. Appendix Table A2 shows the placebo test results.

Because we cannot directly test the pretrends of old-age support for the DID strategy, for robustness, we further employ the regression discontinuity design to test the causal impact of the NRPS on old-age support. As mentioned, participants in the pension program older than 60 receive pensions right away, while those younger than 60 still must

pay premiums until they reach age 60. This policy creates a discontinuous access to pension payments around the threshold age, and we exploit the discontinuity to estimate the effect of pension payments on transfers. As results in Appendix Section D show, transfers received by parents (especially the amount of transfers) display a significant drop at the cutoff age, suggesting that pension payments do decrease upward transfers.

4.3. Child Investment

A pension program affects two decisions of working-age parents simultaneously: transfers to their parents in old age and investment in their children. Next, we examine the impact of the NRPS on child investment, using a DID approach and the CFPS data.

Graphical patterns. As the DID strategy compares the treatment-control difference in changes between the two waves, we plot changes in the average enrollment rate by age and treatment status in Figure 5. For each age cohort, we calculate the change in the enrollment rate from 2010 to 2012. A zero change means that the enrollment rate is the same in the two waves. A negative change implies that there have been dropouts: some children who attended school in 2010 had dropped out by 2012. Similarly, a positive change means that some children who did not attend school in 2010 had started school in 2012.

Figure 5 shows that the changes in enrollment rate are mostly positive in the 3–6 age group (more children become enrolled in preschool or primary school) and negative for children aged above 13 in 2010 or 15 in 2012 (some children finish compulsory education and stop schooling). Figure 5 also highlights that the changes of the treatment group are typically larger in magnitude than the control group, suggesting that the impact of NRPS can have different directions in different groups.

Main results. We use the DID specification in Equation (13) to estimate the intention-to-treat effects of pension availability on child investment by child gender. Note that the CFPS data allows us to control for county-level characteristics in 2010, 2012, and earlier years.

We first examine the impact of the NRPS on enrollment status of children, separately for daughters and sons. Table 7 presents the results, with an indicator for enrollment as the dependent variable. In columns (1)–(2), we include only county and province-year fixed effects. In columns (3)–(4), we include basic individual controls (age, parents' age, and education). In columns (5)–(6), we also control for contemporary trends and the pretrends of county-level characteristics from 2005 to 2009: log(GDP), log(population), log(government revenue) and log(government expenditure). Appendix Figure A4 shows that the main results are similar qualitatively and quantitatively when we only control for pretrends or contemporary trends, or use different periods of pretrends.

We find that parents' access to the NRPS significantly lowers the enrollment rate of their daughters and increases the enrollment rate of their sons. According to results with full controls in columns (5)–(6), the NRPS reduces daughters' enrollment by 7.5 percentage points or 9.5% of the baseline enrollment rate in the control group. The NRPS, nevertheless, increases sons' enrollment rate by more than 9 percentage points or 12% of the control group baseline level. The gender differences in the impact of pension access on enrollment are significant at the 1% level and are robust to the inclusion of individual-level and county-level controls.

Next, we analyze the impact of the NRPS on educational expenditures in Table 8. We use three outcome variables: the raw amount of expenditures, expenditures

winsorized at the top 1 percentile, and expenditures winsorized at the top 5 percentiles. We control for all fixed effects, and county-level and individual-level controls as specified above. We find a similar pattern: access to the pension program significantly raises parents' educational investment in sons, but appears to lower their investment in daughters. Using the 1%-winsorized expenditures, we find that the NRPS increases the expenditures for sons by CNY460 or 40% of the control group baseline level (statistically significant at the 5% level), but decreases the expenditures for daughters by around CNY180 (statistically insignificant). The gender gap in the impact is statistically significant at the 1% level.

Results by cohort. As Figure 6 implies, the impact of pension access on educational investment can vary with age. To formally analyze this dimension of heterogeneity, we divide children into four groups: (i) age 3 to 6 in 2010, approximately corresponding to the period of preschool education, (ii) age 6 to 15, roughly the period of compulsory education (elementary school and lower secondary school), (iii) age 15 to 18, typically when students receive high school education, and (iv) age 18 to 22, the period of higher education. We then estimate the impact of the NRPS on educational investment separately for each age group by gender.

Figure 6 plots the estimated coefficients of $Treatment \times Post$ with 95% and 90% confidence intervals. Regarding enrollment, we find that the positive effect on sons is mainly driven by the 15–18 age group, the period of receiving higher secondary education. The negative effect on daughters is concentrated in the stage of preschool education and tertiary education. In terms of educational expenditures, the pension program raises parents' investment in sons, especially sons in the stage of high school education. The

negative impact of the program on parental investment in daughters is concentrated on the stages of high school and tertiary education, but the impact is not statistically significant. Taken together, the NRPS program mainly affects parents' investment in children's non-compulsory education.

Results by sibling structure. Next, we examine how the impact of pension access on education investment varies with the sibling structure of children. We distinguish three types of children: (i) without siblings, i.e., only daughters and sons, (ii) with any sibling(s), and (iii) with opposite-gender siblings, i.e., daughters with brothers and sons with sisters.[27] The sibling structure implies potential differences in parental altruism toward the child and the budget constraint that parents face.

Figure 7 plots the estimated coefficients of $Treatment \times Post$ by the child's gender and sibling structure, with 95% and 90% confidence intervals. For expenditures, we focus on the children aged above 15 in 2010 because the impact on younger children is very small. Figure 7 shows that for only daughters and sons, the pension program does not affect their school enrollment and appears to increase the educational expenditures that they receive. By contrast, the program significantly lowers parental investment in daughters with siblings. The positive impact on parental investment in sons also appears stronger for sons with siblings. The finding suggests potential resource reallocation from daughters to sons within a family, probably because parents are more altruistic toward sons.

[27] From early 1980s to 2015, most families in the PRC were enforced to have only one child. However, in most rural districts, the one-and-a-half policy was always in place, which allowed parents with a single daughter to have a second child. Given that, families with a female firstborn may decide to have a second child, which is more likely if they have a son preference.

4.4. Robustness and Discussions

Gender differences in impacts. Our empirical results show that the effects of a new pension program on upward transfers and child investment differ significantly by the gender of the child: pensions crowd out transfers from adult daughters to a smaller extent; parents with access to pensions reduce investment in daughters but increase investment in sons. One remaining concern is that these gender differences in the impact can be driven by the differences between households with daughters and households with sons. This is a valid concern. Due to son preference and patrilocal traditions in the PRC, boys and girls can grow up and live in different types of households.[28] These differences may further affect the take-up rate of the pension program and intergenerational resource transfers.

