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The new rural social pension program in rural China: participation and its correlates

NRSPP in
rural China

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Abstract

Purpose – The need for a universal rural pension system has been heightened by demographic changes in rural China, including the rapid aging of the nation's rural population and a dramatic decline in fertility. In response to these changes, China's Government introduced the New Rural Social Pension Program (NRSPP) in 2009, a voluntary and highly subsidized pension scheme. The purpose of this paper is to assess the participation of rural farmers in the NRSPP. Furthermore, the authors examine whether the NRSPP affects the labor supply of the elderly population in China.

Design/methodology/approach – This paper uses household-level data from a sample of 2,020 households originating from a survey conducted by the authors in five provinces, 25 counties, and 101 villages in rural China. Using a probit model and conducting correlation analysis, the authors demonstrate the factors affecting the participation and the impact of NRSPP on labor supply of the rural elderly.

Findings – The results show there are several factors that are correlated with participation, such as specific policy variant in force in the respective household's province, the size of the pension payout from government, the age of sample individuals, and the value of household durable assets. Specifically, different characteristics of NRSPP policy implementation increase participation in China's social pension program. The results suggest that the introduction of the NRSPP has not affected the labor supply of the rural elderly, in general, although it has reduced participation for the elderly who were in poor health.

Originality/value – Several previous studies have covered the NRSPP. However, all previous studies were based on case studies or just focused on a small region, and for this reason the results cannot reflect the populations and heterogeneity of rural areas. Therefore, a data set with a large sample size is



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used in this paper to provide a new perspective to fully understand the participation of NRSP and its impacts on rural households. This paper will make an update contribution to the literature in the area of pension programs in China.

Keywords China, Rural, Labor supply, Participation behavior, New rural social pension program
Paper type Research paper

1. Introduction

Due to a worldwide decline in fertility and a corresponding increase in life expectancy, more and more countries have begun to enter what is being called an era of “aging society” (United Nations Population Fund, 2006). China is no exception. In fact, China’s population is currently aging more rapidly than nearly any other country on earth. In 1982 only 4.9 percent of China’s population was over the age of 65; by 2011 this proportion had almost doubled, reaching 9.1 percent (National Bureau of Statistics of China (NBSC), 2012). By 2050 it is expected that more than a quarter of the world’s population over the age of 65 will live in China (Salditt *et al.*, 2008).

As this demographic shift has accelerated in recent decades, China’s Government has struggled to effectively deal with the needs of its rapidly aging population. In developed countries, public social pension expenditures typically account for about 6 to 18 percent of a country’s GDP (United Nations, 2005). However, despite an increasing government focus on social security and other services for the elderly in China, nationwide pension expenditures amounted to only 4.1 percent of the country’s GDP in 2011 (NBSC, 2012; Ministry of Human Resources and Social Security, 2012). Even though that is a significant increase from the 0.96 percent level of expenditure a decade earlier (National Bureau of Statistics of China, 2002; Ministry of Human Resources and Social Security, 2002), it still does not appear to be enough to meet the future needs of the country’s population.

According to the 2010 Sixth National Census Data Bulletin, 68 percent of people over age 60 reside in the countryside (National Bureau of Statistics of China, 2011). This means that there are about 99.3 million rural elderly individuals in China today. Because many of China’s rural residents are poor and have not been able to accumulate much wealth during their lifetimes, they typically do not have sufficient savings on which to support themselves in old age. Cai *et al.* (2012) provide a comprehensive account of the economic situation of China’s rural elderly, their sources of livelihood and the evolution of Chinese rural pension schemes. In the past, the elderly in rural China relied on their children for financial support as they aged. Unfortunately, the rapid social changes taking place in China are weakening this traditional form of support. The rise of off-farm employment, rural-to-urban migration, as well as increased social mobility are changing the nature of the extended family in rural China, often leaving the elderly to live on their own without the familial support enjoyed by previous generations (Benjamin *et al.*, 2000; Pang *et al.*, 2004; Zhang and Goza, 2006; Giles *et al.*, 2010).

As a result of these social changes, rural people are becoming increasingly reliant on some form of pension to maintain their standard of living in old age, but compared to urban residents rural elderly enjoy a relatively low degree of pension security. Consequently, the task of reforming, expanding, and improving the pension systems associated with old age security in rural areas is crucial to address the problems facing China’s aging population.

