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The Intergenerational Effects of Pension Receipt on Labour Mobility: Evidence From Rural China

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ABSTRACT

China's ageing rural population presents a significant challenge to the country's development. This article uses data from the 2013, 2015 and 2018 China Health and Retirement Longitudinal Study to examine how pension receipt of the elderly parents in rural China affects the labour mobility of their adult children. The estimation results from a fuzzy regression discontinuity design indicate that the pension receipt increases the labour mobility of adult children. The effects are more pronounced when the elderly parents have better health, have more living children and are both alive. Mechanism analysis indicates that pension receipt reduces regular financial transfers from adult children, but does not affect grandparental childcare for the adult children. This article reveals how a public pension programme affects the labour mobility of the younger generation and offers valuable insights for other developing countries facing similar challenges with an ageing population.

JEL Classification: H55, I38, J26, J62

1 | Introduction

Population ageing poses an increasingly critical challenge to developing countries, leading to issues such as rising healthcare costs, labour force shortages and concerns about income security in old age. Ageing occurs more rapidly in developing countries than in developed countries because total fertility rates decline faster in developing countries, particularly in China and India (Preston and Stokes 2012). Falling fertility rates and improved healthcare have contributed to the rapid ageing of populations. Unlike developed countries, developing countries often lack adequate healthcare infrastructure and have widespread informal employment and limited commercial insurance systems. These factors undermine the sustainability of private savings, making social pension schemes an essential response to population ageing (Jung and Tran 2012).

China is facing serious demographic challenges due to its ageing population (Bai and Lei 2020). Although the country has experienced rapid economic growth and improved living standards, it has also witnessed growing social inequalities, especially between urban and rural areas (Sicular et al. 2007; Luo et al. 2020; Y. Wang et al. 2020). The One-Child Policy accelerated demographic change and further sped up the ageing process. According to data from the National Bureau of Statistics of China, the population aged 65 and above reached 223.65 million by the end of 2025, accounting for 15.9% of the total population. Population ageing leads to higher income inequality and persistent poverty in rural China (Zhong 2011; Chen et al. 2016). Data from the 7th National Population Census indicates that rural areas are ageing faster than urban areas and lag behind in economic development, public services, social governance and pension infrastructure. Consequently, rural

families bear a disproportionately heavier burden of eldercare compared to their urban counterparts.

To address the challenges posed by an ageing population and reduce the disparity in welfare between urban and rural areas, the Chinese government has accelerated the expansion of social pension insurance, with a particular focus on rural regions. The New Rural Pension Scheme (NRPS), launched in 2009 and fully implemented by 2012, is a key component of this initiative. Unlike previous research which focuses on the impact of the NRPS on the elderly (Ning et al. 2016; Huang and Zhang 2021), this paper investigates the intergenerational impact of the NRPS. Specifically, this paper explores how the receipt of pension incomes influences the labour mobility of beneficiaries' adult children in rural China.

Rural labour mobility, or migration from rural to urban areas, has been a defining socioeconomic trend in China since the Reform and Opening-Up Policy was implemented. Existing literature identifies various factors that influence this migration, including individual attributes such as gender, age and human capital; family-level characteristics (Liu 2008; Cheng and Chen 2024); and macroeconomic and institutional factors, such as the urban–rural employment gap, the household registration (*hukou*) system and land tenure policies (Chan and Zhang 1999; Su et al. 2018; Adamopoulos et al. 2024). While previous studies have focused on individual labour endowments or broad macroeconomic policies, this research explores how a specific macro-level policy, the provision of pension benefits via the NRPS, affects labour allocation dynamics at the family level.

This study uses data from the 2013, 2015 and 2018 waves of the China Health and Retirement Longitudinal Study (CHARLS) and employs a fuzzy regression discontinuity (FRD) strategy to examine the impact of the elderly's pension receipt on the labour mobility of adult children in rural areas. The findings suggest that parents' receipt of a pension significantly increases the probability of adult children's inter-county labour mobility by 25.5%. Mechanism analysis reveals that pension receipt reduces the regular financial transfers from adult children. We do not find evidence of increased grandparental childcare following pension receipt. Additionally, heterogeneity analysis shows that when the elderly parents have more living children, are healthier, or are both alive, the intergenerational effects of pension receipt on labour mobility are more pronounced.

This study makes several contributions to the existing literature. First, it expands research on the consequences of pension systems in developing countries. Previous studies have shown that China's NRPS has changed the traditional family-based elderly care model in many ways. For example, Huang and Zhang (2021) find that receiving pensions increases household income and expenditures among the elderly, thereby improving their well-being. Cheng et al. (2018) find that pensions increase the likelihood that older adults live independently, especially when their adult children live nearby, have a higher economic status, and are in good health. Zhang et al. (2019) report that pension income reduces intergenerational financial support from sons and decreases cohabitation with them but has no significant effect on daughters.

Unlike these studies, which focus primarily on family welfare and living arrangements, this paper examines the NRPS's broader effects, particularly its intergenerational impact on regional labour reallocation. Eggleston et al. (2018) conducted a similar study in Laiwu City, Shandong Province, and found that pension income reduces rural elderly's dependence on children and increases adult children's migration. While regional data is valuable for controlling confounders and highlighting localized patterns, the economic characteristics of Shandong may introduce specificities that limit the generalizability of the findings. This paper addresses this limitation by using nationally representative data, which enhances the generalizability of the results while accounting for regional and group heterogeneity. Additionally, it investigates how the elderly parents' health, whether both parents are alive, and the number of adult children's siblings moderate these effects, providing a more comprehensive basis for policy recommendations.

Second, this paper contributes to the broader literature on pension policy evaluation in developing countries. Previous studies have shown that social pension insurance in developing countries can have a range of positive effects, such as reducing poverty among the elderly (Kaushal 2014), decreasing labour supply among the elderly adults (Ranchhod 2006; De Carvalho Filho 2008), reducing child labour and increasing school enrolment (Edmonds 2006), while also improving grandchildren's nutrition (Duflo 2003) and increasing adult children's employment and fertility rates (Ardington et al. 2009; Akyol and Atalay 2025). China's experience with the NRPS demonstrates that government-led pension insurance not only improves elderly welfare but also enhances economic efficiency through better labour allocation. This study provides valuable insights for refining China's pension policy and offers lessons for other developing countries facing similar challenges associated with population ageing.

Third, this paper contributes to the literature on labour mobility in China. The existing literature on labour mobility frictions in China mainly focuses on the *hukou* system. Since China launched the Reform and Opening-Up Policy in the early 1980s, restrictions imposed by the *hukou* system on labour mobility have gradually eased (De Brauw and Giles 2018). After China joined the World Trade Organization in 2001, increased labour demand in coastal areas reduced the *hukou* system's impact on rural individuals seeking urban employment (Kinnan et al. 2018). Another body of literature examines the role of land security in labour mobility (Giles and Mu 2018; Adamopoulos et al. 2022, 2024). Social security, particularly healthcare, also affects labour mobility for both workers and their children (Hamersma and Kim 2009; Chatterji et al. 2016). However, the impact of parental social security on the labour mobility of adult children remains unexplored. In China, it is a traditional cultural norm for children, especially sons, to care for their elderly parents. Thus, when social support is insufficient, family support becomes necessary, which could prevent children from seeking better job opportunities.

The remainder of the paper is organized as follows. Section 2 outlines the institutional background of the pension system in China. Section 3 details the data and empirical strategy. Section 4 presents the baseline regression results and robustness

checks. Section 5 analyzes the underlying mechanisms. Section 6 examines additional outcomes and provides more discussion. Section 7 concludes.

2 | Institutional Background

Supporting the elderly is a universal human value and essential to effective governance. Historically, elderly care in China relied heavily on family and clan support, forming a kinship-based model (Zhang 2019). The traditional Confucian saying, 'One should not travel far when one's parents are alive', exemplifies this approach and highlights the importance of family in caregiving. However, this family-based model was rooted in an agrarian economy and the cohabitation of extended families. Following China's Reform and Opening-Up, as well as the implementation of population controlling policies, family sizes have become smaller (Zhang 2017; Li et al. 2020). This shift has placed a disproportionate burden on fewer children to support ageing parents. Additionally, imbalances in development between urban and rural areas have led to large-scale labour migration, further straining family-based care. The shrinking size of families and the growing number of elderly individuals living alone have weakened the traditional family-based care model (Giles et al. 2010), necessitating greater state and societal involvement in elderly care.

