Leaving Money on the Table? Decisions to Enroll in the New Rural Pension Scheme in China[1]

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Abstract

People often have difficult time making optimal financial decisions, including pension enrollment decisions important to lives in old age. Faced with the unprecedented challenge of population ageing, a large number of countries have launched social pension programs. However, the enrollment rates are generally low, leading to low replacement rates unable to sustain basic life after retirement age. Utilizing the largest and most recent social pension program in the world – China's New Rural Pension Scheme (NRPS) – that covers more than 400 million population, we find salient evidence of suboptimal pension enrollment behavior. Specifically, a sizable portion of people simply choose the default dominated pension option. Families often fail to make simple intergenerational or within-couple arrangements of pension income and premium to benefit all members involved. Meanwhile, we do not observe that adult children with more (or younger) parents eligible for pension income demonstrate more pension enrollment to reap larger pension benefits than those with fewer (or older) parents eligible for pension income.

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1. Introduction

A growing body of literature finds that people often have difficult time making optimal financial decisions, including decisions important to lives after retirement. For example, people engage in inadequate retirement planning. A sizable fraction of people close to retirement age do not ever think about retirement (Lusardi 1999) or make any adjustments in consumption and saving (Hubbard et al. 2005), even among respondents with high educational attainment (Ameriks et al. 2003). Employees choose the retirement timing that gives up a large amount of pension income (Campbell 2006; Chalmers et al. 2014). Meanwhile, people are uninformed about the characteristics of their pension plans (Mitchell, 1988; Gustman and Steinmeier, 2001), respond to the complexity inherent in retirement plan choices by simply choosing the default option (Madrian and Shea 2001; Clark et al. 2015), and leave "$100 bills on the sidewalk" by declining matching retirement contributions that can be immediately withdrawn (Choi et al. 2005a).

We extend this literature by studying pension enrollment decisions in developing countries where relevant institutions are weaker, older populations are poorer and less educated, and they are more vulnerable to making such important decisions. The proportion of the world's aging population above age 60 is expected to rise drastically from 13% in 2013 to 21% in 2050 (United Nations, 2013, p11), while population aging has taken place much faster in developing countries.

Faced with this unprecedented challenge, a number of low and middle income countries (LMIC) have implemented large-scale social pension programs.[2] Emerging evidence suggests that social pension programs in the LMIC affect elderly labor supply (Filho et al. 2008a), nutrition and health status (Case and Deaton 1998 and 2004; Duflo 2000), poverty alleviation (Zhao et al. 2014), intra-family arrangements, prime-aged labor migration (Ardington et al 2009), child labor and school enrollment (Filho et al. 2008b), living arrangements, and family structure (Edmonds et al. 2005), transfers (Jensen 2004), care for grandchildren (Maitra and Ray 2003).

While these programs demonstrate far-reaching social and economic impacts, the enrollment rates and the average level of premium chosen are generally low (Appendix Figure 1). This paper aims to examine some of the key issues behind the widespread low enrollment rate in the *developing world*.

We use so far the largest and most recent social pension program – the New Rural Pension Scheme (NRPS) of China – as a case study. China has experienced one of the fastest aging trend owing to increased life expectancy, migration of the young generation to cities and therefore declined intergenerational co-residence, and fewer number of children especially due to the One Child Policy (OCP). All these changes are eroding the traditional elderly care in China. By 2050, 32.8 percent of China's population will be above age 60, the largest in size among all countries in the world (United Nations, 2013).

In September 2009, China launched a large-scale social pension program in rural

[2] Countries in the Southern Cone of Latin America; countries in southern Africa, including Botswana, Lesotho, Namibia, South Africa, and Swaziland; countries in south Asia, including Bangladesh, India, and Nepal. Outside these clusters, social pensions are scarce.

China – the NRPS – to replace the failed unsubsidized rural pension program initiated in the 1990s with the NRPS generously subsidized by both the central government and the local government. By 2012, the NRPS has achieved a universal coverage at the county level, providing nationwide subsidized old-age support to older population in rural China who are not covered by any other pensions and are willing to enroll in the NRPS. Recent studies evaluate early effects of the NRPS, including significant poverty alleviation (Zhang et al. 2013), promotion of economic equity (Chen and Wang 2014), elderly consumption and intergenerational living arrangements (Chen 2015), migration (Chen 2016), and transfers (Chen 2014).

However, the NRPS enrollment rate at the individual level is still very low (Figure 1). Promoting nationwide enrollment and higher levels of premium are important for the NRPS to remain sustainable and beneficial to the rural population, but low coverage of social security programs is often a problem in LMIC. Despite the large efforts made by the Chinese government and the encouraging early effects of the NRPS, young residents below age 45 are not very enthusiastic to enroll in or only contribute the lowest level of premium. This is partly because they have to contribute at least 15 years to receive pension out of their individual accounts, which generates large uncertainty and low rates of return to the pension fund. We focus on people age 45-60, who are most likely to be the backbone of the NRPS. Unlike those below age 45, people age 45-60 are free to choose years of premium contribution and are closer to the age 60 cutoff when they are eligible to receive both the basic pension benefit and the pension payment.

This paper aims to contribute to the literature in at least two aspects: one, we are the first to examine suboptimal pension enrollment decisions and explore plausible explanations to the ubiquitous phenomenon of low pension participation in the developing world; two, we investigate comprehensive measures of pension enrollment, choice of premium, and decision making that determine the functioning and financial sustainability of social pensions. Through an improved understanding of pension enrollment decisions, this paper may contribute to the ongoing integration of the rural social pension program with the urban social pension program in China and similar reforms in other developing countries.

Utilizing a novel national sample of China Family Panel Studies (CFPS), we find salient evidence of suboptimal pension enrollment decisions. First, a sizable portion of respondents could benefit by simply switching from the previous unsubsidized public pension program (the default program) to the highly subsidized and dominant NRPS program. Second, adult children with parents eligible for basic pension could benefit more from the program than those with no eligible parents, but we do not observe significantly more pension enrollment for the former group. Third, among children with parents eligible for basic pension, the younger parents are, the more benefit they could receive upon enrollment. However, adult children's pension enrollment seems not sensitive to parental age profiles. Fourth, for counties subject to the *family binding policy*, the two generations fail to benefit from the program via an intra-family transfers, though basic pension received by elderly parents is much higher than children's paid premium. Fifth, the poorest households are no more likely than their richer counterpart to enroll in the pension program.

Results also show that young respondents are more likely to enroll as they approach the pension eligible age 60. People in lower income groups are more likely to enroll in, as their old age support often relies on the public pension program. Years of schooling of the most educated children promotes parents' pension enrollment, while parents' own education has nothing to do with enrollment, suggesting that financial literacy has externalities. Trust in government, concern over malfunctioning of the social security system, and prior enrollment in the successful New Cooperative Medical Scheme (NCMS) in early 2000s all play an important role in affecting pension enrollment.

The rest of the paper is organized as follows. Section 2 offers institutional background on New Rural Pension Scheme, the dataset, and key factors in a simple conceptual framework. Section 3 explains the empirical results. The final section concludes with discussion on the potential explanations and policy implications.

2. Institutional Background and Data

2.1 The New Rural Pension Scheme in China

The pension system in rural China was largely vacant before September 2009 when China launched the NRPS, now covering 400 million Chinese (Appendix Figure 2). Compared to the smaller scale unsubsidized rural pension program started in the 1990s, both the central government and the local government provide substantial subsidy to pensioners through the NRPS. The local government subsidy must be at least 30 CNY per person per year. The higher individual premium one chooses to pay, the more subsidies local government pays. The individual premium and the local government subsidy form the individual account. Besides, a basic pension benefit, 55 CNY per month per person in poor regions but as much as 310 CNY per month per person in rich regions, is available to all residents financed by the central government. Pensioners receive payment from both the individual account and the basic pension benefit.

All rural residents aged 16 or above who are not in school and are not enrolled in urban basic pension program can voluntarily enroll in the NRPS. Participants below age 45 are required to contribute at least 15 years to become eligible for pension payment upon reaching age 60. Those aged between 45 and 60 are encouraged to contribute more to meet the shortfall in contributions to their own account over the years before age 60. Appendix Table 1 shows that net pension benefits are positive for almost all premium categories ranging from 100 CNY to 500 CNY, the five most commonly observed premium levels across Chinese counties. Since people still tend to choose the lowest level of premium, i.e. 100 CNY, this table indicates that they may leave money on the table in both the extensive margin (whether to enroll) and the intensive margin (how much premium to contribute).