China’s Government is well aware of the looming social security crisis facing its rural population and – as will be described in more detail in Section 2 – has taken steps to help mitigate the effects of this demographic transition (Herd *et al.*, 2010). It has launched and

expanded several rural pension systems the most recent of which is the New Rural Social Pension Program (NRSPP) launched in 2009. Many aspects of the design and effectiveness of the programs were analyzed but the literature NRSPP is unclear on whether this program can successfully meet the needs of the nation's growing elderly population. Several researchers from China have used micro-level data to study the participation decisions concerning NRSPP among different regions (Li and Fan, 2010; Liu *et al.*, 2011; Mu and Yan, 2012). There are also studies evaluating the institutional design of the NRSPP, such as Zhang (2011), which indicates that the NRSPP lacks effective institutional arrangements to encourage individuals to participate and choose higher premium levels. Although these studies discuss the factors that affect an individual's decision to participate in the pension program, they lack representative analyses as well as any quantitative analysis that identifies the different factors associated with participation.

Another aspect to study with regard to the NRSPP are potential crowding-out effects, i.e. to analyze whether it may affect the labor market participation of the elderly to an extent that may be undesirable from a societal perspective (Ardington *et al.*, 2009; Börsch-Supan and Schnabel, 1998; de Carvalho Filho, 2008; Palme and Svensson, 1999). Some studies show that the existence of a national pension program will lead to a decrease in the workforce, especially in developed countries (Börsch-Supan and Schnabel, 1998; Palme and Svensson, 1999). Similar evidence has been found from studies conducted in developing countries. By estimating a pure income effect, de Carvalho Filho (2008) found a reduction in the labor supply of elderly rural workers in Brazil that was about 9.48 percentage points higher than the estimates for urban workers between 60 and 64 years of age. Ardington *et al.* (2009) identified individual labor supply responses to the Social Pension in South Africa, by using longitudinal data. They found that the pension program decreased the labor supply of rural elderly individuals. However, to date there are no such studies on pensions programs in China.

To summarize our overall objective in analyzing the China's NRSPP we pose the following three research questions:

- RQ1.* How did the rural population's participation in China's NRSPP develop over time and regions?
- RQ2.* Which framework conditions and individual characteristics were participation decisions linked to, particularly with regard to different NRSPP policy variants that were in force in different regions?
- RQ3.* Which effects on the labor supply of the elderly population in rural China did the NRSPP have?

Using data collected 2012 from 2,020 households in five provinces of rural China; the paper provides a detailed description of the NRSPP and an assessment of the factors that affect or are correlated with the decision of rural individuals to participate in the pension program.

The rest of paper is organized as follows. In the next section, we briefly describe the historical development of China's pension programs. Section 3, we introduce the nature of the data set and provide our statistical methodology. Section 4, we employ descriptive statistics to show the factors that affect NRSPP participation. In this section we also discuss the factors that affect the decision of sample individuals to participate in the pension program. Section 5 will discuss whether the NRSPP affects the labor supply of the rural elderly in our sample. The final section concludes by summarizing the paper's findings and discussing policy implications.

2. The rural pension program in China

A social pension system based on the Soviet model was first introduced to China in 1951. This system was anchored on the principles of lifetime employment and association with state owned enterprises (Salditt *et al.*, 2008). Coverage applied to nearly all urban workers, but did not apply to the majority of the nation's workforce: its rural population. It was not until 1986 that China's Government began to explore implementing a rural social pension program. In 1991, following directives from the State Council, a rural social pension program known as *laonongbao* was piloted. Then, in 1992 county-level, rural social pension programs were gradually promoted across the country. This pension system was mainly funded by personal contributions. In the absence of any subsidies, the system essentially was a voluntary savings system for farmers (Tao, 2010) especially as it had no strong component of social pooling, i.e. for redistribution between people with relatively short lives to those needing financial support until a very high age. In 1999, the State Council stopped the program, pointing out that rural areas lacked the proper conditions for a successful universal social pension program.

A decade later the Chinese Government introduced the NRSPP as a revamped, voluntary, and subsidized rural pension scheme. The NRSPP is a system that combines individual contributions, collective subsidies, and government subsidies. The NRSPP is designed to carry out a combination of social pooling and individual accounts in order to guarantee the basic livelihood of rural elderly residents. In order to encourage participation, the NRSPP is supposed to have been improved in several ways over the previous pension system. The most important improvements are the addition of basic pension benefits paid by the central government and the premium subsidy provided by local governments to supplement individual contributions.