Rural pension systems developed more slowly and were introduced later than urban pension systems (Shi 2006). Prior to the 1980s, rural elderly individuals were primarily supported by their families and supplemented by the People's Commune system (*renmin gongshe*) and local government relief programmes (Cheng et al. 2018). Following the reform period, the Basic Plan for County-Level Rural Social Pension Insurance was enacted, creating the Rural Pension Scheme (RPS). The RPS adopted an individual account system in which individual contributions were the primary source of pension funds (Shi 2006). However, limited government funding posed several challenges, including low benefit levels, inadequate management systems, and difficulties in preserving the value of pension funds. Consequently, the scheme's implementation was ineffective, and participation rates remained low. By 2004, the participation rate was only about 11% (Wang 2006).

In 2009, the State Council issued the Guiding Opinions on Carrying Out the Pilot Programme of New Rural Social Pension Insurance to address the gap between urban and rural pensions. The initiative launched a pilot programme of the NRPS in 320 counties, covering approximately 11% of all counties in China. Unlike the previous rural pension system, the NRPS combines basic pensions with personal accounts. Once a county is included in the NRPS, all rural residents aged 16 and older (excluding students) can participate. Those aged 60 or older at enrolment are entitled to a monthly pension of 55 yuan, provided that their children participate as well. Participants under 60 can choose an annual contribution amount of 100, 200, 300, 400 or 500 yuan. Upon reaching 60 years of age, the insured person receives a monthly pension comprising two components: 1/139th of the accumulated funds in their personal account plus the central government's basic pension of 55 yuan. The policy also encourages local governments to offer additional pension subsidies.

The Urban Resident Pension (URP) pilot programme, which targeted non-employed urban residents, was introduced in 2011. By 2012, both the URP and the NRPS had achieved nearly universal coverage in all administrative regions. By the end of 2013, 497 million people were insured, 138 million of whom were receiving benefits. Since 2014, the NRPS has merged with the URP to form a unified system known as the Urban and Rural Resident Pension.

3 | Data and Empirical Strategy

3.1 | Data

This study draws on data from the CHARLS, a nationally representative survey targeting individuals aged 45 and above. Conducted by the National School of Development at Peking University, CHARLS covers 150 counties and 450 villages or communities across 28 provinces. The survey collects detailed information on demographic characteristics, pension participation and intergenerational relationships, making it well-suited for studying family arrangements in later life.

Our analysis uses data from the 2013, 2015 and 2018 waves of CHARLS. Pooling multiple waves provides sufficient observations around the pension eligibility threshold. We exclude the 2020 wave to avoid disruptions associated with the COVID-19 pandemic. We also exclude the 2011 baseline survey because the NRPS had not yet been fully implemented nationwide.

We use the family roster in CHARLS to construct a child-level data set that links parents to their adult children.[1] To improve comparability, we apply several sample restrictions. First, we focus on rural parents who participated in the NRPS to reduce differences arising from selective participation. Second, parental age is restricted to 45–85 to ensure comparability across cohorts and focus on individuals plausibly affected by pension eligibility.[2] Table A1 in the Appendix reports the step-by-step construction of the analytical sample.

3.2 | Variables

The main outcome variable indicates whether an adult child resides in a different county from their parent.[3] In rural settings, cross-county residence may arise from schooling, marriage or employment. In this study, we focus on employment-related mobility. To reduce the influence of schooling-related movement, we exclude individuals who are still in school and retain only those currently working. We address marriage-related movement in Section 4.2.3.

Our baseline regression includes a set of predetermined child-level characteristics that may affect mobility and labour decisions. These include gender, age, years of schooling, marital status and the number of siblings. We also construct several predetermined parental characteristics for robustness analysis, including parental gender, years of schooling, ethnicity and membership in the Chinese Communist Party.

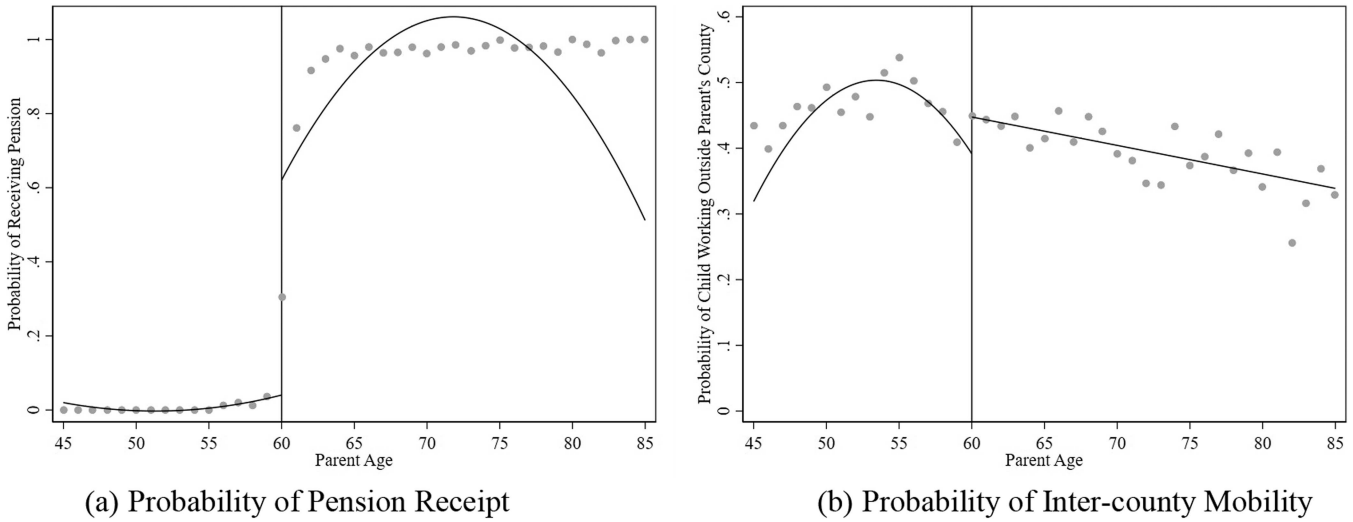

FIGURE 1 | Pension eligibility and adult children's inter-county mobility. This figure illustrates the discontinuities in pension receipt and adult children's inter-county mobility at the age-60 eligibility cutoff. (a) The probability that a parent receives NRPS pension benefits. (b) The probability that an adult child resides in a different county from the parent. The vertical line marks the pension eligibility threshold at age-60. Dots represent binned sample means. Solid lines show local quadratic fits estimated on either side of the cutoff. The bin width is selected using the Integrated Mean Squared Error (IMSE)-optimal procedure.

In the mechanism analysis, we use several variables to capture intergenerational relationships within families. First, we examine parents' reliance on adult children through financial transfers. Two child-level indicators are used: regular transfers and total transfers. Regular transfers refer to routine financial support provided by an adult child to parents during the past year, such as regular living expenses or other routine payments. Total transfers measure the total amount of financial support provided by that child during the past year, regardless of frequency or purpose. Both measures capture parents' reliance on children for financial support.

Second, we examine grandparental childcare to capture time support provided by grandparents to grandchildren. We construct two measures: a dummy variable indicating whether an adult child's children received care from their grandparents, and a continuous variable measuring the total number of hours of such care provided during the past year. These variables capture grandparents' time contributions to supporting younger generations.

Third, we use several parental characteristics to capture the differences in caregiving needs and the availability of family support across households. These characteristics include parental health status, the presence of a living spouse, and the number of living children. Health status reflects parents' self-reported condition and indicates the need for routine daily care. Spousal presence and the number of living children capture the potential for sharing caregiving responsibilities within the household.

Finally, to complement behavioural measures of support, we incorporate attitudinal evidence using data from the 2023 wave of the China General Social Survey (CGSS).[4] We use the most recent wave to capture prevailing attitudes toward old-age support in contemporary rural China. Specifically, we use a survey question that asks whether old-age support should primarily be provided by children. This variable captures prevailing beliefs about filial responsibility and provides contextual evidence for interpreting intergenerational support patterns.

In addition to mobility and intergenerational support, we examine several indicators related to household economic conditions and elderly well-being. At the child level, we consider the combined income of adult children and their spouses.[5] At the parent level, we examine annual hours of agricultural work, satisfaction with children, life satisfaction and depressive symptoms. Satisfaction with children captures parents' subjective evaluation of their relationship with their children, while life satisfaction reflects overall satisfaction with life. Depressive symptoms measure psychological well-being and are constructed using principal component analysis based on ten survey items measuring depressive feelings.

The descriptive statistics for all variables are presented in Table A2 in the Appendix.