Pension payment is non-contributory to anyone aged 60 or above by the local rollout time. In other words, pensioners themselves are not required to make any contribution to the NRPS system or have cumulative work histories to become eligible for the basic pension benefit.[3] However, those aged 60 or above do not have individual

[3] Some regions in China stipulate that those aged 60 or above when the NRPS rolled out in the local

accounts as the NRPS was only rolled out recently.

Despite rapid economic growth, income gaps in China, especially between urban and rural areas, fail to shrink. Chinese governments at different levels provide significant amount of subsidies to pensioners who enroll in the NRPS, especially those living in western and central areas, which may help reduce the income gap between urban and rural China.

2.2 Data

We make use of China Family Panel Studies (CFPS), a nationally representative survey of communities, families, and individuals administered in both 2010 and 2012. The CFPS 2012 covers 44,693 individuals from 13,459 households across 25 provinces of China[4], which represent 95% of the Chinese population. It provides rich information on economic activities, education, family dynamics and relationships, migration, social trusts and concern over social issues, and health that are potential determinants of NRPS enrollment. All estimations are weighted to obtain national representative results.

The NRPS has been launched at the county level since early 2010, and very few counties initiated the program when the CFPS 2010 baseline national sample was collected. Therefore, this study only uses the CFPS 2012 sample. Counties in which NRPS had not been rolled out by the time of the CFPS 2012 survey are dropped. Our analysis is restricted to all who are eligible for NRPS enrollment. Specifically, our sample is composed of rural residents holding rural registration aged 16 or above who are not enrolled in the urban basic pension program. In general, the incentives can be quite different for people older than 60 compared to those younger than 60. Divided according to the age 60 cut-off, two subsamples with 17,865 observations (between age 16 and age 60) and 4,777 observations (above age 60) are formed, respectively.

2.3 Pension Enrollment: Factors and Channels (*under a major revision into a cost-benefit conceptual framework to better organize cost-related and benefit-related factors/channels*)

This paper identifies factors that contribute to the pension enrollment. We measure the decisions to enroll in the NRPS in three ways: whether one enrolls in the NRPS, the level of premium one chooses to pay, and the delayed time before making enrollment decisions. There are five categories of basic individual premium: 100, 200, 300, 400, and 500 CNY per year per person. Many counties have additional levels of premium, ranging from 100 to 7200 CNY per year per person. We take the difference between the exact date when one decided to enroll in the NRPS and the exact date when a county launched the NRPS. For those who are not enrolled in, their delayed time is defined as the gap between the exact interview date and the exact roll-out date at the county level. The roll-out dates for all counties are collected through retrieving county-level official documents and consulting officials in the Ministry of Human Resources and Social Security (Appendix Figure 3).

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county are eligible for the basic pension benefit only when their adult children eligible for the NRPS also enroll in.

[4] Excluding Hong Kong, Macao, Taiwan, Xinjiang, Qinghai, Inner Mongolia, Ningxia, and Hainan.

Key covariates at different levels are considered. First, individual demographic characteristics, including age cohorts, gender, education, household head status, and marital status, are controlled for (Case and Deaton, 1998). People below age 60 are divided into three groups, [45, 50), [50, 55), and [55, 60). Those in older age cohort are expected to receive pension payment sooner and therefore are more likely to enroll in the program. Household head may enroll more in the NRPS, perhaps due to their more bargaining power at home (Li and Olivera 2005; Packard et al. 2002). On the one hand, married couples may value elderly life more and therefore are more motivated to enroll. On the other hand, marriage may serve as an alternative mechanism for old age care and thus are less likely to enroll (Auerbach and Genoni, 2005). Those receiving more education may have more knowledge about the subsidized feature of NRPS and tend to enroll (Chang et al. 2014). Risk preference, as indicated by spending on lotteries, is controlled for. Party membership is also controlled as they might feel more pressure to enroll in programs initiated by government.

Second, poor health status, indicated by chronic disease status and activities of daily living (ADL) impairments, may reflect potential health risks and large medical expenses to insure against as well as the expectation about total time one may benefit from the pension payment. These two forces may predict the willingness to enroll in the NRPS in different directions. Meanwhile, enrolling in public health insurance program – the New Cooperative Medical Scheme (NCMS) – often improves health care utilization (Lei and Lin, 2009; Wagstaff et al., 2009; Kimberly et al., 2010; Hu et al., 2012; Long et al., 2012) and therefore the expectation of benefiting from the pension (Li and Olivera, 2005). Moreover, enrolling in other pension programs may discourage individuals from participate in the NRPS.

Meanwhile, distrust in the government and concern over the malfunctioning of the social security system may refrain people from enrolling in the program (Crabbe 2005). In CFPS 2012, respondents were asked to rank their trust in government officials from 0 to 10. Larger value corresponds to stronger trust. Three binary indicators are generated to represent low trust (0-3), medium trust (4-6), and strong trust (7-10) in the government, respectively. Similarly, concern over the malfunctioning of the social security system is classified as low (0-3), medium (4-6), and strong (7-10).

Fourth, decisions made by other household members may influence NRPS enrollment. People may be more likely to enroll in NRPS if their spouse enroll first. But this effect is different by gender. As women are found to be more willing to support family, women may pay the premium for their husbands by the money they get the pension if they enroll in earlier. To test such effect, we control interaction term of gender of respondent with whether spouse is older than 60 or below 60.

Fifth, most counties stipulate that those over age 60 are eligible to receive basic pension conditional on their adult children enroll in the NRPS. Therefore, households with senior members may have stronger incentive to participate. The number of senior members and the age profile may determine some of the heterogeneous benefits of enrolling in the pension program for those under age 60. So the number of senior members and the age profile are controlled. As household composition may affect the NRPS enrollment, one with migrant children may receive stronger economic support

via remittance and therefore is less likely to enroll. Parents' pension enrollment is positively associated with years of schooling of the most educated children. However, education may not be sufficient to improve pension choices (Choi et al. 2005b). People in larger households are less likely to enroll as family old-age support may to some extent substitute the formal social security (Packard et al., 2002; Li and Olivera, 2005; Auerbach and Genoni, 2005). In a traditional society, elderly parents often rely on instrumental support directly provided by their children, especially sons. Therefore, the number of sons, relative to the number of daughters, may saliently crowd out the motive to enroll in the NRPS (Ebenstein and Leung 2010).

Moreover, household income portfolio is diversified when one migrates out of the home county, which may discourage them from enrolling in the pension program. To mitigate some of the concern over reverse causation, we use migration status from the year before. Meanwhile, though the benefit accounts for a smaller proportion of income in developed regions, it can be much larger in less developed regions. House value, land size, and income per capita (excluding pension) owned by the households may capture the heterogeneous abilities to insure against risks and therefore heterogeneous motives. Income per capita is divided into 5 categories to capture its impact. More specifically, to the rich with alternative old-age support, their willingness to participate in the program can be low. However, the NRPS can be attractive to the poor with no formal old-age support.

Finally, village level characteristics, including those indicating economic condition, information transmission, social learning, and health care access, are included in the analysis. We hypothesize that both the proportion of villagers enrolled in the NRPS and the time since the first villager received pension payment promote the NRPS enrollment. Moreover, number of fellow villagers who did not receive payment from NRPS may decrease enrollment of NRPS. Village average income, village population, and time to the nearest hospital are controlled for.

3. Empirical Results

[Insert Table 1]

Table 1 reports the summary statistics of variables used in the analysis. As the incentives are different for people younger than age 60 and those older than age 60, we divide the sample into two according to the cut-off age 60. The NRPS enrollment rate is 54.2% among the younger cohort and 59.4% among the older cohort. The younger cohort chooses an average pension premium of 89 CNY per year per person, and they wait longer to make pension enrollment decisions compared to their older counterparts.

[Insert Table 2]

Using the national sample CFPS 2012, Table 2 presents key measures of the NRPS roll-out at the provincial level. While 182 out of 184 surveyed counties have launched the program, the individual level enrollment rate is only 45 percent among all people who are eligible to enroll in. Moreover, only 44 percent of people older than age 60

receive pension income.

The State Council stipulates that the lowest level of pension premium is 100 CNY across China. In the meantime, richer provinces often set higher levels of premium after adjusting for higher cost of living. Table 2 shows that the average pension premium among contributors across China is only 158 CNY, ranging from 100 to 746 CNY at the provincial level and from 100 to 7,200 CNY at the individual level. An individual on average waits for 2.6 years before making pension enrollment decisions.

