Reshaping Traditions: Pension Reform, Son Preference, and Old Age Support *

Xiaozhou Ding†
South Dakota State University

Yang Jiao‡
Texas A&M University–Texarkana

Yuyun Liu§
Sun Yat-sen University

November 2025

Abstract

This study examines how pension reforms reshape gender-based cultural norms, focusing on China's New Rural Pension Scheme (NRPS) and its effect on son preference. Using an instrumental variable approach with China General Social Survey data, we find that NRPS participation significantly reduces elderly parents' son preference, including their desired number of sons—a 40% reduction from baseline. We identify two key mechanisms: first, pensions alter living arrangements, reducing co-residence with sons; second, they weaken perceived filial obligations for sons to provide old-age support. Additionally, we document intergenerational spillovers, with young adults whose parents have pension exposure reporting lower son preference. Effects vary substantially by cultural institutional context, with stronger effects in areas with weaker clan institutions. These findings demonstrate that policy interventions modifying economic incentives can rapidly reshape deeply entrenched cultural norms, offering insights for leveraging social policy to combat gender-based biases.

Keywords: Pension Reform, New Rural Pension Scheme, Son Preference, Social Norm
JEL Classification Codes: H55, J16, Z18

*We thank Co-Editor Le Wang and three anonymous reviewers for their valuable feedback. We are grateful for the helpful comments from So Yoon Ahn, Paul Ko, Gretchen Lay, Carla Moreno, and Xincheng Qiu, as well as seminar and conference participants at the Midwest Economics Association Annual Meeting, the Asian Economic Development Conference, and Rural Development Institute of Chinese Academy of Social Sciences.

†Ness School of Management and Economics, South Dakota State University, 881 Campanile Ave, Brookings, SD 57007, USA. Email: xiaozhou.ding@sdstate.edu.

‡Department of Accounting, Economics, and Finance, Texas A&M University–Texarkana, 7101 University Ave, Texarkana, TX. 75503, USA. Email: yjiao@tamut.edu.

§Corresponding author. International School of Business and Finance, Sun Yat-sen University, 135 W Xingang Road, Guangzhou, Guangdong, 510275, China. Email: liuyuyun3@mail.sysu.edu.cn.

1 Introduction

Son preference remains a deeply rooted issue in many developing countries, particularly in East and South Asia, where patriarchal family systems and the economic value attributed to male offspring have historically shaped societal norms (Ebenstein, 2014; Jayachandran, 2015). In the absence of public pension systems, sons often bear the primary responsibility for supporting elderly parents, reinforcing the preference for male children. This cultural bias perpetuates gender inequality, limiting women's access to education, healthcare, and employment opportunities, and creating cycles of intergenerational disadvantage (Field et al., 2021; Anukriti, Bhalotra, and Tam, 2022). It also distorts demographic balances, with skewed sex ratios in countries like China, India, and South Korea leading to challenges such as competition for brides and higher crime rates (Park and Cho, 1995; Banister, 2004; Attané, 2009; Edlund et al., 2013). Addressing son preference is essential for promoting gender equity, improving social cohesion, and achieving sustainable development goals (Kumar and Sinha, 2020).

Policy interventions targeting the economic drivers of son preference hold significant potential for change. While traditional family structures, marriage customs, and gendered labor roles have been highlighted as key factors (Das Gupta, 2010; South and Lloyd, 1992; Field et al., 2021), economic reliance on sons for eldercare remains central. Policies that enhance women's economic independence and provide alternative eldercare mechanisms, such as pension systems, have shown transformative effects (Bau, 2021; Chun and Das Gupta, 2022). For instance, China's New Rural Pension Scheme (NRPS) demonstrates how access to pensions can reduce financial dependence on sons, reshape caregiving roles, and influence fertility decisions (Ebenstein, 2010; Huang and Zhang, 2021).

It is important to analyze the effect of policy interventions on actual behavioral responses as well as on the underlying preference changes that drive them. Much of the existing literature examines behavioral responses, yet an emerging line of research focuses on how policies reshape culture, norms, and attitudes. Policymakers rarely account for the ways in which policies may alter cultural practices and social norms, even though such shifts can substantially change both the costs and benefits of a policy intervention. Pension programs in Ghana and Indonesia reduced parents' reliance on adult children for old-age support, weakening co-residence traditions and lowering investment in children (Bau, 2021). Similarly, the U.S. Earned Income Tax Credit increased female labor force participation and improved attitudes toward working women (Bastian, 2020). These studies demonstrate how policy interventions can generate cultural change by shifting social attitudes (Fernandez, Fogli, and Olivetti, 2004).

This paper examines the impact of the NRPS, implemented between 2009 and 2012, on son preference in rural China. As a landmark reform, the NRPS aimed to provide financial security to rural residents who traditionally relied on male offspring for eldercare. By severing the economic

link between sons and old-age support, the policy challenged deep-seated cultural norms and offered an alternative to traditional kinship-based insurance systems, prompting shifts in attitudes toward family structures and gender roles. Using nationally representative data from the China General Social Survey (CGSS), this study explores how NRPS participation affects preferences for the number of sons, attitudes toward eldercare, and caregiving behaviors. To isolate causal effects while accounting for non-random pension participation, we employ an instrumental variable approach that exploits the interaction between the staggered NRPS rollout and pre-policy demographic structures. This strategy generates plausibly exogenous variation in treatment intensity across counties, allowing us to identify the local average treatment effect of pension receipt on son preference among compliers—individuals whose pension participation was induced by the policy.

Our findings indicate that NRPS participation significantly reduces son preference, lowering the preferred number of sons by approximately 0.58—a 40% reduction relative to the baseline mean of 1.46 sons. This effect is particularly pronounced among men, suggesting a broader influence on gender norms and familial expectations. While our main result shows that NRPS participation significantly reduces son preference among direct beneficiaries, pension reforms may generate spillover effects across generations. Young adults whose parents have greater pension exposure also report significantly lower son preference, suggesting observational learning—watching parents receive pensions provides a credible signal about pension reliability, influencing family formation attitudes even among those facing ex ante uncertainty about future pension benefits. Our additional analysis on intergenerational transmission of pension exposure on young cohort's attitudes confirms that. While younger cohorts' behavioral responses are most pertinent for long-run policy assessment, examining preference changes among both direct beneficiaries and the next generation is critical, as these preference shifts propagate through intergenerational channels such as childcare support and co-residence decisions, ultimately shaping reproductive outcomes. Robustness checks confirm concurrent healthcare reforms or urbanization trends do not confound these results. While previous research relied on aggregate data, we analyzed individual-level pension participation records, revealing important demographic patterns. More importantly, our study focused on the direct effects (average treatment effect) on treated individuals (parents over 65) rather than measuring broader implementation effects (intention to treatment) as examined in other studies (Huang and Zhang, 2021; Guo, Huang, and Wang, 2025).

We identify two key mechanisms underlying these changes. First, participation in the NRPS alters co-residence patterns, reducing the likelihood of parents living with sons while increasing reliance on daughters for eldercare. This shift, particularly pronounced in medium- and high-income households, challenges traditional caregiving roles. Second, the reform reduces financial dependence on sons across generations. Older adults increasingly view themselves as self-sufficient, while younger men revise their expectations of filial obligations. These dynamics challenge the Confucian model of filial piety, which prioritizes sons' financial responsibilities,

thereby gradually weakening cultural preferences for male offspring. This study underscores the transformative potential of pension reforms in reducing gender bias and fostering more equitable social norms in rural China.

Importantly, the pension reform's effectiveness is not uniform across all communities. Our analysis reveals substantial heterogeneity by local cultural institutions, as measured by clan intensity (density of family genealogies). In areas with weak clan structures, pension participation reduces son preference by 0.96—a 66% decline from baseline. In contrast, areas with strong clan institutions show minimal effects. This heterogeneity demonstrates that while economic incentives can reshape gender norms when son preference is primarily economically motivated, their impact is constrained when son preference is reinforced by multi-dimensional institutional structures that enforce traditional norms through social sanctions and ritual obligations. These findings underscore the institutional differences of cultural preferences and highlight the importance of understanding how policy effectiveness varies across cultural contexts.

This research contributes to four strands of literature. First, this paper contributes to the extensive literature on the socioeconomic outcomes of pension systems. This body of work has documented the wide-ranging impacts of pension reforms on behavioral outcomes, from poverty alleviation (Zhang, 2014), elderly consumption patterns (Stephens and Unayama, 2011; Kolsrud et al., 2024), savings behavior (García-Miralles and Leganza, Forthcoming; Attanasio and Rohwedder, 2003), living arrangements (Chen, 2017; Guo, Huang, and Wang, 2025), fertility decisions among offspring (Rossi and Godard, 2022; Danzer and Zyska, 2023), labor supply (Ning et al., 2016; Li, Wang, and Zhao, 2018), to health and well-being of seniors (Cheng et al., 2018; Huang and Zhang, 2021). Our work distinguishes itself by moving beyond these observable behaviors to investigate the underlying cultural attitudes. We argue that this is a more fundamental line of inquiry; as Fernández (2013) and Alesina, Giuliano, and Nunn (2013) suggest, observing behavioral adjustments is insufficient without understanding the shifts in intrinsic preferences that drive them. By examining how the pension policy reshapes preferences directly, we also shed light on the intergenerational transmission of culture. When older individuals reduce their stated son preference, their evolving attitudes can serve as powerful social signals for subsequent generations, potentially accelerating a broader societal shift away from this deep-seated norm.

Second, our findings contribute to the burgeoning literature that questions the notion that cultural norms evolve at a sluggish pace. While cultural traits can be remarkably persistent (Bidner and Francois, 2011; Nunn, 2012; Lowes et al., 2017; Bazzi et al., 2023), scholars are increasingly focused on identifying the conditions that foster rapid cultural change (Giuliano and Nunn, 2021). A key insight from this literature is that policies altering the economic incentives that sustain cultural practices can act as powerful drivers of change (Bau, 2021; Guo, Huang, and Wang, 2025). Our findings provide compelling evidence in this vein. We demonstrate that a significant attitudinal shift in son preference occurred within a remarkably short horizon—a notable decline was observable

within just two years of the NRPS implementation. By providing a stable, alternative source of old-age support, the pension scheme swiftly reduced the economic rationale for son preference, prompting a rapid reevaluation of this deeply entrenched value. Our conclusion also aligns with research like Bursztyn, González, and Yanagizawa-Drott (2020), which shows that interventions that directly alter individuals' underlying calculus can be potent instruments for overturning entrenched norms.

Third, by showing that even older generations, who are traditionally considered the most resistant to gender norm change, are responsive to pension incentives, this study provides new insights into the literature of intergenerational transmission of culture (Bisin and Verdier, 2011). Our analysis focuses directly on the attitudes of senior participants in the NRPS, revealing that the reform significantly reduces their preference for sons. By demonstrating that policy can directly influence the cultural norms of older individuals—who act as key transmitters of tradition—our research offers a new lens through which to view the dynamics of cultural change. This finding not only deepens our understanding of how social policies can combat gender-based biases but also provides a critical piece of evidence showing that intergenerational cultural change can be initiated and accelerated from the top down.

Finally, this research deepens our understanding of son preference determinants, particularly the role of sons in providing eldercare and financial support (Zhang and Harper, 2022).[1] Cultural change evolves gradually, yet our findings demonstrate that policies can drive rapid shifts in deeply held values by modifying underlying economic incentives. While cultural norms are typically viewed as persistent, examining preference changes over time reveals how policy-induced economic changes can reshape intergenerational attitudes. Son preference is rooted in patriarchal cultural norms where male children inherit property, and parents frequently co-reside with their sons (Das Gupta et al., 2003; Ebenstein, 2021). The introduction of basic pension schemes like the NRPS diminishes the financial reliance traditionally placed on sons. For instance, Guo, Huang, and Wang (2025) finds that the NRPS decreases the likelihood of married sons co-residing with their parents, while Shan and Park (2023) demonstrates that access to the NRPS reduces sons' financial contributions to elderly parents. Additionally, Ebenstein and Leung (2010) observes that parents without sons are more likely to participate in voluntary pension programs. In line with these findings, our results show that the NRPS led to a significant reduction in son preference among age-eligible parents. Specifically, these individuals reported a preference for fewer sons, signaling a shift toward valuing daughters more equitably. The reform also decreased the willingness of parents to co-reside with sons, further weakening traditional gender-based eldercare norms.

The remainder of this paper is organized as follows. Section 2 provides background on son preference in rural China and the New Rural Pension Scheme reform. Section 3 introduces our data

[1] A 2013 national household survey by Zhang (2019) revealed that 76% of rural respondents aged 45 and older expected to rely on their children for old-age support, compared to only 14% anticipating reliance on social pensions.

and key variables, while Section 4 details our empirical strategy. Sections 5 and 6 present our main findings and mechanism analyses. Section 7 concludes.

2 Background of Son Preference and Pension Reform

2.1 Background of Son Preference in Rural China

The preference for sons is deeply rooted in agrarian economies and patriarchal family systems, where male offspring were traditionally regarded as economic assets and carriers of the family lineage. Sons were expected to inherit land, provide labor, and perform ancestral rites—responsibilities rarely assigned to daughters, particularly in East and South Asia (Gupta, 1987; Agarwal, 1995). These historical norms created a cultural narrative equating the birth of a son with prosperity and security, while daughters were often seen as transient family members destined to marry into another household.

In China, son preference is deeply embedded in cultural traditions shaped by patriarchal family structures. Sons were valued for preserving the family name and remaining with their birth families, while daughters were expected to join their husband's family upon marriage, thereby ceasing to contribute labor or income to their parents. After the establishment of the People's Republic of China in 1949, the Chinese Communist Party sought to challenge this "feudal tradition" through gender equality campaigns, resulting in a balanced sex ratio at birth until the 1980s (Yi et al., 1993).

The introduction of the one-child policy in 1980, however, disrupted this balance. Parents increasingly resorted to sex-selective practices to ensure the birth of a son (Ebenstein and Leung, 2010). Historically, postnatal methods like infanticide or abandonment were used, but advancements in ultrasound technology enabled prenatal sex selection (Coale and Banister, 1994; Yi et al., 1993). By 1987, over 13,000 ultrasound-B machines were in operation nationwide, alongside state-supported abortion services integrated into hospitals and family planning centers. These developments facilitated widespread sex-selective abortions, particularly in rural areas where strict enforcement of the one-child policy intensified the pressure to have a male child (Junhong, 2001; Pörtner, 2022).