3.3 | Empirical Strategy

We employ a FRD design to estimate the causal effect of pension receipt. Although age 60 defines the formal eligibility threshold, some individuals draw a pension before age 60 due to special eligibility conditions, while others experience delays in pension receipt after becoming eligible. Figure 1a shows a clear but incomplete discontinuity in pension receipt at age 60.

Formally, the Local Average Treatment Effect (LATE) for compliers is defined as the ratio of the discontinuity in the outcome to the discontinuity in the probability of treatment at the age-60 eligibility threshold:

$$\beta_{LATE} = \frac{\lim_{age_p \downarrow 60} E(Y_{ip}|age_p) - \lim_{age_p \uparrow 60} E(Y_{ip}|age_p)}{\lim_{age_p \downarrow 60} E(Pension_p|age_p) - \lim_{age_p \uparrow 60} E(Pension_p|age_p)}. \quad (1)$$

TABLE 1 | Summary statistics and covariate balance at the age 60 cutoff.

	Parent age < 60		Parent age ≥ 60		Mean difference	
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	**Mean**	***N***	**Mean**	***N***	**Unadjusted**	**Adjusted**
Inter-county Mobility	0.478	5476	0.435	9612	−0.042***	0.012
					(0.011)	(0.021)
Pension Receipt	0.015	5476	0.841	9612	0.826***	0.422***
					(0.007)	(0.020)
Child Gender	0.575	5476	0.555	9612	−0.020**	−0.009
					(0.009)	(0.014)
Child Age	30.070	5476	35.627	9612	5.558***	−0.250
					(0.106)	(0.165)
Child Education	9.535	5476	7.909	9612	−1.626***	0.042
					(0.101)	(0.162)
Child Married	0.778	5476	0.884	9612	0.106***	0.003
					(0.007)	(0.012)
Number of Children	2.694	5476	3.206	9612	0.513***	−0.029
					(0.040)	(0.065)

Note: This table reports statistics for the analytical sample within the baseline bandwidth around the age-60 cutoff. The sample includes parents ages 54–66, corresponding to the baseline MSE-optimal bandwidth of 6.877. Columns (1) and (2) report means and sample sizes for the pension-ineligible group (age < 60). Columns (3) and (4) report the corresponding statistics for the pension-eligible group (age ≥ 60). Column (5) reports mean differences between the two groups. Column (6) reports regression-adjusted differences controlling for parental age. Standard errors are clustered at the household level. ** and *** denote significance at the 5% and 1% levels, respectively.

To estimate this parameter, we specify the following first-stage and second-stage equations:

$$Pension_p = \alpha_0 + \alpha_1 AgeEligible_p + f_1(age_p - 60) + AgeEligible_p f_2(age_p - 60) + X_{ip}'\theta + \varepsilon_p. \quad (2)$$

$$Y_{ip} = \beta_0 + \beta_{LATE}\widehat{Pension_p} + g_1(age_p - 60) + AgeEligible_p g_2(age_p - 60) + X_{ip}'\phi + u_{ip}. \quad (3)$$

Here, p denotes the parent and i denotes the adult child. age_p is the parent's age. $AgeEligible_p$ equals 1 if the parent is aged 60 or older. $Pension_p$ indicates whether the parent receives a pension from the NRPS. The outcome variable Y_{ip} equals 1 if the adult child resides in a different county from the parent. The functions $f(\cdot)$ and $g(\cdot)$ denote local polynomial functions of parental age that allow for different trends on either side of the cutoff. Gelman and Imbens (2019) caution against higher-order polynomials due to potential instability near the boundary. We therefore use a quadratic specification in the main analysis and a linear specification for robustness checks.

X_{ip} is a vector of predetermined baseline controls. Under the identification assumptions of the regression discontinuity (RD) design, covariates are not required for consistency. However, including these variables can improve estimation efficiency and precision (Anderson 2014). Covariates also help address potential local imbalances in observable characteristics in finite samples (Calonico et al. 2019) and reduce bias from observations farther from the cutoff (Imbens and Lemieux 2008).

Following Calonico et al. (2014), our baseline non-parametric estimation uses a triangular kernel and a mean squared error (MSE) optimal bandwidth. Within this bandwidth, we estimate local quadratic polynomials on both sides of the cutoff. Standard errors are clustered at the household level to account for intra-household correlation among siblings.

3.4 | Descriptive Statistics

We summarize sample characteristics within the MSE-optimal bandwidth in Table 1. The bandwidth is determined based on the baseline specification in Column (1) of Table 2 and corresponds to parents aged 54–66.

In Table 1, Columns (1) and (2) report the means and the number of observations for the pension-ineligible group, defined as parents younger than age 60. Columns (3) and (4) report the corresponding statistics for the pension-eligible group, defined as parents aged 60 or above. Column (5) reports the mean differences between the two groups. Column (6) reports the regression-adjusted differences controlling for parental age. Standard errors are clustered at the household level. After controlling for parental age, none of the predetermined characteristics differs significantly between the two groups, which is consistent with the continuity assumption required for the RD design.

4 | Main Results

4.1 | Baseline Results

Figure 1b shows the raw probability of inter-county mobility as a function of parental age. For visualization, we overlay local

TABLE 2 | FRD estimates of pension receipt on the inter-county mobility of adult children.

Variables	Inter-county Mobility					
	(1)	(2)	(3)	(4)	(5)	(6)
Pension Receipt	0.269**	0.255**	0.233*	0.178**	0.161**	0.241*
	(0.130)	(0.120)	(0.122)	(0.079)	(0.075)	(0.132)
Controls		Y	Y		Y	Y
Bandwidth Selection	MSE	MSE	MSE	MSE	MSE	CER
Kernel Type	Triangular	Triangular	Epanech	Triangular	Triangular	Triangular
Order	2	2	2	1	1	1
Bandwidth	6.877	7.113	6.546	4.699	4.908	3.122
Effective Observations	15,088	17,064	15,088	10,697	10,697	8309

Note: This table reports nonparametric fuzzy regression discontinuity (FRD) estimates of the effect of pension receipt on adult children's inter-county mobility. *Inter-county Mobility* equals one if the adult child resides in a different county from the parent. *Pension Receipt* indicates whether the parent receives NRPS pension benefits. Controls consist of child gender, age, years of schooling, marital status, and number of siblings. Each column reports estimates under alternative specifications that vary in the inclusion of controls, bandwidth selection method, polynomial order, and kernel type, as indicated in the table. Standard errors are clustered at the household level. * and ** indicate significance at the 10% and 5% levels, respectively.

quadratic fits estimated separately on each side of the cutoff. The fitted curves show a visible increase in mobility around the age-60 threshold.

Table 2 reports the corresponding FRD estimates. Column (1) presents the baseline specification without additional controls. Column (2) adds baseline covariates and serves as our preferred specification. The estimate in Column (2) indicates a 25.5% increase in the probability of inter-county mobility.[6] In the remaining columns, we consider alternative FRD specifications. Column (3) replaces the triangular kernel with an Epanechnikov kernel. Columns (4) and (5) repeat Columns (1) and (2) using a local linear specification. Column (6) reports estimates based on a CER (Coverage Error Rate)-optimal bandwidth with baseline controls. Across all specifications, the estimated effect of pension receipt remains positive and statistically significant.

As an additional check on functional form assumptions, we estimate parametric FRD models using a Two-Stage Least Squares (2SLS) framework. Table B1 reports the results. The estimated effects remain positive and statistically significant, consistent with the baseline nonparametric results.

4.2 | Robustness

We conduct a series of robustness checks to assess the validity of the RD design and examine alternative explanations. These checks include a density test, covariate smoothness tests, placebo tests, marriage-related sample restrictions and donut FRD specifications.

4.2.1 | *Validity of the RD Design*

The validity of the RD design relies on local random assignment of treatment near the cutoff (Lee 2008). This requires that the running variable cannot be precisely manipulated around the eligibility threshold. In this setting, such manipulation is unlikely for two reasons. First, eligibility for the pension is determined based on official administrative records, making intentional manipulation of age difficult. Second, participation in the survey does not affect pension eligibility, reducing incentives for strategic misreporting.

We further assess this assumption using two tests. First, following Cattaneo et al. we implement a local polynomial density test of parental age around the cutoff. Figure B1 shows a smooth density with no visible discontinuity, suggesting no evidence of manipulation. Second, we examine whether baseline covariates vary smoothly around the cutoff. Figure B2 presents RD plots for the child-level characteristics included in the baseline specification. No visible discontinuities are observed at the age-60 threshold, suggesting that the observed jump in cross-county mobility is unlikely to be driven by discontinuities in observable characteristics.