[Insert Table 3]

The first two columns in Table 3 present summary statistics of multi-level characteristics by pension enrollment status among people younger than 60. T-tests in the third column show that people in older age profiles, having chronic diseases, possessing lower house value, and having fewer sons are more motivated to enroll. However, people in the lowest income quintile, receiving lower education, having no spouse, and having no medical insurance are less likely to enroll. Therefore, there is only mixed evidence that the NRPS may protect the more vulnerable aging population. We next conduct more rigorous analysis on NRPS pension enrollment decisions while controlling for rich covariates.

[Insert Table 4]

Table 4 presents regression results on pension enrollment decisions for people aged 45-60. All estimations are weighted to obtain nationally representative results. The first column identifies the extensive margin of pension enrollment, i.e., whether an individual enrolled in the NRPS. First, people closer to age 60, i.e., the pension eligibility cut-off, are more likely to enroll in the NRPS. Second, people who spend more money on lottery tend to enroll, perhaps due to their higher financial literacy rate or more risk tolerance. Third, given the time gap between investing in and receiving pension, political distrust might be a key obstacle to higher rate of enrollment. Results suggest that distrust in government, especially stronger concern over malfunctioning of the social security system, is associated with lower enrollment rates. However, distrust may not operate through concern over government corruption to affect pension enrollment. Fourth, since pension benefits are distributed via individual bank accounts without a need to claim benefits in person, migration status does not discourage enrollment. Fifth, those who already enrolled in the successful public health insurance program – the New Cooperative Medical Scheme (NCMS) – tend to enroll in the NRPS, possibly due to their beliefs that the NRPS may repeat the success story and that the NCMS may protect them against health risks, help them live longer, and therefore receive more pension benefits. People suffering from chronic diseases are more motivated to enroll to mitigate health risks. Sixth, owing to the within-household externality of a financial literate person (Basu and Foster 1998), results show that years of schooling of the most educated children promotes parents' pension enrollment, while parents' own education has nothing to do with enrollment. Seventh, most of the village

level characteristics are not associated with pension enrollment, one exception is that individual enrollment rate is higher in the village where higher proportion of people enroll in NRPS, perhaps due to the peer learning effect or herding behavior.

Importantly, we find signals of suboptimal pension enrollment that prevent people from reaping pension benefits. First, consistent with the pension policy stipulations, people are less likely to participate in the NRPS if they already enrolled in the non-subsidized public pension program. They could benefit by simply switching from the previous unsubsidized public pension program to the highly subsidized NRPS program. However, summary statistics in Table 2 suggest that 10.8 percent of respondents aged 45-60 fail to do so.

Second, we do not find any evidence of *within-couple* arrangements to claim the NRPS benefit and facilitate the enrollment. Specifically, having spouses eligible for receiving pension (i.e., older than age 60) does not motivate their own NRPS enrollment.

Third, the *family binding policy* stipulates that at least one adult child has to enroll in the NRPS for parents older than age 60 to receive pension. While basic pension received by elderly parents is much higher than children's paid premium, there is little evidence of *intergenerational* arrangements to claim the pension benefit and encourage enrollment that could benefit both generations. Specifically, we do not observe adult children with any pension eligible parents to be more motivated to enroll compared to those with no eligible parent. Among children with parents eligible for pension, the younger parents are, the more benefit parents could receive upon enrollment, but we do not see saliently higher enrollment rate among children.

Fourth, social pensions are designed to help vulnerable populations. However, while people in the second and third quintiles of income per capita are more likely to enroll in the NRPS compared to the highest quintile, it is surprising that those in the lowest quintile are no more motivated to enroll compared to their richest counterpart. These is no stigma of claiming pension benefits among the poor. Meanwhile, it is unlikely that people in the lowest quintile have concern over ineligibility of claiming other social security benefits when they are lifted out of poverty with the pension benefits, simply because their income is far lower than the poverty line (Appendix Table 2).

The second and the third columns of Table 4 introduce estimations on the intensive margin of pension enrollment, including premiums paid and time spent before making enrollment decisions. While the results are similar to those for NRPS participation, some interesting findings arise. For example, parents with one more son significantly reduce pension premium by 21 CNY, while there is no such effect for daughters. This can be caused by the traditional role of sons in taking care of elderly parents that substitutes for pension. Parents with migrant children pay lower premium, likely due to the remittances they receive from children that offset motives for formal old age support. Females pay more for pension premium than males do. Parents' education becomes important in determining the premium they pay, though children's education still matters more. ADL impairment significantly reduces pension premium, while suffering from chronic diseases has no salient effect on premium. More pension enrollment among villagers increases the level of premium and decreases the decision time.

Similar signals of suboptimal decisions persist when we investigate intensive margin of pension enrollment. Moreover, none of the lowest quintile of income through the second highest quintile of income demonstrate higher pension premium, which again is inconsistent with the purpose of social pensions to help vulnerable people.

[Insert Table 5]

Since social pensions are implemented by the government, it is plausible that political trust affects pension enrollment decisions (Lei et al. 2013). Replacing trust in government in Table 4 by alternative dimensions of trust in Table 5, our placebo tests find that none of the trusts in parents, Americans, strangers or neighbor is associated with pension enrollment. These results indicate it unlikely that unobserved factors simultaneously drive trust and individual enrollment decisions.

[Insert Table 6]

According to the *Family Binding Policy*, people older than age 60 are eligible to receive pension conditional on at least one of their adult children enrolling in. Considering higher level of education and financial literacy among children, they might be the real decision makers of pension enrollment for their elderly parents. In Table 6 we present results on pension enrollment decisions for elderly parents. Since senior people do not pay premium, only two other enrollment outcomes are estimated. On the one hand, having children participating in the NRPS is associated with significantly more enrollment among elderly parents and shorter decision time for pension enrollment. On the other hand, characteristics of older parents themselves exert negligible effects on pension enrollment. Though participation in the successful public medical insurance NCMS promotes pension enrollment, NCMS enrollment is often at the household level, rather than an individual decision.

Suboptimal pension enrollment among these older cohorts remains. We find some evidence of *within-couple* arrangements that having a spouse above age 60 promotes own pension enrollment. There is, however, little evidence of *intergenerational* arrangements to claim the NRPS benefit. For example, with a larger number of children and closer to age 60, each child could share a smaller portion of pension premium and is closer to being eligible for pension benefits. However, we do not observe significantly more pension enrollment among their elderly parents. Meanwhile, help to children offered by parents through financial transfers, doing housework, or child care do not increase parents' pension enrollment. Moreover, the summary statistics in Table 1 show that 24 percent of older persons do not claim pension benefits simply by switching from the unsubsidized pension program to the highly subsidized NRPS, therefore leaving money on the table. Furthermore, senior people in lower income quintiles do not take more advantage of social pensions compared to their richer counterpart. Poorer villages on average have lower pension enrollment rates.

Finally, it is interesting to note that community characteristics significantly affect pension enrollment decisions made by senior people, while negligible community effect

is found for younger cohort (age 45-60). One plausible explanation is that peers may exert stronger impacts on older persons compared to the younger generation who are more likely to migrate out and adjust their reference groups to the outside world.

4. Discussion

Discussion the economic magnitude and significance of Table 4

The rapid economic growth, profound changes in family compositions, and the fast aging process call for major transformation from the traditional family-based old-age support to more market oriented old-age care. Formal social security benefits provide important sources of income for aging populations. As Chinese are aging fast before getting rich, and the poverty rate among the elderly are much higher than other age cohorts, it is essential to implement social pension programs as basic safety nets for older populations.

The rapid launch of the NRPS since 2009 has achieved a universal coverage of all counties in China by 2012. However, the individual level participation rate remains low, even among older populations eligible for pension benefits. Using a nationally representative survey in 2012 when all counties were covered by the NRPS, this study examines potential suboptimal enrollment decisions that may prevent people from reaping pension benefits. Results suggest that people could benefit by simply switching from the previous unsubsidized public pension program (the default program) to the highly subsidized and dominant NRPS program. Meanwhile, they could benefit all family members through intra-family or intergenerational transfers. Moreover, vulnerable populations, such as those of low income, low education and financial literacy, older cohorts, could make better use of the pension benefits.

Why do people leave money on the table? First, low returns to the pension investment is unlikely a viable explanation, especially among people who are eligible to receive pension, because the pension payment they receive is at least several times higher than premium paid by their children. Second, unlike other developing countries (e.g. Mexico) that require pensioners to claim pension in person, the cost of claiming the benefits is low in China, due to the directly transfers of pension to individual banking accounts. We do not find any lower pension enrollment rate among migrants in China. Third, it is less plausible to attribute the low enrollment to budget constraints. For example, intergenerational arrangements can be made to overcome much of the potential budget constraint for elderly population. Fourth, low financial literacy may still limit the pension enrollment among older persons, but this issue can be resolved given the increasing financial literacy among their children. We would then witness more active and optimal enrollment decisions instead of simply choosing the default option. Fifth, distrust towards government and the social security system it runs can be one of the key issues that discourages more enrollment. Distrust is often cumulatively built and therefore difficulty to be reversed overnight.