To mitigate the concern, we directly estimate the gender gap in the treatment effect (co-efficient of the triple interaction term $Treatment \times Post \times Female$) and show that the gender gap is robust to controlling for other household characteristics and their interaction effects with $Treatment \times Post$. As Appendix Table A5 shows, the estimated gender gap in the impact on upward transfers (daughter minus son) remains positive and statistically significant even after including the interaction terms between $Treatment \times Post$ and the adult child's number of siblings, number of male siblings, whether living in the same household or apartment as the parents, and whether both parents are alive. Appendix Table A6 shows that the gender gap in the impact on child's school enrollment

[28] Appendix Table A4 summarizes household characteristics by the gender of children in our sample and tests the gender differences. The pattern of sibling structure is overall consistent with son preferences in the PRC. Daughters in our sample have more siblings, especially male siblings. For adult children, sons are more likely to live together with parents than daughters, consistent with patrilocal traditions. For example, in the CHARLS sample, about 40% sons but only 5% of daughters live in the same apartment, house, or yard as their parents.

and educational expenditures remain negative and statistically significant after controlling for the interactions between $Treatment \times Post$ the child's (male) sibling numbers and household members' age composition. Also, the positive treatment effects on sons and the gender differences in the effects are both stronger when we focus on children not in compulsory education ages, consistent with the results shown in Figure 6. These findings suggest that the gender differences in the effects of pension availability are not driven by gender differences in household characteristics.

Also, we test whether parents' enrollment in the pension program depends on the number and gender composition of their children. We present the results in Appendix Table A7, where columns (1)–(2) include both parents, and columns (3)–(4) separately examine the enrollment of mothers and fathers. We find that children's age or gender composition does not significantly predict parents' participation in the program. This finding further suggests that the gender differences in the program's impact on intergenerational resource transfers are not driven by gender-specific selection into the program.

Other forms of support. As noted earlier, our analysis of old-age support focuses on monetary transfers between elderly parents and adult children. This means that we are neglecting other forms of support and exchange between parents and children. For example, they can provide labor support to each other: parents help look after grandchildren or receive care from children when getting sick. Parents and children may live in the same household and share common assets and resources. Children can also inherit land, housing, and other assets from parents.[29]

[29] Given different forms of exchange between generations, families face various tradeoffs when deciding

In our empirical setting, all these forms of exchange are generally greater between parents and sons than between parents and daughters. For example, in our CHARLS sample of adult children, 28% of sons live with parents in the same household as a single unit, while only 3% of daughters co-reside with parents. Also, parents provide more childcare support for sons than for daughters (the gap is about 540 hours in a year). Although we find no evidence that the new pension program affects co-residence or childcare support (Appendix Table A8), we cannot fully capture and properly aggregate all forms of intergenerational exchanges, and therefore, our estimated impact of the pension program on old-age support is potentially biased. Moreover, as the exchanges can display large gender differences, our estimations of the gender gap in the impact can also be biased. It is important to keep this limitation in mind when interpreting our results.

5. Conclusion

The intergenerational support system—parents invest in children and children support elderly parents—plays a crucial role in human capital accumulation and old-age well-being in traditional societies. Due to kinship traditions and social norms, the support system can exhibit salient gender differences. In these societies, the introduction of public pension programs helps provide better insurance for the elderly population, but may unexpectedly hamper the private support system between generations.

This paper examined the simultaneous effects of public pensions on old-age support and child investment, with a special focus on the gender differences in such effects.

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child investment and old-age support. For example, Jensen and Miller (2017) showed that parents in India strategically invest less in children they want to keep at home but more in children that they want to migrate. Bau et al. (2022) showed that in India, dowry serves as a form of income sharing between parents and children and facilitates sons' migration.

We first presented a conceptual framework to clarify the roles of different generations in a family, the incentives for transfers, and the channels through which pensions can influence intergenerational transfers. The model predicted that public pensions will crowd out upward transfers from adult children, but the impact on child investment was ambiguous in sign.

Empirically, we focused on a large-scale pension program introduced from 2009 to 2013 in rural PRC. We found evidence suggesting that the pension program alters cultural norms about old-age support. Parents became more likely to rely on pensions rather than children for economic support in old age. Pensions also crowded out transfers received by elderly parents from adult children, especially adult sons. Meanwhile, the program affected parents' investment in children, but differently for sons and daughters. Before pensions were introduced, parents spent more money for the education of sons than daughters. The gender gap in human capital accumulation became even greater as pensions became available: the investment in sons significantly increased, but the investment in daughters appeared to decrease.

Taken together, our results suggest that public pension programs can fundamentally alter the traditional support system between generations. The positive effect of pension payments on the old-age generation can be partly offset by the decrease in transfers from adult children. Moreover, as pensions increase family income and undermine the role of children in providing old-age support, parents may also increase or reduce investment in the child depending on the child's gender, thus causing new equity issues. In light of such unintended effects, when introducing public pensions, governments may need to implement policies to reduce school dropouts and provide

financial support for students who receive less parental investment, particularly female students with siblings or in non-compulsory education.

One limitation of our paper is that the conceptual framework and empirical strategy are designed to examine the short-run impact of a new pension program. Nevertheless, as we have concrete measures of intergenerational support, our paper complements studies like Bau (2021) and Fetter et al. (2021) that provide important evidence on long-term effects of public pensions on old-age support and child human capital accumulation.

FIGURES AND TABLES

Table 1: Descriptive Statistics of the CHARLS Sample

Panel A: Observations of Parents in 2011 and 2013 (N=5,546)

	Mean	SD	p10	p50	p90
Age	68.80	(6.26)	62.0	67.3	78.1
Female	0.49	(0.50)	0	0	1.0
Schooling Years	3.25	(3.86)	0	2.0	9.0
Spouse is Alive	0.77	(0.42)	0	1.0	1.0
Average Age of Children	39.7	(6.07)	32.3	39.7	47.3
Number of Children	3.88	(1.59)	2.0	4.0	6.0
Number of Male Children	2.15	(1.19)	1.0	2.0	4.0
Receiving Any Upward Transfers	0.72	(0.45)	0	1.0	1.0
Receiving Any Net Upward Transfers	0.70	(0.46)	0	1.0	1.0
Upward Transfers Received	1,697	(4,279)	0	600	3,900
Net Upward Transfers Received	1,383	(5,252)	0	500	3,700

Panel B: Observations of Adult Children in 2011 and 2013 (N=8,932)

	Mean	SD	p10	p50	p90
Female	0.50	(0.50)	0	0	1.0
Age	40.5	(5.58)	33	41.0	48.0
Schooling Years	6.36	(3.22)	3	6.0	9.0
Number of Siblings	2.85	(1.42)	1	3.0	5.0
Number of Children	1.85	(0.76)	1	2.0	3.0
Parents' Schooling Years	2.92	(2.98)	0	2.3	7.3
Parents' Age	69.0	(6.55)	61	68.0	78.0
Both Parents Alive	0.68	(0.47)	0	1.0	1.0
Providing Any Upward Transfers	0.55	(0.50)	0	1.0	1.0
Providing Any Net Upward Transfers	0.53	(0.50)	0	1.0	1.0
Upward Transfers Provided	580	(2,417)	0	100	1,200
Net Upward Transfers Provided	433	(3,485)	0	100	1,200

Panel C: Gender Differences in the Provision of Upward Transfers

	Sons (N=4,492)		Daughters (N=4,440)		Gender Difference
	Mean	SD	Mean	SD	*p*-value
Any Upward Transfers	0.45	(0.50)	0.64	(0.48)	0.000
Any Net Upward Transfers	0.44	(0.50)	0.62	(0.49)	0.000
Upward Transfers	599	(2,885)	562	(1,826)	0.471
Net Upward Transfers	399	(3,873)	468	(3,041)	0.355

CHARLS = China Health and Retirement Longitudinal Study, SD = standard deviation.

