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A small amount can make a big difference

The effect of the New Rural Social Pension Insurance program on the retirement decision in China

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Abstract

In 2009, the New Rural Social Pension Insurance program (NRSPI) was introduced and expanded to nationwide in 2012. This paper investigates the effect of the NRSPI on the retirement and old-age labor supply pattern in China using a two-wave nationwide survey data. Since the NRSPI is voluntary, we use instrument variables to control for the endogeneity bias. We find that receiving pension benefits from the NRSPI can substantially increase the likelihood of retirement and decrease number of working hours for females even though

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the pension benefit of the pension program is far below the minimum cost of living. We further decompose the labor supply into agricultural labor supply and non-agricultural labor supply, and find that most of the decrease in labor supply is from agricultural labor supply.

1 Introduction

As a developing country that has the world's largest population and a harsh family-planning policy, China faces a serious aging problem. By the end of 2014, more than 212.4 million people, i.e., 15.5% of the country's entire population, were aged 60 or over.¹ China differs from most developed countries in that it has not yet established a fully-covered pension system. Many elderly people, especially those in rural areas, continue to work at a very advanced age.

In 2009, a voluntary pension program, aimed at the rural elderly, was introduced and was expanded nationwide in 2012. The basic pension benefit is only 660 CNY per year,² which is much lower than the minimum cost of living in rural China. This pension program was the first to be strongly promoted by the government and has reached every village in China. Not surprisingly, the Chinese people are very hopeful that this program can improve the life of the rural elderly. Therefore, it is of interest to find out whether such a modest widely-covered pension program can make a difference for the retirement and old-age labor supply situation in the rural area.

In this paper, we analyze the effects of the pension receipt on the retirement decision. We then explore the effect of the NRSPI on different kind of labor supply for both males and females, both pensioners and contributors to further investigate channels through which the New Rural Social Pension Insurance program affects the labor supply decision.

This paper contributes to the literature in two ways. First, it helps us to

¹Ministry of civil affairs: 2014 Statistic bulletin of social service and development.

²1 US dollar was approximately 6.36 CNY on October 29, 2015.

understand the retirement behavior under a unique institutional setting. As is argued by Gruber and Wise (2008) in the *social security and retirement around the world* project, the institutional settings are strongly correlated to the labor force participation. Although previous literature shows that pension systems shift people's retirement behavior by providing economic incentives, this literature mainly focused on pension systems providing the main income for the elderly involved. Even the pension system in rural Brazil, another developing country considered in the retirement literature, offers a pension benefit equal to the minimum wage (see de Carvalho Filho (2008)). However, the benefits from the New Rural Social Pension Insurance program are far below the minimum living cost. This institutional setting is quite unique and gives us a chance to study whether and, if so, to what extent people respond to such a small amount of money. Besides, the pension benefits from the New Rural Social Pension Insurance program are not contingent on the work status. For those above age 60 at the moment the program was introduced, contribution is not needed at all, thus, joining the pension program generated a pure income effect.

The second contribution of this paper is that we investigate the role played by a non-financial factor, namely the living area, in the retirement decision. After controlling for financial situation, demographic background, family structure, etc., there is still a substantial difference in retirement patterns between people living in the urban side and the rural side.

Our study is an empirical one with data from a two-wave survey: the China Health and Retirement Longitudinal Study, which covers about 10,000 households and 17,500 individuals aged 45 or older in 150 counties in the years

2011 and 2013. Our empirical results show that after controlling for economic and demographic factors, receiving pension from the NRSPI substantially increases the probability of retirement and and decreases the weekly working time for females. The economic value of the changes in the labor supply is far more than the average pension benefits received per year, suggesting that the impact of this pension system goes far beyond the amount of money it brings to the female participants. For male participants, the effect of the NRSPI is not significant. Besides, we further decompose the different kinds of labor supply and find that most of the decrease in labor supply is from agricultural work.

We also examine the segmentation between the urban and rural areas. There are some cultural differences between the urban and rural sides that play a role in people's retirement decision. Population mobility in the rural area is low and people know each other's background, resulting in high peer pressure when deviating from traditional patterns of behavior. Retirement is a relatively new concept, thus less likely to be accepted in the rural area. Empirical findings are in favor of this argument. Living in the urban area, *ceteris paribus*, increases the likelihood of retirement by 25.7% and 18.3% for females and males, respectively. The decreased weekly working time is 9.7 hours for females and 9.0 hours for males. Most of the observations in our sample in the urban area have an agriculture household registration,³ indicating that most of them are migrants from the rural area. After migrating to the urban area, where the concept of retirement is commonly accepted

³We exclude people covered by the urban pension programs. It is very likely that those people have a non-agriculture household registration.

and peer pressure is weaker, their retirement pattern changed and became different from their rural counterparts.

In addition to the above findings, we also find that people tend to work more when they have more never-married sons. One explanation is that although traditionally adult sons are the main old age support for their old parents, parents don't want to retire before their sons have their own family, since they still need to earn money to increase their sons' bargaining power in the marriage market. This is what is suggested by the theory of Wei and Zhang (2011), namely that people increase saving to improve their relative standing in the marriage market.