Figure 1 illustrates the NRSPP's payment scheme. As the figure shows, there are different phases of the pension program participation depending on the age of the participant. In order to qualify for full pension benefits, individuals must be at least 60 years of age and have contributed to the pension fund for at least 15 years. However, individuals already over the age of 60 when the NRSPP was launched are able to access the basic pension benefit without making contributions to their individual funds. Any rural resident over the age of 16 who is not enrolled in school or an urban pension scheme is eligible to voluntarily enter the NRSPP scheme. In some provinces the implementation regulation specifies that contributing for more than 15 years lead to greater pension payouts.

Funding for the pension comes from two sources: government subsidies and individual premium payments. The government subsidies are contributed by both the

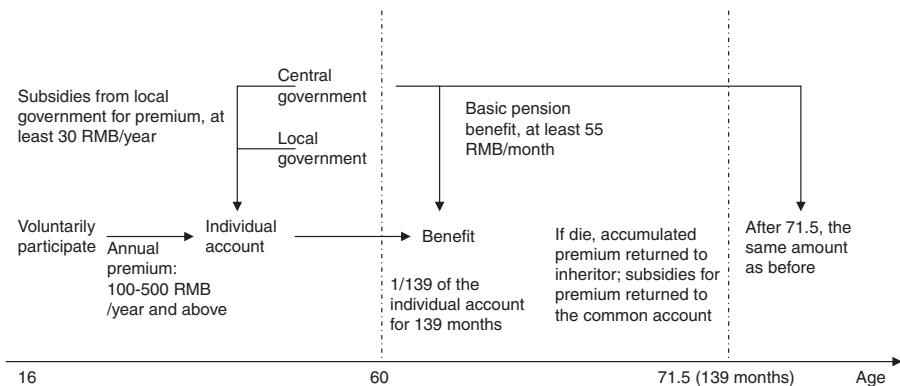


Figure 1.
The new rural social pension program scheme

central and local governments. Local governments contribute a minimum of 30 RMB per year to each individual's fund and the value of the subsidy increases with higher premium levels chosen by the individual. The individuals' choice of premium level is between at least five amounts: 100, 200, 300, 400, and 500 RMB per year[1]. Available premium levels may be adjusted according to the increase in per capita annual income of rural residents. Individual premiums and local government subsidies are accumulated in individual accounts according to the one-year saving rates of individuals and interest is compounded yearly.

The pension benefits are also paid in two parts: in the form of government contributions and accumulated premium payments. First, after reaching the age of 60 pensioners receive a monthly payment from the central government, which local governments can supplement in accordance with local resources. Currently, the central government subsidy is 55 yuan per month for the basic pension (State Council, 2009). Additionally, individuals receive a monthly payment equal to 1/139 of the total amount accumulated in their individual accounts. Within the individual accounts, all accumulated individual contributions are inheritable, but local government subsidies are not. Thus, if a beneficiary dies before age 71.5 (60 years old + 139 months), the part of the died person's individual account that represents the undisbursed part of the accumulated personal premium paid will be transferred to an inheritor while the part representing the local government subsidy will return to the common account of the pension system[2]. Under this pension structure, the largest portion of the pension payments is provided by the government and the remaining payments from the individual account are based on the participant's premium level. If an individual has chosen the lowest premium (100 yuan/year), the pension from individual accounts will be around 20 yuan per month. In total, an individual who has contributed according to the lowest premium level will receive about 75 yuan per month, which is less than half of the national poverty line[3].

3. Data and methods

3.1 Survey region and data

The data used in this paper were collected in a survey in April 2012 and containing information for the years 2009 through 2011. The fieldwork team conducted the data collection effort in five provinces, 25 counties, 50 townships, and 101 villages. The sample villages were selected as follows. First, one province was randomly selected from each of China's major regional zones: Jiangsu represents the eastern coastal areas (Jiangsu, Shandong, Shanghai, Zhejiang, Fujian, and Guangdong); Sichuan represents the southwestern provinces (Sichuan, Guizhou, and Yunnan) plus Guangxi; Shaanxi represents the provinces on the Loess Plateau (Shaanxi and Shanxi), Inner Mongolia, and the rest of the provinces in the northwest (Gansu, Ningxia, Qinghai, and Xinjiang); Hebei represents the north and central provinces (Hebei, Henan, Anhui, Hubei, Jiangxi, and Hunan); and Jilin represents the northeastern provinces (Jilin, Liaoning, and Heilongjiang).