Our study raises important implications for public policy. First, with the rapid growth of older populations and shrinking young cohorts, it is essential to make the pension system financially sustainable via encouraging younger cohorts to enroll. Second, more efforts are required to better insure vulnerable populations in old age as

old-age poverty is prevalent and their pension enrollment decisions often restrict them from receiving more benefits. Meanwhile, promoting social pension enrollment among vulnerable populations may also relieve worsening inequality.

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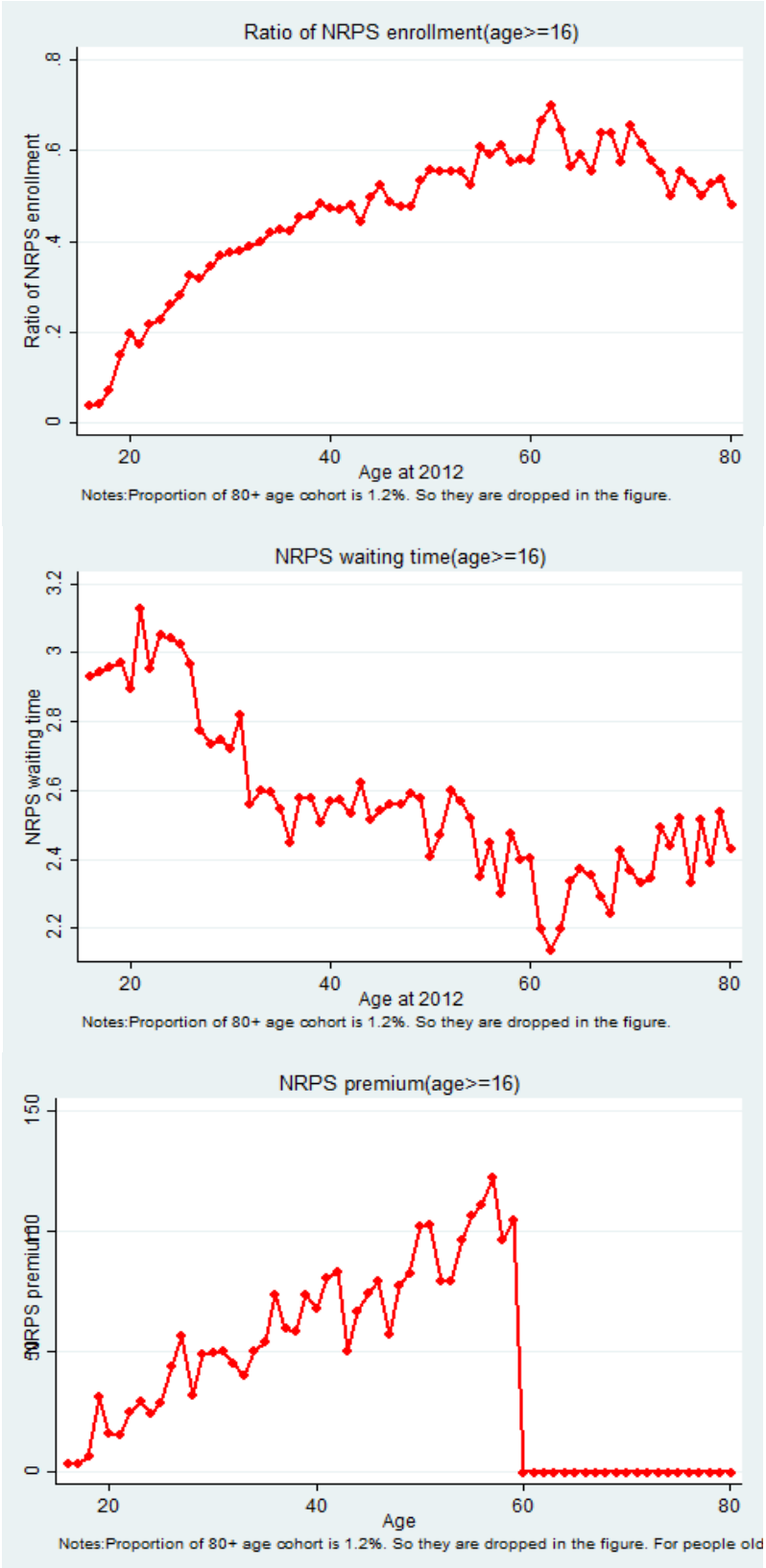
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Figure 1 NRPS Enrollment Decisions



Note: All individuals with zero premium contributions are counted in when generating the average premium by age.

Table 1 Summary Statistics

	age>=45 & age<60					age>=60				
	N	mean	sd	min	max	N	mean	sd	min	max
					New Rural Pension Scheme					
Whether enroll in New Rural Pension Scheme?	6,811	0.542	0.498	0	1	4,777	0.594	0.491	0	1
Level of NRPS	6,467	89.110	259.932	0	7,200	.	.	.	.	.
Waiting time of NRPS(year)	6,148	2.493	1.381	0	5	4,197	2.333	1.393	0	5
					Individual Characteristics					
Age is [45,50)	6,811	0.412	0.492	0	1	4,777	0	0	0	0
Age is [50,55)	6,811	0.255	0.436	0	1	4,777	0	0	0	0
Age is [55,60)	6,811	0.333	0.471	0	1	4,777	0	0	0	0
Age is [60,)	6,811	0	0	0	0	4,777	1	0	1	1
Age	6,811	51.598	4.527	45	59	4,777	68.024	6.746	60	99
Male	6,811	0.478	0.500	0	1	4,777	0.489	0.500	0	1
Years of schooling in 2012	6,811	4.924	4.469	0	16	4,773	2.160	3.387	0	16
Household head(yes=1,no=0)	6,811	0.484	0.500	0	1	4,777	0.414	0.493	0	1
Marital status(married=1,single=0)	6,811	0.944	0.229	0	1	4,776	0.761	0.427	0	1
Chronic disease(yes=1,no=0)	6,811	0.136	0.343	0	1	4,772	0.195	0.396	0	1
ADL impairments(yes=1,no=0)	6,808	0.063	0.242	0	1	4,765	0.200	0.400	0	1
Money spent on lottery(1,000yuan)	6,795	0.005	0.048	0	2	4,758	0.003	0.043	0	2
Party membership(yes=1,no=0)	6,810	0.045	0.208	0	1	4,776	0.073	0.261	0	1
Low trust in government	6,757	0.253	0.435	0	1	4,629	0.193	0.394	0	1
Medium trust in government	6,757	0.484	0.500	0	1	4,629	0.468	0.499	0	1
Strong trust in government	6,757	0.263	0.440	0	1	4,629	0.340	0.474	0	1
Low concern over the malfunctioning of the social security system	6,811	0.287	0.453	0	1	4,777	0.326	0.469	0	1
Medium concern over the malfunctioning of social security system	6,811	0.391	0.488	0	1	4,777	0.356	0.479	0	1