The rest of the paper is organized as follows: section 2 presents previous literature on retirement. In section 3 we discuss the institutional background, followed by section 4 where the data source and descriptive statistics are presented. In section 5, we introduce the methodology we adopt and section 6 shows the empirical findings. We do a sensitivity analysis in section ?? and conclude the paper in section 8.

2 Literature

Retirement and old age labor supply attracted great attention in the previous decades. Factors affecting people's retirement decision fall into two categories: financial incentives and non-financial factors. In the neoclassical framework, the retirement decision is part of the life-cycle choice of consumption and leisure. Social security programs, for instance, pension programs, and age related health insurance programs provide financial incentives for

people to retire (see, for example, Coile and Gruber (2004); Vere (2011); Stock and Wise (1990); Hurd (1997); Lee (1998)). Individual wealth also plays a role in the retirement decision: wealthier people tend to retire earlier (see Bloemen (2006); Fields and Mitchell (1984)), and decumulation in wealth, like medical expenditure, is important for understanding retirement behavior (see French and Jones (2011)). Non-financial factors include financial literacy (see Van Rooij et al. (2012); Lusardi and Mitchell (2007)), social norms (see Vermeer et al. (2014)), and family obligations (see Szinovacz et al. (2001); Maurer-Fazio et al. (2011)).

However, studies about the retirement decision in developing countries with less sophisticated pension systems are very scarce. Social security in the rural side is sparse, (see Hussain (1994)) and the economic position of the elderly and family as a social security institution seems to be weakened as argued by Benjamin et al. (2000). Institutional settings, varying across countries, is an important factor of labor market behavior. Based on a pension reform in 1991, de Carvalho Filho (2008) studied the retirement decision of the rural elderly in Brazil and found that receiving old-age pension benefits significantly reduces the possibility of working and the hours of work.

There are few papers investigating the retirement pattern in China. For example, Benjamin et al. (2003) documented the labor supply situation of the elderly people in China and investigated the effect of age and health on the labor supply of the elderly. Using physical limitations as an instrument for the health situation, and based on three waves of panel data of the China Health and Nutrition Survey (CHNS), they found that health issues can explain half of the reduction in labor supply for men from 60 to 70, but

have no significant effect on the labor supply of women. In addition, Giles et al. (2015) documented the retirement patterns and the factors affecting the retirement decisions based on the first national survey of China Health and Retirement Longitudinal Study (CHARLS).

Zhang et al. (2014) and Chen et al. (2015) analyzed the effect of the New Rural Social Pension Program on work status using a Fuzzy Regression Discontinuity model. Our paper contributes to the two papers in the following ways: Firstly, they use a cross-sectional data while we use a panel data. With panel data, individual effect is better controlled. Secondly, because they use a FRD model, only communities which already have access to the pension program can be used. Therefore, only 26% of the whole sample in the first wave are used. Besides, a FRD model limits their focus to people around the cutoff age, thus a local treatment effect is estimated. Our model allows us to investigate wider sample and wider age group. This is relevant because pension contributors' retirement decision also responds to the NRSPI status. Thirdly, a FRD model cannot estimate the effect of the amount of pension benefits on the retirement behavior while our model is able to do that. And finally, we distinguish between females and males and decompose the total labor supply to further investigate the channel via which the NRSPI plays a role.

In addition to the reduced-form models, there are few other types of methods that are used in the estimation. Stock and Wise (1990) treated retirement as an option. People reassess the value of continuing to work and immediate retirement every period to make their retirement decision. As long as the value of continuing working is larger, people will not withdraw their

labor supply. Samwick (1998) extended the previous study by introducing dis-utility of labor into the model and by extending the dataset from a specific firm to the whole nation. People will stop working when the financial gain from postponing retirement falls just below the utility loss from decreasing leisure.

The other method heavily used by many researchers is a life-cycle dynamic programming model. People maximize their life-cycle utility subject to a budget constraint. Early models like the one used by Gustman and Steinmeier (1985) only considered consumption and the labor supply decision (full-time work, part-time work, and retirement). Later models introduced, for example, wage uncertainty (see Gourinchas and Parker (2002)), health uncertainty and health insurance (see French and Jones (2011)), and saving (see van der Klaauw and Wolpin (2008)).

While structural retirement models allow us to understand the underlying mechanism of the retirement behavior, the drawbacks of this kind of models are also obvious. The estimation is more complex and the results rely heavily on the assumptions. At this stage, we focus on reduced-form models to quantitatively measure the relation between the New Rural Social Pension Insurance Program and the retirement decision. In further studies, structural estimation could be adopted to do some counterfactual analysis.

3 The Institutional Background

The New Rural Social Pension Insurance program was introduced in 2009, when 320 out of 2858 counties joined the program as a pilot. In 2010, 518

new counties entered (see Cheng et al. (2015)) followed by 1076 counties in 2011.⁴ By the end of 2012, this pension program extended to nationwide.