4.2.2 | *Placebo Tests*

We conduct several placebo tests to detect discontinuities unrelated to pension receipt. First, we use children whose parents did not participate in the NRPS. In this subsample, crossing the age-60 threshold does not lead to pension receipt, so any discontinuity in mobility would reflect factors unrelated to pension income. Table B2 shows no statistically significant discontinuity at the cutoff, suggesting that the main estimates are unlikely to be driven by age-related factors alone.

Second, we use predetermined parental characteristics as placebo outcomes, including parental gender, years of schooling, ethnicity and membership in the Chinese Communist Party. Since these variables were determined prior to pension eligibility, any discontinuity would indicate underlying differences between treatment and control groups. Table B3 shows no statistically significant jumps in any of these characteristics.

Finally, we re-estimate the baseline RD specification using placebo cutoffs between ages 57 and 63. Figure B3 shows no significant discontinuities at these placebo thresholds, suggesting that the observed mobility response is unlikely to be driven by unrelated age trends.

4.2.3 | *Marriage-Related Relocation*

To assess whether the estimated effects reflect marriage-related relocation rather than labour mobility, we present several pieces of supporting evidence. First, marital status is included as

TABLE 3 | Effects of pension receipt on financial transfers and grandparental childcare.

	Intergenerational Transfers		Grandparental Childcare	
Variables	(1) Regular Transfers	(2) Total Transfers	(3) Grandparental Childcare	(4) Hours of Grandparental Childcare
Pension Receipt	−1636.372**	171.451	0.139	127.453
	(775.158)	(1,622.316)	(0.125)	(554.699)
Controls	Y	Y	Y	Y
Bandwidth	5.842	5.253	6.309	6.618
Effective Observations	6734	6723	8518	8518

Note: This table reports FRD estimates of the effect of pension receipt on financial transfers from adult children to parents and on grandparental childcare provided to each child's own children. *Regular Transfers* measure routine financial support provided by an adult child to parents, typically involving recurring payments. *Total Transfers* measure the total amount of financial support. *Grandparental Childcare* indicates whether an adult child's children received care from grandparents. *Hours of Grandparental Childcare* measure the total hours of such care. All specifications use local quadratic regressions with a triangular kernel and MSE-optimal bandwidths. All specifications include baseline controls. Standard errors are clustered at the household level. ** indicates significance at the 5% level.

a baseline control in all specifications. Second, Figure B2d shows no visible discontinuity in marital status at the eligibility threshold. Third, the average age of children in the sample is approximately 36, suggesting that most marital transitions occur prior to the ages considered here.

As more direct tests, we further restrict the sample in two ways. First, we restrict the sample to adult children who are not currently married. Second, we restrict the sample to adult children aged 26 and above. According to data from the 7th National Population Census, the average age at first marriage among rural residents was approximately 24–26 during 2013–2018. We adopt the upper bound as a conservative threshold. Table B4 reports the results. The estimated effects remain statistically significant under both restrictions, suggesting that the main findings are unlikely to be driven by marriage-related mobility.

4.2.4 | *Donut FRD*

We implement donut FRD specifications to address potential age misclassification and administrative variation in pension implementation. As discussed earlier, intentional manipulation of age around the eligibility threshold is unlikely. However, the timing of pension receipt may vary across localities due to differences in administrative procedures, such as the month or day when benefits begin after reaching age 60. In addition, because CHARLS records year of birth rather than exact birth date, age may be measured imprecisely around the cutoff. To address these concerns, we exclude observations within alternative windows around the cutoff. Table B5 reports the results. The estimated effects remain positive and statistically significant across specifications, indicating that the results are robust to alternative donut specifications.

5 | Mechanism Analysis

We interpret adjustments in children's location choices as reflecting changes in intergenerational relationships within the family. In rural China, location choices are often shaped by family responsibilities rather than purely individual preferences, especially the need to support ageing parents and arrange care for young children. Pension receipt may reshape these obligations through two mechanisms: reducing parents' dependence on children for old-age support and increasing grandparental provision of childcare. We first examine parents' dependence on adult children and then turn to grandparental childcare.

5.1 | Parents' Dependence on Adult Children

We examine parents' dependence on adult children from three complementary perspectives, each capturing a different aspect of dependence within the family. First, we test whether pension income, as a direct public cash transfer, substitutes for financial support previously provided by adult children. Second, we assess whether the inter-county mobility responses of adult children differ across families with varying caregiving responsibilities, helping to evaluate whether hands-on care needs constrain the extent to which financial relief translates into spatial adjustment. Third, we explore whether pension receipt is associated with changes in parents' beliefs about old-age support, providing additional evidence on shifts in expectations of family support.

We begin by examining financial transfers from children to parents. Financial transfers are measured using two indicators: regular transfers, which capture routine support, and total transfers, which capture the overall amount of financial support.[7] We estimate the same FRD specifications as in Equations (2) and (3), replacing the outcome variable with each transfer measure in turn.

Columns (1) and (2) of Table 3 report the results. Pension receipt reduces regular financial transfers from adult children, while total transfers remain largely unchanged. This pattern suggests that pension income substitutes for routine financial support, whereas larger or irregular needs continue to be met through family transfers.[8] Regular transfers reflect ongoing reliance on children for daily support. Their reduction indicates that pension income alleviates parents' dependence on children, while the stability of total transfers suggests that family support remains important for larger or occasional needs.

TABLE 4 | Heterogeneous effects by parental caregiving conditions.

	Inter-county Mobility					
Variables	**(1) Fair/Good Health**	**(2) Poor Health**	**(3) Has Spouse**	**(4) No Spouse**	**(5) Large Sibship (≥ 3)**	**(6) Small Sibship (≤ 2)**
Pension Receipt	0.272**	−0.107	0.221*	0.344	0.390**	0.079
	(0.132)	(0.413)	(0.134)	(0.396)	(0.190)	(0.171)
Controls	Y	Y	Y	Y	Y	Y
Bandwidth	6.877	6.877	6.877	6.877	6.877	6.877
Effective Observations	12,376	2712	12,668	2420	9285	5803

Note: This table reports FRD estimates of the effect of pension receipt on adult children's inter-county mobility across subsamples defined by parental characteristics. *Inter-county Mobility* is an indicator equal to one if the adult child resides in a different county from the parent. *Pension Receipt* indicates whether the parent receives NRPS pension benefits. The sample is partitioned by parental health status, spousal presence, and the total number of children of the parents. All specifications use local quadratic regressions with a triangular kernel and a bandwidth of 6.877, corresponding to the baseline MSE-optimal bandwidth reported in Table 2. All specifications include baseline controls. Standard errors are clustered at the household level. * and ** indicate significance at the 10% and 5% levels, respectively.

Dependence within families involves not only financial support but also hands-on care. We therefore examine whether mobility responses vary across families with different caregiving conditions. Specifically, we classify families based on parental health status,[9] whether the parent has a living spouse, and the number of living siblings of the adult child. These characteristics capture both the intensity of care needs and the scope for sharing caregiving responsibilities within the family. The estimated heterogeneous effects are reported in Table 4.

The results show that mobility responses are stronger among adult children whose parents are in better health and have a living spouse and who have more living siblings. These patterns are consistent with the idea that pension income reduces financial dependence but does not fully substitute for hands-on care. When caregiving responsibilities can be shared or are less intensive, children appear to have greater flexibility in adjusting their location decisions. When care needs remain binding, location choices remain constrained.

We further examine heterogeneity across children to assess how caregiving responsibilities are distributed within families. Specifically, we consider differences by gender, birth order, and marital status. These analyses help identify which family members are more likely to adjust their location decisions in response to pension receipt. Detailed identification strategies and results are presented in Appendix C.

Finally, we turn to the normative dimension of intergenerational dependence. Using data from the 2023 CGSS, we examine parents' beliefs about whether adult children should serve as the primary providers of old-age support. The results suggest a modest decline in the likelihood that parents view children as the main source of old-age support around the eligibility threshold. Detailed results are presented in Table C1.

5.2 | Grandparental Childcare Provision

In this section, we examine grandparental provision of childcare as another potential channel shaping children's mobility. In China, it is often difficult for the left-behind young children in the rural areas to live together with their parents who are working away from home county. First, the *hukou* system ties access to public education and healthcare to the place of registration. Migrant families without local *hukou* often face barriers to accessing public services outside their home counties. Second, migration-related financial costs and demanding work schedules further discourage family relocation. As a result, children typically remain in their home counties rather than accompanying their migrating parents. When children remain in their home counties, daily care needs persist. In many households, grandparents take on childcare responsibilities, which helps relax constraints on adult children's migration. We therefore examine whether pension receipt affects the likelihood and intensity of grandparental childcare.