Despite modernization transforming many aspects of Chinese society, son preference persists, especially in rural regions. While cultural and religious traditions contribute to this phenomenon, economic incentives remain a key driver. Sons provide economic advantages in three primary ways: generating higher labor income in agricultural settings, enabling informal land inheritance under China's state-owned land system, and serving as a source of old-age support. This study focuses on the third mechanism, investigating whether the introduction of the New Rural Pension Scheme (NRPS) in 2009 has influenced the relationship between son preference, savings behavior, and support for aging parents.

2.2 The New Rural Pension Scheme Reform

The Chinese government introduced the New Rural Pension Scheme (NRPS) in response to the severe poverty among the rural elderly, who lacked social security and relied heavily on family support. Although China saw significant economic growth over the past 30 years, poverty remained a significant issue, with over 250 million people living below the World Bank's poverty line by the end of 2008. While urban employees had access to a robust old-age security system from the early 1990s, rural seniors were left without similar support.

To address this disparity, the NRPS was launched in September 2009 and expanded in four waves, reaching universal coverage by the end of 2012. The rollout was strategically planned by China's central government, with the first wave covering about 12% of counties in 2009, followed by 16% in 2010, 38% in 2011, and the remaining 34% in 2012. Figure 1 shows the rollout of NRPS across Chinese counties. The program allowed all rural residents aged 16 and older (excluding students) to voluntarily participate, with those aged 60 and above eligible for a monthly pension of 55 yuan (about US$9), regardless of their previous earnings. However, to receive the pension, seniors with adult children were required to have their children participate in the scheme and contribute annually.[2] Starting from age 60, the NRPS provides pension benefits that consist of the total accumulated funds in an individual's account plus a basic pension benefit. The basic pension operates similarly to a defined benefit plan but without work requirements, akin to the universal basic income concept discussed by Hanna and Olken (2018). Unlike traditional defined benefit pension plans or government-sponsored welfare programs, this basic pension is entirely government-funded, with no means-testing involved.

[Insert Figure 1 Here]

The NRPS is the largest and most generous welfare program ever implemented in rural China and is unique for covering the largest population in human history. By 2011, 89 million rural seniors began receiving pensions under the program. By the end of 2012, both central and local governments had contributed over 262 billion yuan (approximately US$41 billion) to the NRPS, with more than 232 billion yuan (about US$37 billion) coming from the central government. The NRPS, introduced to distinguish itself from the older rural pension system, was designed to offer more substantial benefits than its predecessor, which began in 1992. The old rural pension scheme functioned like a savings account, with premiums deposited into individual accounts and earning low interest rates (Leisering, Gong, and Hussain, 2002). At its peak, 75.4 million people participated in the old scheme, but it provided very modest pensions. The program's development stagnated after 1998, largely due

[2]The authors accessed the list of counties participating in the NRPS pilot program from 2009 to 2012 by submitting a request through the government information disclosure application channel provided by the Ministry of Human Resources and Social Security of the People's Republic of China.

to widespread mismanagement and its limited impact (Cai and Cheng, 2015; Liu and Sun, 2016). By 2005, enrollment in the old scheme had dwindled to less than 3 percent, according to China Agricultural Statistical Yearbooks.

3 Data and Key Variables

3.1 China General Social Survey

The primary dataset for this study is the China General Social Survey (CGSS), a nationally representative survey launched in 2003 that spans multiple provinces and years. The CGSS aims to systematically document changes in the relationship between social structures and quality of life across urban and rural regions. It provides key variables related to son preference, forming the foundation of our analysis. For this paper, we utilize data from the 2010, 2012, 2013, and 2015 waves, which include questions on attitudes toward old-age support and son preference.

Although the NRPS was introduced in 2009, earlier waves of the CGSS lack critical variables necessary for this study. By 2012, the NRPS had been fully implemented, allowing the selected survey waves to capture substantial policy variations across counties and years. A notable strength of the CGSS dataset is its detailed information on individual respondents' pension plan status. This enables a more nuanced analysis of policy effects beyond standard intent-to-treat frameworks, which are often constrained by limited pension coverage data (Huang and Zhang, 2021). Figure 2 illustrates pension participation rates based on the CGSS data over time. In urban areas, participation remained consistently high, increasing slightly from 2010 to 2012 and stabilizing around 75%. In contrast, rural areas experienced a dramatic rise in pension enrollment, reflecting the NRPS rollout. The share of rural respondents with a pension plan grew from 25% in 2010 to 55% in 2012, eventually reaching 65% by 2015.

[Insert Figure 2 Here]

Our analysis primarily focuses on individuals aged 59 and older in rural areas, as the NRPS was designed to target rural populations and included an age eligibility threshold of 59. While elderly respondents have largely completed their fertility decisions, studying their preferences serves two critical purposes. First, it reveals the direct effects of pension security on attitudes, providing a test of our theoretical mechanisms around co-residence and intergenerational support obligations. Second, elderly preferences influence the next generation through multiple channels, such as children's expectations about co-residence and elder support obligations as well as younger cohorts' own preference formation. We test these intergenerational spillovers in Section 6.3.

Table 1 summarizes key variables, including demographic characteristics, household attributes, and indicators of son preference. The outcome variable—preferred number of sons—shows a slight decline over time, decreasing from 1.561 in 2010 to 1.467 in 2015. Male respondents constitute

about 50% of the sample, with minor fluctuations across survey waves. The average respondent age is approximately 68 years, and individuals of Han ethnicity make up around 90% of the sample throughout the study period. Family size shows a slight downward trend, decreasing to 1.686 members by 2015.

[Insert Table 1 Here]

The proportion of migrants in the sample remains low, averaging 2.5%, which is expected given the focus on older individuals. Marital status is stable, with about 70% of respondents married across all waves. Public sector employment remains limited, averaging 6%, reflecting rural residents' restricted access to such jobs. Education levels are similarly low, with only around 2% of respondents having completed more than middle school. Most respondents report having health care plans, with over 90% indicating access across survey years. This reflects improvements in public health coverage due to earlier reforms under the New Rural Cooperative Medical Scheme (NCMS) (Wagstaff et al., 2009). Household income shows a gradual upward trend, indicating improved economic conditions among surveyed households over time.

3.2 China Decennial Census

This study utilizes data from the 2000 China Census, which provides population counts for each county disaggregated into five-year age groups. These data serve as the basis for calculating the proportion of the elderly population, a key component in constructing the instrumental variable used in this analysis. We use data from the 2000 Census—the most recent census preceding the policy rollout—to ensure accurate representation of pre-policy population demographics.

3.3 County-Level Economic Characteristics

The county-level economic characteristics included in the analysis are land area, GDP, population size, rural employment, fiscal revenue, fiscal expenditure, rural per capita income, and GDP per capita in rural areas. These data are obtained from the China Stock Market & Accounting Research Database (CSMAR), offering a comprehensive overview of local economic conditions.

4 Empirical Strategy and Identification Assumptions

Our interest is to investigate the impact of participating in a pension plan on the preference for sons. Following Huang and Zhang (2021), we define people whose age is above 59 that are eligible to receive NRPS benefits. The empirical specification is as follows:

$$NumSon_{ijt} = \beta_0 + \beta_1 Pension_{ijt} + \mathbf{X}_{it}\boldsymbol{\delta} + \gamma_j + \gamma_t + u_{ijt} \tag{1}$$

where $NumSon_{ijt}$ is the key outcome variable measuring son preference, which is the response from individual i in county j and survey year t, indicating how many sons the respondent would prefer if there is no policy restriction. Unlike much of the existing literature, which measures son preference using the sex ratio at birth,[3] we use the ideal number of sons for the following reason. The ideal number of sons reflects stated preferences—how many male children individuals report wanting—whereas the sex ratio at birth captures realized behavioral outcomes, measured as the actual proportion of male to female births. The former provides direct insight into cultural or personal biases favoring sons, as it is based on self-reported attitudes. The latter, drawn from demographic data, indicates whether these preferences translate into observable behaviors, such as sex-selective abortion or differential parental investment. In short, the ideal number of sons captures desired preferences, while the sex ratio at birth reflects the extent to which those preferences are realized in practice.

$Pension$ is a binary variable indicating whether the respondent has a pension plan. $\mathbf{X}_{it}$ denotes a vector of variables that characterize this individual's demographic information and family background. Specifically, we include a gender dummy, rural-urban migrant dummy, marriage status, and family size to account for gender norms across households. We also include a binary variable to represent whether the individual has employment in the public sector, which is likely to generate better pension benefits and could reduce earnings volatility (Berkowitz, Ma, and Nishioka, 2017; He et al., 2018). γ_j absorbs heterogeneity across county and γ_t is time fixed effect accounting for aggregate common shocks.

While we account for numerous individual-level factors influencing pension participation decisions, as well as location-specific heterogeneity and aggregate shocks, self-selection into pension plans remains evident. For example, county-specific economic shocks that increase local residents' income could simultaneously influence older adults' pension participation and their preference for sons. Moreover, empirical evidence suggests that rural households with only daughters are more likely to participate in future pension programs compared to those with only sons (Ebenstein and Leung, 2010). To address these challenges, we identify county-year-level instrumental variables that allow us to disentangle the effects of pension plan participation from son preference. This approach not only enhances the robustness of our findings but also provides actionable insights for policymakers designing pension programs to mitigate gender biases and promote equitable social outcomes.

[3]There is a large literature on gender imbalance and son preference in China. See, for example, Ebenstein and Leung (2010), Bhaskar (2011), Dong et al. (2021), Lin, Sun, and Xing (2021), and Guo, Hu, and Ding (2022).

4.1 The Instrument

Our study leverages two key sources of variation to provide causal estimates of how pension reforms influence son preference: the exogeneity of the NRPS reform rollout and the differential exposure to the reform across birth cohorts at the time of the survey. Figure 2 highlights robust evidence showing that the likelihood of having a pension plan is strongly correlated with the timing of the NRPS reform. Specifically, counties that adopted NRPS earlier, or had been under the program for a longer duration before the survey year, exhibited higher enrollment rates among local senior residents. This staggered rollout allows us to construct an instrumental variable capturing the probability of an individual's participation in pension plans based on the reform's timing.[4]

Additionally, the reform's impact is closely tied to regional demographic compositions, particularly the proportion of senior residents eligible for pension enrollment. Regions with a higher share of seniors experienced greater effects from the NRPS, underscoring the age-sensitive nature of the reform (Fan and Yue, 2023). The staggered implementation also varied across time and regions, with some counties adopting the reform earlier than others. To account for these temporal and spatial variations, our instrumental variable integrates both the timing of NRPS adoption and the demographic context of each region. By doing so, our analysis provides actionable insights into how social safety nets like pension programs can reshape cultural norms, offering a critical lens for policymakers aiming to address deeply ingrained preferences and promote equitable outcomes.

Rather than using the observed pension take-up rate, we construct an instrument capturing the probability of pension participation in a county at a given point in time. Since eligibility for the pension program begins at age 60, we can predict the share of individuals likely to participate in each county over the following years based on the county's initial age composition. Provided that the age composition of the elderly population is orthogonal to the timing of pension rollout and influences younger individuals only through pension participation, this variation serves as a valid instrument for identifying the causal impact of retirements.

This measure is determined by whether the pension program had been introduced in the county and by the size of the eligible age cohort at the time of the CGSS survey, with cohort composition derived from the 2000 Census. The key sources of variation in our instrument are the staggered rollout of the pension program across regions over time and the predetermined age composition of cohorts, which we treat as exogenous.

Utilizing the detailed information about population demographics from the 2000 census, we divide the population at the 5-year interval for each county and estimate the share of each age bin (from age 1 to 4, age 5-9 until age above 85). Let age_{it} denote respondent i's age in year t, and

[4]While other empirical methods widely used in the literature including difference-in-differences could help recover the intent to treat effect, we are more interested in capturing the direct impact of pension participation on individuals' attitudes.

define

$$a_{i,2000} = age_{it} - (t - 2000).$$

We assign each respondent to a 5-year age bin $k(a_{i,2000})$. Using 2000 Census counts, we compute county-by-bin shares

$$s_{j,k}^{2000} = \frac{N_{j,k}}{\sum_k N_{j,k}},$$

where $N_{j,k}$ is county j's count in bin k in 2000. Let $Rollout_{jt} = \mathbf{1}\{t \geq T_j\}$ indicate NRPS activation in county j and T_j is the policy implementation year for county j. The instrument is

$$Z_{ijt} = s_{j,k(a_{i,2000})}^{2000} \times Rollout_{jt}. \tag{2}$$

This instrument exploits the fact that counties with higher shares of pension-eligible residents experience mechanically greater treatment intensity when NRPS becomes available. Since demographic shares are measured several years before policy implementation and rollout timing was centrally coordinated, this interaction provides plausibly exogenous variation in pension participation that is uncorrelated with contemporaneous local determinants of son preference. Thus, we estimate the following 2SLS instrumental variable regressions:

$$Pension_{ijt} = \alpha_0 + \alpha_1 Z_{ijt} + \mathbf{X}_{it}\boldsymbol{\theta} + \alpha_j + \alpha_t + \varepsilon_{ijt}, \tag{3}$$

$$NumSon_{ijt} = \pi_0 + \pi_1 \widehat{Pension}_{ijt} + \mathbf{X}_{it}\boldsymbol{\delta} + \gamma_j + \gamma_t + u_{ijt} \tag{4}$$

where (3) represents the first-stage equation.[5]

It is important to note that our instrumental variable approach identifies the Local Average Treatment Effect (LATE) of pension participation among compliers—individuals induced to participate by the policy rollout. This differs from an intent-to-treat (ITT) analysis, which would estimate the reduced-form effect of policy exposure regardless of actual participation. While both estimands are policy-relevant, we focus on the LATE for pension participation because our theoretical mechanism operates through the direct receipt of pension benefits, not merely exposure to the policy environment.

The distinction is particularly important in our context because NRPS rollout may affect attitudes through multiple channels beyond individual participation, including information campaigns,

[5]Our identification strategy differs from standard staggered DID designs that may suffer from negative weight problems when treatment effects are heterogeneous across implementation cohorts (Callaway and Sant'Anna, 2021). Instead of relying solely on timing variation between early and late adopters, our instrument exploits cross-sectional differences in treatment intensity at the time of policy rollout. This approach mitigates concerns about negative weights because our identifying variation comes from the interaction of timing and demographic structure, not from using later-treated units as controls for earlier-treated units. Moreover, by 2012, NRPS coverage was essentially universal across all counties, so our estimation primarily relies on cross-sectional intensity differences rather than problematic timing-based comparisons.

community discussions, and social learning effects. An ITT analysis would capture all these channels combined, making it difficult to isolate the specific role of pension income in reshaping son preference. Our IV approach isolates the causal effect of receiving pensions by exploiting variation in treatment intensity driven by predetermined demographic compositions rather than individual characteristics.