The New Rural Social Pension Insurance program is voluntary for people registered in the rural area and aged 16 or older. However, students and those participating in any other pension plans are excluded. Other pension plans include the government pension program, which is for people working in the government and institutions, the firm basic pension, which is for firm-employed, and urban residents pension, which is for unemployed people with urban registration. The registration system (*Hukou*) was established in the 1950s to control the population mobility. All the individuals are classified into one of the two categories: agriculture *Hukou* and non-agriculture *Hukou*. A status change from agriculture to non-agriculture is tightly controlled. Therefore, many migrant workers are still rural registered even though they are working in the urban side, thus, they still have access to the New Rural Social Pension Insurance program.

The pension contributions are shared by individual participants, the local village community, and the local and central government. Five basic levels of contribution can be chosen by individual participants, varying from 100 CNY to 500 CNY per year. However, in 10 provinces, another five levels up to 1000 are also available.⁵ Nevertheless, the most popular level of contribution is 100 CNY per year (see Lei et al. (2013)). The collective subsidy from the local village is encouraged but not mandatory. Subsidies from the governments are partially matched to the individual contribution level, with a minimum

⁴Ministry of Human Resources and Social Security of the PRC.

⁵Ministry of Human Resources and Social Security of the PRC.

subsidy equal to 30 CNY per year per participant.

The pension benefits include benefits from the individual account and the basic benefits from the government. The monthly amount from the individual account are the accumulated assets in the individual account divided by 139, where 139 is assumed to be the average remaining life expectancy measured in months. The basic benefits from the government is 660 CNY per year. For the east provinces, the central government bears half of the basic benefits and for the relatively poor middle and west provinces, the central government finances the whole basic benefits.⁶

The minimum age required to receive the pension benefits is 60. There is no requirement to retire to receive pension benefits. However, unlike in most countries, the pension benefits are not for everyone above 60 but only for certain participants. People aged 60 or older before the introduction of the pension program can receive the basic pension benefits without any contribution, under the condition that their children, if eligible for the program, participate in the program. For those younger than 45 years old when the program was introduced, a minimum of 15 years of contribution has to be made to be able to receive the pension benefits after they reach age 60. There is no minimum number of years of contribution required for those between age 45 and 60.

Compared to the rural poverty line, which was set to be 2300 CNY per year in 2011, the pension benefits from the New Rural Social Pension Insurance Program are quite low. The basic pension benefits are 660 CNY

⁶Eight Provinces increased the basic pension. The basic pension of Beijing is 3960 CNY, Shanghai is 3600 CNY, Tianjin is 1800 CNY, Chongqing is 960 CNY. Other provinces vary from 720 to 840 CNY per year.

and the overall pension benefits in the sample are around 965 CNY, less than half of the rural poverty line. In 2012, the average per person annual net income and consumption in the rural area was 7916.6 and 5908 CNY, respectively. Even for families with income in the lowest income group, the average per person annual net income and consumption was 2316.2 and 3742.4 CNY per year. The pension benefits from the new rural pension program are not sufficient for elderly people to maintain a normal life but are an important source of income for the lowest income group.

4 Construction and description of main variables

4.1 Data Source

All the data used in this paper are from the biennial survey of the China Health and Retirement Longitude Study. It is a nation-wide survey covering approximately 10,000 households, 17,500 individuals aged 45 or older in 150 counties in the years 2011 and 2013. Based on the experience of the Health and Retirement survey (HRS) in the U.S. and the Survey of Health, Aging, and Retirement in Europe (SHARE), it contains information on demographics, family transfers, health status and health care, income and consumption, work, retirement and pension, assets and liabilities, etc.. Detailed description of this study and its advantages can be found in (Smith et al., 2014), (Lei et al., 2012), (Lei et al., 2014), and (Shen, 2014).

In this paper, we focus on the retirement decision, old age labor supply

and retirement planning of the elderly. Among the different modules in the questionnaire, we are particularly interested in the work, retirement, and pension part, taking the demographics information, financial situation, and health conditions as control variables. The construction of the main variables is described in the following section.

4.2 Construction of variables

Dependent variables

Retirement status: The retirement status $R_{i,t}$ is a dummy variable that takes the value 1 if individual i is “retired”, i.e., not working and not searching for jobs at time t , otherwise it is 0. In the urban side, although there is a compulsory retirement age for workers, there is also a mismatch between the retirement procedures and the actual labor supply. According to the survey data, around 35.14% of the people who have completed the retirement procedure continue to work. Thus, the compulsory retirement age is not a perfect proxy for people’s retirement status. In the rural area, many people are engaged in agriculture work and seasonality is the nature of that kind of work. Thus, we define retirement in the following way: if individual i did not engage in any agriculture work for more than 10 days in the previous year, did not work for at least 1 hour in the previous week, is not currently laid-off, and did not search for a new job in the past month, then we say individual i is retired.

Weekly working hours: The number of weekly working hours H_{it} is a continuous variable representing the labor supply condition of individual i at time

t. As indicated before, agricultural work is seasonal, thus the weekly working hours on agriculture work are weighted by the number of working months. In the questionnaire, three questions are asked. *a*: *How many months did you work on cropping (forestry), livestock, and fishing in the past year?* *b*: *How many days did you work per week on average during a normal work month in the past year?* *c*: *how many hours did you usually work per day during a normal work day in the past year?* The number of weekly working hours on agriculture work is the product of the answers in these three questions divided by 12. For employed or self-employed work, although the number of months worked is asked as well, they are asked the average working days in a week in the past year and the average working hours per day in the past year. Thus, the number of weekly working hours is just the product of the answers in the last two questions. The total number of weekly working hours is the sum of the weekly working hours for all kinds of jobs.