Specifically, we examine whether grandchildren receive care from grandparents and the time devoted to such care. Results are reported in Columns (3) and (4) of Table 3. We find no significant effect of pension receipt on grandparental childcare. This absence of response likely reflects the stability of grandparental childcare roles within families, which are typically well established before pension eligibility.

Taken together, these findings indicate that the spatial reallocation of adult children primarily reflects a relaxation of parents' reliance on adult children, rather than changes in childcare provision.

6 | Additional Outcomes and Discussion

Our analysis shows that pension receipt reduces parents' dependence on adult children and increases the labour mobility of adult children. In this section, we examine a set of additional outcomes to provide a broader perspective on household economic conditions and parents' well-being following pension receipt.

First, we examine changes in the economic outcomes of adult children. In the baseline analysis, the spatial allocation of labour is interpreted as reflecting constraints arising from family caregiving obligations. Building on this interpretation, we explore whether increased mobility is accompanied by

TABLE 5 | Additional evidence on household economic outcomes.

Variables	(1) Child and Spouse Income	(2) Parental Agricultural Work Hours
Pension Receipt	0.952*	−143.972*
	(0.540)	(75.814)
Controls	Y	
Mean of Dependent Variables	10.599	261.296
Bandwidth	6.757	5.943
Effective Observations	11,967	6901

Note: This table reports FRD estimates of the effect of pension receipt on household economic outcomes. Column (1) uses child-level observations, where *Child and Spouse Income* is measured as the inverse hyperbolic sine of the total annual income of the adult child and spouse. Column (2) uses parent-level observations, where *Parental Agricultural Work Hours* measures the total hours spent on agricultural activities. *Pension Receipt* indicates whether the parent receives NRPS pension benefits. Baseline controls are included in Column (1), while no additional covariates are included in Column (2). All specifications use local quadratic regressions with a triangular kernel and MSE-optimal bandwidths. Standard errors are clustered at the household level. * indicate significance at the 10% level, respectively.

measurable economic returns. We estimate the FRD specifications in Equations (2) and (3), replacing the outcome variable with the combined income of adult children and their spouses.[10] Column (1) of Table 5 shows that pension receipt is associated with a measurable increase in income.

Second, we examine changes in agricultural work among the elderly parents. In rural China, the aged often continue to work even at advanced ages and reduce physically demanding work due to increases in income or wealth (Mitra et al. 2020). To assess whether pension receipt affects labour supply among the elderly parents, we use a parent-level panel data set.[11] Column (2) of Table 5 shows that pension receipt is associated with a reduction in agricultural work hours. This pattern suggests an easing of physical labour burdens among the elderly parents.

Finally, we examine whether pension receipt is associated with changes in subjective well-being and parent–child relationships among the elderly parents. Increased labour mobility of adult children often implies longer periods of physical separation, raising concerns about the well-being of left-behind parents (Antman 2010; Xiang et al. 2016). To evaluate potential well-being consequences, we examine three indicators: overall life satisfaction, satisfaction with children, and an index of depressive symptoms. The corresponding results are reported in Appendix Table D1. We find no evidence of deterioration in these subjective well-being measures following pension receipt.

Taken together, these findings provide additional context for understanding household adjustments following pension receipt. We find that when formal institutional support is available, spatial separation does not necessarily coincide with observable declines in parental well-being. However, these patterns should be interpreted with caution. First, our empirical design does not permit causal interpretation of these supplementary outcomes as consequences of mobility. Second, subjective measures may be influenced by reporting bias or unobserved factors. These results should therefore be viewed as complementary evidence.

7 | Conclusion

This paper examines how public pension receipt affects intergenerational relationships and labour mobility in rural China. Using intergenerational data from the CHARLS, we implement a regression discontinuity design based on the age eligibility rule of the New Rural Pension Scheme. The results show that pension receipt increases the likelihood that adult children reside in a different county from their parents. Mechanism analysis indicates that pension income reduces parents' dependence on adult children for old-age support, with no significant evidence of changes in grandparental childcare provision. We also find that pension receipt of the elderly parents is associated with reduced agricultural labour hours among themselves and higher income among their adult children. We do not find evidence of deterioration in thesubjective well-being of the elderly parents after they draw a pension. Taken together, these findings highlight the role of public pensions in reshaping intergenerational relationships and influencing household labour allocation.

This study highlights the importance of examining labour mobility through the lens of household-level constraints. Labour mobility is often understood as a response to differences in economic opportunities and institutional conditions across locations. Our findings suggest that spatial decisions are also shaped by constraints within the household. The needs to take care the elderly parents and the availability of adult siblings to share responsibilities shape how flexibly adult children can adjust their location choices. In this sense, labour mobility reflects interactions among individual incentives, family structures, and broader institutional environments.

Our findings also highlight the role of public pensions in shaping labour mobility through intergenerational spillovers. By partially substituting for family-based old-age support, pension income reduces parents' reliance on adult children and expands adult children's flexibility in their location choices. In the context of rapid population ageing in many developing countries, these findings suggest that public investments in the elderly generation may have positive spillover effects on the well-being of the younger generation.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Endnotes

[1]When linking children to parents, we assign parental characteristics based on the older parent within the household. A household is considered treated once either parent reaches the eligibility threshold. When both parents are of the same age, we assign the father as the reference parent, reflecting the stronger institutional and social role traditionally associated with fathers in rural households. Our baseline specifications rely only on parental age as the running variable. Therefore, using the mother instead of the father in these cases does not affect the baseline results.

[2]Studies using the NRPS eligibility threshold adopt different age windows around the cutoff. For example, Eggleston et al. (2018) use ages 55–65, Chen (2017) uses ages 50–80 and Shi (2022) uses ages 45–80. Given this variation, we adopt a relatively broad parental age range and rely on data-driven bandwidth selection to determine the effective estimation window.

[3]Crossing a county boundary typically involves substantial spatial separation from the origin household, which limits frequent commuting and makes routine caregiving more difficult. In addition, this spatial definition is broadly consistent with commonly used definitions of rural migrant labour based on cross-county migration (Zhao 1999).

[4]CGSS is a nationally representative general-purpose survey designed to track social change in China. Each wave includes approximately 10,000 respondents.

[5]CHARLS reports income jointly for adult children and their spouses, so separate income for adult children is not available.

[6]In the subsequent analysis, we maintain a fixed bandwidth to ensure comparability of the estimation sample across specifications. We select the bandwidth from Column (1) so that the estimation window is determined independently of covariate adjustment.

[7]Mechanism analysis relies on variables collected in specialized survey modules, resulting in smaller estimation samples than in the main mobility regressions.

[8]One potential concern is that the decline in transfers reflects the consequence rather than a determinant of migration. To address this concern, we restrict the sample to adult children who do not migrate across counties (Table C1). In this subsample, regular transfers still decline, while total transfers remain unchanged. This pattern is consistent with the interpretation that pension income reduces parents' daily financial dependence on their children, thereby relaxing constraints associated with mobility decisions.

[9]Theoretically, parental health status could be affected by pension receipt over the long run. However, within the narrow bandwidth of the RD design, health conditions are unlikely to change discontinuously at the age-60 threshold. For example, Cheng et al. (2018) find no significant effect of pension receipt on self-reported health. We therefore treat parental health as a predetermined characteristic that captures pre-existing differences in caregiving needs across families.

[10]Income variables are transformed using the inverse hyperbolic sine transformation. This approach retains observations with zero income and approximates the logarithmic transformation for large values.

[11]We construct a parent-level data set for two reasons. First, in the child-level data set used in the baseline analysis, a given parent may appear multiple times if he or she has more than one child. This would overweight parents with more children in parent-level outcomes. Second, the child-level matching procedure assigns parental characteristics based on a reference parent within each household, which may omit information for the other parent. Constructing a parent-level data set ensures that each parent contributes only one observation to the estimation.

[12]We thank the anonymous referee for raising this point.

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Appendix A

Data and Variables

TABLE A1 | Step-by-step sample construction.

Step	Description	Remaining observations
1	CHARLS pooled waves 2013–2018	86,243
2	Restrict to rural households	66,457
3	Restrict to NRPS participants	44,284
4	Restrict parental age to 45–85	42,910
5	Keep working adult children only	35,531
6	Remove missing key variables	33,655
	—Of which: CHARLS Wave 2013	12,408
	—Of which: CHARLS Wave 2015	10,821
	—Of which: CHARLS Wave 2018	10,426

Note: This table reports the step-by-step construction of the analytical sample. Each row describes a sample restriction applied to the pooled CHARLS waves.