4.2 Threats to Identification

The application of instrumental variables relies on two key assumptions. The first, the relevance assumption, can be directly tested. As demonstrated in the first-stage results, the F statistic is sufficiently large, indicating that our instrument strongly predicts pension enrollment status.

The second assumption, the exclusion restriction, requires that the instrument—in this case, the time gap between the policy implementation year and the survey year—affects son preference only through its impact on pension enrollment. Our identification strategy leverages within-city, and cross-county variation in the timing of NRPS eligibility. However, if other simultaneous shocks or policies were implemented at the county-year level, these could confound the effect of NRPS and bias our estimates. Furthermore, migration could pose a concern; if individuals relocate from counties not yet eligible for NRPS to those treated earlier and these migrants differ in resources or son preference, the results may be distorted. Finally, the timing and selection of counties for NRPS rollout must be exogenous. Our identification hinges on the assumption that counties were selected for NRPS reform and its timing in a random manner. If counties with higher son preferences were deliberately targeted, observed changes in preferences might reflect pre-existing trends rather than the effects of the NRPS reform.

To address these concerns, we consider the possibility of other concurrent reforms or policies implemented in a manner similar to NRPS during the same period. To mitigate concerns about policy selection and reverse causality—particularly the idea that NRPS rollout may have prioritized counties with stronger economic conditions—we conduct a series of pre-trend tests. Following Huang and Zhang (2021), we examine whether the selection of counties and the timing of NRPS implementation were random. Key economic indicators such as land size, GDP, population, urban employment, and tax revenue and expenditures are analyzed. Using an event-study framework, we explore the temporal evolution of these economic variables:

$$Y_{jt} = \alpha_0 + \sum_{k=-5, k\neq -1}^{5} \beta_k D_{jt} \times \mathbb{1}[t = k] + \phi_j + \phi_t + u_{jt}, \tag{5}$$

where Y_{jt} represents the economic variable of interest, D_{jt} is an indicator equal to one if county j is treated, and $\mathbb{1}[t = k]$ is an indicator function for k years before and after the county receives treatment. ϕ_j and ϕ_t denote county and year fixed effects, respectively.

The event-study plot, shown in Figure 3, presents the estimated coefficients β_k for selected economic indicators, including land size, GDP, population, employment, public finance, and income measures. The findings strongly suggest that prior to NRPS implementation, counties designated for treatment did not significantly differ from those that were not. There is no evidence to support the idea that the rollout was concentrated in counties with stronger pre-existing economic performance. This validates the assumption that the timing of the reform was independent of prior economic trends.

[Insert Figure 3 Here]

Finally, to address potential concerns about our identification strategy, we conduct comprehensive placebo tests that validate our instrument by examining whether the results arise from the intended causal mechanism. These tests randomly reassign our instrument values in ways that break the theoretical connection between pension rollout and local demographics while preserving other data features. As we will show in the next section, the results show that our true effect sits in the extreme tail of placebo distributions, providing strong evidence that our identification strategy captures genuine causal effects rather than spurious correlations.

5 The Impact of Pension on Son Preference

5.1 The Baseline Results

5.1.1 OLS

Table 2 presents the OLS results with a stepwise inclusion of county-fixed effects, year-fixed effect, and county-specific trends in the regression model. In column (1), participation in the pension plan is negatively correlated with son preference among seniors. However, when controlling for county and year FE, the correlation turns positive, suggesting that omitted variables introduce a downward bias if time-invariant county factors or common contemporary influences across counties are not accounted for. For example, family values (Jiao and Liu, 2024) or clan culture (Zhang, 2019) can lower pension participation among seniors, with these social norms tending to increase son preference (Murphy, Tao, and Lu, 2011). The coefficient in column (3) confirms that a positive correlation between pension participation and son preference among seniors persists even after adding the county-specific trend. Other unaccounted factors, such as demographic changes and family income, could potentially skew the OLS results upward. Individuals with lower family incomes are more inclined to enroll in universal pension programs, resulting in higher participation rates (Ma, 2023), and they also tend to exhibit a stronger preference for sons (Murphy, Tao, and Lu, 2011). However, none of the OLS results show statistical significance.

While the positive OLS coefficient for pension access may appear counterintuitive given the

hypothesized inverse relationship between son preference and pensions, it likely reflects biases from omitted variables or reverse causality. For instance, individuals with higher incomes or formal sector jobs may be more likely to have access to pensions and simultaneously express son preference due to traditional cultural norms or inheritance practices. Additionally, areas with stronger son preference might historically advocate for broader pension coverage, indirectly correlating son preference with pensions. These confounding factors highlight the limitations of OLS in isolating the causal effect of pension access on son preference. Our IV approach mitigates these biases by leveraging exogenous variation from county-level pension reform, providing a more reliable estimate of the causal relationship.

[Insert Table 2 Here]

5.1.2 IV

We turn our focus to the IV regression to address the potential bias in the OLS estimation. The results from IV are presented in Table 3. The analysis indicates that participation in the pension program is associated with a statistically significant reduction in seniors' preference for sons. This effect remains robust even after accounting for county fixed effect, year fixed effect, and county-specific trends, underscoring that the reduction in son preference is not driven by broader, unobserved regional or temporal factors. Quantitatively, enrollment in the pension program lowers son preference by approximately 40.2% (calculated as 0.588/1.462). This reduction is substantial but interpretable. The preferred number of sons is close to parity, given this effect. Previous work on the 1990 census showed that strict enforcement of the one-child policy resulted in 4.4 additional boys per 100 girls in the 1980s, accounting for approximately 94% of the observed increase in sex ratios during that period (Li, Yi, and Zhang, 2011). Exploiting the 1999 college admissions expansion to address endogeneity concerns, Zhang and Meng (2025) found that each additional year of education reduced stated son preference by 4.4%. Guo, Huang, and Wang (2025) documented that the NRPS increased the likelihood of female births by 2.8 percentage points. Building on this line of research, our paper provides a complementary contribution: the 40% decline in elderly men's expressed son preference highlights the mechanism underlying these behavioral shifts. While sex-ratio responses operate through selection decisions among those still bearing children, our measure captures the deeper cultural reorientation affecting all pensioners, including those long past reproductive years. Importantly, by controlling for both county and year fixed effects as well as county trends, the analysis compares son preference between seniors who do and do not participate in the pension program within the same county and survey year. This approach ensures that the observed effect reflects differences attributable to pension enrollment rather than regional or temporal variations,

thus reinforcing the validity of the findings.[6]

[Insert Table 3 Here]

Our instrument is designed to be independent of individual decisions regarding pension program enrollment. Instead, it is driven by two key external factors: the age distribution within a region and the externally determined, staggered rollout of pension programs across regions. It minimizes endogeneity by ensuring that the instrument is influenced only by these broader demographic and policy factors rather than personal choices. The strength and validity of our instrument are confirmed by a robust F-test, which indicates a significant first-stage relationship, supporting the instrument's appropriateness for identifying the causal impact of pension enrollment. We also present the results from the first stage and the reduced form in Table 4. As expected, our instrument shows a positive correlation with pension enrollment and a negative correlation with son preference (measured by the reported number of sons). The results indicate that individuals residing in areas with a higher proportion of seniors and where pension reform has been implemented are more likely to participate in the pension program.[7]

Notably, fathers in rural areas show a lower preference for sons compared to mothers, and son preference appears to increase with age. Education, however, has a limited impact on son preference within our sample. In contrast, prior employment in the public sector is linked to a reduced preference for sons, whereas higher household income is associated with a stronger son preference. This trend suggests that inheritance and land rights often favor male heirs, and in the absence of robust social security systems, aging parents may rely more on sons for support. Additionally, men's greater workforce participation allows them to contribute more substantially to family income, reinforcing son preference in higher-income households.

[Insert Table 4 Here]

Our OLS estimate is positive while the IV estimate is negative. This pattern is consistent with selection and with the nature of our instrument. Participation in NRPS is not random: even after rich controls, households may differ on unobserved traits—such as more traditional gender norms or intra-household bargaining—which can make OLS too positive. In contrast, our instrument relies on

[6] A potential concern is selective migration to counties with earlier NRPS implementation. However, this is unlikely to bias our estimates for three reasons: (1) only 2.5% of our sample reports being rural-urban migrants (Table 1), (2) 2010 Census data show only 5.8% of rural elderly (60+) reside outside their birth province, with 0.78% having moved out of province in the past five years, and (3) excluding self-reported migrants from our analysis yields nearly identical results (-0.571).

[7] We additionally report (i) a reduced-form ITT using $Rollout_{jt}$ and (ii) an IV with $Rollout_{jt}$ as the sole instrument; see Appendix Table A1. The ITT is much smaller than the main IV effect, and the rollout-only IV has a weak first stage F, below conventional thresholds (Andrews, Stock, and Sun, 2019). It is consistent with the idea that treatment intensity arises when centralized rollout is scaled by predetermined eligibility shares.

exogenous policy timing scaled by predetermined 2000 age shares and therefore isolates variation in encouragement to participate. Two empirical facts reconcile the sign difference: (i) the first stage is positive—exposure increases participation—and (ii) the reduced form is negative—exposure lowers the outcome. Together, these imply a negative causal effect among compliers, i.e., those induced to participate when exposure intensifies. Measurement issues (imperfect take-up or misclassification) further attenuate OLS toward zero, accentuating the gap with IV.

5.1.3 Validation of Our Instruments and Placebo Checks

To verify that the IV estimates reflect the intended exposure mechanism rather than spurious correlation, we implement two permutation placebos that deliberately sever the geographic–demographic link our instrument exploits. First, in the random county placebo we randomly reassign county across individuals within 5-year age bins, rebuild $Z_{jkt} = s_{j,k}^{2000} \times Rollout_{jt}$ using the fake county (age bins intact), and re-estimate our baseline IV. Second, in the random age bin placebo we randomly reassign 5-year age bins across individuals within county, rebuild Z_{jkt} using the fake age bins (counties intact), and re-estimate the same specification. In both cases the IV coefficients are small and statistically indistinguishable from zero at conventional levels, while instrument relevance is appreciably weaker than in the main specification (Kleibergen–Paap F is substantially lower). Figure 4 shows that the distributions of placebo t-statistics lie largely within ± 1.96 and the p-value histograms are approximately uniform, as expected under a true null. Together, these results indicate that our identification comes from the predicted exposure channel—centralized NRPS timing scaled by predetermined 2000 age shares—rather than from unrelated features of the data.

[Insert Table 5 Here]

[Insert Figure 4 Here]

5.1.4 Robustness Checks

Anticipation Effect It can be argued that a similar effect may be observed among younger individuals in counties where pension reform was implemented, even if they were not directly eligible for pension payments. This effect could be seen as an anticipated or spillover effect, arising from the expectation that changes in elder support might influence government assistance for old-age financial needs. If this is the case, it could challenge our IV assumption, as unobserved confounding factors may be correlated with both an individual's pension participation and their son's preference. To address this, we expand the sample in our main analysis to include younger populations and substitute the IV regression with alternative age groups. The results, presented in Figure 5, reveal that none of the coefficients for younger age groups are statistically significant,

indicating that exposure to the pension reform does not result in a significant change in son preference among these individuals. For the age group of 40 to 59 years, which is near the pension eligibility age, the effect is negligible, further confirming that there are no spillover or anticipatory effects for individuals who do not qualify for the pension.

[Insert Figure 5 Here]

Health Care Reform To strengthen the robustness of our findings, we include an additional control variable for healthcare coverage, capturing whether individuals have access to medical insurance. This inclusion is motivated by earlier reforms in China, such as the New Cooperative Medical Scheme (NCMS) and the expansion of rural health insurance (Wagstaff et al., 2009). These reforms aimed to reduce out-of-pocket health expenditures and enhance financial security for rural households, potentially influencing son preference by reducing the economic reliance on sons as future caregivers. By incorporating healthcare coverage, we account for the possibility that access to both pensions and health insurance jointly mitigates traditional economic pressures driving son preference. If these two factors complement each other in providing financial security, excluding healthcare coverage might bias our estimates of the effect of pensions on son preference.

Column (1) of Table 6 shows the first-stage effect of pension reform on health insurance access, revealing an insignificant positive correlation. Column (2) presents the IV regression of pension plan participation on health insurance, finding a small and statistically insignificant effect: individuals with a pension plan are only 2.5 percentage points more likely to have health insurance. Columns (3) and (4) compare the baseline model with and without the health insurance variable, demonstrating that the estimated effect of pension access on son preference remains consistent across specifications.

These results indicate that the observed relationship between pension access and reduced son preference is not confounded by concurrent healthcare access. Instead, they underscore the unique role of pensions in diminishing reliance on sons for old-age support, thereby reducing traditional economic motivations for son preference even amidst broader healthcare reforms.

[Insert Table 6 Here]

Housing Prices Another contemporaneous factor that could influence both pension participation and son preference is the dynamics of the housing market. Figure 6 highlights the substantial boom in China's real estate market between 2004 and 2015 (Glaeser et al., 2017), coinciding with the period of pension reform. Although our analysis focuses on rural individuals, the rapid urbanization during this time significantly impacted the urban housing market, potentially introducing bias into our results. Later cohorts exposed to higher housing prices may have accumulated greater housing wealth, enhancing their ability to contribute to pensions. Conversely, financial pressures on older

adults to save for their children's urban housing purchases could reduce pension participation and reinforce son preference, driven by competitive (Wei and Zhang, 2011) and precautionary saving motives (Chen, Yang, and Zhong, 2020).

To address the potential influence of the housing market boom, we include an interaction term between a provincial capital dummy and national housing prices in our analysis, recognizing that different city tiers experienced varying impacts from the boom (Glaeser et al., 2017). Consistent with our earlier findings, this robustness check in column (5) does not produce noticeable changes to our baseline estimate of the effect of pensions on son preference.

[Insert Figure 6 Here]

5.2 Heterogeneous Impact

Gender We have established a causal relationship between pension plan participation and reduced son preference among rural seniors, but the magnitude of this effect may differ systematically across demographic groups. We begin by examining gender differences, as traditional Chinese family structures assign distinct roles to fathers and mothers in intergenerational support arrangements.