Main explanatory variables

Pension: The pension status $Pension_{it}$ a dummy variable indicating whether individual i receives pension from the New Rural Social Pension Insurance program at time t .

Enrollment: the New Rural Social Pension Insurance program enrollment status $enrollment_{it}$ is a dummy variable, too. If individual i participates in the NRSPI at time t , it takes the value of 1, otherwise it is 0. So, it takes the value of 1 for both pension contributors and pensioners.

Pension benefits: the pension benefits $benefit_{it}$ is the amount of money individual i received from the New Rural Social Pension Insurance at time t .

Main control variables

The control variables include the family structure, the occupation, the demographic background, the local retirement culture, financial situation, medical insurance, and whether the respondents have grandchildren, or old parents to take care of. Education levels are classified into 12 categories, varying from 1 (illiterate) to 12 (doctoral degree). The intermediate levels include not having finished primary school, home school, elementary school, middle school, high school, vocational school, two-/three-year college/associate degree, bachelor, and master degree. Most of the people in the survey have education not higher than elementary school as shown in figure 1.

4.3 Descriptive statistics of the sample

The samples are selected by sequentially deleting the observations that do not satisfy the following criteria. (1) Individuals appear in both surveys, (2) older than 45, (3) have ever worked in their whole life, (4) not covered by commercial pension and other urban pension programs in any wave, (5) have full information on the key variables. Before sample selection, we have 36330 individual-year observations, 5948 are dropped out because of criteria (1), 177 observations are dropped out because of age limitation. 104 observations never worked in their whole life, 8652 observations are covered by other pension programs. After those selection, we again dropped those only appear in one wave. In the end we have 11300 observations in the rural group and 1056 observations in the urban group. Since the New Rural Social

Pension Insurance program is for rural-registered people, we first focus on people in the rural area without any other pension other than the New Rural Social Pension Insurance. However, migrant workers, i.e., those who have agriculture-*hukou* but work and live in the urban area, are also eligible to participate in the New Rural Social Pension Insurance program. To further investigate whether the New Rural Social Pension Insurance still has effects when people move to the urban side, we then include people in the urban area in the analysis.

Figures 2, 3 and 4 show the retirement ratio, i.e., the proportion of retired people, in the two surveys. Figure 2 plots the retirement ratio against age by pension status and wave, figure 3 is the retirement ratio by region and wave, and figure 4 shows the retirement ratio for different genders. We see that the retirement ratio is increasing with age in all these three figures. The variable we are interested in, the pension enrollment, does not seem to make a big difference, at least not without controlling for other variables. From figure 2, we cannot see a substantial difference in terms of the retirement ratio for the pension participants and non-participants. Differences between people in the urban and rural areas (figure 3) and between different genders (figure 4) are quite substantial. As shown in figure 3, at the age of 60, around 50% of the people in the urban area are retired, but only 20% are retired in the rural area. Even after age 70, most of the rural residents still work. In terms of gender differences, the retirement ratio of women is higher than that of men. The retirement age for males is 60, for white collar females it is 55, and it is 50 for blue collar females. However, there is no substantial jump at those ages because the fraction of people working in the government and

firms, where the retirement regulation is applied, is very low and many of them continue to work after the compulsory retirement age.

Figures 5, 6, and 7 present the average weekly working hours in the two waves. Figure 5 presents the average working hours against age for people with different pension status, figure 6 is grouped by region, and 7 is grouped by gender. Again, without controlling for other variables, there is no substantial difference in working hours between pension participants and non-participants. The difference in working hours between the urban and rural areas is not substantial, especially before age 50. However, the difference is increasing after 55 and is about 10 hours for people aged 60 and above. For people at very advanced age, the difference is diminishing. Figure 7 shows that males work longer than females before age 80. The number of weekly working hours of these two groups is converging after age 80.

Figure 8 shows the proportion of people who receive pension benefits from the New Rural Social Pension Insurance program in the urban area. Those enrolled in the other pension programs are excluded. People begin to receive pension at the age 60 if they are enrolled in the New Rural Social Pension Insurance program. Thus, we see a big jump at the age of 60 and 61. The reason that there is a jump at 61 is that some people use the nominal age⁷ which is usually 1 year older than the actual age. From figure 9, we also see that the pension program expanded quickly during the two waves. In 2011, about 20-30% of the rural villagers were covered in the program. In 2013, the coverage ratio increased to about 80%.

⁷Newborns start at age of 1 instead of age 0. See Wikipedia *East Asian age reckoning*: https://en.wikipedia.org/wiki/East_Asian_age_reckoning.