Strong concern over the malfunctioning of the social security system	6,811	0.270	0.444	0	1	4,777	0.213	0.410	0	1
Low concern over government corruption	6,811	0.231	0.421	0	1	4,777	0.251	0.434	0	1
Medium concern over government corruption	6,811	0.335	0.472	0	1	4,777	0.315	0.465	0	1
Strong concern over government corruption	6,811	0.361	0.480	0	1	4,777	0.288	0.453	0	1
Migrant(yes=1,no=0)	6,791	0.054	0.226	0	1	4,771	0.011	0.103	0	1
NCMS enrollment(yes=1,no=0)	6,811	0.901	0.299	0	1	4,777	0.893	0.309	0	1
Old unsubsidized rural pension enrollment(yes=1,no=0)	6,811	0.120	0.325	0	1	4,777	0.244	0.430	0	1
Household Characteristics										
Male * spouse 60-	6,781	0.440	0.496	0	1	4,759	0.102	0.302	0	1
Male * spouse 60+	6,781	0.012	0.108	0	1	4,759	0.302	0.459	0	1
Male * no spouse	6,811	0.025	0.157	0	1	4,777	0.085	0.280	0	1
Spouse is below 60(yes=1,no or single or widow=0)	6,781	0.861	0.346	0	1	4,759	0.121	0.326	0	1
Spouse is above 60(yes=1,no or single or widow=0)	6,781	0.083	0.277	0	1	4,759	0.639	0.480	0	1
0 senior household member	6,315	0.385	0.487	0	1	.	.	.	.	.
1 senior hh member, ages [60, 65)	6,315	0.003	0.058	0	1	.	.	.	.	.
1 senior hh member, ages [65, 70)	6,315	0.022	0.147	0	1	.	.	.	.	.
1 senior hh member, ages [70+)	6,315	0.323	0.468	0	1	.	.	.	.	.
2+ senior hh member, oldest ages [60, 65)	6,315	0.002	0.044	0	1	.	.	.	.	.
2+ senior hh member, oldest ages [65, 70)	6,315	0.018	0.131	0	1	.	.	.	.	.
2+ senior hh member, oldest ages [70+)	6,315	0.247	0.431	0	1	.	.	.	.	.
Whether children enroll in NRPS	.	.	.	.	.	3,603	0.629	0.483	0	1
No child	6,811	0.020	0.141	0	1	4,777	0.030	0.170	0	1
Have 1 child	6,811	0.214	0.410	0	1	4,777	0.135	0.342	0	1
Have 2 children	6,811	0.493	0.500	0	1	4,777	0.249	0.432	0	1
Have 3 children	6,811	0.203	0.402	0	1	4,777	0.260	0.439	0	1
Have 4 children	6,811	0.054	0.225	0	1	4,777	0.187	0.390	0	1

Have more than 5 children	6,811	0.016	0.125	0	1	4,777	0.139	0.346	0	1
Number of children age below 45	.	.	.	.	.	4,777	2.100	1.263	0	7
Number of children age [45,50)	.	.	.	.	.	4,777	0.495	0.776	0	5
Number of children age [50,55)	.	.	.	.	.	4,777	0.184	0.485	0	3
Number of children age [55,60)	.	.	.	.	.	4,777	0.108	0.385	0	3
Number of children age above 60	.	.	.	.	.	4,777	0.043	0.269	0	4
Any child migrate?	6,811	0.161	0.368	0	1	4,777	0.086	0.280	0	1
Highest year of education of their children	6,800	10.840	3.805	0	22	4,775	9.175	3.969	0	22
Household size	6,811	4.415	1.858	1	17	4,777	4.240	2.177	1	14
Number of sons	6,811	1.143	0.731	0	5	4,777	1.622	1.027	0	6
Number of daughters	6,811	0.966	0.883	0	8	4,777	1.306	1.183	0	6
House value	6,792	14.156	33.343	0	2,000	4,746	14.041	51.122	0	2,000
Land size	6,742	0.011	0.035	0	1	4,716	0.009	0.031	0	1
Lowest quantile of income per capita(1,000yuan)	6,811	0.200	0.400	0	1	4,777	0.200	0.400	0	1
2nd quantile of income per capita(1,000yuan)	6,811	0.200	0.400	0	1	4,777	0.199	0.399	0	1
3rd quantile of income per capita(1,000yuan)	6,811	0.200	0.400	0	1	4,777	0.199	0.400	0	1
4th quantile of income per capita(1,000yuan)	6,811	0.200	0.400	0	1	4,777	0.199	0.399	0	1
Highest quantile of income per capita(1,000yuan)	6,811	0.200	0.400	0	1	4,777	0.203	0.402	0	1
Economic help for children	.	.	.	.	.	4,777	0.069	0.254	0	1
Housework for children	.	.	.	.	.	4,777	0.257	0.437	0	1
Take care of children	.	.	.	.	.	4,777	0.301	0.459	0	1
Financial management	.	.	.	.	.	4,777	0.016	0.127	0	1
					Village Characteristics					
Village income per capita	6,810	10.196	5.373	0	68	4,774	9.937	5.431	-0	68
% villagers enroll in NRPS	6,809	0.471	0.280	0	1	4,776	0.470	0.280	0	1
# NRPS participants above 60 but not receiving pension	6,811	5.331	5.040	0	28	4,777	6.454	5.901	0	28

Population of the village	6,811	2,192.403	1,850.583	31	23,000	4,777	2,216.676	1,796.537	16	23,300
Time since the 1st villagers receives pension	6,769	1.362	1.142	0	5	4,742	1.425	1.162	0	5
Time to nearest hospital(hour)	6,784	0.198	0.271	0	5	4,738	0.235	0.309	0	5

Notes: Dummy variables for trust in government are based on answers to self-rated trust in government officials. Answers ranges from 0 to 10. 0-3 indicates low trust, 4-6 indicates medium trust, and 7-10 corresponds to strong trust. Dummy variables for concern over the malfunctioning of the social security system are defined similar to dummy variables for trust. Respondents are defined as migrants if he/she worked outside the local county in the past year.

Table 2 Summary Statistics of NRPS Implementation

	#counties surveyed	#counties with NRPS	Enrollment rate (%) (all eligible people)	Enrollment rate (%) (Ages 45-60)	Enrollment rate (%) (Age>=60)	Rate of receiving pension (%)	Average pension premium	Average waiting time
Tianjin	3	3	14	10	23	14	665	4.3
Hebei	12	12	58	68	67	46	110	2.3
Shanxi	8	8	66	80	86	70	135	2.7
Liaolin	19	19	46	58	74	62	150	2.3
Jilin	3	3	54	62	74	46	135	2.4
Heilongjiang	5	5	39	51	55	41	270	1.3
Shanghai	14	13	25	37	28	12	512	3.7
Jiangsu	4	3	38	39	58	49	431	3.1
Zhejiang	4	4	29	44	23	18	746	3.9
Anhui	3	3	71	80	83	72	111	2.9
Fujian	2	2	64	61	87	71	132	2.6
Jiangxi	3	3	64	67	69	59	116	2.7
Shandong	9	9	52	57	73	53	198	3.2
Henan	22	22	51	60	67	43	127	2.6
Hubei	3	3	46	58	55	47	105	1.7
Hunan	7	7	63	70	66	57	133	1.8
Guangdong	18	18	24	27	45	34	235	2.3
Guangxi	3	3	40	47	51	29	115	3.4
Chongqing	2	2	39	51	70	65	117	3.6
Sichuan	8	8	21	30	28	21	291	2.2
Guizhou	5	5	53	54	75	66	108	3.3
Yunnan	4	4	33	50	37	34	125	2.0
Shaanxi	3	3	70	84	92	77	124	3.1
Gansu	16	16	41	48	47	29	150	2.4
Overall	**184**	**182**	**45**	**54**	**59**	**44**	**158**	**2.6**

Source: CFPS 2012.
Notes: calculated by the authors.

Table 3 Difference between NRPS Participants and Non-participants (for ages 45-60)

	Participants	Non-participants	Difference
Individual Characteristics			
Age is [45,50)	0.38	0.45	-0.07***
Age is [50,55)	0.26	0.25	0.01
Age is [55,60)	0.36	0.30	0.07***
Years of schooling in 2012	5.03	4.80	0.22**
Household head(yes=1,no=0)	0.49	0.48	0.00
Marital status(married=1,single=0)	0.95	0.94	0.01**
Chronic disease(yes=1,no=0)	0.14	0.13	0.02**
ADL impairments(yes=1,no=0)	0.06	0.06	-0.00
Money spent on lottery(1,000yuan)	0.01	0.00	0.00
Party membership(yes=1,no=0)	0.05	0.04	0.02***
Low trust in government	0.23	0.28	-0.05***
Medium trust in government	0.49	0.48	0.01
Strong trust in government	0.28	0.24	0.04***
Low concern over the malfunctioning of the social security system	0.31	0.26	0.05***
Medium concern over the malfunctioning of the social security system	0.39	0.39	-0.01
Strong concern over the malfunctioning of the social security system	0.25	0.29	-0.05***
Low concern over government corruption	0.23	0.23	0.00
Medium concern over government corruption	0.33	0.34	-0.01
Strong concern over government corruption	0.36	0.36	0.00
Migrant(yes=1,no=0)	0.05	0.05	0.00
NCMS enrollment(yes=1,no=0)	0.96	0.83	0.13***
Old unsubsidized rural pension enrollment(yes=1,no=0)	0.05	0.21	-0.16***
Household Characteristics			
Male * spouse 60-	0.44	0.45	-0.01
Male * spouse 60+	0.01	0.01	0.00
Male * no spouse	0.02	0.03	-0.01*
Spouse below age 60 (yes=1,no or single or widow=0)	0.86	0.86	0.00
Spouse above age 60 (yes=1,no or single or widow=0)	0.09	0.08	0.01*
0 senior household member	0.39	0.38	0.01
1 senior hh member, ages [60, 65)	0.00	0.00	-0.00
1 senior hh member, ages [65, 70)	0.02	0.03	-0.01*
1 senior hh member, ages [70+)	0.33	0.32	0.01
2+ senior hh member, oldest ages [60, 65)	0.00	0.00	0.00
2+ senior hh member, oldest ages [65, 70)	0.02	0.02	0.00
2+ senior hh member, oldest ages [70+)	0.24	0.25	-0.01
Any child migrate?	0.16	0.17	-0.01
Highest year of education of their children	10.97	10.68	0.29***
Household size	4.35	4.50	-0.15***
Number of sons	1.13	1.16	-0.03*
Number of daughters	0.97	0.97	0.00
House value	12.99	15.54	-2.55***
Land size	0.01	0.01	0.00