In our baseline IV regression (Table 3, column 3), the coefficient for male respondents is -0.084 and statistically significant, indicating that men in our sample prefer fewer sons than women on average. To explore heterogeneity in treatment effects, we split the sample by respondent gender. Table 6 presents the results. Column (1) reveals that for male respondents, pension plan participation reduces son preference by 0.425 (significant at the 1% level), representing approximately 30% of the baseline mean for men. The strong first-stage effect is supported by an F-statistic of 97.63. In contrast, column (2) shows a larger point estimate for female respondents (-1.298), but this estimate is considerably noisier and not statistically distinguishable from zero. The first-stage F-statistic of 4.09 indicates weaker instrument power within this subgroup.

The robust reduction in men's son preference reflects that men's preferences are primarily instrumentally motivated. In rural China, fathers directly control property inheritance, receive explicit financial support from sons, and are the primary beneficiaries of filial obligations under Confucian norms (Das Gupta et al., 2003; Zhang, 2019). The father-son relationship centers on financial contracts—sons provide monetary transfers and old-age support in exchange for inheritance rights and family authority (Xu, 2015). When pension income provides alternative financial security, it directly substitutes for these instrumental benefits, allowing fathers to readily update their preferences.

Women's son preference operates through multiple channels beyond direct economic calculation. Mothers benefit from sons indirectly through their husband's lineage, face social pressure to conform to patriarchal expectations, and maintain relationships with children that

encompass broader emotional and caregiving dimensions (Lin et al., 2003). Since pension income primarily addresses the financial security channel, it has more limited leverage over women's multi-dimensional motivations for son preference. This finding aligns with evidence that policy interventions targeting economic incentives are most effective when preferences are instrumentally rather than normatively driven (Bau, 2021).

[Insert Table 7 Here]

The Dynamic Effect While social norms are generally stable and persistent, they can adapt in response to new policies or environmental changes (Gelfand, Gavrilets, and Nunn, 2024). In our context, the conventional view holds that changing entrenched attitudes, such as son preference, is difficult. However, we explore the dynamic evolution of son preference in rural China following the pension reform, examining how it influences individuals' attitudes towards having sons and daughters over time.

To analyze the effect of having a pension plan on son preference after the reform, we estimate an event-study style regression:

$$NumSon_{ijt} = \varphi_0 + \sum_{k=-2, k\neq 0}^{k=6} \varphi_k \times \mathbb{1}[NRPS_{j,t+k} = 1] + \mathbf{X}_{it}\boldsymbol{\delta} + \varphi_c + \varphi_t + \varepsilon_{ijt} \tag{6}$$

where $\mathbb{1}[NRPS_{j,t+k} = 1]$ is an indicator function equal to one if the residence county j in year $t+k$ was treated by the NRPS. Since the NRPS reform began in 2009 and was fully rolled out by 2012, the earliest pre-treatment period we observe is the 2010 wave. In contrast, for counties treated earliest, we observe up to six years post-exposure to the reform.[8]

The results, presented in Figure 7, reveal a stark contrast between rural individuals with and without a pension plan. Among those without a pension plan, son preference remains persistently high, reflecting the stability of traditional norms. However, for individuals with a pension plan, the ideal number of sons begins to decline significantly two years after the policy reform. This gradual decline highlights an adaptive process, where the economic security provided by pensions diminishes reliance on traditional norms favoring sons, aligning with the broader literature on how policy interventions can reshape entrenched social behaviors.

[Insert Figure 7 Here]

Culture Differences Following Zhang (2019) and recent work on clan-based institutions in China, we measure clan intensity using the logarithm of the number of family genealogies (Jiapu

[8]For counties treated in 2012, individuals in the 2010 wave are observed two years before treatment. For counties treated in 2009, individuals in the 2015 wave are observed six years after treatment.

or Zupu) at the city level. Family genealogies are historical records documenting patrilineal descent over generations, serving as markers of clan organization and traditional family values. Cities with more recorded genealogies have stronger clan networks, which reinforce patriarchal norms including son preference, patrilocal residence, and sons' filial obligations (Zhang, 2019; Cao, Xu, and Zhang, 2022).

We classify individuals into high and low clan intensity groups based on the median number of genealogies in our sample. This approach allows us to test whether deeply embedded cultural institutions moderate the pension reform's impact on individual attitudes. Table 8 presents our clan heterogeneity analysis. Column (1) shows results for high clan intensity areas (above median Zupu), while Column (2) presents estimates for low clan intensity areas (below median). Column (3) shows the pooled specification with an interaction term. The contrast is striking and theoretically consistent. In high clan intensity areas (Column 1), pension participation reduces son preference by 0.342, but this effect is not statistically significant and represents only a 23% decline from baseline. In contrast, in low clan intensity areas (Column 2), the effect is nearly three times larger: pension participation reduces son preference by 0.964 (significant at the 5% level), representing a 66% decline from the baseline mean—substantially larger than our full-sample estimate of 0.588. These findings strongly support theories of cultural persistence and institutional complementarities (Giuliano and Nunn, 2021). In areas with weak clan structures, son preference functions primarily as a rational economic response to the absence of formal old-age security systems. When pensions provide credible alternative support, the primary economic rationale for preferring sons dissolves, allowing attitudes to shift dramatically. The large magnitude of the effect in low-clan areas (-0.964) suggests that once institutional enforcement weakens, economic incentives become highly determinative of son preference. In strong-clan areas, however, son preference is embedded in multi-dimensional institutional structures that extend beyond individual economic calculation. The interaction term in Column (3) is positive but not statistically significant, consistent with the pattern observed in the split-sample analysis.

[Insert Table 8 Here]

6 Mechanism

In this section, we explore the mechanisms through which pension policy impacts elderly parents' son preferences in rural China. First, we examine how the pension reform affects co-residence patterns between elderly parents and their children, as co-residence has historically been a primary means of old-age support. Second, we analyze responses from the CGSS survey regarding attitudes toward who should provide old-age support to determine whether the pension reform influences son preference by altering these attitudes.

6.1 The Impact of Reform on Children's Caregiving

Eldercare in rural areas has traditionally followed a gendered division of labor: sons provide financial support, while daughters take on caregiving responsibilities. For instance, Xu (2015) examined eldercare within rural families and found that, under similar co-residence conditions, sons contributed more financially, while daughters were more involved in caregiving. Guo and Zhang (2020) argues that this division reflects an optimal family arrangement, particularly when sons earn more than daughters. This pattern is consistent with the "gender role theory" and "resource endowment theory" proposed by Lin et al. (2003), which suggest that societal gender norms encourage sons to take on financially supportive roles, while daughters, with more flexible schedules, typically assume caregiving duties. This gendered approach to eldercare is not exclusive to rural China; it is also observed in developed countries (Horowitz, 1985; Montgomery and Kamo, 1989). Our data supports this pattern, showing that co-residence with daughters is more common than with sons.[9]

Building on this gendered model of eldercare, we suggest that the pension reform shifts caregiving dynamics between sons and daughters. By providing direct financial support to seniors aged 60 and above, the pension partially replaces the financial role traditionally played by sons, while not addressing the caregiving duties typically carried out by daughters. As supported by existing literature, since sons primarily offer financial support rather than caregiving, we expect a decline in co-residence between parents and sons following the reform, while co-residence with daughters remains unchanged. Additionally, family income significantly influences these dynamics, as wealthier families tend to have less co-residence due to greater financial independence among both parents and adult children (Chen and Chen, 2016). The impact of the reform varies depending on family income: in lower-income families, where pension support is more limited, the shift in eldercare responsibilities is less pronounced.

Figure 8 examines the impact of pension reform on co-residence between parents and children, stratified by family income groups and the gender of the children. The low-income group represents the bottom 25th percentile of income, the high-income group corresponds to the top 25th percentile, and the medium-income group includes those between these thresholds. As anticipated, the reform does not significantly affect the likelihood of co-residence between daughters and parents across all income groups, as evidenced by consistent coefficient estimates. However, among parents in the medium- and high-income groups, the reform is associated with a reduced likelihood of co-residence with sons. Interestingly, parents in low-income households are more likely to co-reside with their

[9]We examine children's caregiving behavior by looking at whether parents live with their children. Although our data does not include financial transfers from children to parents, preventing an analysis of how pension reform affects this aspect of caregiving, it does provide detailed information on living arrangements. Specifically, we know whether parents live with their sons, daughters, or independently. Our sample shows that 58.67% of young adult females live with their parents, compared to 48.23% of males. Our findings also align with the observations of Kajanus (2016), who highlighted the distinct roles that sons and daughters fulfill in providing eldercare (pp. 31–32).

sons following the reform.

[Insert Figure 8 Here]

The heterogeneous effects of pension reform on co-residence by family income reveal an important threshold mechanism. While one might expect pension income to have the largest impact in low-income families—where it represents a higher percentage of total resources—we instead observe stronger effects in high-income households. This counterintuitive pattern reflects a distinction between substitution effects and binding constraints. In low-income families, although pension income substitutes for a larger share of sons' financial contributions, the absolute amount remains insufficient to cover elderly parents' basic needs (housing, healthcare, daily expenses). Consequently, cohabiting with sons remains an economic necessity rather than a choice, leaving limited room for pension reform to shift living arrangements. Conversely, high-income families have already crossed an economic independence threshold, where pensions provide not just income substitution but also bargaining power and residential autonomy. For these households, pension income transforms cohabitation from a binding economic necessity into a preference-based decision, enabling elderly parents to prioritize non-economic considerations—such as daughters' caregiving quality, emotional relationships, or avoidance of daughter-in-law conflicts—that were previously overshadowed by economic constraints. This threshold effect suggests that pension reform's impact on family structure operates through distinct mechanisms across income distributions, consistent with broader evidence on how cash transfers facilitate preference-based rather than necessity-driven choices (Duflo, 2003).

6.2 The Impact of Reform on Views about Who Should Provide Old-Age Support

Another explanation for the results is that financial assistance through pension reform affects the attitudes of both elderly parents and their children toward eldercare responsibilities. When elderly parents receive public support for their care, the need for their sons to provide direct assistance decreases, potentially making parents feel less reliant on their sons. Similarly, adult children who expect to receive government eldercare support when they become eligible for pensions may feel less dependent on their own children for future care. This shift could lead both generations to reassess their views on familial eldercare responsibilities. We examine these mechanisms by analyzing respondents' opinions on who should provide old-age support using the CGSS data.

Tables 9 and 10 examine the impact of pension reforms on attitudes toward old-age support among seniors and younger individuals, respectively. The variables "self-provide" and "child-provide" represent individuals' perspectives on providing eldercare. For seniors, the reform slightly increases the belief that individuals should be responsible for their own support. Among individuals under 60, the perception that children should provide old-age support has decreased

slightly after the reform, while the belief that individuals should self-provide has increased. When analyzed by gender, the results are primarily driven by changes among male adults, suggesting that the availability of pensions has shifted their views on eldercare responsibility. Specifically, male adults now believe that parents should be more self-reliant rather than dependent on their children.

We interpret these results in two ways. First, the reform may directly affect parents' attitudes. The asymmetric substitution between sons and daughters in providing old-age support suggests that sons' financial contributions are becoming less crucial, while daughters' caregiving roles are gaining significance. Furthermore, daughters often exhibit greater emotional sensitivity toward their parents, which has a positive impact on their well-being (Lu, Liu, and Li, 2017). As a result, parents may place less importance on having sons as their attitudes toward old-age support shift due to the reform. Second, pension reform may influence children's views on old-age support. Adult sons, who traditionally provide financial assistance, might feel less responsible for caregiving, believing that elderly parents should be more financially independent and not rely solely on them. This shift in perception could alter the nature of interactions between adult sons and their parents. Research by Shan and Park (2023) found that pension reform in China led to a reduction in financial transfers from rural adult sons to their elderly parents. As elderly parents observe these changes in behavior, their preference for sons may decrease.

[Insert Tables 9 and 10 Here]

6.3 Intergenerational Transmission

A central question raised by our findings is whether the pension reform's effects on elderly parents' attitudes extend to the next generation. While we cannot directly observe intergenerational transmission of preferences due to data limitations—CGSS only collects detailed attitudinal responses from primary respondents—we can examine whether young adults whose parents were exposed to the pension reform exhibit different son preferences.

We identify young adult respondents in our sample and use household roster information to determine whether they have parents living with them. Specifically, we examine the relationship variables to identify household members coded as "parents", extracting their age and gender from the roster.

We construct an instrument measuring the parent's cohort exposure to NRPS: the share of the parent's age group in the county (from the 2000 census) interacted with NRPS implementation timing. This follows the same identification strategy as our main analysis but applies it to the parent's cohort rather than the respondent's own cohort. The reduced form specification is:

$$NumSon_{ijt} = \beta_0 + \beta_1(\text{ParentShare}_{jt} \times Rollout_{jt}) + \mathbf{X}_{it}\boldsymbol{\delta} + \gamma_j + \gamma_t + u_{ijt} \tag{7}$$

where $NumSon_{ijt}$ is the young adult's ideal number of sons and ParentShare$_{jt} \times Rollout_{jt}$ captures the parent's cohort exposure to pension reform.

Table 11 presents the results across different age ranges. An important theoretical consideration in interpreting these findings is the distinction between *ex ante* and *ex post* preferences. Younger individuals who are actively forming family preferences face *ex ante* uncertainty about future economic conditions, pension sustainability, and their own fertility outcomes. In contrast, those who have largely completed childbearing evaluate preferences *ex post*, with greater certainty about realized outcomes.

Column (1) examines young adults age 25–40, focusing on those most likely to be actively forming family preferences and making fertility decisions. The coefficient on parent's cohort exposure is -2.63, indicating that young adults whose parents belong to cohorts with greater NRPS coverage exhibit lower son preference. A one-standard-deviation increase in parent's cohort exposure corresponds to a 0.12 reduction in desired sons, representing an 11.2% decrease relative to the baseline mean of 1.06 sons. The effect is marginally significant at the 10% level.

Column (2) extends the age range to 25–50, substantially increasing sample size from 471 to 630 observations. The coefficient becomes more precisely estimated (-1.83), achieving statistical significance at the 5% level. The standardized effect is 0.08 sons, or 7.9% relative to baseline. While the percentage effect is somewhat smaller than for the younger cohort, the broader age range provides greater statistical power to detect intergenerational transmission.

The pattern across columns reveals an economically meaningful gradient: effects are largest (in percentage terms) among the youngest adults who are most actively forming preferences, but remain substantial and statistically significant in the broader sample. This is consistent with pension security influencing family formation attitudes during critical decision-making windows, with observational learning from parents' experiences playing a key role.

These findings suggest that young adults whose parents have greater pension exposure update their preferences about family formation, even though they face *ex ante* uncertainty about pension benefits they would receive decades in the future. We interpret this as evidence of observational learning: observing parents' actual pension receipt provides a credible signal about pension reliability and reduces reliance on traditional son-preference-based support systems.