After the five provinces were selected, the second step of the sample selection involved choosing the counties, towns, and villages. Five counties were selected from each province, one from each quintile of a list of counties arranged in descending order of per capita gross value of industrial output (GVIO)[4]. Within each county, we also chose two townships following the same selection procedure. In each sample township, two administrative villages were randomly selected according to different levels of poverty, and we then randomly selected 20 households from each village.

The final survey sample contains 101 administrative villages[5] and 2,020 households. By 2011, there were five counties (one in Jilin, one in Sichuan, and three in Hebei) in our

sample that had not implemented the NRSPP, so we exclude the observations in these regions in the following analysis. In the end, the sample included 4,569 people. However, due to the fact that most individuals over the age of 60 in our sample are capable of receiving the basic pension benefit without previously contributing to an individual fund, the factors affecting the participation decisions of this portion of the sample are likely different from those of other rural NRSPP participants. For this reason, some of our analyses exclude individuals over the age of 60, reducing the sample size to 3,554 people.

The survey collected a variety of information relevant in connection with the NRSPP, such as basic characteristics of households. Table I shows the definition and descriptive statistics of the variables, such as gender, age, education, whether the individual is the village leader, endowment with household assets, self-reported health status, average area of land, whether the individual has been involved in the old pension program, and whether other people in an individual's village were already enrolled in NRSPP (a proxy for confidence in the program).

In addition to the basic characteristics of households, there were three sections of the survey that collected the information that forms the basis of this analysis. First, the survey included a section that collected information on the pension scheme and the participation rates among different provinces from 2009 to 2010. Specifically, we specified how the NRSPP policy was implemented in each area. We expect that NRSPP participation will vary depending on the different pension policies in a given province or county. For this reason, it is necessary to consider in the behavior analysis the possible effects that particular variants of the pension scheme ("NRSPP policies") have on an individual's decision to participate in the NRSPP. Therefore, in this section we also collected relevant information on different options for NRSPP policy implementation that may impact program participation: We identify two critical NRSPP policies that may influence program participation. The first policy ("policy 1"), implemented in some provinces, is the requirement that pension age participants can only receive pensions if all (working age) members of their household were participating, i.e. were paying pension contributions. That means people can only enroll in the pension system as a household, not individually. The second policy ("policy 2")

Variables	Description	Mean	Min	Max
participation	0 = participating; 1 = not participating	0.74	0	1
female	0 = male; 1 = female	0.5	0	1
age	age (Unit: years)	39.2	16	59
education	educational years	7.4	0	16
leader	village leadership function: 0 = not; 1 = yes	0.04	0	1
communist	member of CCP: 0 = not; 1 = yes	0.04	0	1
non_ag_income	non-agricultural income: 0 = do not have; 1 = have	0.6	0	1
asset	value of household durable assets (Unit:10000 Yuan)	0.4	0.1	19
time_preference	0 = prefer now; 1 = prefer future	0.5	0	1
unhealthy (self-reported)	0 = good or normal health status; 1 = bad health status	0.1	1	1
land_mean	average areas of land within the household (Unit: Mu)	1.7	0	20
old_insur	participation in former pension scheme: 0 = participated; 1 = un-participated	0.05	0	1
v_getpension	0 = not; 1 = yes (people from same village get pension)	0.95	0	1

Table I.
Definitions and
descriptive
statistics of variables
(sample: age 16-60)

Source: Authors' own survey

regulates whether or not the value of the basic pension will increase for those who contribute for more than 15 years. As shown in Table II, specific policies are implemented differently in different counties. For example, policy 1 was only implemented in Shaanxi and Hebei, while Jilin and Hebei were the only provinces that did not put in place policy 2. There is another important policy which also may affect participation: the value of the basic pension subsidy. According to our survey data, the basic pension subsidy ranges from 55 to 100 yuan per month among the sampled counties. According to Table III, more than half the counties surveyed have a basic pension of 55 yuan, including all counties in Sichuan and Jilin. However, in Jiangsu province, the lowest pension is 60 yuan and the highest pension is 100 yuan, which indicates that some county governments improve the basic pension based on available county resources.