Lowest quantile of income per capita(1,000yuan)	0.18	0.23	-0.05***
2nd quantile of income per capita(1,000yuan)	0.21	0.19	0.02*
3rd quantile of income per capita(1,000yuan)	0.22	0.17	0.05***
4th quantile of income per capita(1,000yuan)	0.21	0.19	0.03***
Highest quantile of income per capita(1,000yuan)	0.18	0.22	-0.04***
Village Characteristics			
Village income per capita	10.19	10.21	-0.02
% villagers enroll in NRPS	0.63	0.28	0.35***
# NRPS participants above 60 but not receiving pension	6.77	3.62	3.15***
Population of the village	2,008.33	2,410.55	-402.21***
Time since the 1st villagers receives pension	1.57	1.11	0.46***
Time to nearest hospital(hour)	0.19	0.21	-0.02***

Notes: The third column shows the differences between the first column and the second column.

Table 4 Determinants of NRPS Enrollment (for ages 45-60)

	Enroll (yes/no)		Premium (CNY)		Decision time (year)	
	coef	se	coef	se	coef	se
			Individual Characteristics			
Age is [50,55)	0.069***	0.018	35.462***	11.933	-0.077*	0.044
Age is [55,60)	0.096***	0.021	48.040***	10.322	-0.175***	0.044
Years of schooling in 2012	0.002	0.002	2.080*	1.134	-0.006	0.004
Household head	0.017	0.015	3.510	12.497	-0.028	0.027
Chronic disease	0.046**	0.021	-4.243	8.751	-0.055	0.045
ADL impairments	-0.046	0.033	-26.787**	11.817	0.068	0.053
Money spent on lottery	0.226**	0.095	-23.632	45.033	-0.698***	0.266
Party membership	0.051	0.033	-24.344	18.950	-0.026	0.058
Medium trust in government	0.020	0.020	7.568	13.136	-0.066*	0.037
Strong trust in government	0.051**	0.023	42.180**	17.876	-0.086*	0.048
Medium concern over the malfunctioning of the social security system	-0.004	0.016	-12.059	11.390	-0.038	0.036
Strong concern over the malfunctioning of the social security system	-0.030	0.019	-22.051**	10.545	0.044	0.035
Medium concern over government corruption	0.005	0.018	-6.821	16.045	0.035	0.042
Strong concern over government corruption	0.004	0.021	7.907	13.526	-0.009	0.041
Migrant	0.022	0.027	-11.143	13.308	0.009	0.052
NCMS enrollment	0.247***	0.039	36.606	31.598	-0.466***	0.079
Old unsubsidized rural pension enrollment	-0.381***	0.040	-68.812**	33.441	0.667***	0.116
			Household Characteristics			
Male * spouse 60-	-0.021	0.016	-18.899*	11.298	0.037	0.032
Male * spouse 60+	0.009	0.070	-59.691**	27.699	0.003	0.155
Male * no spouse	0.012	0.050	20.280	26.884	0.009	0.116
Whether spouse is below 60	-0.017	0.038	29.957*	17.540	0.041	0.076
Whether spouse is above 60	-	-	31.185	24.617	-0.041	0.105
1 senior hh member, ages [60, 65)	0.035	0.097	6.653	35.913	0.204	0.140
1 senior hh member, ages [65, 70)	-0.038	0.046	-24.032	17.614	0.044	0.108
1 senior hh member, ages [70+)	0.021	0.014	-8.906	13.515	-0.046	0.029
2+ senior hh member, oldest ages [60, 65)	0.176**	0.087	52.611**	23.433	-0.478*	0.257
2+ senior hh member, oldest ages [65, 70)	0.041	0.048	3.054	17.849	-0.190*	0.114
2+ senior hh member, oldest ages [70+)	0.046***	0.015	11.288	8.298	-0.065*	0.036
Any child migrate?	-0.011	0.021	-18.815**	8.462	0.032	0.037
Highest year of education of their children	0.005**	0.002	2.430*	1.435	-0.004	0.005
Household size	-0.002	0.004	-0.297	2.101	0.002	0.009
Number of sons	-0.009	0.014	-20.754**	9.762	-0.011	0.026
Number of daughters	-0.012	0.009	4.840	3.910	-0.009	0.018
House value	0.000	0.000	-0.173	0.221	-0.000	0.000
Land size(1,000mu)	0.112	0.297	34.806	48.706	-0.282	0.543
Lowest quantile of income per capita	0.014	0.024	-4.524	29.250	0.067	0.054
2nd quantile of income per capita	0.047**	0.023	-6.525	23.437	0.033	0.043
3rd quantile of income per capita	0.065***	0.025	-4.776	23.159	-0.045	0.060
4th quantile of income per capita	0.019	0.026	-11.331	24.667	0.025	0.048
			Village Characteristics			
Village income per capita	-0.000	0.001	4.957	3.768	0.001	0.005
% villagers enroll in NRPS	0.992***	0.080	191.947**	82.542	-1.359***	0.372
# NRPS participants>age 60 with no pension	-0.007***	0.003	-0.965	1.921	0.006	0.007
Population of the village	-0.000	0.000	-0.003	0.004	0.000	0.000
Time since the 1st villagers receives pension	0.007	0.012	28.120*	16.074	-0.005	0.059
Time to nearest hospital(hour)	0.001	0.036	26.200	17.606	-0.079	0.076
# observations / Adjusted R2	6,083 / 0.433		5,790 / 0.105		5,522 / 0.687	

Notes: Standard errors are clustered at the county level. NRPS = 1 if one enrolls in. NRPS premium=0 for non-participants. NRPS decision time is defined as the time gap between enrollment date (or date of interview for non-participants) and county level roll-out date. All income measures exclude pension. *10% significance level. **5% significance level. ***1% significance level.

Table 5 Placebo Tests of the Impact of Trust on NRPS Enrollment (for ages 45-60)

	Enroll (yes/no)		Premium (CNY)		Decision time (year)	
	coef	**se**	**coef**	**se**	**coef**	**se**
Trust in Parents						
Medium trust in parents	0.037	0.048	50.419	45.074	-0.058	0.128
Strong trust in parents	0.019	0.050	25.935	25.406	-0.061	0.142
# Obs	6,089		5,793		5,523	
Adjusted R2	0.426		0.101		0.684	
Trust in Americans						
Medium trust in Americans	-0.017	0.018	-9.857	12.502	-0.001	0.037
Strong trust in Americans	0.022	0.030	-24.617	10.219	0.054	0.070
# Obs	5,829		5,547		5,307	
Adjusted R2	0.432		0.100		0.681	
Trust in Strangers						
Medium trust in strangers	-0.004	0.018	-15.725	12.971	-0.030	0.041
Strong trust in strangers	0.001	0.051	-1.119	11.942	0.002	0.072
# Obs	6,079		5,782		5,515	
Adjusted R2	0.426		0.101		0.685	
Trust in Neighbors						
Medium trust in neighbor	-0.002	0.028	-15.979	18.339	-0.045	0.057
Strong trust in neighbor	0.018	0.027	-3.002	10.689	-0.071	0.058
# Obs	6,109		5,812		5,542	
Adjusted R2	0.425		0.098		0.685	

Notes: All covariates are the same to Table 4 except the trust indicators. Coefficients of other covariates are not reported due to space limitation. Standard errors clustered at county level are reported in parentheses.