Several limitations should be noted. The sample of young adults with identifiable co-residing parents is substantially smaller than our main analysis, and this population is selected (those still living with parents may differ systematically from those living independently). Additionally, we observe parents' cohort exposure rather than actual pension receipt, making these reduced-form estimates of exposure effects rather than direct treatment effects.

Despite these limitations, the consistent negative effects across both age specifications, with statistical significance in the broader sample, provide evidence that pension security can influence intergenerational cultural transmission. These findings complement our main results showing direct

effects on elderly beneficiaries, suggesting that pension reforms may have broader and longer-lasting impacts on gender norms than analyses focusing solely on direct recipients would indicate.

7 Conclusion

This paper examines the impact of the NRPS on son preference in rural China, a deeply rooted social norm. Using the exogenous timing of the policy's implementation across counties and an instrumental variable approach, we isolate the causal effect of pension participation on individuals' ideal number of sons. Our analysis shows that the NRPS significantly reduced son preference, with a 40% decline in the preferred number of sons, especially among men, reflecting shifts in gender norms and family dynamics. The reform also affects co-residence patterns, decreasing the likelihood of elderly parents living with their sons in medium- and high-income families, while co-residence with daughters remains unchanged. Additionally, it shifts attitudes toward old-age support, with elderly parents increasingly favoring self-reliance, and younger generations, particularly men, reducing their expectations of sons as primary caregivers. By using individual-level data, our study offers a more detailed understanding of the policy's impact, highlighting the role of age and gender in shaping responses to the reform. Robustness checks confirm that our findings are not explained by factors like healthcare reforms or urbanization-driven housing changes.

These results underscore the broader implications of social policy interventions in challenging and reshaping long-standing cultural norms. Unlike the findings of Goldin and Katz (2002), Guiso, Sapienza, and Zingales (2008), and Alesina, Giuliano, and Nunn (2013), which suggest that gender norms—as embedded culture—change through the long-term effects of productivity and technological transformation, this paper reveals that pension policies directly influencing individual economic incentives can rapidly shift people's views on gender and reshape the division of household roles in the short term. One possible explanation is that, unlike birth control or farming technology, pension policies have a more immediate impact by providing cash to older adults, thus directly affecting their economic incentives and making it easier to alter people's perceptions. By addressing economic insecurities through pension reforms, the NRPS not only improved material well-being but also fostered attitudinal shifts toward more equitable family structures. This study highlights the potential for targeted policy initiatives to drive social change in contexts where cultural norms are tightly interwoven with economic and institutional factors.

Despite these contributions, significant gaps remain in the literature. While previous studies have examined the impact of pension systems on various socio-economic outcomes, there is limited understanding of how these policies influence cultural norms, especially concerning gender dynamics and family structures. Additionally, as the sex ratio begins to decline, the factors driving this shift have not been fully explored, highlighting the need for further research to better understand how cultural norms evolve in response to policy changes. Filling these gaps will deepen

our understanding of how social security measures can reshape cultural attitudes and behaviors, contributing to a more equitable society.

The findings of this study, while centered on China, offer broader lessons for global policymakers seeking to address deeply entrenched cultural norms. First and foremost, our research reveals that social security programs can be powerful instruments for social change, not just poverty reduction. In many societies, norms like son preference are sustained by economic necessity. This study shows that by directly providing an alternative source of financial security, such as a state pension, policymakers can swiftly weaken the economic rationale behind these traditions. This creates a direct pathway for fostering more equitable attitudes, a principle applicable to various norms tied to economic dependency. Second, the rapid pace of the observed attitudinal shift challenges the view that culture is an immovable barrier to policy action. We find that when an intervention immediately alters the financial calculations of individuals, cultural reevaluation can happen in years, not generations. This suggests that direct cash-based welfare policies can be exceptionally effective at accelerating social modernization, offering policymakers a tool for achieving rapid social dividends alongside economic ones. Finally, our results highlight the importance of engaging older generations, who are often seen as keepers of tradition. By showing that seniors are themselves responsive to policy incentives, we demonstrate that cultural change need not wait for generational replacement. Policies that alter the economic landscape for the elderly can turn them into agents of change, disrupting the transmission of biased norms "from the top down."

References

Agarwal, Bina. 1995. *A Field of One's Own: Gender and Land Rights in South Asia. Cambridge South Asian Studies*, Cambridge University Press.

Alesina, Alberto, Paola Giuliano, and Nathan Nunn. 2013. "On the Origins of Gender Roles: Women and the Plough." *The Quarterly Journal of Economics*, 128(2): 469–530.

Andrews, Isaiah, James H. Stock, and Liyang Sun. 2019. "Weak Instruments in Instrumental Variables Regression: Theory and Practice." *Annual Review of Economics*, 11(1): 727–753.

Anukriti, S, Sonia Bhalotra, and Eddy H F Tam. 2022. "On the Quantity and Quality of Girls: Fertility, Parental Investments and Mortality." *Economic Journal*, 132(641): 1–36.

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.

Attané, Isabelle. 2009. "The Determinants of Discrimination Against Daughters in China: Evidence from a Provincial-Level Analysis." *Population Studies*, 63(1): 87–102.

Banister, Judith. 2004. "Shortage of Girls in China Today." *Journal of Population Research*, 21(1): 19–45.

Bastian, Jacob. 2020. "The Rise of Working Mothers and the 1975 Earned Income Tax Credit." *American Economic Journal: Economic Policy*, 12(3): 44–75.

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

Bazzi, Samuel, Abel Brodeur, Martin Fiszbein, and Joanne Haddad. 2023. "Frontier History and Gender Norms in the United States." National Bureau of Economic Research.

Berkowitz, Daniel, Hong Ma, and Shuichiro Nishioka. 2017. "Recasting the Iron Rice Bowl: The Reform of China's State-Owned Enterprises." *The Review of Economics and Statistics*, 99(4): 735–747.

Bhaskar, V. 2011. "Sex Selection and Gender Balance." *American Economic Journal: Microeconomics*, 3(1): 214–244.

Bidner, Chris, and Patrick Francois. 2011. "Cultivating Trust: Norms, Institutions and the Implications of Scale." *The Economic Journal*, 121(555): 1097–1129.

Bisin, Alberto, and Thierry Verdier. 2011. "Chapter 9 - The Economics of Cultural Transmission and Socialization." In *Handbook of Social Economics*. Vol. 1, , ed. Jess Benhabib, Alberto Bisin and Matthew O. Jackson, 339–416. North-Holland.

Bursztyn, Leonardo, Alessandra L. González, and David Yanagizawa-Drott. 2020. "Misperceived Social Norms: Women Working Outside the Home in Saudi Arabia." *American Economic Review*, 110(10): 2997–3029.

Cai, Yong, and Yuan Cheng. 2015. "Pension Reform in China: Challenges and Opportunities." *China's Economy: A Collection of Surveys*, 45–62.

Callaway, Brantly, and Pedro H C Sant'Anna. 2021. "Difference-in-Differences with Multiple Time Periods." *Journal of Econometrics*, 225(2): 200–230.

Cao, Jiarui, Yiqing Xu, and Chuanchuan Zhang. 2022. "Clans and Calamity: How Social Capital Saved Lives during China's Great Famine." *Journal of Development Economics*, 157: 102865.

Chen, Binkai, Xi Yang, and Ninghua Zhong. 2020. "Housing Demand and Household Saving Rates in China: Evidence from a Housing Reform." *Journal of Housing Economics*, 49: 101693.

Cheng, Lingguo, Hong Liu, Ye Zhang, and Zhong Zhao. 2018. "The Health Implications of Social Pensions: Evidence from China's New Rural Pension Scheme." *Journal of Comparative Economics*, 46(1): 53–77.

Chen, Jieming, and Qi Chen. 2016. "Socioeconomic Statuses across Generations and Coresidence in China." *The Journal of Chinese Sociology*, 3: 1–21.

Chen, Xi. 2017. "Old Age Pension and Intergenerational Living Arrangements: A Regression Discontinuity Design." *Review of Economics of the Household*, 15: 455–476.

Chun, Heeran, and Monica Das Gupta. 2022. "'Not a Bowl of Rice, But Tender Loving Care': From Aborting Girls to Preferring Daughters in South Korea." *Asian Population Studies*, 18(2): 169–189.

Coale, Ansley J, and Judith Banister. 1994. "Five Decades of Missing Females in China." *Demography*, 31(3): 459–479.

Danzer, Alexander M, and Lennard Zyska. 2023. "Pensions and Fertility: Microeconomic Evidence." *American Economic Journal: Economic Policy*, 15(2): 126–165.

Das Gupta, Monica. 2010. "Family Systems, Political Systems and Asia's 'Missing Girls' the Construction of Son Preference and Its Unravelling." *Asian Population Studies*, 6(2): 123–152.

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): 153–187.

Dong, Zhiqiang, Yaseen Alhaj-Yaseen, Yang Jiao, and Yuejun Zhong. 2021. "Surplus Men and Scarce Women: The Impact of Mating Competition on the Desire for Sons in China." *Pacific Economic Review*, 26(3): 339–371.

Duflo, Esther. 2003. "Grandmothers and Granddaughters: Old-Age Pensions and Intrahousehold Allocation in South Africa." *The World Bank Economic Review*, 17(1): 1–25.

Ebenstein, Avraham. 2010. "The "Missing Girls" of China and the Unintended Consequences of the One Child Policy." *Journal of Human Resources*, 45(1): 87–115.

Ebenstein, Avraham. 2014. "Patrilocality and Missing Women." *SSRN Electronic Journal*.

Ebenstein, Avraham. 2021. "Elderly Coresidence and Son Preference: Can Pension Reforms Solve the 'Missing Women'Problem?" *Available at SSRN 3829866*.

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.

Edlund, Lena, Hongbin Li, Junjian Yi, and Junsen Zhang. 2013. "Sex Ratios and Crime: Evidence from China." *Review of Economics and Statistics*, 95(5): 1520–1534.

Fan, Xiaohai, and Ximing Yue. 2023. "The Peer Effects on Participation in New Rural Pension Scheme." *Economic Theory and Business Management*, 43(11): 99–112.

Fernandez, Raquel, Alessandra Fogli, and Claudia Olivetti. 2004. "Preference formation and the rise of women's labor force participation: Evidence from WWII."

Fernández, Raquel. 2013. "Cultural Change as Learning: The Evolution of Female Labor Force Participation over a Century." *American Economic Review*, 103(1): 472–500.

Field, Erica, Rohini Pande, Natalia Rigol, Simone Schaner, and Charity Troyer Moore. 2021. "On Her Own Account: How Strengthening Women's Financial Control Impacts Labor Supply and Gender Norms." *American Economic Review*, 111(7): 2342–2375.

García-Miralles, Esteban, and Jonathan M Leganza. Forthcoming. "Public Pensions and Private Savings." *American Economic Journal: Economic Policy*.

Gelfand, Michele J, Sergey Gavrilets, and Nathan Nunn. 2024. "Norm Dynamics: Interdisciplinary Perspectives on Social Norm Emergence, Persistence, and Change." *Annual Review of Psychology*, 75(Volume 75, 2024): 341–378.

Giuliano, Paola, and Nathan Nunn. 2021. "Understanding Cultural Persistence and Change." *The Review of Economic Studies*, 88(4): 1541–1581.

Glaeser, Edward, Wei Huang, Yueran Ma, and Andrei Shleifer. 2017. "A Real Estate Boom with Chinese Characteristics." *Journal of Economic Perspectives*, 31(1): 93–116.

Goldin, Claudia, and Lawrence F Katz. 2002. "The Power of the Pill: Oral Contraceptives and Women's Career and Marriage Decisions." *Journal of Political Economy*, 110(4): 730–770.

Guiso, Luigi, Paola Sapienza, and Luigi Zingales. 2008. "Social Capital as Good Culture." *Journal of the European Economic Association*, 6(2-3): 295–320.

Guo, Hao, Chenxu Hu, and Xiaozhou Ding. 2022. "Son Preference, Intrahousehold Discrimination, and the Gender Gap in Education in China." *International Review of Economics & Finance*, 79: 324–339.

Guo, Naijia, Wei Huang, and Ruixin Wang. 2025. "Public Pensions and Family Dynamics: Eldercare, Child Investment, and Son Preference in Rural China." *Journal of Development Economics*, 172(103390): 103390.

Guo, Rufei, and Junsen Zhang. 2020. "The Effects of Children's Gender Composition on Filial Piety and Old-Age Support." *Economic Journal*, 130(632): 2497–2525.

Gupta, Monica Das. 1987. "Selective Discrimination against Female Children in Rural Punjab, India." *Population and Development Review*, 13(1): 77.

Hanna, Rema, and Benjamin A Olken. 2018. "Universal Basic Incomes Versus Targeted Transfers: Anti-Poverty Programs in Developing Countries." *Journal of Economic Perspectives*, 32(4): 201–226.

He, Hui, Feng Huang, Zheng Liu, and Dongming Zhu. 2018. "Breaking the "Iron Rice Bowl:" Evidence of Precautionary Savings from the Chinese State-Owned Enterprises Reform." *Journal of Monetary Economics*, 94: 94–113.

Horowitz, Amy. 1985. "Sons and Daughters as Caregivers to Older Parents: Differences in Role Performance and Consequences1." *The Gerontologist*, 25(6): 612–617.

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.

Jayachandran, Seema. 2015. "The Roots of Gender Inequality in Developing Countries." *Annual review of economics*, 7(1): 63–88.

Jiao, Yang, and Judith Liu. 2024. "The Power of Family: How Ties Influence Welfare Participation." *Working Paper*.

Junhong, Chu. 2001. "Prenatal Sex Determination and Sex-Selective Abortion in Rural Central China." *Population and Development Review*, 27(2): 259–281.

Kajanus, Anni. 2016. *Chinese Student Migration, Gender and Family.* Springer.

Kolsrud, Jonas, Camille Landais, Daniel Reck, and Johannes Spinnewijn. 2024. "Retirement Consumption and Pension Design." *American Economic Review*, 114(1): 89–133.

Kumar, Sneha, and Nistha Sinha. 2020. "Preventing More "Missing Girls": A Review of Policies to Tackle Son Preference." *The World Bank Research Observer*, 35(1): 87–121.

Leisering, Lutz, Sen Gong, and Athar Hussain. 2002. *People's Republic of China: Old-Age Pensions for the Rural Areas: From Land Reform to Globalization.* Asian Development Bank.

Li, Hongbin, Junjian Yi, and Junsen Zhang. 2011. "Estimating the effect of the one-child policy on the sex ratio imbalance in China: Identification based on the difference-in-differences." *Demography*, 48(4): 1535–1557.