Second, there was a long section on the individual's understanding of and participation in the NRSPP, reasons for an individual's participation decision, the amount of premium payments, and other characteristics. In addition, enumerators asked questions designed to indicate an individual's time preference, such as, "Suppose that the government will give you money in one of two ways: it either gives you 1000 yuan today, or 1,250 yuan in a month. Which one do you prefer?" "Impatient" respondents, who accept to wait for payoffs in the future only for relatively high markups, are defined to have a high time preference.

Third, the survey also had a section which provided details on topics such as the general living conditions, working status, and health status of the elderly respondents. This information aids the analysis by providing means to test the effect of receiving the NRSPP on labor force participation of the elderly, especially in the cases of individuals in poor health.

Province	Total sample counties	Policy 1: participation in the pension program mandatory by household rather than personal (%)	Policy 2: value of basic pension increases for people that contribute for more than 15 years (%)
Jiangsu	5	0	40
Sichuan	4	0	25
Shaanxi	5	40	40
Jilin	4	0	0
Hebei	2	50	0
Total sample	20	15	25

Source: Authors' own survey

Table II. Policies about pension program among different provinces in Rural China (sample: 20 counties)

Pension (Yuan)	Total (%)	Jiangsu (%)	Sichuan (%)	Shaanxi (%)	Jilin (%)	Hebei (%)
55	55		100	40	100	50
60	20	80				
70	5					50
90	5			20		
100	15	20		40		

Source: Authors' own survey

Table III. Pension payout among different provinces in Rural China (sample: 20 counties)

3.2 *Statistical methods*

We use a probit model to analyze participation in China's NRSPP, the specification of the model is:

$$\text{Prob}(y = 1) = \Phi(\alpha_0 + \beta P + \gamma X + \delta D)$$

where y is indicating participation of an individual in the NRSPP. If people are participating in the program then y is one, otherwise y is zero. $\Phi(\cdot)$ is the cumulative density function, and P is vector of variables which denotes the policies about the pension program which we will explain in details in Section 3.1. The coefficient β is the coefficient the measures the correlations between the nature of pension policies and the probability that people participate in the pension program. X is a vector of control variables, including measures of gender, age, education (measured by educational years), whether the respondent was a village leader or communist party member, whether the respondent was earning non-agricultural income, the level of the household's assets (measured by the value of household durable assets), time preference (as described in the above section), self-reported health status, and land assets (measured in area of land operated by the household). The coefficient γ is the related coefficient vector. In order to control for unobservable heterogeneities from the dimensions of provinces, a district dummy D is added to capture regional effects.

4. **Factors affecting participation in the NRSPP**

4.1 *Descriptive results*

According to our data, when the NSRPP started in 2009, only 27 percent of the villages implemented the program. This share increased to 64 percent in 2010 and by the end of 2011, 80 percent of our sample villages implemented the NSRPP (Table IV). Our survey sample of 4,569 people was divided into two categories: (adult) individuals participating and not participating in the NRSPP. The survey results show that by the end of 2011, 79 percent[6] of our sample was enrolled in the NRSPP (Table V), with participation increasing significantly from 2009 to 2011. However, there are still differences in the participation rate at the individual-level between provinces. Hebei has the highest participation rate of the five provinces we surveyed at 87 percent, which is 19 percentage points higher than the participation rate of Sichuan province (the province with the lowest participation rate).

We report the descriptive statistics of the sample of individuals younger than 60 years of age in Table VI. As mentioned before, because individuals over the age of 60 can receive basic pension benefits without contributing to NRSPP, we expect that the participation decisions of individuals in our sample over the age of 60 will be

Table IV.
Rates of participation in NRSPP among sample villages in different provinces in Rural China (2009-2011)

Province	Total sample villages	Cumulative percent of villages participating the NRSPP (%)		
		2009	2010	2011
Jiangsu	20	50	100	100
Sichuan	20	10	60	75
Shaanxi	20	65	80	100
Jilin	21	10	62	81
Hebei	20	0	20	45
Total	101	27	64	80

Source: Authors' own survey

affected by factors that do not apply to younger individuals. Therefore, we limit our analysis to individual between the ages of 16 and 60. Our descriptive analysis suggests that some of the variables seem to be associated with participation in our sample, such as pension policies, whether the respondent is the village leader or a member of the Chinese Communist Party, whether the household has non-agricultural income, whether people from the same village receive the pension, and self-reported health status.