TABLE A2 | Descriptive statistics.

Variables	Definition	*N*	Mean	SD	Min	Max
Inter-county Mobility	Equals 1 if the adult child resides in a different county from the parent, 0 otherwise	33,655	0.426	0.495	0	1
Pension Receipt	Equals 1 if the parent receives NRPS benefits, 0 otherwise	33,655	0.640	0.480	0	1
Parental Age	Age in years	33,655	64.528	9.367	45	85
Child Gender	Equals 1 if male, 0 if female	33,655	0.559	0.497	0	1
Child Age	Age in years	33,655	36.858	9.030	16	69
Child Education	Years of schooling	33,655	7.720	4.503	0	19
Child Married	Equals 1 if married, 0 otherwise	33,655	0.840	0.366	0	1
Number of Siblings	Number of living siblings, including the adult child herself/himself	33,655	3.506	1.539	1	10
Parental Gender	Equals 1 if male, 0 if female	33,655	0.618	0.486	0	1
Parental Education	Years of schooling	33,655	3.803	4.169	0	16
Parental Ethnicity	Equals 1 if Han ethnicity, 0 otherwise	22,834	0.913	0.283	0	1
Parental Party Membership	Equals 1 if a CPC member, 0 otherwise	22,816	0.085	0.279	0	1
Total Transfers	Total cash transfers provided to parents in the past year (in RMB)	18,903	1337.172	4290.183	0	150,000
Regular Transfers	Regular cash transfers provided to parents in the past year (in RMB)	18,948	315.638	1907.299	0	100,000
Grandparental Childcare	Equals 1 if received childcare support from parents in the past year, 0 otherwise	19,999	0.203	0.402	0	1
Hours of Grandparental Childcare	Total hours of childcare support received from parents in the past year	19,999	441.226	1384.255	0	8736
Parental Health Status	Equals 0 if poor, 1 if fair, 2 if good	20,718	0.895	0.719	0	2
Parental Spousal Presence	Equals 1 if has a living spouse, 0 otherwise	33,655	0.755	0.430	0	1
Child and Spouse Income	Inverse hyperbolic sine of total income of the child and spouse	25,627	10.425	2.244	0	13.592

Note: This table reports definitions and summary statistics for the main variables used in the analysis.

Appendix B

Robustness Checks

To complement the nonparametric estimates, we implement a parametric FRD design using a standard 2SLS framework. The running variable is centred at the cutoff, defined as $\tilde{age}_p = age_p - 60$. We adopt a linear specification for the age trend, fully interacted with the eligibility indicator to allow for different slopes on either side of the cutoff.

The first-stage equation estimates the discontinuity in pension receipt at the eligibility threshold:

$$Pension_p = \pi_0 + \pi_1 AgeEligible_p + \pi_2 \tilde{age}_p + \pi_3 (AgeEligible_p \times \tilde{age}_p) + X'_{ip}\theta + \mu_p. \quad \text{(B1)}$$

The reduced-form equation relates mobility directly to eligibility status:

$$Mobility_{ip} = \lambda_0 + \lambda_1 AgeEligible_p + \lambda_2 \tilde{age}_p + \lambda_3 (AgeEligible_p \times \tilde{age}_p) + X'_{ip}\tau + \nu_{ip}. \quad \text{(B2)}$$

where λ_1 represents the intention-to-treat (ITT) effect of pension eligibility on children's inter-county mobility.

The second-stage equation estimates the effect of pension receipt:

$$Mobility_{ip} = \rho_0 + \rho_{LATE} \hat{Pension}_p + \rho_2 \tilde{age}_p + \rho_3 (AgeEligible_p \times \tilde{age}_p) + X'_{ip}\phi + \epsilon_{ip}. \quad \text{(B3)}$$

Across all equations, X_{ip} denotes the baseline controls, and standard errors are clustered at the household level. Results are reported in Table B1.

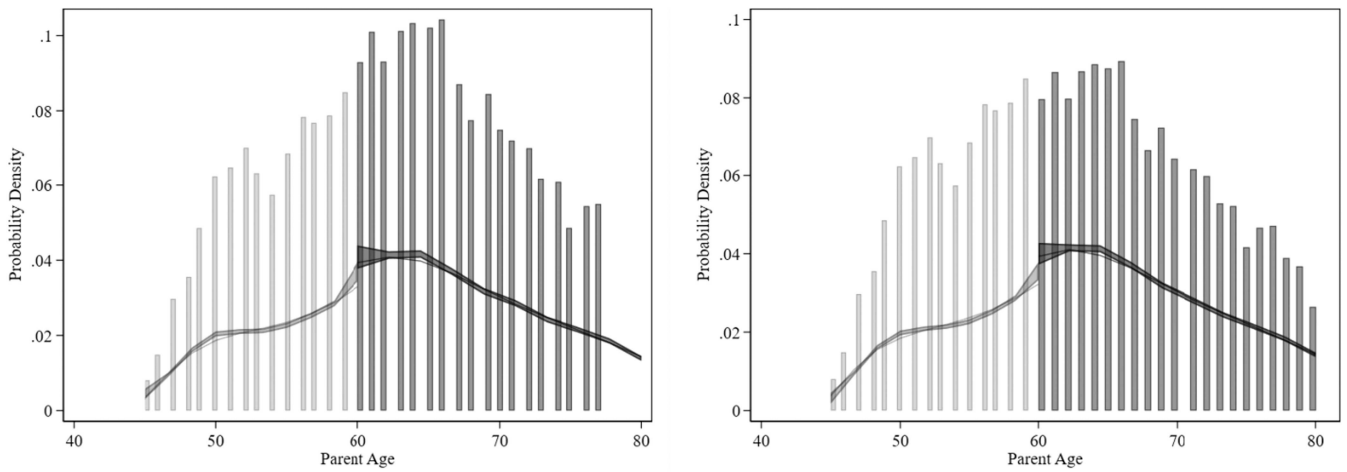

FIGURE B1 | Density of the running variable around the cutoff of age 60. This figure examines the density of the running variable (parental age) around the age-60 eligibility cutoff to assess potential manipulation. Panel (a) uses the baseline bandwidth of 6.877. Panel (b) uses a bandwidth of 7.113 corresponding to the specification including baseline controls. Bars represent histograms of parental age, and solid lines show local quadratic density fits on either side of the cutoff.