Lin, Carl, Yan Sun, and Chunbing Xing. 2021. "Son Preference and Human Capital Investment among China's Rural-urban Migrant Households." *The Journal of Development Studies*, 57(12): 2077–2094.

Lin, I-Fen, Noreen Goldman, Maxine Weinstein, Yu-Hsuan Lin, Tristan Gorrindo, and Teresa Seeman. 2003. "Gender Differences in Adult Children's Support of Their Parents in Taiwan." *Journal of Marriage and Family*, 65(1): 184–200.

Li, Qin, Yafeng Wang, and Yaohui Zhao. 2018. "The Impact of China's New Rural Pension Program on Elderly Labor, Grandchild Care, and Old-Age Support." *Feminist Economics*, 24(2): 265–287.

Liu, Tao, and Li Sun. 2016. "Pension Reform in China." *Journal of Aging & Social Policy*, 28(1): 15–28.

Lowes, Sara, Nathan Nunn, James A Robinson, and Jonathan L Weigel. 2017. "The Evolution of Culture and Institutions: Evidence from the Kuba Kingdom." *Econometrica*, 85(4): 1065–1091.

Lu, Fangwen, Guoen Liu, and Huiwen Li. 2017. "Gender of Children and Parental Happiness." *Economic Research Journal*, 52(10): 173–188.

Ma, Xinxin. 2023. "Public Pension and Household Financial Asset Allocation." In *Public Pension Reforms in China*. 167–189. Springer.

Montgomery, Rhonda J V, and Yashinoro Kamo. 1989. "Parent Care by Sons and Daughters." In *Aging Parents and Adult Children.* , ed. J A Mancini, 213–230. Lexington Books/D. C. Heath and Com.

Murphy, Rachel, Ran Tao, and Xi Lu. 2011. "Son Preference in Rural China: Patrilineal Families and Socioeconomic Change." *Population and Development Review*, 37(4): 665–690.

Ning, Manxiu, Jinquan Gong, Xuhui Zheng, and Jun Zhuang. 2016. "Does New Rural Pension Scheme Decrease Elderly Labor Supply? Evidence from CHARLS." *China Economic Review*, 41: 315–330.

Nunn, Nathan. 2012. "Culture and the Historical Process." *Economic History of Developing Regions*, 27(S1): 108–126.

Park, Chai Bin, and Nam-Hoon Cho. 1995. "Consequences of Son Preference in a Low-Fertility Society: Imbalance of the Sex Ratio at Birth in Korea." *Population and Development Review*, 21(1): 59.

Pörtner, Claus C. 2022. "Birth Spacing and Fertility in the Presence of Son Preference and Sex-Selective Abortions: India's Experience over Four Decades." *Demography*, 59(1): 61–88.

Rossi, Pauline, and Mathilde Godard. 2022. "The Old-Age Security Motive for Fertility: Evidence from the Extension of Social Pensions in Namibia." *American Economic Journal: Economic Policy*, 14(4): 488–518.

Shan, Xiaoyue, and Albert Park. 2023. "Access to Pensions, Old-Age Support, and Child Investment in China." *Journal of Human Resources*.

South, Scott J, and Kim M Lloyd. 1992. "Marriage Opportunities and Family Formation: Further Implications of Imbalanced Sex Ratios." *Journal of Marriage and the Family*, 440–451.

Stephens, Melvin, and Takashi Unayama. 2011. "The Consumption Response to Seasonal Income: Evidence from Japanese Public Pension Benefits." *American Economic Journal: Applied Economics*, 3(4): 86–118.

Wagstaff, Adam, Magnus Lindelow, Gao Jun, Xu Ling, and Qian Juncheng. 2009. "Extending Health Insurance to the Rural Population: An Impact Evaluation of China's New Cooperative Medical Scheme." *Journal of Health Economics*, 28(1): 1–19.

Wei, Shang-Jin, and Xiaobo Zhang. 2011. "The Competitive Saving Motive: Evidence from Rising Sex Ratios and Savings Rates in China." *Journal of Political Economy*, 119(3): 511–564.

Xu, Qi. 2015. "Sons or Daughters? Who Are Caring for Aging Parents: A Gender Comparative Study of Chinese Family." *Chinese Journal of Sociology*, 35(4): 199.

Yi, Zeng, Tu Ping, Gu Baochang, Xu Yi, Li Bohua, and Li Yongpiing. 1993. "Causes and implications of the recent increase in the reported sex ratio at birth in China." *Population and development review*, 283–302.

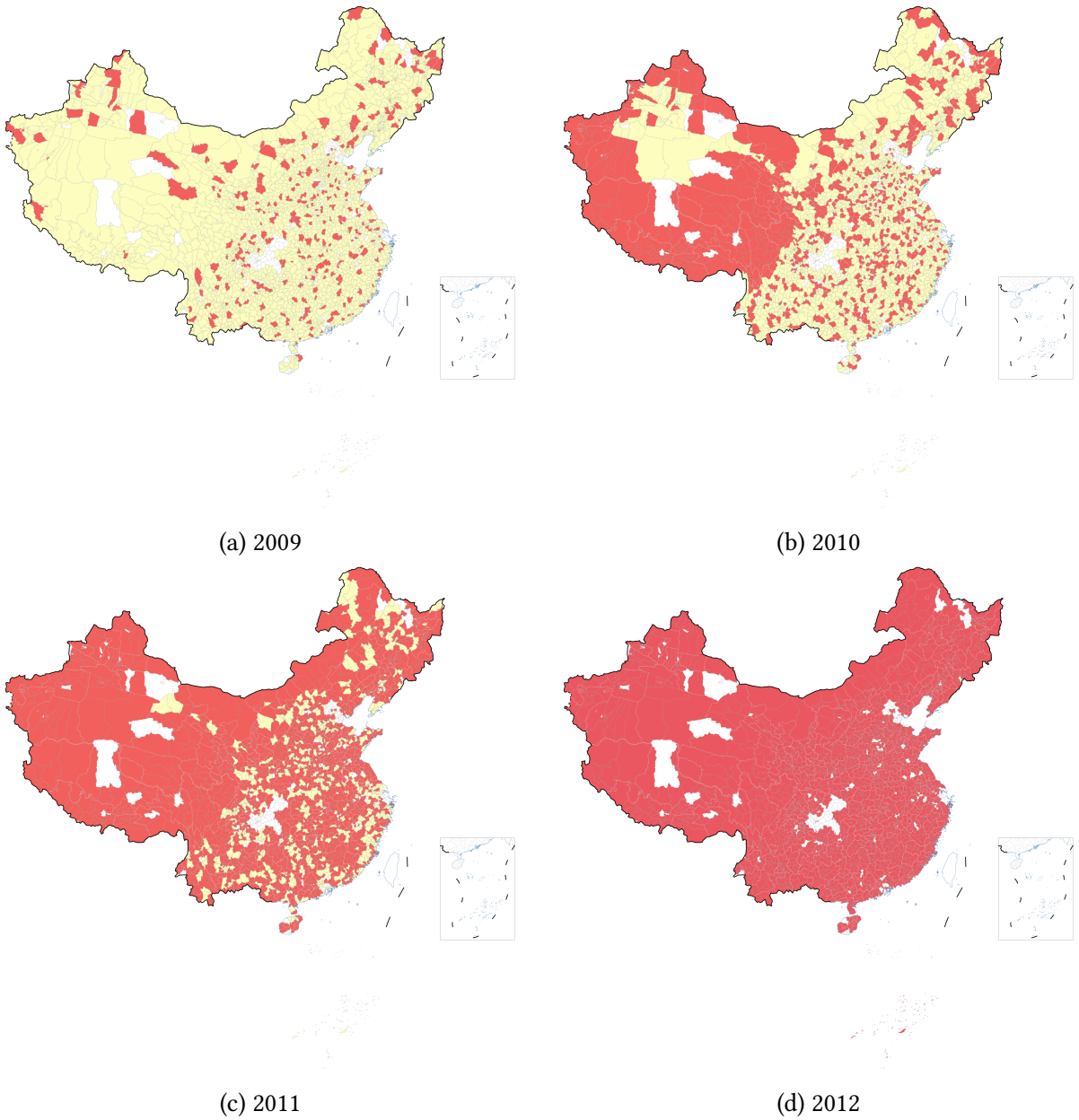
Zhang, Chuanchuan. 2014. "Policy Evaluation of China' New Rural Pension Program: Income, Poverty, Expenditure, Subjective Wellbeing and Labor Supply." *China Economic Quarterly*, 14(1): 203.

Zhang, Chuanchuan. 2019. "Family Support or Social Support? The Role of Clan Culture." *Journal of Population Economics*, 32: 529–549.

Zhang, Jie, and Chenyu Meng. 2025. "Educational expansion and attitudes toward son preference in China." *Journal of Asian Economics*, 101960.

Zhang, Yanan, and Sarah Harper. 2022. "The Impact of Son or Daughter Care on Chinese Older Adults' Mental Health." *Social Science & Medicine*, 306: 115104.

8 Figures



(a) 2009 (b) 2010

(c) 2011 (d) 2012

Figure 1: Roll-out of New Rural Pension Scheme Reform in China

Notes: Grey areas indicate no data. Read areas indicate counties that participate in the NRPS.

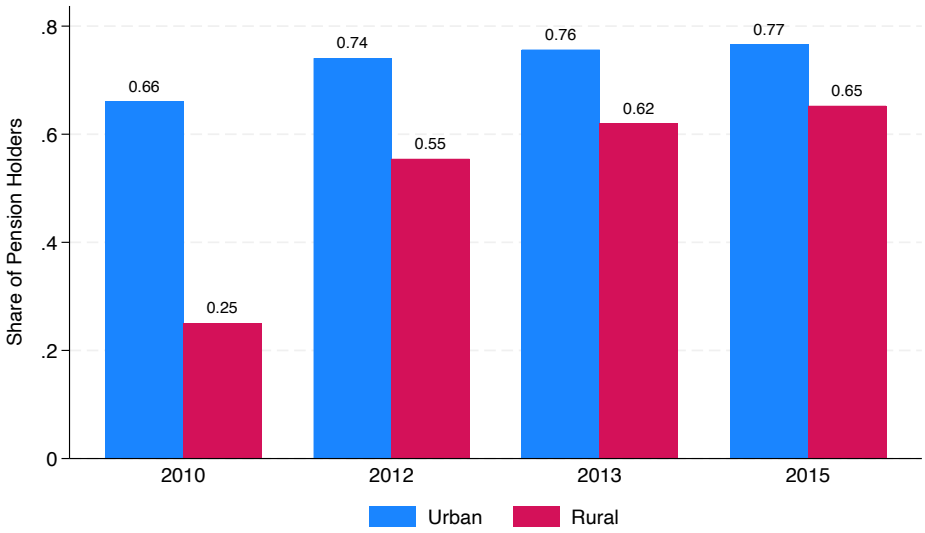


Figure 2: Share of CGSS Respondents that Have a Pension Plan

Notes: This figure plots the percentage of survey respondents in each CGSS wave that hold a pension plan.

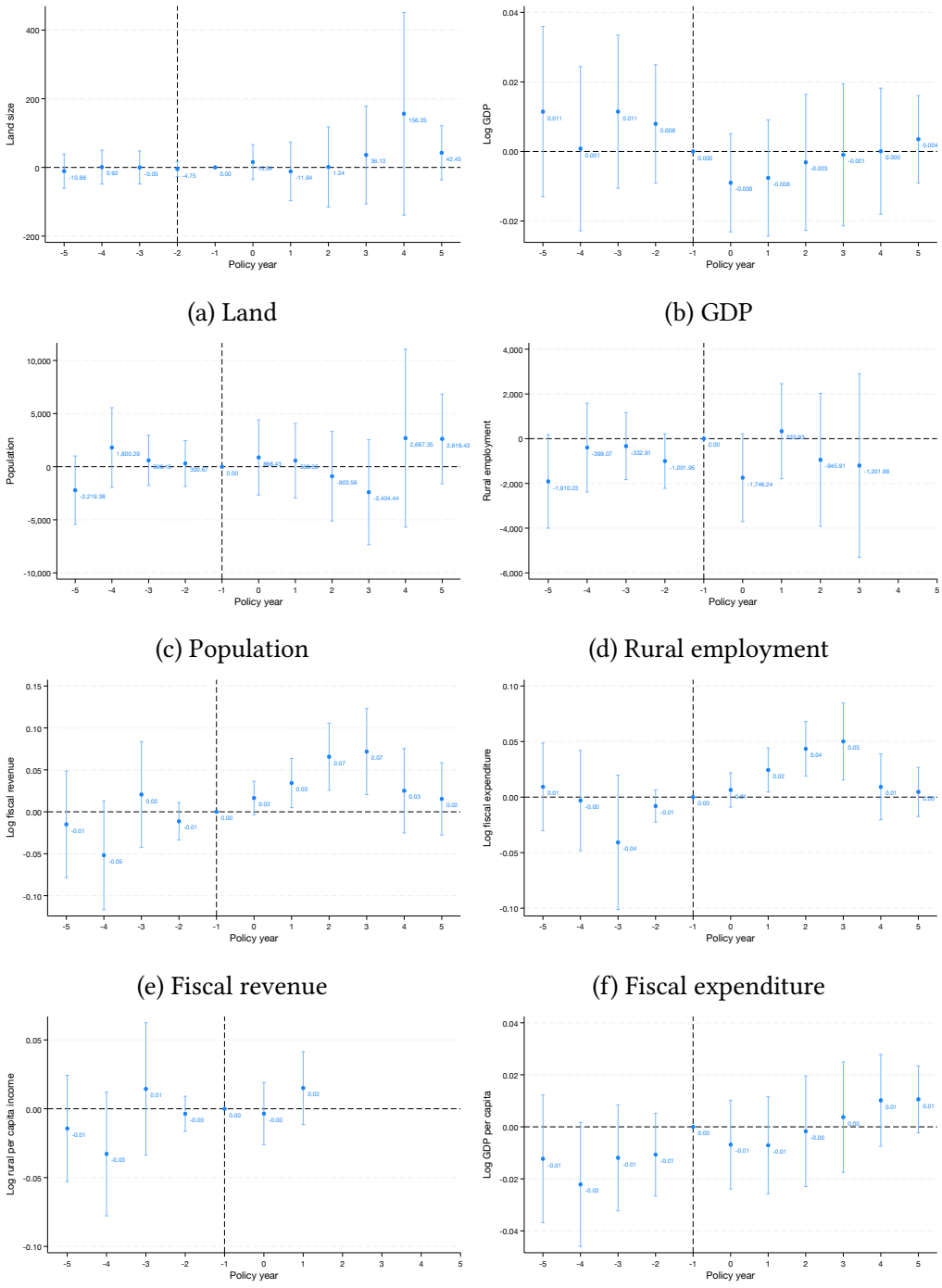
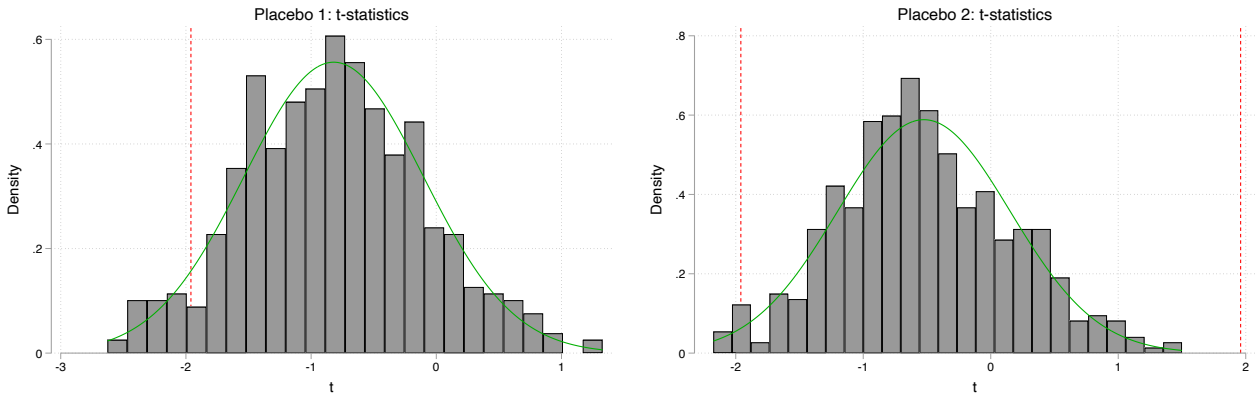


Figure 3: County Characteristics

Notes: This figure plots the coefficient and the 95% confidence interval for the difference of major characteristics of treated and control counties following Equation (5). Data are obtained from CSMAR.