Notes: The gender differences in the likelihood of providing any (net) transfers are robust to controlling for child age and county fixed effects. As Appendix Table A4 shows, adult sons on average have more schooling years and fewer siblings than adult daughters.

Source: China Health and Retirement Longitudinal Study.

Table 2: Descriptive Statistics of the CFPS Sample

Panel A: Observations of Children in 2010 and 2012 (N=8,908)

	Mean	SD	p10	p50	p90
Female	0.47	(0.50)	0	0	1
Age	12.1	(5.38)	5	12	20
Number of Siblings	0.92	(0.75)	0	1	2
Parents' Average Age	38.7	(6.08)	30.5	39	46.5
Parents' Average Schooling Years	6.26	(3.11)	3	7.5	9
Enrollment	0.78	(0.41)	0	1	1
Expenditures	1,815	(3,521)	0	478.5	5,100

Panel B: Gender Differences in Educational Investment

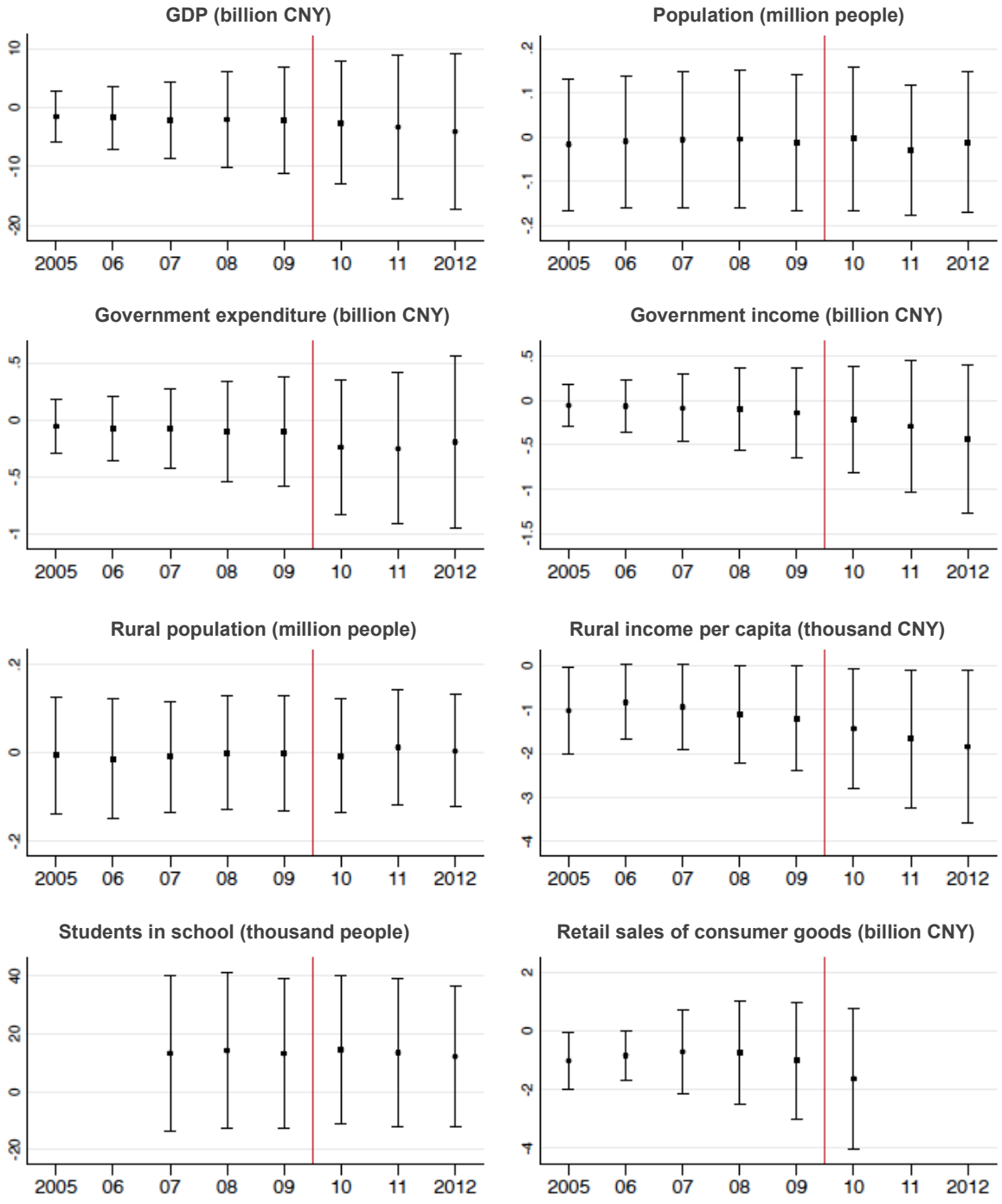
	Sons (N=4,736)		Daughters (N=4,172)		Gender Difference
	Mean	SD	Mean	SD	*p*-value
Enrollment	0.77	(0.42)	0.80	(0.40)	0.000
Expenditures	1,799	(3,627)	1,833	(3,397)	0.650

CFPS = China Family Panel Studies, SD = standard deviation.

Notes: The gender differences in school enrollment and expenditures are close to zero and not statistically significant after controlling for child age and county fixed effects. As Appendix Table A4 shows, sons on average have fewer siblings than daughters.

Source: China Family Panel Studies.