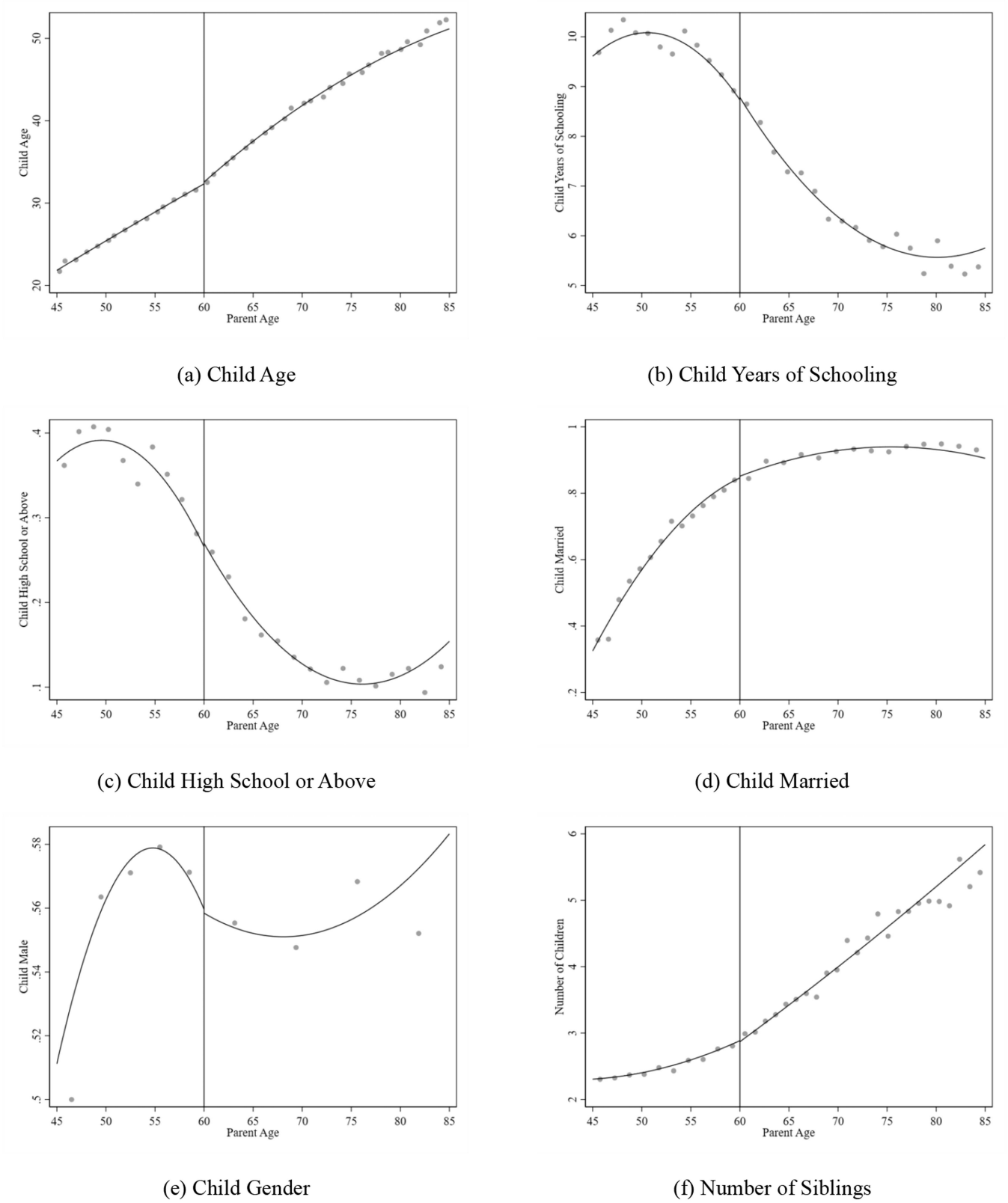

FIGURE B2 | Continuity of baseline covariates around the age-60 cutoff. This figure assesses the continuity of baseline covariates around the age-60 eligibility cutoff. Each panel plots a baseline covariate against parental age. Panels (a) to (f) show the covariates of child age, child's years of schooling, whether the child completed high school or above, whether the child married, child gender, and the number of child's siblings, respectively. Dots represent binned sample means, and solid lines show local quadratic fits estimated on either side of the cutoff. The bin width is selected using the Integrated Mean Squared Error (IMSE)-optimal procedure.

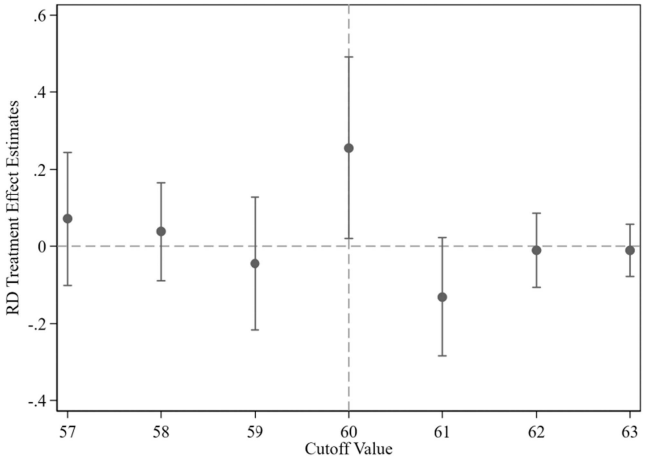

FIGURE B3 | RD placebo tests using alternative age cutoffs. This figure presents placebo RD tests using alternative age cutoffs to assess whether discontinuities arise at the true eligibility threshold. The vertical line marks the pension eligibility cutoff at age-60. Each point represents the estimated treatment effect at a given placebo cutoff, and vertical bars indicate 95% confidence intervals. All specifications follow the baseline FRD specification reported in Column (2) of Table 2.

TABLE B1 | Parametric FRD estimates.

	Pension Receipt First Stage		Inter-county Mobility			
			Reduced From		2SLS	
Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Age Eligibility	0.540***	0.540***	0.045**	0.043**		
	(0.016)	(0.015)	(0.022)	(0.022)		
Pension Receipt					0.082**	0.080**
					(0.041)	(0.041)
Controls		Y		Y		Y
Bandwidth	6.877	6.877	6.877	6.877	6.877	6.877
Effective Observations	15,088	15,088	15,088	15,088	15,088	15,088
KP-Wald F statistic					1206.764	1216.983
R^2	0.712	0.713	0.004	0.039		

Note: This table reports parametric FRD estimates of the effect of pension receipt on adult children's inter-county mobility. *Inter-county Mobility* is an indicator equal to one if the adult child resides in a different county from the parent. *Age Eligibility* equals one if the parent is age 60 or older. *Pension Receipt* indicates whether the parent receives NRPS pension benefits. All specifications use the baseline bandwidth of 6.877 and include linear age trends fully interacted with the eligibility indicator. All specifications include baseline controls. Standard errors are clustered at the household level. ** and *** indicate significance at the 5% and 1% levels, respectively.

TABLE B2 | Placebo FRD estimates: non-participating parents.

	Inter-county Mobility					
	Parametric Local Linear		Non-parametric Local Quadratic			
Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Age Eligibility	−0.125*	−0.092	−0.025	0.061	0.136	0.040
	(0.072)	(0.065)	(0.170)	(0.140)	(0.178)	(0.257)
Controls		Y		Y	Y	Y
Bandwidth Selection	Baseline	Baseline	Baseline	Baseline	MSE	CER
Kernel Type			Triangular	Triangular	Triangular	Triangular
Order	1	1	2	2	2	2
Bandwidth	6.877	6.877	6.877	6.877	4.571	3.002
Mean of Dependent Variable	0.685	0.685	0.685	0.685	0.687	0.701
Effective Observations	1450	1445	1206	1202	881	618
R^2	0.004	0.115				

Note: This table reports placebo FRD estimates using children whose parents did not participate in NRPS. *Inter-county Mobility* is an indicator equal to 1 if the adult child resides in a different county from the parent. *Age Eligibility* equals 1 if the parent is aged 60 or older. Columns (1)–(4) use the baseline bandwidth of 6.877. Columns (5) and (6) use the MSE-optimal and (Coverage Error Rate) CER-optimal bandwidths, respectively. Baseline controls are included. Standard errors are clustered at the household level. * indicates significance at the 10% level.

TABLE B3 | Placebo FRD estimates: predetermined characteristics.

Variables	**(1) Parental Gender**	**(2) Parental Education**	**(3) Parental Ethnicity**	**(4) Parental Party Membership**
Pension Receipt	0.036	0.235	0.023	−0.041
	(0.048)	(0.437)	(0.038)	(0.038)
Controls	Y	Y	Y	Y
Bandwidth	6.877	6.877	6.877	6.877
Effective Observations	15,088	15,086	10,357	10,352

Note: This table reports placebo FRD estimates using predetermined parental characteristics as outcomes. The outcomes include parental gender, parental years of schooling, parental ethnicity and parental party membership. *Pension Receipt* indicates whether the parent receives NRPS benefits. Information on parental ethnicity and party membership is not available in the CHARLS 2015 wave, resulting in smaller samples for these outcomes. All specifications use local quadratic regressions with a triangular kernel and a fixed bandwidth of 6.877, corresponding to the baseline MSE-optimal bandwidth reported in Table 2. Baseline controls are included. Standard errors are clustered at the household level.

TABLE B4 | Marriage-related sample restrictions.

	Inter-county Mobility	
Variables	**(1) Currently Unmarried Sample**	**(2) Above Typical Marriage Age**
Pension Receipt	0.620*	0.259**
	(0.348)	(0.130)
Controls	Y	Y
Bandwidth	6.877	6.877
Mean of Dependent Variables	0.502	0.449
Effective Observations	2333	14,010

Note: This table reports robustness checks using alternative sample restrictions related to marriage. *Inter-county Mobility* is an indicator equal to 1 if the adult child resides in a different county from the parent. *Pension Receipt* indicates whether the parent receives NRPS benefits. Column (1) restricts the sample to adult children who are not currently married, including those who are never married, divorced, or widowed. Column (2) restricts the sample to adult children aged 26 and above, corresponding to the upper bound of the typical age at first marriage in rural China during the study period. Both specifications use local quadratic regressions with a triangular kernel and the baseline bandwidth of 6.877. Baseline controls are included. Standard errors are clustered at the household level. * and ** indicate significance at the 10% and 5% levels, respectively.