For the variable *age*, we use a cutoff at the age of 45 to observe the effect of age on pension participation more easily. This cutoff follows the NSRPP design, as people will contribute the premium each year for at least 15 years until they reach 60, and our findings show that the rate of participation is significantly higher for the people who

Table V.
Rates of participation in NRSPP for individuals among different provinces in Rural China (2009-2011)

Province	Cumulative rate of individuals participating pension program in the region which has implemented the NRSPP (%)		
	2009	2010	2011
Jiangsu	76	75	79
Sichuan	60	57	68
Shaanxi	53	83	86
Jilin	34	60	73
Hebei	-	85	87
Total	58	75	79

Source: Authors' own survey

Table VI.
Definitions and descriptive statistics of explanatory variables (sample: age 16-60)

Variables	Description	Participation (%)		<i>p</i> -value
		= 1	= 0	
policy 1	0 = people participate the pension program individually; 1 = by household	82	72	0.0000***
policy 2	0 = for those people contribute to more than 15 years, their basic pension will not increase; 1 = basic pension will increase	75	74	0.4019
pension_group	0 = 55 yuan; 1 = above 55 yuan	83	67	0.0000***
female	0 = male; 1 = female	74	74	0.9865
age_group	0 = younger than 45; 1 = 45 and above	90	65	0.0000***
education_group	0 = elementary and below; 1 = high school and above	72	86	0.0000***
leader	0 = not; 1 = yes	90	73	0.0000***
communist	0 = not; 1 = yes	89	73	0.0001***
non_ag_income	0 = do not have; 1 = have	71	78	0.0000***
asset_group	0 = below the average; 1 = above the average	80	78	0.244
time_preference	0 = prefer now; 1 = prefer future	75	73	0.4264
unhealth	0 = good or normal health status; 1 = bad health status	80	73	0.0034***
land_group	0 = below the average; 1 = above the average	78	79	0.5632
old_insur	0 = participated; 1 = did not participate	69	74	0.9873
v_getpension	0 = not; 1 = yes (people from village get pension)	76	48	0.0000***
district	0 = Jiangsu, Jilin, Hebei; 1 = Sichuan, Shannxi	75	74	0.5614

Notes: The *p*-value of *t*-statistics is reported. ***indicate the significance level of 1 percent

Source: Authors' own survey

are older than 45 years of age (Table VI). An interesting finding is that the participation rate is lower for individuals with higher levels of education, which would appear to go against expectations. We will discuss this finding in the following section.

4.2 Results and discussion

After running the model, the regression coefficients make sense and are consistent with our assumptions based on the descriptive analysis. There are significant differences in participation probabilities depending on differences in policies, age, time preference, and social and economic conditions.

The most important parameter is the coefficients for the policy variables. As shown in Table VII, if people live in a location that requires participation in the pension scheme by household (rather than by individual), the coefficient of 0.117 indicates that the probability of participation is about 12 percentage points higher than it would be otherwise. This may be because decisions that impact the entire family are usually decided by the head of the household. Among our sample, more than 70 percent heads of household are older than 45 and therefore would be more likely to prefer to participate in the NRSPP. Similarly, the policy that allowed the value of the basic pension to increase if an individual contributed for more than 15 years had a positive

Independent variables	Definition	Dependent variable: participating pension system (marginal effect after probit) age < 60
policy 1	0 = no, 1 = yes	0.117 (0.0170)***
policy 2	0 = no, 1 = yes	0.0458 (0.0179)**
pension	pension payout (Unit:10 Yuan)	0.0477 (0.0048)***
female	0 = male, 1 = female	-0.0078 (0.0158)
age	age (Unit: year)	0.0256 (0.0043)***
age_square	age x age	-0.0002 (5.59e-05)***
education	years of education	-0.0039 (0.0025)
leader	0 = no, 1 = yes	0.0822 (0.0386)**
communist	0 = no, 1 = yes	0.0724 (0.0371)*
non_ag_income	0 = do not have; 1 = have	0.0006 (0.0172)
asset	Household durable asset (Unit:10,000 Yuan)	0.0350 (0.0146)**
time_preference	0 = prefer now; 1 = prefer future	0.0344 (0.0151)**
unhealth	0 = good or normal health status; 1 = bad health status	-0.0200 (0.0269)
land_mean	average land within the household (Unit: Mu)	0.0009 (0.0040)
old_insur	0 = participated; 1 = did not participate	-0.101 (0.0882)
v_getpension	0 = not; 1 = yes (people from village get pension)	0.273 (0.0398)***
district	0 = Jiangsu, Jilin, Hebei; 1 = Sichuan, Shanxi	-0.0285 (0.0181)
Observation		3,554

Table VII. Estimation results of factors that influence people's decision to participate in the NRSPP (sample: age 16-60)

Notes: The value of standard error is reported in parentheses. *, **, *** indicate significance levels of 5, 1 and 0.1 and percent, respectively

Source: Authors' own survey

and significant effect on the probability of participation, increasing participation by about five percentage points due to the incentive. Furthermore, the higher the pension payout provided by local government, the higher the rate of participation. Our findings suggest that if the pension payout increases by 10 yuan, participation will increase by 5 percentage points. This can be explained by the higher expected return. All of these results show that the policy design of NRSPP impacted on rates of participation.