The means of the main variables are summarized in table 1. In column (1), we present the sample average for females, column (2) is for males and column (3) covers the whole sample. Consistent with figures 4 and 7, females are more likely to get retired, and to work less. Besides, the time allocation on different kind of work is different, too. Males spend twice more time on non-agriculture work than females but their differences on agriculture work are small. These motivate us to investigate the effect of NRSPI for males and females separately.

The average total pension income from the New Rural Social Pension Insurance program is around 857 CNY per year. It is quite small when comparing to the household income, which is around 13169 CNY per year.

5 Model

From the descriptive statistics in section 4, we cannot see the impact of the New Rural Social Pension Insurance program on the retirement and labor supply decision. In this section, we use econometric models to analyze the impact of pension receipt by estimating the following regression equation.

$$y_{it} = Pension_{it}\gamma + Pension_{it} \times Benefits_{it}\theta + X'_{it}\beta + D_i\delta + \alpha_i + \varepsilon_{it} \quad (1)$$

The dependent variable y_{it} can be the retirement status R_{it} or the hours of the weekly labor supply H_{it} as discussed in section 4.2. Detailed description of the variables are shown in section 4.2. First, we look at the effects of receiving pension from the New Rural Social Pension Insurance program.

After that, we want to investigate the effects of pension enrollment on pension contributors' retirement and labor supply situation. The model used for this estimation is

$$y_{it} = Enrollment_{it}\Gamma + X'_{it}B + D_i\Delta + A_i + \Upsilon_{it}. \quad (2)$$

For both models, X_{it} refers to other individual background characteristics, including the occupation type, education level, age, self-reported health status, financial situation, taking care of elderly parents or young grandchildren, and family structure. D_i represents district dummies referring to Eastern China, Middle China, Western China, and Northeastern China. β , γ , δ and A , B , and Δ are vectors of parameters to be estimated, and ε_{it} and Υ_{it} are the error term.

We begin our estimation using a random effect model assuming the individual effect α_i is a random variable orthogonal to the explanatory variables and all the independent variables are uncorrelated with the error term ε_{it} . However, the assumption of exogeneity of the independent variables may lead to biased estimation results if both the enrollment in the New Rural Social Pension Insurance program and the pension benefits are allowed to be correlated with the error terms. The pension program is voluntary and the pension benefits can be determined to some extent by the pension participants. Villagers younger than 60 years can choose the level of contribution, which will affect the pension benefits they are about to receive after age 60. Previous literature deals with this problem by utilizing discontinuity regression, see Chen (2015), or an instrumental variable approach, see Cheng et al.

(2015), de Carvalho Filho (2008), and Vere (2011).

We adopt an instrumental variable approach to deal with this endogeneity problem. We assume the instrument variables are exogenous but are correlated to the endogenous variables. Following Cheng et al. (2015), we choose the first instrumental variable as the length of the duration of the pension program in each community. The pension program was launched at different times for different communities, therefore, the pension status and pension income will be correlated to the duration of the pension program. Besides, the implementation of the pension program was determined by the government, and is thus uncorrelated to the retirement plan of the individual villagers. For each community, we generate the duration of the New Rural Social Pension Insurance program as the difference between the survey time and the time the first villager in the community joined the pension program. For communities without any pensioner, we set the duration equal to zero.

The second instrumental variable is the province level federal revenue. Both the basic pension and government subsidies can vary across provinces and their level may be related to the federal revenue, since the local government can adjust the basic pension and subsidies based on their economic situation. This not only directly affects the pension benefits, but also influences the pension enrollment decision, since people are more incentivized to participate when compensation is higher. Besides, the federal revenue is not determined by individuals, thus, it is expected to be independent of the error terms.

The other endogeneity problem arises with the use of the self-reported health status. There is a large literature documenting the effect of health

on labor supply and retirement, in which the measurement of the health condition is highlighted. In addition to the self-reported health condition, more objective measures of health condition were adopted, for instance, the constructed “health stock” (see Hagan et al. (2008), Disney et al. (2006), and Bound et al. (1999)), using the presence of specific conditions and activity limitations to instrument the self-assessed health condition (see (Stern, 1989)). As indicated by Rice et al. (see Jones et al. (2010)), constructing the health stock using objective measures is analogous to using more objective health indicators as instrumental variables to self-reported health condition. Besides, Dwyer and Mitchell (see Dwyer and Mitchell (1999)) found that neither the self-reported health condition nor the objective health indicators are measured endogenously when they compare the results to the one using hospital stay situation and parental health and mortality as instruments. Moreover, self-reported health condition is important in explaining retirement because other objective health indicators measure health condition rather than work capacity (see Bound (1991)). Thus, in this paper, we follow the previous literature and use objective health indicators as instruments to self-reported health condition. The health indicators include the presence of certain diseases and physical limitations.

6 Empirical Results

6.1 Instrumental variables

Before we move to the impact of the New Rural Social Pension Insurance program, we want to validate the choice of the instrumental variables. Table 2 presents the first stage estimation results of the pooled OLS model in column (2), (4), and (6), as well as the random effect model in columns (1), (3), and (5).