(a) Random county

(b) Random age bin

Figure 4: Distributions of t Statistics for Placebo Checks

Notes: This figure plots the distributions of t-statistics for the two placebo checks in which we randomize county IDs and age bins separately. Red dashed lines refer to -1.96 and 1.96.

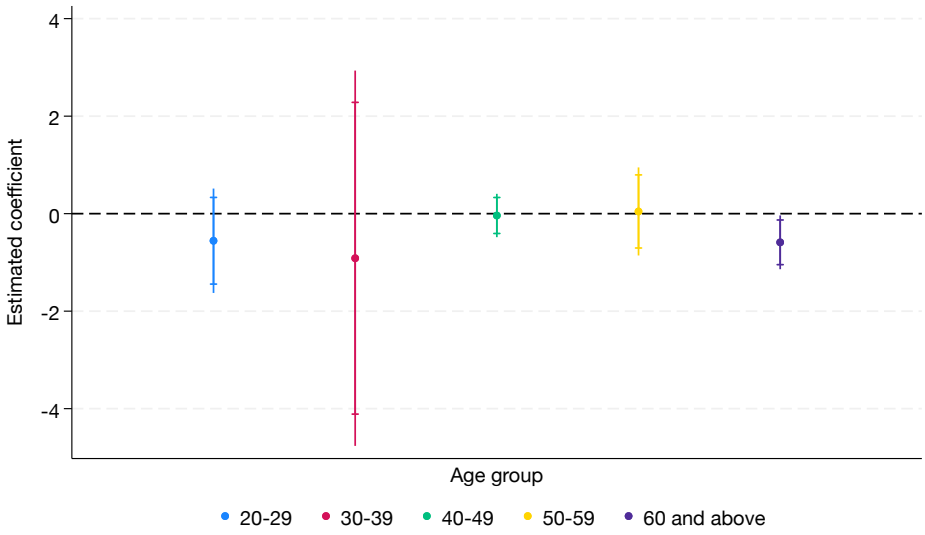


Figure 5: Coefficient Plot for Pension Across Different Age Groups for Rural Individuals

Notes: This figure plots the coefficient and both the 90% and 95% confidence interval for $Pension$ in Equation (4) for different age groups for rural individuals.

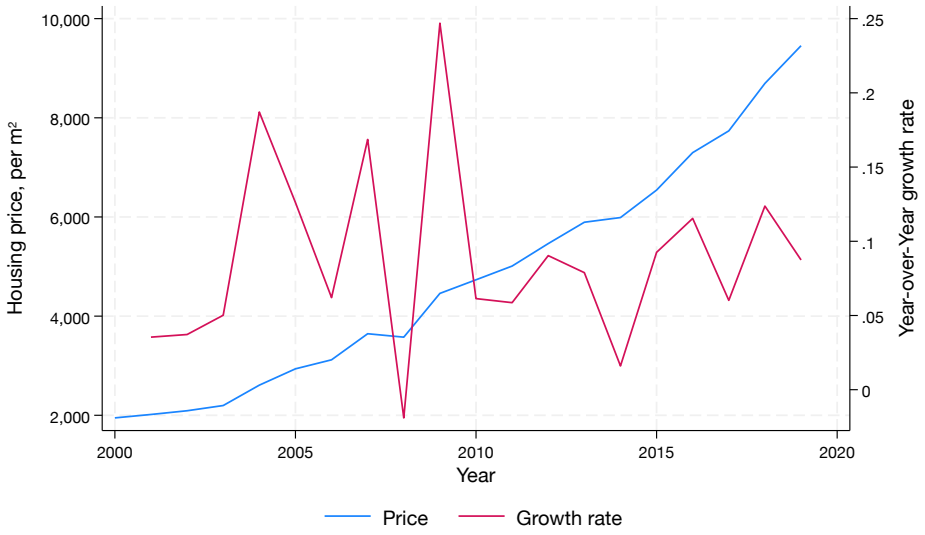


Figure 6: Residential Housing Price and Growth Rate

Notes: This figure shows the residential housing price trend and its year-over-year growth rate. Data source: National Bureau of Statistics of China.

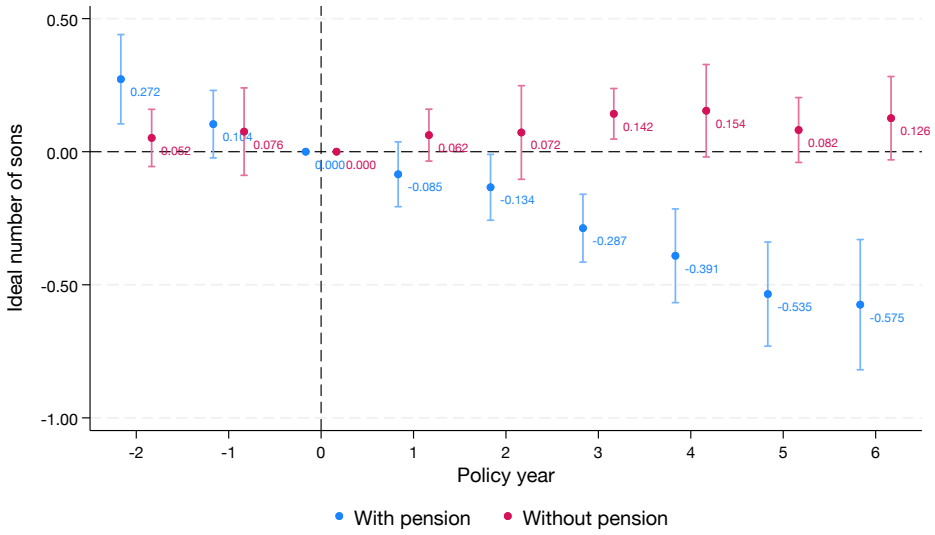


Figure 7: The Dynamic Effects of NRPS Reform on Son Preference, Rural

Notes: This figure shows the dynamic effects of the implementation of NRPS reform on son preference for rural individuals.

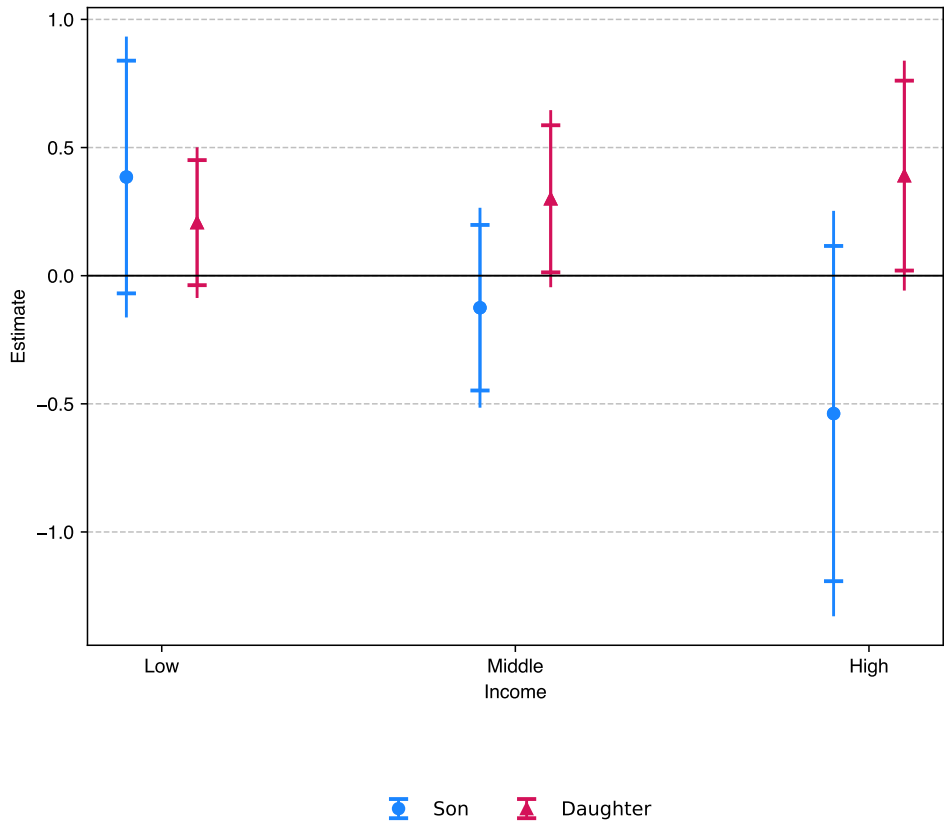


Figure 8: The Impact of Pension on Co-residence with Children by Income

Notes: This figure shows the estimated coefficients for co-residence with sons and daughters by income group. Low income is below 25th percentile, middle income is between 25th and 75th percentile, and high income is above 75th percentile. 90% and 95% confidence bands are plotted.

9 Tables

Table 1: Summary Statistics

	2010	2012	2013	2015	Total
Preferred number of sons	1.561	1.384	1.453	1.467	1.462
	(0.862)	(0.779)	(0.768)	(0.838)	(0.821)
Male	0.498	0.557	0.544	0.488	0.517
	(0.500)	(0.497)	(0.499)	(0.500)	(0.500)
Age	68.136	68.361	69.081	68.729	68.529
	(6.646)	(6.946)	(7.066)	(7.006)	(6.921)
Han ethnicity	0.904	0.892	0.894	0.919	0.905
	(0.294)	(0.311)	(0.308)	(0.272)	(0.293)
Family size	2.621	2.842	2.633	1.686	2.336
	(1.466)	(1.626)	(1.533)	(1.018)	(1.469)
Migrant	0.023	0.031	0.022	0.021	0.025
	(0.151)	(0.174)	(0.147)	(0.143)	(0.155)
Married	0.721	0.710	0.709	0.758	0.731
	(0.449)	(0.454)	(0.455)	(0.428)	(0.444)
Public jobs	0.0650	0.0781	0.0345	0.0504	0.0600
	(0.247)	(0.268)	(0.183)	(0.219)	(0.238)
Education	0.010	0.018	0.015	0.029	0.020
	(0.0986)	(0.134)	(0.121)	(0.167)	(0.140)
Healthcare	0.901	0.947	0.926	0.934	0.929
	(0.299)	(0.225)	(0.262)	(0.249)	(0.256)
Log HH income	9.061	9.223	9.289	9.486	9.293
	(1.209)	(1.227)	(1.277)	(1.320)	(1.275)
Observations	815	1,088	406	1,389	3,698

Notes: This table reports the summary statistics for major variables in this paper. Standard deviations are in parentheses.