When looking at personal characteristics, some effects that were significant in the descriptive analysis are no longer significant. For example, in the descriptive analysis education was negatively correlated with participation. However, after controlling for policies, age, and other factors, it is not significant. One possible reason could be that younger people are more likely to have received higher levels of education. For example, in our sample, the average years of education completed by people who are younger than 25 is 9.5 years, and this number decreases to 7.7 years for people who are older than 25 and younger than 45. For people who are between 45 and 60, the average education year is only 5.9 years. Both, the descriptive analysis and the multivariate analysis show that the probability of participation increases with age. This suggests that the requirement for 15 years of contribution for people who are younger than 45 years does affect the participation decisions of this younger age cohort, which indicates that this kind of policy design may induce adverse selection.

One interesting result of the study is that people's time preference had an impact on participation. There is no absolute distinction between "high" and "low" time preference and this measure is only determined in relation to the time preference of others within our sample. For example, someone with a high time preference is focused on his well-being in the present relative to the average person, while someone with low time preference values his well-being in the future more than average person. The statistical significance and positive sign of the coefficient of the time preference variables indicates that for those individuals whose survey responses indicated a low time preference, the probability of participation will be higher. This is consistent with the obvious notion that a pension insurance system is particularly attractive for people who care a lot about their future.

Other results include that people who are village leaders or members of the Chinese Communist Party have comparably high probabilities of participating in the NRSPP. It was also found that the higher the value of a household's durable assets, the higher their probability of participation. Additionally, among those people who live in the same village as someone already receiving the pension, the probability of participating is 25.9 percentage points higher. This indicates that confidence in the pension program is also an important factor in the participation decision.

5. The effect of the NRSPP on the labor supply of rural elderly

Previous studies show that elderly people typically continue working right up until the end of their life in China (Pang *et al.*, 2004). Our data indicate that among the rural population over the age of 60, people generally continue to participate in the labor force until they are at least in their 70s. We also find that there is not a significant difference in the probability that elderly people continue to engage in income generating work between those who do and do not receive a pension (Table VIII).

Of all the elderly people (over age 60) in our sample, 76 percent are still part of the formal workforce (including on the farm, working for a wage, or running their own off-farm businesses). We found that 78 percent of individuals aged 60 to 69 years still work, but this statistic drops to 37 percent for individuals over the age of 70. From the

information presented in Table VIII, it is clear that elderly people have similar participation rates in the workforce whether or not they are involved in the NRSPP.

One of the main potential determinants of the age at which someone drops out of the workforce is their individual health status. In our sample, a person was determined to be ill (understood as having a chronic health condition) on the basis of a self-reported response to a survey question about their general health status. The importance of health as a determinant of income generating work is confirmed by our data (Table IX). In all age categories there is a strong correlation between health status and employment. Among people who are enrolled in the NRSPP and report being ill, the working rate is 19 percentage points lower than it is for people who report being ill but is not enrolled in the NRSPP. Even more striking, we find that 35 percent of NSRPP beneficiaries who report being ill continue to work. This may indicate that the pension payment is still so low that some elderly pension subscribers are economically unable to forgo working, even when suffering from a chronic health condition.