The pooled OLS and the random effect model give similar results. The coefficients of duration and province level federal revenue on pension enrollment and pension income are significant at the 1% significance level in both models. Longer duration is associated with higher probability of joining the pension program and higher pension income. The impact of federal revenue is negative on pension enrollment while positive on pension income, indicating the pension program was first introduced in relatively poor provinces, but those provinces fail to provide higher basic pension or higher subsidies. The effect of financial assets shows a similar pattern. People with more financial assets are less likely to join the pension program, but when they participate, they tend to choose a higher level of contribution. The negative correlation between financial assets and the probability of pension enrollment suggests that there is some substitution effect. People have different old age dependent methods, and the New Rural Social Pension Insurance program is a substitute for individual saving.

The health indicators are all significant at the 1% significance level when explaining the self-reported health condition. In addition, by using instru-

mental variables, we decrease the dimension of health to one: the self-reported health condition, which is powerful in explaining work capacity.

6.2 The effect of the New Rural Social Pension Insurance on the retirement and labor supply patterns

As discussed in section 4, the labor supply situation and retirement status of females and males are quite different. A formal test of the regression coefficients equality also shows that the regression coefficients for the two groups are significantly different. Therefore, in this section, we analyze the effect of the New Rural Social Pension Insurance program separately for different genders.

Table 3 shows that receiving pension benefits can substantially change the retirement status of females. However, for males, the effect is not significant. The average partial effect of pension receipt on female is around 6%.

Table 4 presents the effect of pension on labor supply. In the whole sample with both males and females, the partial effect of receiving pension benefits on labor supply is around 17 hours. We plot the partial effect in figure 10. In 80% of the scenarios, the deduction in labor supply falls in the range of 15-20 hours. For males, the coefficients on the variable $pension_{it}$ and the interaction term are not significantly different from 0, indicating that the effect of the NRSPI program on labor supply of males is not significant. But for females, receiving pension benefits decreases the labor supply substantially. Comparing to males, females have a lower productivity on agricultural work, the pension benefits worth more work for them.

We further decompose the total labor supply into non-agricultural labor supply (table 4) and agricultural labor supply (table 5). Neither females nor males substantially change their non-agriculture labor supply after receiving the pension benefits. But they all decrease their agriculture labor supply accordingly and females respond more to the pension program. Besides, most of the decrease in agricultural labor supply comes from decreased working hours on their own field. This finding is reasonable given that rural people allocate most of their working time on household agricultural work. However, the amount of decreased labor supply for females is very large when comparing it to the amount of benefits received. As shown in table 1, the average annual benefits received by females are only 860 CNY, this is about the wage of 78 hours of work if we use the minimum wage of 11.73⁸. Two reasons might be able to explain this phenomenon. In the rural side, the actual economic value of one hour's work might be far below the minimum wage. Farmers can spend lots of time on the field but the production cannot be raised proportionally. Besides, for older workers, working on the field might be a very heavy burden and the disutility of labor is very high.

The big effect of the New Rural Social Pension Insurance program found by us is in line with previous findings. According to the analysis of Chen et al. (2015), the probability to get retired increased by 13.2% to 36.8% based on different model specification. The effect estimated by Zhang et al. (2014) is around 25%. The introduction of the New Rural Social Pension Insurance program brings rural people a feeling that the government is taking care of

⁸In 2014, the average minimum hourly wage in China was 11.73 CNY <http://www.china-briefing.com/news/2014/06/11/complete-guide-minimum-wage-levels-across-china-2014.html>

them so that they can have the opportunity to retire. Besides, traditionally, people in the rural area don't have the concept of retirement. This pension program can also spread the concept of retirement among pension contributors and pensioners. That may explain why we find the sizable effect on retirement. Anyway, the New Rural Social Pension Insurance program is the first pension program that covers the whole rural area. Its sizable effect is found not only on the labor supply decision, but also on people's living arrangement (Chen (2015), and Cheng et al. (2015)) and health (Lingguo et al. (2015)).

Another interesting finding is the role of the number of never married sons. Although, adult children, especially adult sons are very important old age supporters, people need to work more before their single sons are getting married. This is in line with the competitive saving theory proposed by Wei, et al.(Wei and Zhang, 2011). People with single sons need to work harder to improve their son's relativeness attractiveness for marriage.

Consistent with the previous literature (see (Benjamin et al., 2003)), health conditions play an important role in people's retirement planning. People with poorer health are more likely to get retired, to plan their retirement and to work less. Occupation affects the retirement planning as well. People engaged in agriculture work are more likely to work until they are no longer physically able to do so, less likely to get retired, and work more.

We further investigate the role of the New Rural Social Pension Insurance program by looking at the effect of the pension benefits for those enrolled in the pension program. Table 10 shows the effect on work/retirement status and table 11 shows the effect on weekly labor supply. The coefficients on

benefits are insignificantly for all of the cases. Neither females nor males significantly changed their retirement and labor supply decision for different benefits received. It indicates that the amount of pension benefits has no effect on the retirement behavior or retirement expectations. There are two possible explanations. First, the overall pension benefits are very low with average basic subsidy equal to 857 Yuan per year. It is not sufficient to shift people's retirement behavior. Second, the variation in the basic pension is low. Half of the observations have a minimum basic pension of 660 Yuan per year and the overall standard deviation is 336. The irrelevance of pension income suggests that it is the feeling that the government takes care of them rather than the amount of money received that matters.