TABLE B5 | Donut FRD.

	Inter-county Mobility					
	Excluding Age 60			Excluding Ages 59–61		
Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Pension Receipt	0.153**	0.149**	0.136**	0.180*	0.162*	0.131*
	(0.071)	(0.062)	(0.055)	(0.103)	(0.086)	(0.074)
Controls	Y	Y	Y	Y	Y	Y
Bandwidth Selection						
Bandwidth	8	9	10	8	9	10
Effective Observations	15,784	17,712	19,671	13,347	15,275	17,234

Note: Columns (1)–(6) report donut FRD estimates that exclude observations within alternative windows around the age 60 cutoff. *Inter-county Mobility* is an indicator equal to 1 if the adult child resides in a different county from the parent. Pension Receipt indicates whether the parent receives NRPS benefits. Columns (1)–(6) report donut FRD estimates that exclude observations close to the age 60 cutoff. Because excluding observations near the cutoff reduces the number of observations within the baseline bandwidth, the bandwidths in the donut specifications are fixed at 8, 9 and 10 to ensure sufficient observations for estimation. All specifications use local quadratic regressions with a triangular kernel. Baseline controls are included. Standard errors are clustered at the household level. * and ** indicate significance at the 10% and 5% levels, respectively.

Appendix C

Additional Evidence on Mechanisms

Table C2 reports heterogeneous effects by child gender and birth order. The estimates show that the effect of pension receipt on inter-county mobility is stronger among daughters and later-born children. These patterns are consistent with uneven caregiving responsibilities within rural families. In many households, sons and firstborn children tend to assume greater responsibility for supporting elderly parents. As a result, their mobility decisions may remain more constrained even when parents begin to receive pension income. Daughters and later-born children, by comparison, may face fewer direct obligations and therefore have greater flexibility in adjusting their location decisions.

The role of caregiving may also depend on marital status. In rural China, patrilocal residence norms remain important, and caregiving responsibilities are often organized at the household level rather than the individual level. This raises the possibility that daughters-in-law may bear responsibility for a husband's parents, while married daughters may take on responsibilities toward their parents-in-law.[12] However, the CHARLS data do not allow us to directly identify relationships between daughters-in-law and parents-in-law. We therefore rely on indirect patterns to provide suggestive evidence. Specifically, we estimate heterogeneous reduced-form effects by child gender and marital status using a pooled RD specification:

$$Mobility_{ip} = \sum_{k=1}^{4} \gamma_k Group_{ip}^{k} + \sum_{k=1}^{4} \tau_k \left(AgeEligible_p \times Group_{ip}^{k} \right) + a\tilde{g}e_p + \beta_2 (AgeEligible_p \times a\tilde{g}e_p) + X_{ip}'\delta + \epsilon_{ip}\#. \quad \text{(C1)}$$

Here, $Group_{ip}^{k}$ denotes indicators for four groups defined by child gender and marital status: married sons, unmarried sons, married daughters and unmarried daughters. $AgeEligible_p$ equals 1 if the parent is aged 60 or older. $a\tilde{g}e_p$ is the running variable representing the parent's centred age. X_{ip} is a vector of child-level covariates, including age, years of schooling and number of siblings.

The coefficients τ_k capture subgroup-specific discontinuities at the eligibility cutoff. The estimated effects are reported in Table C3. The results show significant responses for unmarried daughters and married sons, while the effects for unmarried sons and married daughters are not statistically significant. This pattern is consistent with variation in caregiving responsibilities across children within the same family. Unmarried daughters may rely on brothers to assume primary responsibilities for parental support, while married sons may face fewer direct time constraints if caregiving is shared within the household. By contrast, unmarried sons may be more directly

TABLE C1 | Supplementary evidence on transfers and eldercare beliefs.

Variables	(1) Regular Transfers	(2) Total Transfers	(3) Reliance on Children for Eldercare
Pension Receipt	−2416.049*	−698.318	−0.120*
	(1436.126)	(2293.349)	(0.072)
Controls	Y	Y	Y
Bandwidth	6.148	5.948	14.54
Mean of Dependent Variables	366.312	1340.524	0.615
Effective Observations	2823	2413	1693

Note: This table presents supplementary evidence related to the proposed mechanisms. Columns (1) and (2) use the non-migrant subsample from the CHARLS data set. The dependent variables are *Regular Transfers* and *Total Transfers*, measuring routine and total financial support provided by an adult child to parents. Baseline controls are included. Column (3) uses data from the 2023 wave of CGSS. The dependent variable is an indicator equal to 1 if the respondent believes that old-age support should be primarily provided by children. Controls in column (3) include the respondent's gender, education level, marital status and number of children. All specifications use local quadratic regressions with a triangular kernel and MSE-optimal bandwidths. Standard errors are clustered at the household level for the CHARLS-based specifications. * indicates significance at the 10% level.

TABLE C2 | Heterogeneous effects by child gender and birth order.

	Inter-county Mobility					
Variables	(1) Daughter	(2) Son	(3) Later-born	(4) Firstborn	(5) Firstborn Daughter	(6) Firstborn Son
Pension Receipt	0.324*	0.204	0.312*	0.176	0.389	0.055
	(0.185)	(0.150)	(0.161)	(0.146)	(0.246)	(0.182)
Controls	Y	Y	Y	Y	Y	Y
Bandwidth Selection	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline
Kernel Type	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Order	2	2	2	2	2	2
Bandwidth	6.877	6.877	6.877	6.877	6.877	6.877
Observations	6602	8486	8388	6700	3003	3697

Note: This table reports FRD estimates of the effect of pension receipt on adult children's inter-county mobility across subsamples defined by child gender and birth order. *Inter-county Mobility* is an indicator equal to one if the adult child resides in a different county from the parent. *Pension Receipt* indicates whether the parent receives NRPS benefits. Columns (1) and (2) split the sample by child gender. Columns (3) and (4) compare firstborn children with later-born children. Columns (5) and (6) restrict the sample to firstborn children and compare daughters with sons. All specifications use local quadratic regressions with a triangular kernel and the baseline bandwidth of 6.877. Baseline controls are included. Standard errors are clustered at the household level. * indicates significance at the 10% level.

TABLE C3 | Reduced-form RD estimates by gender and marital status.

	Inter-county Mobility			
Variables	**(1) Married Son**	**(2) Unmarried Son**	**(3) Married Daughter**	**(4) Unmarried Daughter**
Age Eligibility	0.083***	0.036	0.034	0.134***
	(0.025)	(0.034)	(0.027)	(0.045)
Controls	Y	Y	Y	Y
Bandwidth	6.877	6.877	6.877	6.877
Effective Observations	6896	1605	5888	731

Note: This table reports subgroup-specific reduced-form RD estimates by child gender and marital status based on a pooled specification with group interactions. *Inter-county Mobility* is an indicator equal to one if the adult child resides in a different county from the parent. *Age Eligibility* equals one if the parent is aged 60 or older. The four groups include married sons, unmarried sons, married daughters and unmarried daughters. All specifications use the baseline bandwidth of 6.877 and include linear age trends on both sides of the cutoff. Controls include the child's age, years of schooling and number of siblings. Standard errors are clustered at the household level. *** indicates significance at the 1% level.

responsible for supporting their own parents, while married daughters may face obligations toward their parents-in-law. However, because we do not observe direct information on actual caregivers, these interpretations should be viewed as suggestive rather than definitive.

Taken together, these results suggest that mobility responses are concentrated among children with greater flexibility in caregiving responsibilities, while those more likely to bear direct caregiving duties remain less responsive.

Appendix D

Supplementary Evidence on Elderly Well-being

TABLE D1 | FRD Estimates of elderly well-being.

Variables	(1) Satisfaction with Children	(2) Life Satisfaction	(3) Depressive Symptoms
Pension Receipt	0.190	0.147	0.295
	(0.197)	(0.263)	(0.634)
Mean of Dependent Variables	2.361	2.782	0.138
Bandwidth	6.216	5.639	5.498
Effective Observations	5912	6828	6613

Note: This table reports FRD estimates of the effect of pension receipt on elderly well-being. The unit of observation in this table is the parent, as the well-being outcomes are measured at the parent level. Outcomes include overall life satisfaction, satisfaction with children, and an index of depressive symptoms constructed using principal component analysis based on 10 survey items. *Pension Receipt* indicates whether the parent receives NRPS benefits. All specifications use local quadratic regressions with a triangular kernel and MSE-optimal bandwidths. No additional covariates are included, as the outcomes are measured at the parent level and the RD design does not require controls for identification.