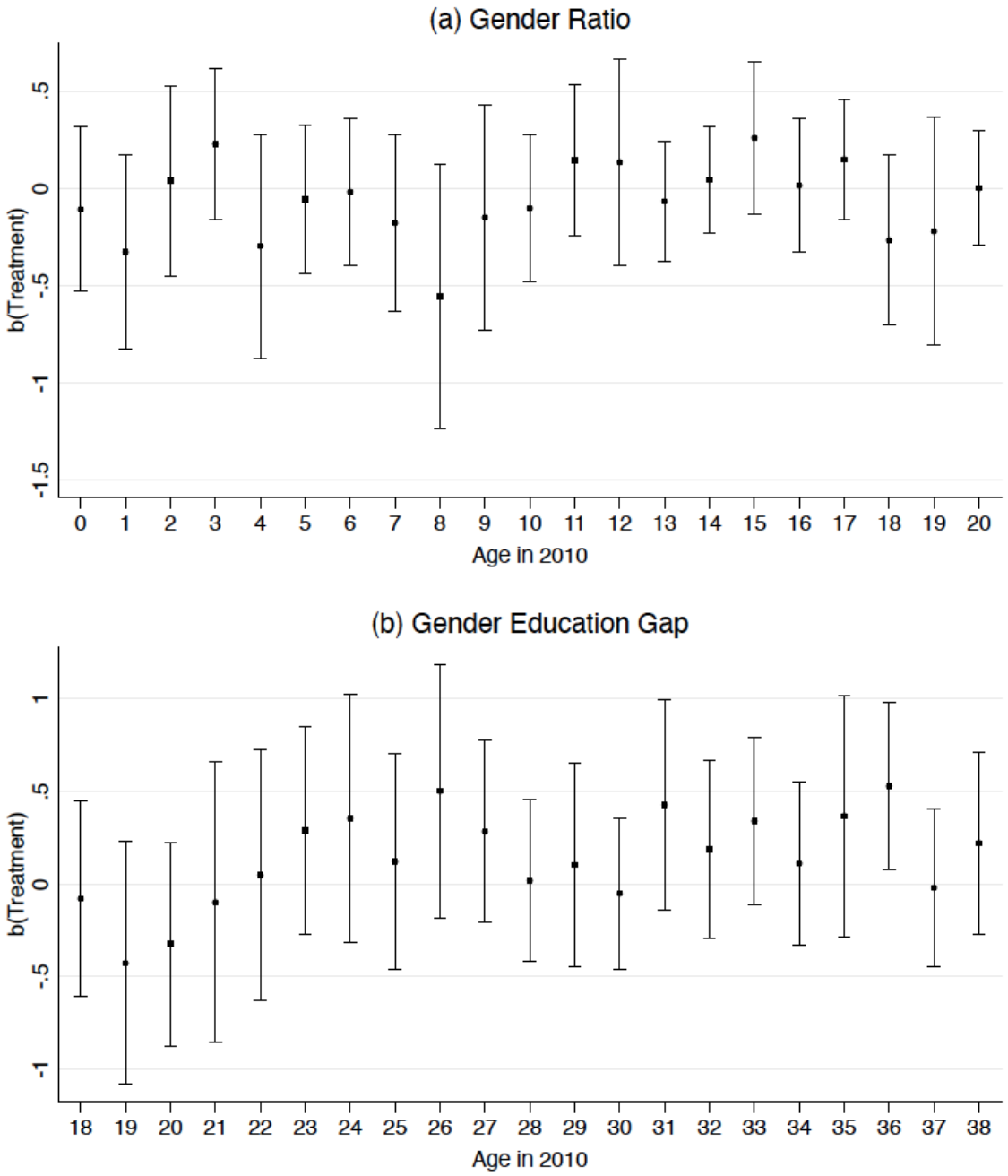
Figure 2: Differences in County-Level Characteristics between the Treatment and Control Group, by Year



Notes: The graph plots the trends of differences in county-level characteristics between the treatment and control group. We regress each characteristic on the treatment variable separately for each year and plot the estimated coefficient with 95% confidence intervals. We use HC3 (heteroskedasticity-consistent) standard errors in all regressions due to the small sample size of counties. For the last two county-level characteristics, the data are missing for 2005 to 2006 and 2011 to 2012. The years 2005 to 2009 represent the pre-NRPS period.

Source: CEIC Global Database and China County (City) Socioeconomic Statistical Yearbooks.

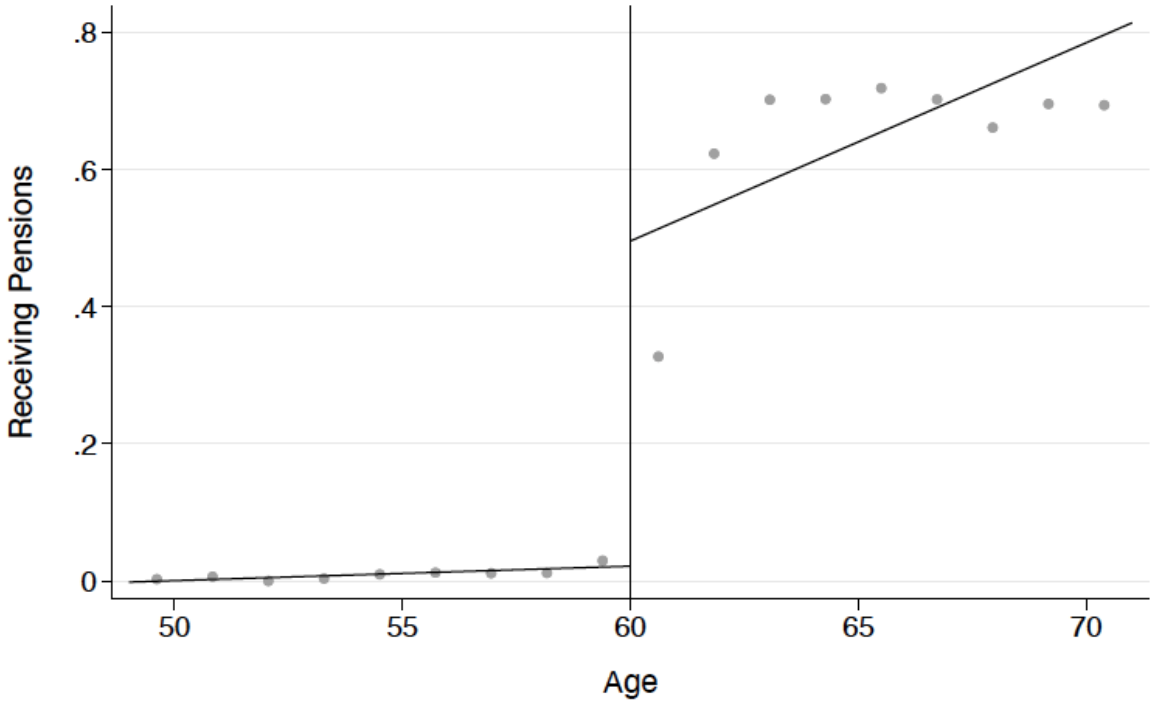
Figure 3: Differences in Gender Ratio and Gender Education Gap between the Treatment and Control Group, by Cohort



Notes: The graph plots the treatment-control differences in county-level gender ratio and gen- der gap in years of schooling for different age cohorts. We use individual-level data from the 2010 Chinese Census and use local rural residents to calculate the aggregate gender ratio and gender education gap for each CFPS county and each age group. Each point estimate is derived from one regression. Error bars indicate 95% confidence intervals based on HC3 standard errors. In Appendix Figure A2, we plot the same figure using individual-level data and find no clear trends of gender differences either.

Source: 2010 Population Census of the People's Republic of China and China Family Panel Studies.