6.3 The effect on the pension contributors

According to the regulation framework, only pension participants above the age of 60 can receive pension benefits from the New Rural Social Pension Insurance program. In our sample, there are a group of people below age 60, for them, enrolling in the New Rural Social Pension program means that they need to make contributions. They haven't receive any pension benefits from the pension program. We want to see how the pension program will affect the pension contributors' labor supply decision, whether they will work more to earn money to make contributions.

Table 6 shows the effect of pension enrollment on the retirement status for the pension contributors. The coefficients on pension enrollment is only significant for the female group. It suggests only females contributors will

increase the probability of retirement by around 15.6% after enrolling in the pension program. However, males will work less on the non-agricultural work. As for agricultural work, table 7 shows females will decrease the working probability by 13.3% but the effect of pension enrollment on males is not significantly different from 0.

The labor supply situation of female contributors and male contributors are shown in table 8. Similar to the retirement status, only female contributors will significantly decrease their weekly labor supply by 12.1 hours. The agricultural labor supply of both females and males are affected as shown in table 9, only that the influence on female contributors is more significant and more sizable.

Although the New Rural Social Pension Insurance program generates net cash outflow for pension contributors, females contributors still decrease their labor supply and increase the likelihood of retirement. It is possible that within a household, the younger contributors and males contributors work to pay the pension contribution while the middle age female contributors work less.

6.4 Urban-Rural disparity

We further include people in the urban area, not covered by other pension programs, to see whether the New Rural Social Pension Insurance program affects those in the urban side. As mentioned before, there are many migrants from the rural side who work in the urban side. Thus, even in the urban side, there are people enrolled in the New Rural Social Pension Insurance program.

Table 12, 13, 14 and 15 present the results for the extended sample. Similarly as before, enrolling in the New Rural Social Pension Insurance program increases the likelihood to retire and decreases the number of working hours per week for females. Only the magnitudes of the coefficient estimators are smaller. The effect of the pension income is of a smaller magnitude as well. The pension program has less effect on people living in the urban area.

Table 12 and 14 also shows that there are substantial differences in terms of retirement status, and working hours between the urban and the rural area. After controlling for the demographic background, social welfare, financial situation, gender, and family situation, people in the urban area are still more likely to get retired and work for less hours than their rural counterparts. It suggests retirement is not only an economic decision, but cultural factors are also essential.

In rural China, population mobility is lower, people know each other's background, resulting in high peer pressure when behaving differently. Getting retired may be one of the things that are on the "forbidden list" because traditionally, it was the privilege of very high-level officers. And even for them, after resigning from imperial court, they usually returned to their native town to help the local education. The urban side, however, is more industrialized and "open-minded" to the imported concept of retirement.

7 Sensitivity Analysis

8 Conclusion

In this paper, we investigate the effect of the New Rural Social Pension Insurance program on the retirement behavior, the labor supply situation and retirement planning of the Chinese elderly. With a monthly pension benefit of less than 100 CNY, less than one-half of the minimum cost of living, the pension program significantly changes the retirement pattern of females. Their retirement likelihood is increased and weekly working hours are decreased. But for males, the labor supply situation doesn't change dramatically. Our findings suggest that policies targeting at a wide audience can have a substantial effect even with only a very small amount of money.

The amount of the basic pension received has no effect on the retirement pattern. The variation in the basic pension is low and the overall pension income is not sufficient to shift the retirement behavior. It seems it is the feeling that the government will support them in their old age, rather than the amount of money received that affects their retirement decision.

Although the New Rural Social Pension Insurance program changes the retirement pattern of the rural villagers, there are still substantial differences between the rural and urban area. Retirement is a relatively new concept for the rural villagers, it's not easy for them to abandon the tradition of working until too old to work.

We also find that people tend to work more when they have single sons. Although people in the rural side still mainly rely on their adult sons for

old age support, they need to work harder to help their sons to get married first. This is consistent with the finding by Wei, et al., (see (Wei and Zhang, 2011)) that families with unmarried sons tend to save more to increase their son's attractiveness in the marriage market.