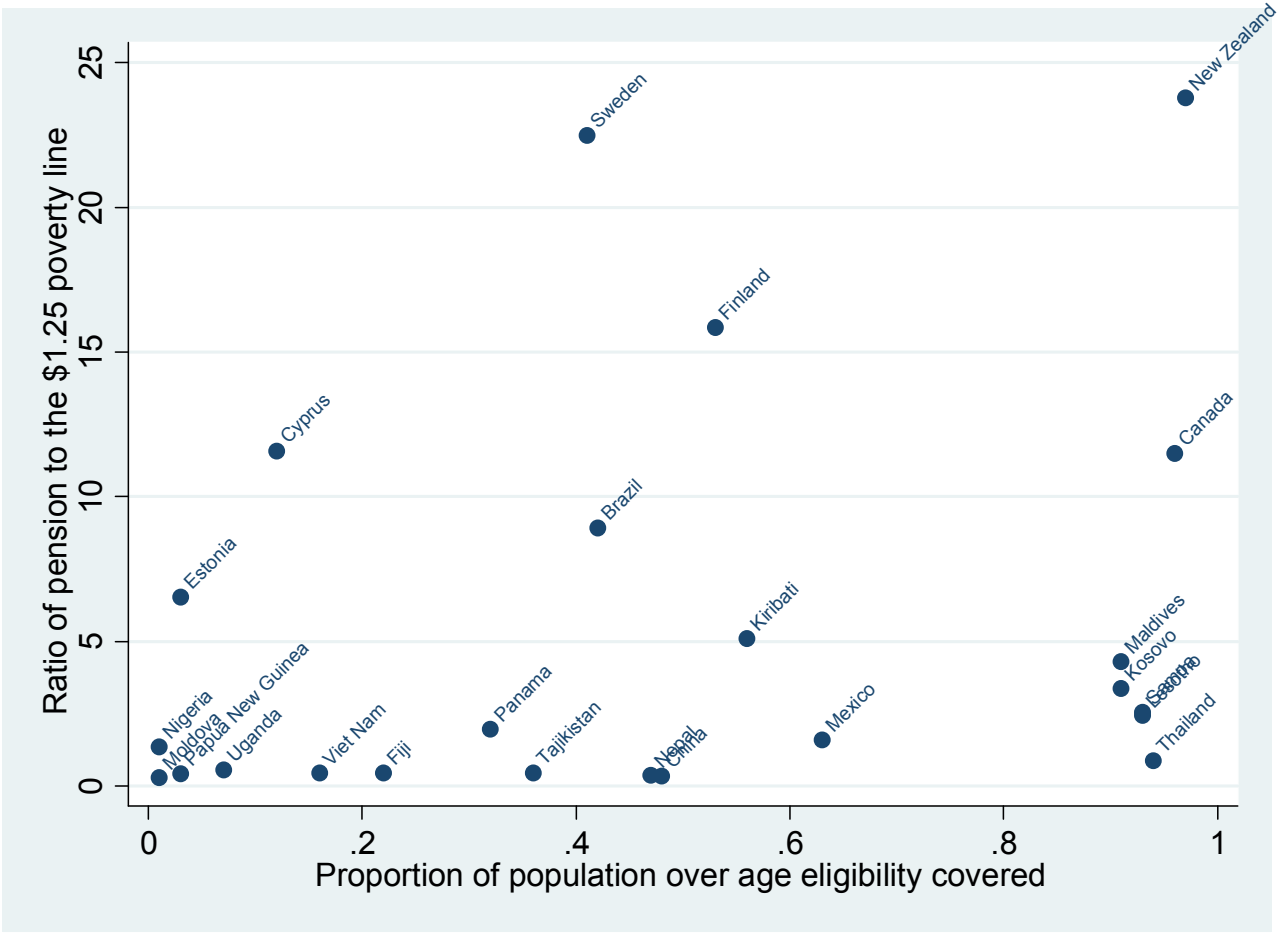
Table 6 Determinants of NRPS Enrollment (for age>60)

	NRPS (yes/no)		Decision time (year)	
	coef	**se**	**coef**	**se**
Individual Characteristics				
Age in 2012	-0.002	0.002	0.000	0.004
Years of schooling in 2012	-0.001	0.002	0.001	0.006
Household head	0.029*	0.016	-0.037	0.037
Chronic disease	0.002	0.017	-0.007	0.037
ADL impairments	-0.021	0.016	0.066	0.044
Money spent on lottery	-0.168	0.268	0.615	0.388
Party membership	-0.027	0.026	0.041	0.067
Medium trust in government	-0.006	0.017	0.016	0.056
Strong trust in government	-0.040**	0.020	0.115*	0.061
Medium concern over the malfunctioning of the social security system	-0.022	0.016	0.051	0.043
Strong concern over the malfunctioning of the social security system	-0.009	0.019	-0.054	0.048
Medium concern over government corruption	-0.019	0.017	0.057	0.040
Strong concern over government corruption	-0.004	0.016	-0.008	0.051
Migrant	0.104*	0.057	-0.135	0.112
NCMS enrollment	0.151***	0.035	-0.263***	0.063
Old unsubsidized rural pension enrollment	-0.266***	0.043	0.539***	0.105
Household Characteristics				
Male * spouse 60-	0.086	0.070	-0.137	0.149
Male * spouse 60+	-0.015	0.018	-0.014	0.042
Male * no spouse	0.067***	0.021	-0.088	0.059
Whether spouse is below 60	0.028	0.061	0.017	0.150
Whether spouse is above 60	0.048**	0.022	0.003	0.063
Whether children enroll in NRPS	0.366***	0.037	-0.501***	0.062
No child	0.039	0.045	-0.141	0.105
Number of children age below 45	0.107	0.113	-0.031	0.353
Number of children age [45,50)	0.108	0.115	-0.049	0.350
Number of children age [50,55)	0.113	0.116	-0.042	0.352
Number of children age [55,60)	0.124	0.117	-0.068	0.354
Number of children age above 60	0.073	0.116	0.010	0.356
Any child migrate?	-0.033	0.028	-0.011	0.080
Highest year of education of their children	0.003	0.002	-0.009	0.007
Household size	-0.002	0.004	0.000	0.010
Number of sons	-0.103	0.113	0.031	0.353
Number of daughters	-0.101	0.114	0.028	0.351
House value(10,000yuan)	0.000	0.000	-0.001*	0.000
Land size(1,000mu)	0.022	0.258	0.000	0.366
Lowest quantile of income per capita	0.072***	0.027	-0.141***	0.051
2nd quantile of income per capita	-0.032	0.030	0.027	0.053
3rd quantile of income per capita	-0.022	0.028	-0.001	0.054
4th quantile of income per capita	-0.023	0.029	-0.094	0.068

Economic help for children	0.020	0.037	-0.035	0.072
Housework for children	0.004	0.013	0.022	0.052
Take care of children	0.009	0.014	-0.070	0.043
Financial management	0.014	0.064	-0.135	0.122
Village Characteristics				
Village income per capita	0.002*	0.001	-0.005	0.004
% villagers enroll in NRPS	0.283***	0.077	-0.233	0.281
# NRPS participants above 60 but not receiving pension	0.009***	0.002	-0.018**	0.007
Population of the village	0.000	0.000	-0.000	0.000
Time since the 1st villagers receives pension	0.041***	0.012	-0.251***	0.045
Time to nearest hospital(hour)	-0.022	0.020	-0.124**	0.052
Number of observations	3,379		2,997	
Adjusted R2	0.638		0.774	

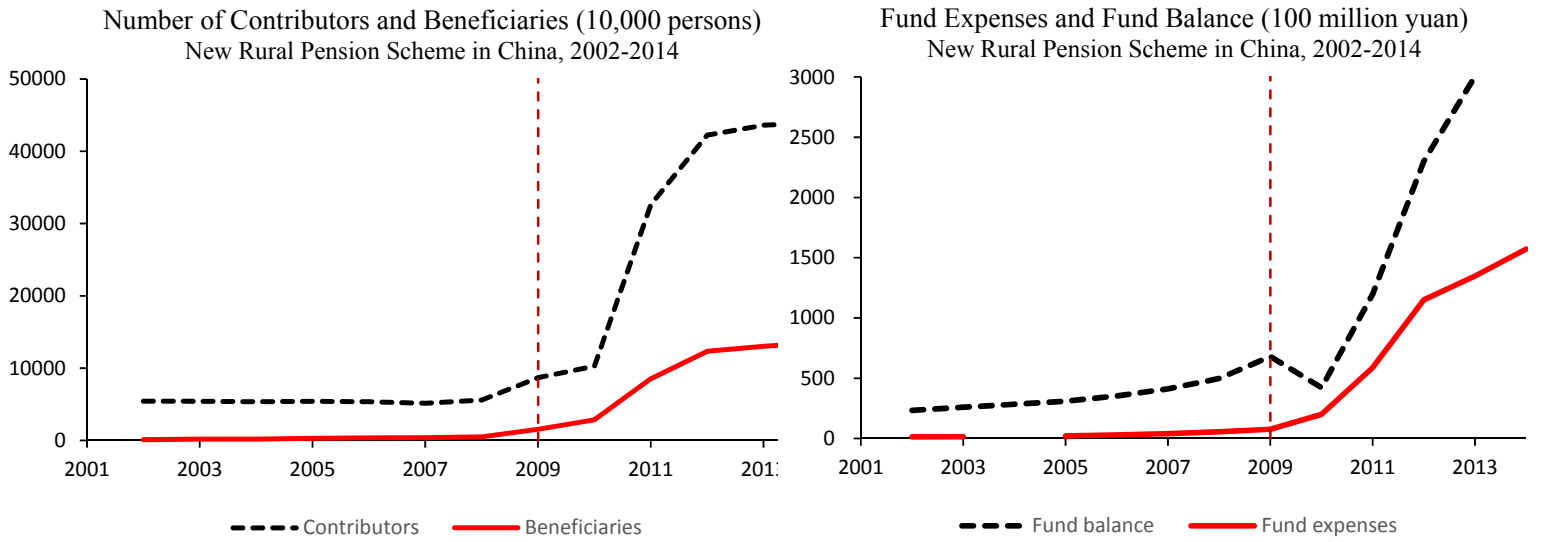
Notes: See Table 4.