Figure 4: Pensions-Receiving Status around Age 60



Notes: The graph plots the status of receiving pension payments against age, using the China Health and Retirement Longitudinal Study sample of parents in 2013.

Source: China Health and Retirement Longitudinal Study.

Table 3: The Impact of the NRPS on Expectations of Old-Age Support

	(1)	(2)	(3)	(4)	(5)	(6)
	All Parents		**Parents aged < 60**		**Parents aged ≥ 60**	
Rely on . . . for support	**Children**	**Pensions**	**Children**	**Pensions**	**Children**	**Pensions**
Treatment × Post	-0.074**	0.071***	-0.070**	0.049**	-0.076**	0.087***
	(0.030)	(0.023)	(0.033)	(0.023)	(0.037)	(0.031)
Female	0.036***	-0.019***	0.030**	-0.010	0.035***	-0.022***
	(0.008)	(0.006)	(0.013)	(0.009)	(0.011)	(0.007)
Observations	10,742	10,742	5,196	5,196	5,546	5,546
R-squared	0.079	0.089	0.095	0.110	0.103	0.120
Control baseline mean	0.810	0.095	0.818	0.082	0.802	0.108

NRPS = New Rural Pension Scheme.

Notes: All columns use OLS regressions with parent-year observations from the China Health and Retirement Longitudinal Study 2011 and 2013. In odd columns, the dependent variable (DV) is an indicator for relying on children for old-age support. In even columns, the DV is an indicator for relying on pensions. Controls include age, schooling years, if the spouse is alive, the number of all children and male children, and the average age of children. We also control for county fixed effects and province- year fixed effects. *Control baseline mean* refers to the average baseline level of outcomes in the control group. Standard errors are in parentheses and clustered at the county level. $*p < .1$, $**p < .05$, $***p < .01$.

Source: Authors.

Table 4: The Impact of the NRPS on Transfers from Adult Children

	(1)	(2)	(3)	(4)	(5)	(6)
	Any Transfer		**Transfer**		**Net Transfer**	
Treatment × Post	-0.023	-0.024	-75.7*	-78.5*	-95.8**	-98.4**
	(0.038)	(0.038)	(40.9)	(41.3)	(41.3)	(41.7)
Female		0.187***		72.1**		73.5**
		(0.015)		(29.6)		(28.6)
Age		0.006***		-1.6		-1.3
		(0.001)		(2.4)		(2.4)
Schooling Years		0.006***		28.9***		25.8***
		(0.002)		(4.1)		(4.1)
Number of Siblings		0.021***		-23.8***		-18.7**
		(0.006)		(8.9)		(9.1)
Number of Children		-0.011		1.0		0.7
		(0.009)		(15.3)		(15.4)
Parents' Schooling Years		0.007**		16.3***		14.3***
		(0.003)		(4.8)		(4.9)
Parents' Age		0.002		1.9		2.7
		(0.002)		(2.7)		(2.6)
Both Parents Alive		-0.003		61.5**		56.7*
		(0.016)		(30.8)		(29.8)
Observations	8,932	8,932	8,932	8,932	8,932	8,932
R-squared	0.134	0.179	0.092	0.106	0.084	0.095
Control baseline mean	0.441	0.441	360.2	360.2	338.5	338.5

NRPS = New Rural Pension Scheme.

Notes: All columns use OLS regressions with child-year observations from the China Health and Retirement Longitudinal Study 2011 and 2013. Columns (1)–(4) examine upward transfers from adult children, and columns (5)–(6) examine net upward transfers (upward minus downward transfers). The dependent variable (DV) in columns (1)–(2) is an indicator for any transfers: whether a child provides positive amount of transfers. The DVs in remaining columns are the amount of (net) transfers. All regressions control for county fixed effects and province-year fixed effects. *Control baseline mean* refers to the mean of the DV in the control group at baseline. Standard errors are in parentheses and clustered at the county level. $*p < .1$, $**p < .05$, $***p < .01$.

Source: Authors.

Table 5: Impact of the NRPS Availability on Transfers from Male/Female Children

	(1)	(2)	(3)	(4)	(5)	(6)
	Any Transfer		**Transfer Wins. 1%**		**Transfer Wins. 5%**	
Transfer from ...	**Daughter**	**Son**	**Daughter**	**Son**	**Daughter**	**Son**
Treatment × Post	-0.002	-0.046	22.4	-191.5***	14.3	-221.8***
	(0.055)	(0.032)	(58.7)	(57.8)	(61.9)	(55.7)
Observations	4,440	4,492	4,440	4,492	4,440	4,492
R-squared	0.210	0.157	0.191	0.108	0.171	0.102
Control baseline mean	0.516	0.366	374.2	346.4	359.1	318.1
Wald Test: Gender Difference						
x^2	0.853		7.024		8.331	
p-value	0.356		0.008		0.004	

Notes: All columns use simple OLS regressions. The dependent variables are an indicator for positive transfers, the amount of transfers winsorized at the top 1 percentile and 5 percentiles. Control variables include county and province-year fixed effects, and all individual characteristics as listed in even columns of Table 4. *Control baseline mean* refers to the mean of the DV in the control group at baseline. Standard errors are in parentheses and clustered at the county level. $*p < .1$, $**p < .05$, $***p < .01$.

Source: Authors.

Table 6: The Impact of the NRPS on Transfers Received by Parents

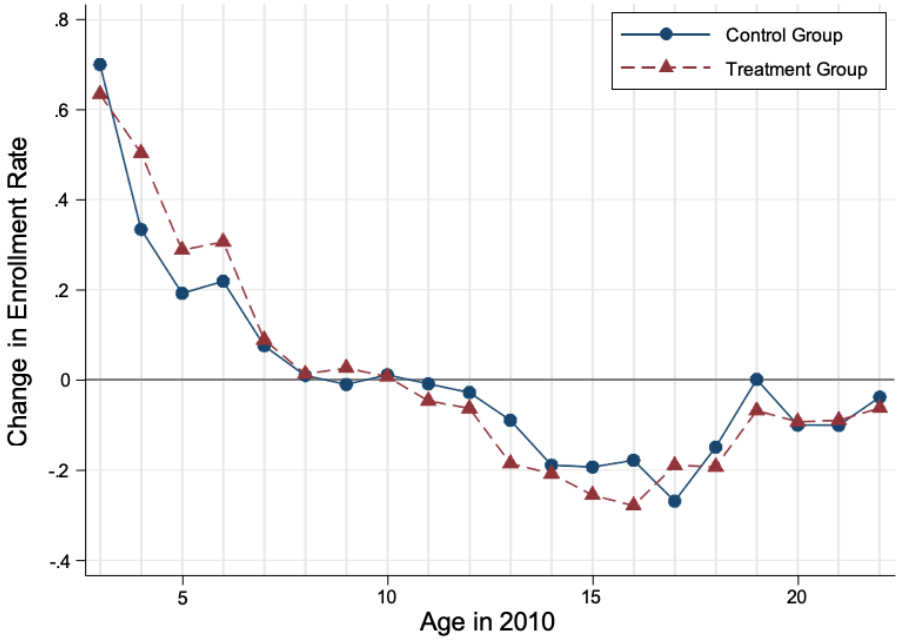
	(1) **Any Transfer**	(2) **Any Net Transfer**	(3) **Transfer**	(4) **Net Transfer**
Treatment × Post	-0.027	-0.062	-240.0*	-354.3***
	(0.041)	(0.044)	(124.8)	(125.8)
Observations	5,546	5,546	5,546	5,546
R-squared	0.249	0.234	0.153	0.127
Control baseline mean	0.554	0.545	1143	985.9

NRPS = New Rural Pension Scheme.