6. Conclusion

In order to promote the development of the rural population and to cope with the problems of a rapidly aging society, the Chinese Government has repeatedly emphasized its willingness to implement a functioning public pension system in rural areas. Since the NRSPP pilot began at 2009, many decisive reforms have followed and further solidified the pension program's framework. By the end of 2011, the number of NRSPP participants reached 326 million and the number of participants receiving NRSPP payout reached 89 million. That same year the pension payments across the whole country were totaled at 58 billion RMB (NBSC, 2012). Despite these gains, participation in the NRSPP is far from universal, and there is a clear need to better

Table VIII.
Share of working
elders among all
elders (sample:
age ≥ 60)

Age categories	All elderly (%)	Receive pension (%)	No pension (%)	<i>p</i> -value
60-69	78	78	86	0.2763
70 and above	37	38	29	0.4096
all	76	76	79	0.3390

Source: Authors' own survey

Table IX.
Working status of
healthy and
unhealthy old people
(sample: age ≥ 60)

Age categories	All elderly (%)	Got pension (%)	No pension (%)	<i>p</i> -value
<i>Healthy</i>				
60-69	80	80	85	0.4510
70 and above	40	40	30	0.3652
all	78	78	80	0.6557
<i>Unhealthy</i>				
60-69	45	40	80	0.0934*
70 and above	11	11	11	0.9743
all	39	35	54	0.0842*

Notes: The *p*-value of *t*-statistics is reported. *indicate significance level of 10 percent
Source: Authors' own survey

understand the factors (both socioeconomic and policy related) influencing individual participation in the program.

Using a survey data set collected across China that involves five provinces, 25 counties, 50 towns, 101 villages, we provide a detailed description of China's current pension program. According to our data, the NRSPP has expanded rapidly since 2009, with a total average participation rate of 79 percent by the end of 2011. Additionally the participation rate for those who are younger than 60 years of age, and therefore not yet receiving pension benefits, is 74 percent. By employing a probit model we are able to examine the factors influencing people's decisions concerning participation in the NRSPP.

We paid particular attention to effects some NRSPP policies had on program participation. In areas that implemented a policy that mandated enrollment in the NRSPP by household, we found the probability of participation to be 12 percentage points higher than in areas that implemented individual-level enrollment. As wide participation in is an important objective of Chinese social policy this policy option which was during the survey period implemented in only 15 percent of the surveyed counties should be considered in other counties too or even be considered for amendments of the national policy guidelines. However, we have a tradeoff between the objective of high program participation and freedom of choice for the individual family member which needs to be carefully considered. In addition it must not be overlooked that any increase of the participation rate entails high budgetary costs in terms of the subsidy top-ups provided by local and provincial governments. If in case these would be reduced in case of higher participation the positive participation effect is likely to be mitigated at least in part which is confirmed by the results for the second policy: The policy that total pension payments increase for those individuals who contribute for more than the minimum 15 years also had significant positive effect on the participation, a clear hint for policy that potential participants in rural China react rationally on incentives that make participation more advantageous in terms of payoff. Analogously, higher NRSPP participation rates are found in areas where the pension payout is higher.

Other results of our analyses include that the age, social status, household assets, time preference, and confidence in the NRSPP affected program participation rates. These findings suggest that the government should take into account these individual-level heterogeneities when designing pension policies and take active measures to build a more effective system.

The design of the NRSPP implies that the present system does not have an insurance component protecting livelihoods of those with particularly long live spans beyond working age supported by means of those who only reach ages below average life expectancy. For pension systems in other countries this redistributive or social pooling aspect is the major constituent, more important budget wise than public subsidies. It should be considered, whether an introduction of such component would be accepted by the population and could help to mitigate poverty in old age in rural China.

Regarding effects of the present system results confirmed that the NRSPP did not affect the labor supply of rural elderly, as the majority of the elderly population sampled continued to work well into their seventies whether or not they were enrolled in the NRSPP. However, participation in the NRSPP appears to have decreased labor force participation of the elderly population suffering from chronic health conditions, as they were much more likely to leave the labor force than non-participants who became ill.

This fact gives a clear signal to policy that the system does have desired social impacts: it proves that the NRSPP improved the welfare in old age by way of decreasing the working rate of the part of rural elderly population that is most vulnerable due to poor health.

Notes

1. In some provinces, there are more levels, such as 600, 700, 800, etc.
2. This implies that the social pooling component of the system is limited to the government subsidies that individuals could accumulate on their account but not on private resources as in insurance schemes.
3. According to Central Poverty Alleviation and Development Conference on November 29, 2011, the per capita net rural income of 2,300 yuan is the new national poverty line.
4. The GVIO, which indicates the aggregated output of all economic sectors, has been found in other studies (Rozelle, 1996) to reflect the local standard of living and development potential more reliably than available data on per capita net rural income.
5. There were two villages in Jilin province merged and then “separated.” Because of this, both of the two villages are included in our sample.
6. If excluding the people who are older than 60, the participation rate is 74 percent.

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Further reading

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