Appendix Figure 1 – Low Enrollment Rate of Non-contributory Social Pension Programs in the World



Note: This figure excludes all means-tested pension programs in the world. The horizental axis only includes people above the age cutoffs eligible for non-contributory pension.

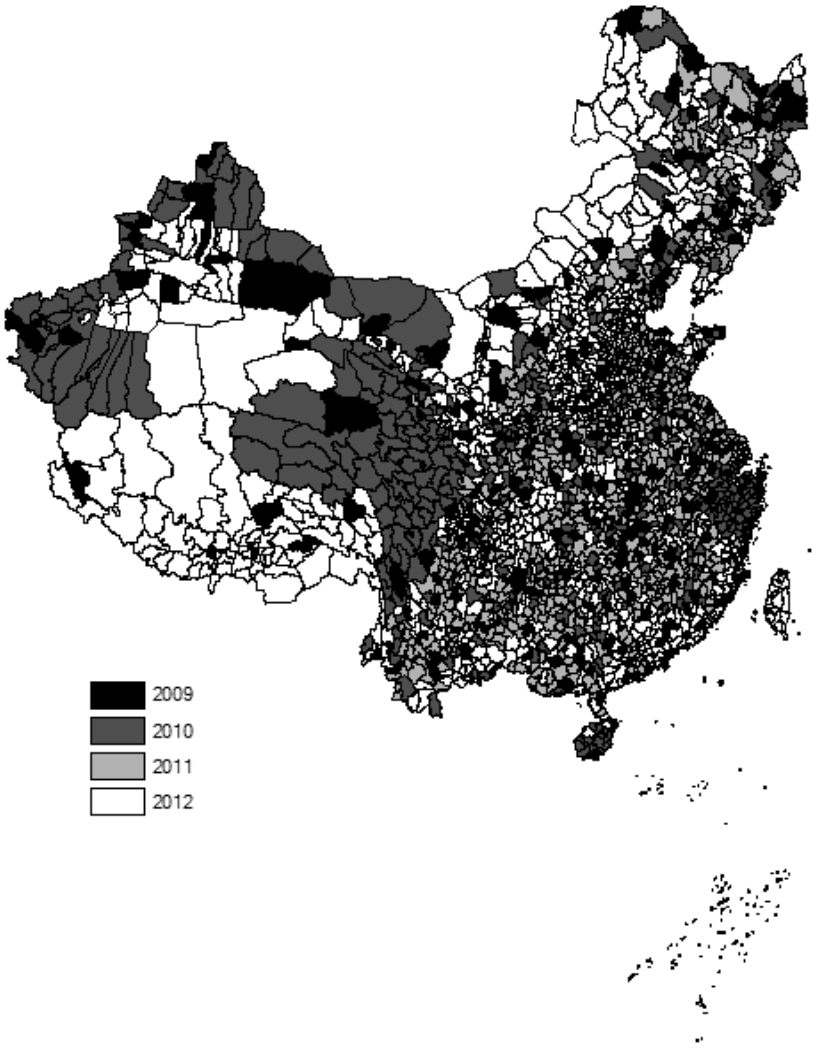
Appendix Figure 2 – Statistics on the Rural Pension System in China (2002-2014)



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Notes: The NRPS initiated at the end of 2009. The non-zero figures before 2009 represent the old unsubsidized social pension that covered a tiny proportion of rural residents, mainly in developed regions in China.

Appendix Figure 3 – The Roll-out of New Rural Pension Scheme in China



Appendix Table 1 – The Simulated Net Benefit of the Individual Account at Age 60

	Premium Paid (CNY per year per person)									
Years of Contribution	**100**	**200**	**300**	**400**	**500**	**1000**	**2000**	**3000**	**4000**	**7200**
1	29.53	28.53	27.53	26.53	25.53	20.53	10.53	0.52	-9.47	-41.48
2	60.61	57.49	54.38	51.26	48.15	32.57	1.42	-29.73	-60.88	-160.56
3	93.31	86.84	80.38	73.91	67.44	35.09	-29.61	-94.30	-159.00	-366.03
4	127.73	116.53	105.33	94.13	82.93	26.94	-85.05	-197.04	-309.02	-667.38
5	163.92	146.47	129.02	111.57	94.13	6.89	-167.60	-342.08	-516.56	-1074.91
6	201.98	176.60	151.23	125.85	100.47	-26.41	-280.17	-533.93	-787.70	-1599.74
7	241.99	206.84	171.68	136.53	101.38	-74.39	-425.92	-777.46	-1128.99	-2253.90
8	284.05	237.08	190.12	143.15	96.19	-138.63	-608.27	-1077.91	-1547.55	-3050.39
9	328.24	267.24	206.23	145.22	84.21	-220.82	-830.90	-1440.97	-2051.04	-4003.27
10	374.68	297.18	219.69	142.19	64.69	-322.80	-1097.79	-1872.77	-2647.76	-5127.71
11	423.47	326.80	230.13	133.46	36.79	-446.55	-1413.25	-2379.94	-3346.64	-6440.06
12	474.72	355.95	237.18	118.41	-0.36	-594.21	-1781.92	-2969.63	-4157.34	-7958.01
13	528.56	384.48	240.41	96.34	-47.73	-768.09	-2208.82	-3649.54	-5090.27	-9700.58
14	585.10	412.23	239.36	66.50	-106.37	-970.69	-2699.34	-4427.99	-6156.65	-11688.33
15	644.47	439.01	233.55	28.08	-177.38	-1204.69	-3259.32	-5313.95	-7368.58	-13943.39

Notes: This table presents net benefits (*NB*) of the NRPS (at age 60) for those who are currently 45-60 years old. According to the official document no.32 issued by the State Council, they are free to choose to contribute between 1-15 years (*N*) before receiving pension payment out of their personal account. It is stipulated that local government should subsize premium contributors at least 30 CNY per person per year. Basic levels of premium (P_0) include 100, 200, 300, 400, and 500 CNY. Counties may design higher levels of premium with higher returns. For example, most of the 184 counties in our CFPS survey have higher categories, such as 1000, 2000, 3000, 4000, and up to 7,200 CNY. This table presents net benefits correspond to these key levels of premium. We assume pension premium on average increases at the annual rate g=.07; the rate of return of the accumulated fund in the individual pension account *r=1.75%* (i.e., current one-year deposit rate); the potential rate of return through alternative investments r_{-1}=2.75% (i.e., current five-year deposit rate).

NB = Cumulated Benefit – Opportunity Cost = $\sum_{t=1}^{N}(P_0+30)(1+g)^{t-1}(1+r)^{N-t+1}-\sum_{t=1}^{N}P_0(1+g)^{t-1}(1+r_{-1})^{N-t+1}$

Appendix Table 2 - Summary Statistics of Income per capita by quintile (for those age >45)

	N	mean	Sd	min	max
Income per capita(1000 CNY)					
Lowest quintile	1,360	0.082	0.706	-12.2	0.5
2nd quintile	1,361	1.004	0.314	0.5	1.6
3rd quintile	1,364	2.713	0.769	1.6	4.2
4th quintile	1,361	7.343	2.246	4.2	12.0
Highest quintile	1,357	29.552	30.507	12.0	500.0

Notes: CFPS (2012)