Notes: All columns use simple OLS regressions. The dependent variables in columns (1)–(4) are respectively, an indicator for receiving any transfers, an indicator for any net transfers, the amount of transfers and the amount of net transfers. Control variables include county and province-year fixed effects, individual age, schooling years, gender, whether the spouse is alive, the number of children and male children, and the average age of children. *Control baseline mean* refers to the mean of the dependent variable in the control group at baseline. Standard errors are in parentheses and clustered at the county level. $*p < .1$, $**p < .05$, $***p < .01$.

Source: Authors.

Figure 5: Enrollment Rate by Cohort and Treatment



Notes: The figure shows the change in enrollment rate from 2010 to 2012 for each age cohort, in either the control group or treatment group. A negative change in enrollment rate means a positive dropout rate, that is, some children who previously enrolled in schools/colleges drop out by 2012. A positive change indicates that some children start schooling between 2010 and 2012. Figure A3 plots the change in enrollment rate by gender.

Source: Authors.

Table 7: The Impact of the NRPS on Enrollment by Child Gender

	(1)	(2)	(3)	(4)	(5)	(6)
Enrollment of ...	**Daughter**	**Son**	**Daughter**	**Son**	**Daughter**	**Son**
Treatment × Post	-0.066*	0.052**	-0.068*	0.051**	-0.075**	0.093***
	(0.036)	(0.023)	(0.035)	(0.023)	(0.032)	(0.033)
County & Province-Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Individual Controls	No	No	Yes	Yes	Yes	Yes
County Trends	No	No	No	No	Yes	Yes
Observations	4,172	4,736	4,172	4,736	3,459	3,879
R-squared	0.067	0.071	0.116	0.144	0.110	0.146
Control baseline mean	0.787	0.755	0.787	0.755	0.786	0.752
Wald Test: Gender Difference						
x^2	11.34		11.65		21.85	
p-value	0.001		0.001		0.000	

NRPS = New Rural Pension Scheme.

Notes: All columns use OLS regression. The dependent variable is an indicator for school/university attendance. Individual controls include the age, parents' average age and average schooling years. County-level controls include log(GDP), log(population), log(government revenue) and log(government expenditure) in 2012, 2010, and five lagged years (2009-2005). *Control baseline mean i*s the mean of the DV in the control group at base- line. Standard errors are in parentheses and clustered at the county level. $*p < .1$, $**p < .05$, $***p < .01$.

Source: Authors.

Table 8: The Impact of the NRPS on Educational Expenditures by Child Gender

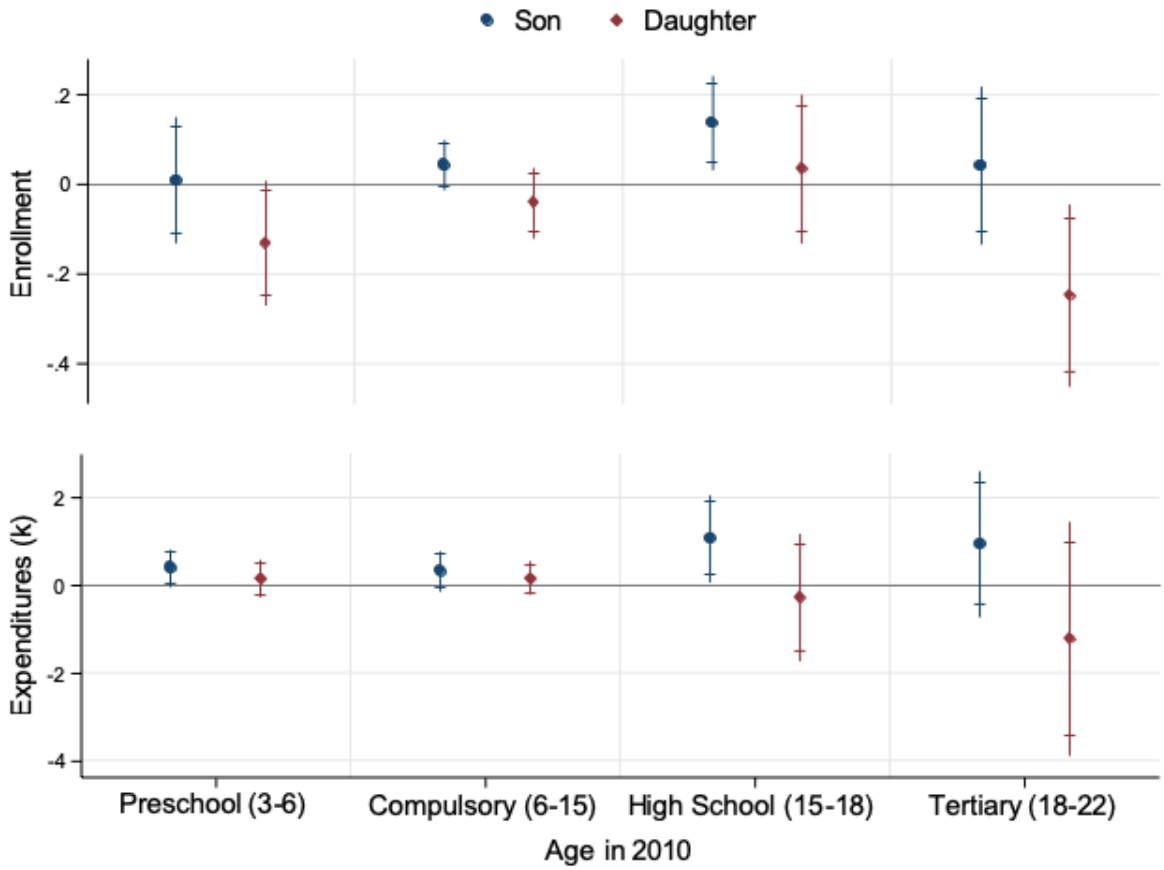
	(1)	(2)	(3)	(4)	(5)	(6)
	Raw Expenditures		**Expenditures Wins. 1%**		**Expenditures Wins. 5%**	
Expenditures for ...	**Daughter**	**Son**	**Daughter**	**Son**	**Daughter**	**Son**
Treatment × Post	-282.7	454.9*	-177.3	458.0**	-145.1	386.0**
	(241.2)	(238.9)	(225.3)	(214.0)	(164.1)	(163.0)
Observations	3,459	3,879	3,459	3,879	3,459	3,879
R-squared	0.255	0.197	0.276	0.216	0.289	0.226
Control baseline mean	1,140	1,125	1,140	1,100	1,087	1,026
Wald Test: Gender Difference						
χ^2	7.37		7.23		9.08	
p-value	0.007		0.007		0.003	

NRPS = New Rural Pension Scheme.