Table 2: The Impact of Pension on Son Preference, OLS Results

	(1)	(2)	(3)
Pension	-0.043	0.015	0.016
	(0.037)	(0.042)	(0.042)
Male	-0.103***	-0.092***	-0.092***
	(0.034)	(0.031)	(0.031)
Age	0.026***	0.027***	0.027***
	(0.003)	(0.003)	(0.003)
Han	-0.103	0.122	0.122
	(0.110)	(0.095)	(0.094)
Family size	0.017	-0.013	-0.013
	(0.015)	(0.008)	(0.008)
Migrant	-0.169**	-0.042	-0.042
	(0.071)	(0.056)	(0.056)
Married	0.072	0.071*	0.072*
	(0.047)	(0.041)	(0.041)
SOE	-0.093**	-0.118***	-0.118***
	(0.035)	(0.037)	(0.037)
Middle school	-0.016	-0.000	-0.000
	(0.045)	(0.046)	(0.045)
High school	0.075	0.113	0.113
	(0.069)	(0.077)	(0.077)
College and above	0.119	0.158	0.158
	(0.389)	(0.382)	(0.383)
Log HH income	-0.014	0.018	0.017
	(0.071)	(0.076)	(0.076)
Health care	0.008	0.005	0.005
	(0.015)	(0.014)	(0.014)
County FE		✓	✓
Year FE		✓	✓
County Trend			✓
R^2	0.053	0.126	0.126
Observations	3,698	3,698	3,698

Notes: This table reports the regression results for the impact of pension on son preference. The dependent variable is the preference for the number of sons. All regressions are weighted by CGSS sample weights. Robust standard errors are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3: The Impact of Pension on Son Preference for Senior People, IV

	(1)	(2)	(3)
Pension	-0.447***	-0.576**	-0.588**
	(0.111)	(0.260)	(0.269)
Male	-0.100***	-0.084**	-0.084**
	(0.033)	(0.032)	(0.032)
Age	0.026***	0.025***	0.025***
	(0.003)	(0.003)	(0.003)
Han	-0.096	0.109	0.110
	(0.106)	(0.088)	(0.088)
Family size	-0.005	-0.013	-0.013
	(0.012)	(0.010)	(0.010)
Migrant	-0.164**	-0.057	-0.057
	(0.072)	(0.064)	(0.064)
Married	0.066	0.066	0.066
	(0.048)	(0.043)	(0.043)
SOE	-0.106**	-0.124**	-0.124**
	(0.043)	(0.050)	(0.050)
Middle school	0.014	0.013	0.013
	(0.046)	(0.051)	(0.051)
High school	0.108	0.118	0.118
	(0.080)	(0.091)	(0.091)
College and above	0.150	0.073	0.073
	(0.338)	(0.321)	(0.318)
Log HH income	0.113	0.168*	0.172*
	(0.083)	(0.098)	(0.099)
Health care	0.012	0.008	0.008
	(0.014)	(0.013)	(0.013)
County FE		✓	✓
Year FE		✓	✓
County Trend			✓
Mean	1.462	1.462	1.462
SD	0.821	0.821	0.821
Kleibergen-Paap F statistic	114.8	12.94	13.16
Observations	3,698	3,698	3,698

Notes: This table reports the main IV regression results for the impact of pension on son preference. The dependent variable is the preference for the number of sons. All regressions are weighted by CGSS sample weights. Robust standard errors are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: First-Stage and Reduced-Form Results

	(1) Pension	(2) Number of sons
$Reform$	3.594***	-2.113**
	(0.991)	(0.885)
Male	0.014	-0.092***
	(0.019)	(0.031)
Age	0.003	0.023***
	(0.002)	(0.003)
Han	-0.026	0.125
	(0.052)	(0.095)
Family size	-0.002	-0.012
	(0.007)	(0.008)
Migrant	-0.025	-0.043
	(0.054)	(0.055)
Married	-0.011	0.072*
	(0.019)	(0.041)
SOE	-0.003	-0.123***
	(0.037)	(0.037)
Middle school	0.021	0.000
	(0.029)	(0.045)
High school	0.010	0.113
	(0.050)	(0.077)
College and above	-0.137	0.154
	(0.135)	(0.383)
Log HH income	0.256***	0.022
	(0.034)	(0.077)
Health care	0.003	0.006
	(0.007)	(0.014)
County FE	✓	✓
Year FE	✓	✓
County Trend	✓	✓
Kleibergen-Paap F statistic	13.16	
Observations	3,698	3,698

Notes: This table reports the first-stage and reduced-form results for the impact of pension on son preference. The dependent variable is whether the respondent has pension in the first column and preference for the number of sons in the second column. All regressions are weighted by CGSS sample weights. Robust standard errors are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Placebo Checks

	(1) Random county	(2) Random age bin	(3) Ideal number of daughter
Pension	-0.806	0.685	-0.735
	(0.613)	(0.704)	(0.497)
Observations	3,450	3,478	3,695
Kleibergen-Paap F statistic	6.553	4.248	13.389

Notes: This table reports the instrumental variable regression results for the placebo checks. The dependent variable is the preference for the number of sons in columns (1) and (2) and preference for the number of daughters in column (3). Column (1) randomly assigns a county to each individual and column (2) randomly assigns an age bin to each individual. Column (3) uses preferred number of daughters as dependent the variable. All regressions control for gender, age, ethnicity, family size, migration status, marital status, public sector job, education attainment, household income, and health care status. Robust standard errors are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Robustness: Health Care Coverage and Housing Boom

	(1)	(2)	(3)	(4)	(5)
		Health care			Housing price
Dependent Vars	Health care	Health care	Number of sons	Number of sons	Number of sons
	First stage	IV	IV	IV	
Pension		0.025	-0.584**	-0.588**	-0.557**
		(0.131)	(0.269)	(0.269)	(0.270)
Male	0.027***	0.027***	-0.079**	-0.084**	-0.083**
	(0.008)	(0.008)	(0.032)	(0.032)	(0.032)
Age	-0.002*	-0.002**	0.024***	0.025***	0.025***
	(0.001)	(0.001)	(0.003)	(0.003)	(0.003)
Han	0.037	0.037	0.116	0.110	0.112
	(0.027)	(0.026)	(0.088)	(0.088)	(0.088)
Family size	0.007**	0.007**	-0.012	-0.013	-0.014
	(0.003)	(0.003)	(0.010)	(0.010)	(0.010)
Migrant	-0.058	-0.057	-0.067	-0.057	-0.055
	(0.044)	(0.045)	(0.064)	(0.064)	(0.063)
Married	0.025**	0.025**	0.070	0.066	0.066
	(0.011)	(0.012)	(0.042)	(0.043)	(0.042)
SOE	0.024*	0.023*	-0.120**	-0.124**	-0.123**
	(0.012)	(0.012)	(0.051)	(0.050)	(0.049)
Middle school	0.018	0.017	0.015	0.013	0.012
	(0.016)	(0.016)	(0.051)	(0.051)	(0.051)
High school	-0.027	-0.027	0.114	0.118	0.118
	(0.049)	(0.050)	(0.089)	(0.091)	(0.091)
College and above	0.061***	0.064***	0.084	0.073	0.075
	(0.011)	(0.018)	(0.317)	(0.318)	(0.315)
Log HH income	0.007*	0.007*	0.009	0.008	0.008
	(0.004)	(0.004)	(0.013)	(0.013)	(0.013)
$Reform$	0.092				0.164
	(0.484)				(0.100)
Health Care				0.172*	
				(0.099)	
Capital×Housing price					-0.065
					(0.063)
Observations	3,698	3,698	3,698	3,698	3,698
Kleibergen-Paap F		12.32	12.32	13.16	13.15

Notes: This table reports the tests for potential threat from the health care reform and housing market boom. Column (1) is the OLS regression result of having health care coverage on the instrument we use in our main specification. Column (2) is an IV regression where the dependent variable is health care. Column (3) shows the estimated IV result of pension on son preference omitting health care where column (4) is the benchmark result in Column (3) Table 3. Column (5) tests whether the housing market boom affects our main results. We add an interaction between provincial capital indicator and the national annual housing price. All regressions control for county and year fixed effects as well as county linear trend. All specifications are weighted by CGSS sample weights. Robust standard errors are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Heterogeneous Impacts by Gender

	(1) Male	(2) Female
Pension	-0.425***	-1.298
	(0.117)	(1.124)
Age	0.024***	0.024***
	(0.004)	(0.005)
Han	-0.007	0.270
	(0.042)	(0.179)
Family size	-0.028**	-0.006
	(0.014)	(0.021)
Migrant	-0.130	-0.001
	(0.092)	(0.118)
Married	0.162***	-0.010
	(0.053)	(0.072)
SOE	-0.125**	-0.024
	(0.051)	(0.204)
Middle school	-0.017	0.047
	(0.045)	(0.111)
High school	0.115	0.019
	(0.074)	(0.395)
College and above	0.735*	-0.327***
	(0.386)	(0.063)
Log HH income	-0.002	0.027
	(0.019)	(0.019)
Health care	0.096	0.411
	(0.105)	(0.353)
County FE	✓	✓
Year FE	✓	✓
County Trend	✓	✓
Mean	1.412	1.515
SD	0.778	0.862
Kleibergen-Paap F statistic	97.63	4.094
Observations	1,911	1,779

Notes: This table reports the impact of pension on son preference by gender. The dependent variable is the ideal number of sons in the second column. All regressions are weighted by CGSS sample weights. Robust standard errors are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Heterogeneous Effects of Pension on Son Preference by Clan Intensity

	(1) High Clan Size	(2) Low Clan Size	(3) Full Sample
Pension	-0.342	-0.964**	-0.632**
	(0.246)	(0.400)	(0.231)
Pension × High Clan			0.057
			(0.193)
Observations	2,223	1,474	3,698
Kleibergen-Paap F statistic	9.663	6.365	6.810

Notes: This table reports heterogeneous effects of pension participation on son preference by clan size. Columns (1) and (2) present IV estimates separately for respondents in high and low clan size cities. Column (3) reports the full sample with an interaction term between pension and high clan size. The dependent variable is ideal number of sons. All regressions include controls for demographic characteristics, household attributes, and employment status. All regressions weighted by CGSS sample weights and standard errors clustered at province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: The Impact of Pension on Attitude: Who Should Provide Old-Age Support

	(1) Self-provide	(2) Child-provide
Pension	0.008	0.086
	(0.066)	(0.324)
Male	0.017**	-0.017
	(0.007)	(0.021)
Age	-0.002**	0.005*
	(0.001)	(0.002)
Han	0.013	-0.054
	(0.019)	(0.069)
Family size	-0.009***	0.008
	(0.003)	(0.007)
Migrant	0.023	0.066
	(0.032)	(0.081)
Married	0.011	0.015
	(0.011)	(0.025)
SOE	0.022	-0.012
	(0.023)	(0.051)
Middle school	-0.015	-0.069*
	(0.012)	(0.036)
High school	-0.041*	-0.031
	(0.021)	(0.077)
College and above	0.095	0.387*
	(0.101)	(0.201)
Log HH income	0.001	0.031***
	(0.004)	(0.008)
Health care	-0.017	-0.023
	(0.022)	(0.077)
Observations	3,698	3,698
Kleibergen-Paap F statistic	13.16	13.16

Notes: This table reports the estimated impact of having pension on the response to the question regarding who should provide old-age support. The dependent variable in column (1) is whether the individual supports the idea that old-age support should be covered by self and the dependent variable in column (2) is whether the individual supports the notion that old-age support should be provided by their children. All regressions are weighted by CGSS sample weights. Robust standard errors are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: The Impact of Pension Reform on Attitude: Who Should Provide Old-Age Support (Under 60)

	(1)	(2)	(3)	(4)	(5)	(6)
		Self-provide			Child-provide	
VARIABLES	All	Male	Female	All	Male	Female
$Reform$	0.168**	0.194*	0.155	-0.300	-0.424*	-0.166
	(0.074)	(0.106)	(0.094)	(0.205)	(0.239)	(0.258)
Male	0.007*			0.025**		
	(0.004)			(0.011)		
Age	0.001***	0.001***	0.001***	-0.004***	-0.004***	-0.003***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Han	-0.005	-0.023*	0.011	-0.024	-0.018	-0.023
	(0.008)	(0.012)	(0.009)	(0.019)	(0.032)	(0.027)
Family size	-0.001	-0.002	-0.000	-0.002	0.005	-0.007
	(0.001)	(0.003)	(0.002)	(0.004)	(0.007)	(0.005)
Migrant	-0.001	0.007	-0.007	0.043**	0.029	0.055*
	(0.007)	(0.014)	(0.010)	(0.020)	(0.029)	(0.031)
Married	-0.012*	-0.020	-0.003	0.017	0.001	0.032
	(0.007)	(0.013)	(0.007)	(0.020)	(0.024)	(0.026)
SOE	0.000	-0.021	0.025	0.025	0.045	0.014
	(0.011)	(0.013)	(0.020)	(0.031)	(0.044)	(0.045)
Middle school	-0.009*	-0.020***	0.002	-0.046***	-0.024	-0.074***
	(0.004)	(0.007)	(0.006)	(0.014)	(0.022)	(0.020)
High school	-0.005	-0.006	-0.010	-0.083***	-0.089***	-0.062*
	(0.009)	(0.013)	(0.008)	(0.020)	(0.031)	(0.031)
College and above	-0.028***	-0.045***	-0.013	-0.137***	-0.175***	-0.081*
	(0.006)	(0.008)	(0.011)	(0.025)	(0.033)	(0.041)
Log HH income	-0.001	0.003	-0.003	0.025***	0.040***	0.010
	(0.002)	(0.004)	(0.003)	(0.007)	(0.010)	(0.009)
Health care	-0.002	0.004	-0.009	0.030	0.027	0.035
	(0.006)	(0.010)	(0.008)	(0.023)	(0.028)	(0.035)
Observations	10,212	4,707	5,505	10,212	4,707	5,505
R^2	0.037	0.067	0.049	0.079	0.100	0.094

Notes: This table reports the OLS estimation of pension reform on the response to the question regarding who should provide old-age support for individuals below age 60. The dependent variable is whether the individual supports the idea that old-age support should be covered by self in columns (1) through (3) and whether the individual supports the notion that old-age support should be provided by their children in columns (4) through (6). All regressions are weighted by CGSS sample weights. Robust standard errors are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11: Intergenerational Transmission

Dep Var: Son preference	(1) Age 25–40	(2) Age 25–50
Parent's Cohort Exposure	-2.629*	-1.830**
	(1.417)	(0.856)
Male	0.159*	0.116**
	(0.080)	(0.057)
Age	0.003	0.002
	(0.008)	(0.005)
Han	0.039	0.035
	(0.117)	(0.089)
Family size	-0.003	-0.009
	(0.021)	(0.018)
Migrant	0.097	0.078
	(0.236)	(0.228)
Married	-0.015	-0.016
	(0.099)	(0.096)
Public sector	0.059	-0.041
	(0.121)	(0.073)
Middle school	-0.079	-0.065
	(0.049)	(0.047)
High school	0.134	0.113
	(0.154)	(0.077)
College and above	-0.086	-0.045
	(0.083)	(0.085)
Health care	-0.158	-0.072
	(0.144)	(0.108)
Log HH income	0.014	0.015
	(0.039)	(0.030)
Observations	471	630
Baseline Mean	1.055	1.052
1 SD Effect	-0.117	-0.083
Effect (% of baseline)	-11.2%	-7.9%

Notes: This table reports the reduced form effect of parent's cohort exposure to NRPS on young adult respondents' ideal number of sons. Parent's Cohort Exposure = (parent's age cohort share in county from 2000 census) $\times$ (NRPS implemented in county-year). Sample includes young adults with parents identifiable in household roster based on relationship codes in the CGSS roster data. Column (1) restricts the sample to respondents aged 25–40, while column (2) includes respondents aged 25–50. All regressions control for county and year fixed effects and are weighted by CGSS sample weights. Standard errors clustered at the province level are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Appendices

A Additional Tables

Table A1: Intent-to-Treat Effect of Using Rollout Timing

	(1) Reduced form	(2) IV
Rollout	-0.245**	
	(0.104)	
Pension		-1.311
		(0.888)
Observations	1,966	1,965
R^2	0.183	-0.416
Kleibergen-Paap F		4.528

Notes: This table reports the results of estimating an ITT effect of rollout directly on son preference in column (1) and using the rollout timing as an instrument in column (2). All regressions control for gender, age, ethnicity, family size, migration status, marital status, public sector job, education attainment, household income, and health care status. Robust standard errors are clustered at the province level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$