Notes: All columns use OLS regression. We use three dependent variables (DV): the raw amount of expenditures in columns (1)–(2), the expenditures winsorized at the top 1 percentile in columns (3)–(4), and expenditures winsorized at the top 5 percentiles in columns (5)–(6). All columns control for county and province-year fixed effects, individual-level and county-level controls as specified in Table 7. *Control baseline mean* is the mean of the DV in the control group at baseline. Standard errors are in parentheses and clustered at the county level. $*p < .1$, $**p < .05$, $***p < .01$.

Source: Authors.

Figure 6: The Impact of the NRPS on Educational Investment by Age Group

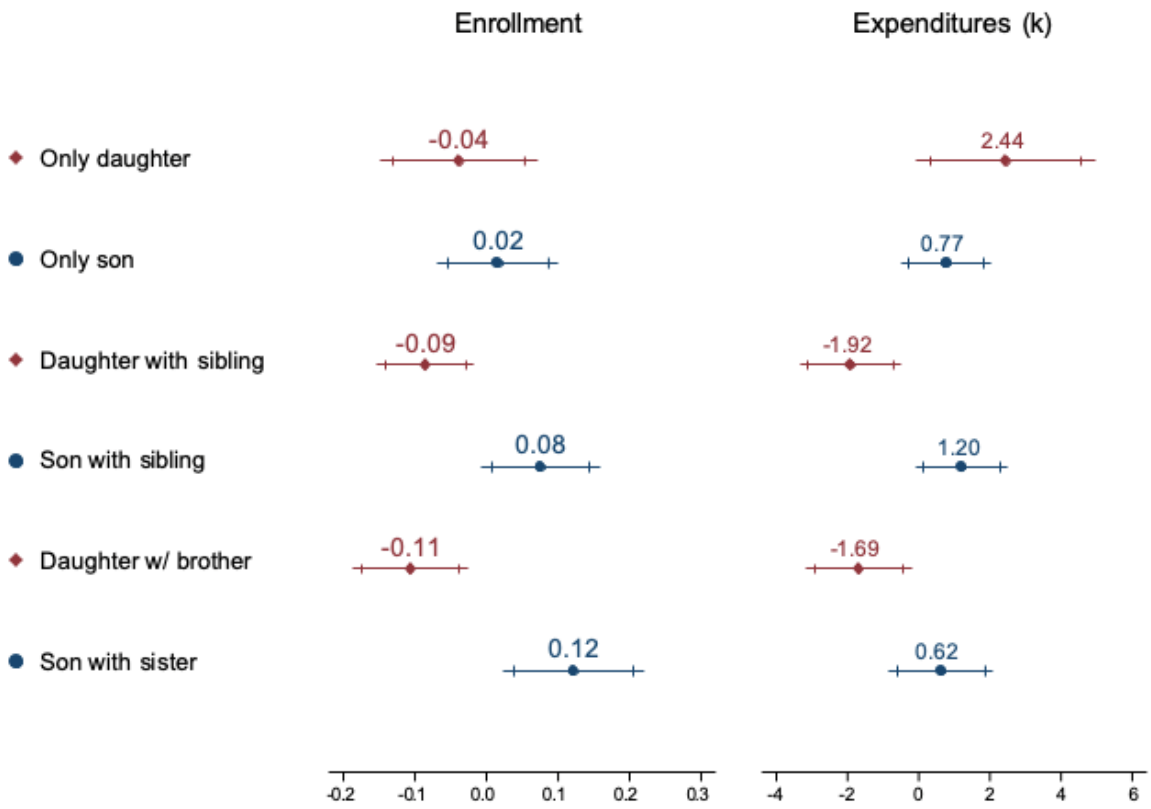


NRPS = New Rural Pension Scheme.

Notes: Each point in the graph corresponds to the estimated coefficient of the interaction term $Treatment \times Post$ with 95% and 90% confidence intervals, for a certain cohort and gender. The dependent variables are an indicator of enrollment and expenditures in thousand CNY (winsorized at the top 1 percentile). We use the same regression specification as in columns (5)–(6) of Table 7 but do not control for the county-level pretrends due to small sample sizes and multicollinearity.

Source: Authors.

Figure 7: The Impact of on the NRPS on Educational Investment by Sibling Structure



NRPS = New Rural Pension Scheme.

Notes: The figure plots the coefficients of $Treatment \times Post$ for different types of children with 95% and 99% confidence intervals. The left panel presents the impact on enrollment, while the right panel presents the impact on expenditures. In the right panel, we focus on children aged above 15 in 2010 and use 5%-winsorized expenditures as the dependent variable to reduce noise. We use the same regression specification as in columns (5)–(6) of Table 7 but do not control for the county-level pretrends due to small sample sizes and multicollinearity. For children with siblings, we control for family fixed effects and cluster the standard errors at the family level.

Source: Authors.

REFERENCES

Altonji, Joseph G., Fumio Hayashi, and Laurence J. Kotlikoff. 1997. "Parental Altruism and Inter Vivos Transfers: Theory and Evidence." *Journal of Political Economy*, 105 (6):1121–66.

Andreoni, James. 1989. "Giving with Impure Altruism: Applications to Charity and Ricardian Equivalence." *Journal of Political Economy*, 97 (6):1447–58.

Attanasio, Orazio P., and Agar Brugiavini. 2003. "Social Security and Households' Saving." *The Quarterly Journal of Economics*, 118 (3):1075–1119.

Attanasio, Orazio P., and Susann Rohwedder. 2003. "Pension Wealth and Household Saving: Evidence from Pension Reforms in the United Kingdom." *American Economic Review*, 93 (5):1499–1521.

Barro, Robert J. 1974. "Are Government Bonds Net Wealth?" *Journal of Political Economy*, 82 (6): 1095–1117.

Bau, Natalie. 2021. "Can Policy Change Culture? Government Pension Plans and Traditional Kinship Practices." *American Economic Review*, 111 (6): 1880–1917.

Bau, Natalie, Gaurav Khanna, Corinne Low, and Alessandra Voena. 2022. Traditional Institutions in Modern Times: Dowries as Pensions When Sons Migrate. *Working Paper*.

Becker, Gary S. 1974. "A Theory of Social Interactions." *Journal of Political Economy*, 82 (6): 1063–93.

Becker, Gary S., and Nigel Tomes. 1976. "Child Endowments and the Quantity and Quality of Children." *Journal of Political Economy*, 84 (4, Part 2): S143–62.

Cai, Fang, John Giles, and Xin Meng. 2006. "How Well Do Children Insure Parents against Low Retirement Income? An Analysis Using Survey Data from Urban China." *Journal of Public Economics*, 90 (12): 2229–55.

Calonico, Sebastian, Matias D. Cattaneo, Max H. Farrell, and Rocío Titiunik. 2019. "Regression Discontinuity Designs Using Covariates." *Review of Economics and Statistics*, 101 (3): 442–51.

Calonico, Sebastian, Matias D. Cattaneo, and Rocío Titiunik. 2014. "Robust Nonparametric Confidence Intervals for Regression-Discontinuity Designs." *Econometrica*, 82 (6): 2295–326.

Cattaneo, Matias D., Michael Jansson, and Xinwei Ma. 2018. "Manipulation Testing Based on Density Discontinuity." *The Stata Journal*, 18 (1): 234–61.

Cheng, Lingguo, Hong Liu, Ye Zhang and Zhong Zhao. 2018. "The Heterogeneous Impact of Pension Income on Elderly Living Arrangements: Evidence from China's New Rural Pension Scheme." *Journal of Population Economics*, 31 (1): 155–92.

Cox, Daniel. 1987. "Motives for Private Income Transfers." *Journal of Political Economy*, 95 (3): 508–46.

Cox, Daniel, and Emmanuel Jimenez. 1992. "Social Security and Private Transfers in Developing Countries: The Case of Peru." *The World Bank Economic Review*, 6 (1): 155–69.

Das Gupta, Monica, Jiang Zhenghua, Li Bohua, Xie Zhenming, Woojin Chung, and Bae Hwa-Ok. 2003. "Why Is Son Preference So Persistent in East and South Asia? A Cross-Country Study of China, India and the Republic of Korea." *The Journal of Development Studies*, 40 (2): 153–87.

Ebenstein, Avraham. 2014. "Patrilocality and Missing Women." *Working Paper, Hebrew University of Jerusalem*.

Ebenstein, Avraham, and Steven Leung. 2010. "Son Preference and Access to Social Insurance: Evidence from China's Rural Pension Program." *Population and Development Review*, 36 (1): 47–70.

Eggleston, Karem, Ang Sun, and Zhaoguo Zhan. 2016. "The Impact of Rural Pensions in China on Migration and Off-Farm Employment of Adult Children and Extended Household' Living Arrangements." *The World Bank Economic Review,* 32 (1): 64–84.

Fetter, Daniel, Lee M. Lockwood, and Paul Mohnen. 2021. "Long-Run Intergenerational Effects of Social Security." *Unpublished*.

Hannum, Emily, Peggy Kong, and Yuping Zhang. 2009. "Family Sources of Educational Gender Inequality in Rural China: A Critical Assessment." *International Journal of Educational Development*, 29 (5): 474–86.

Hernæs, Erik, Simen Markussen, John Piggott, and Knut Røed. 2016. "Pension Reform and Labor Supply." *Journal of Public Economics*, 142 (October 2016): 39–55.

Horioka, Charles Yuji, Emin Gahramanov, Aziz Hayat, and Xueli Tang. 2016. "Why Do Children Take Care of Their Elderly Parents? Are the Japanese Any Different?" *Unpublished*.

Huang, Wei, and Chuanchuan Zhang. 2021. The Power of Social Pensions: Evidence from China's New Rural Pension Scheme. *American Economic Journal: Applied Economics*, 13 (2): 179–205.

Institute of Social Science Survey, Peking University. 2015. China Family Panel Studies (CFPS).

Jensen, Robert, and Nolan H. Miller. 2017. "Keepin' Em Down on the Farm: Migration and Strategic Investment in Children's Schooling." *NBER Working Paper* No. 23122. National Bureau of Economic Research, Cambridge, MA.

Jensen, Robert T. 2004. "Do Private Transfers 'Displace' the Benefits of Public Transfers? Evidence from South Africa." *Journal of Public Economics*, 88 (1-2): 89–112.

Lachowska, Marta, and Michal Myck. 2018. "The Effect of Public Pension Wealth on Saving and Expenditure." *American Economic Journal: Economic Policy*, 10 (3): 284–308.

Mastrobuoni, Giovanni. 2009. "Labor Supply Effects of the Recent Social Security Benefit Cuts: Empirical Estimates Using Cohort Discontinuities." *Journal of Public Economics*, 93(11-12):1224–33.

Mu, Ren, and Yang Du. 2015. "Pension Coverage for Parents and Educational Investment in Children: Evidence from Urban China." *The World Bank Economic Review*, 31 (2): 483–503.

Murphy, Rachel, Ran Tao, and Xi Lu. 2011. "Son Preference in Rural China: Patrilineal Families and Socioeconomic Change." *Population and Development Review*, 37 (4): 665–90.

Nikolov, Plamen, and Alan Adelman. 2019. "Do Pension Benefits Accelerate Cognitive Decline? Evidence from Rural China." *Unpublished*.

Porter, Maria, and Albert Park. 2014. "Housing Windfalls and Intergenerational Transfers in China." In *Annual Meetings of the American Economic Association*, 3–5.

Salditt, Felix, Peter Whiteford, and Willem Adema. 2007. "Pension Reform in China: Progress and Prospects." *OECD Social, Employment, and Migration Working Papers* No. 53.

Secondi, Giorgio. 1997. "Private Monetary Transfers in Rural China: Are Families Altruistic?" *The Journal of Development Studies*, 33 (4): 487–511.

Shi, Yaojiang, Linxiu Zhang, Yue Ma, Hongmei Yi, Chengfang Liu, Natalie Johnson, James Chu, Prashant Loyalka, and Scott Rozelle. 2015. "Dropping Out of Rural China's Secondary Schools: A Mixed-Methods Analysis." *The China Quarterly*, 224: 1048–69.

Staubli, Stefan and Josef Zweimüller. 2013. "Does Raising the Early Retirement Age Increase Employment of Older Workers?" *Journal of Public Economics*, 108 (Dec 2013): 17–32.

Wang, Wendy. 2005. "Son Preference and Educational Opportunities of Children in China—'I Wish You Were a Boy!'." *Gender Issues*, 22 (2): 3–30.

Zhao, Yaohui, John Strauss, Gonghuan Yang, John Giles, Yisong Hu, and Albert Park. 2012. The CHARLS User Guide. *Peking University China Center for Economic Research.* http://charls.ccer.edu.cn

Access to Pensions, Old-Age Support, and Child Investment in the People's Republic of China

This study shows that the new pension program in the People's Republic of China can fundamentally alter the traditional support system between generations. While it lessens the role of working-age adults to provide support to their old-age parents, it may also have an impact on the educational investment of parents in their children depending on their gender. Along with the new pension program, policies to reduce school dropout and to support children who receive less parental investment may mitigate the unintended adverse impact.

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