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9 Figures and Tables

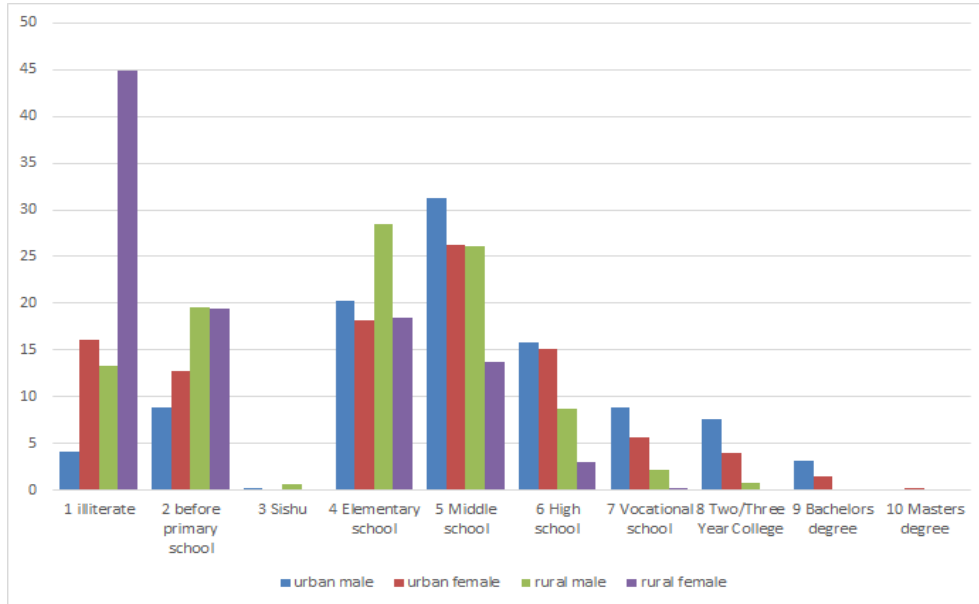


Figure 1: Education background of people in the survey data

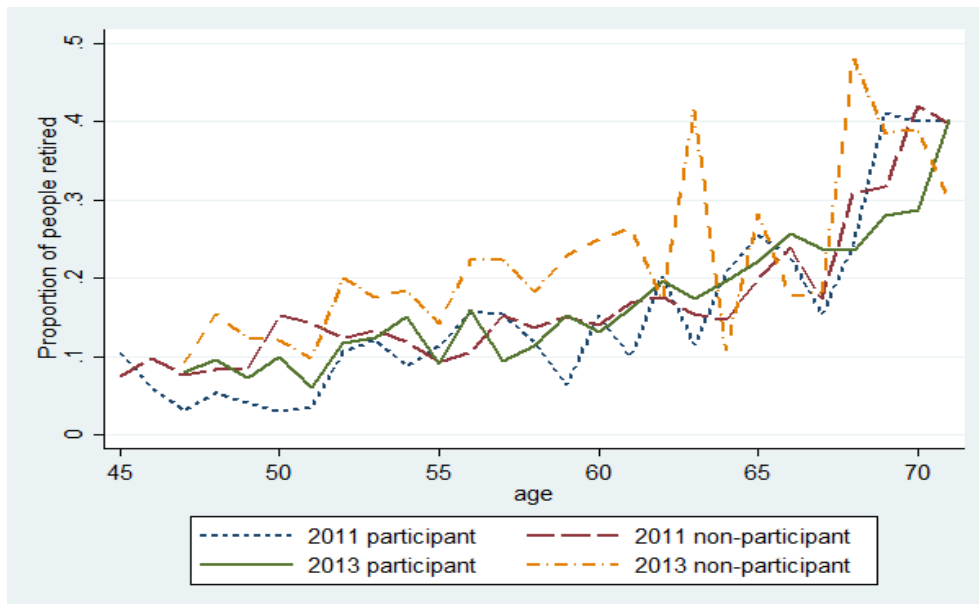


Figure 2: Retirement ratio of different age groups by pension status and wave

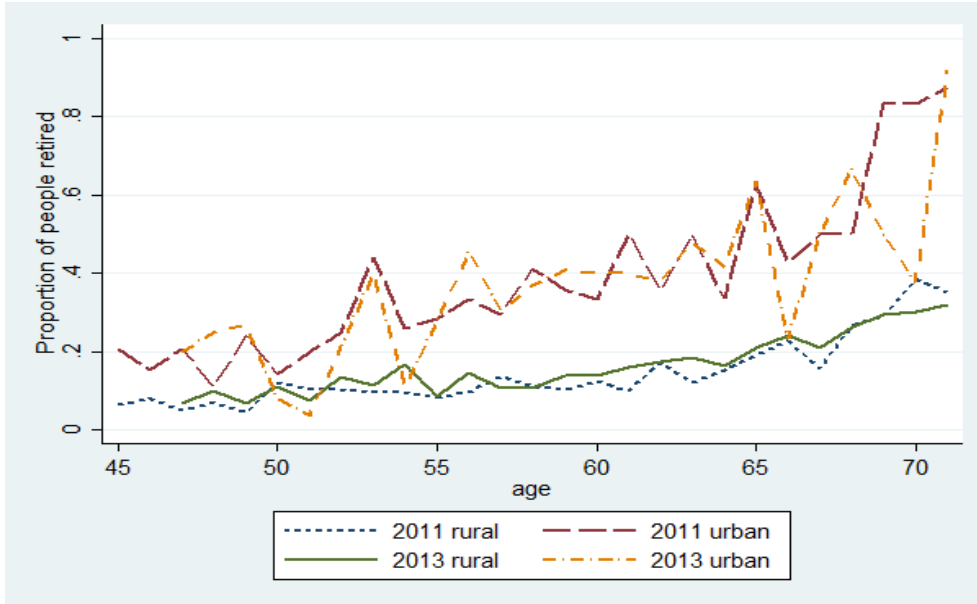


Figure 3: Retirement ratio of different age groups by region and wave



Figure 4: Retirement ratio of different age groups by gender and wave

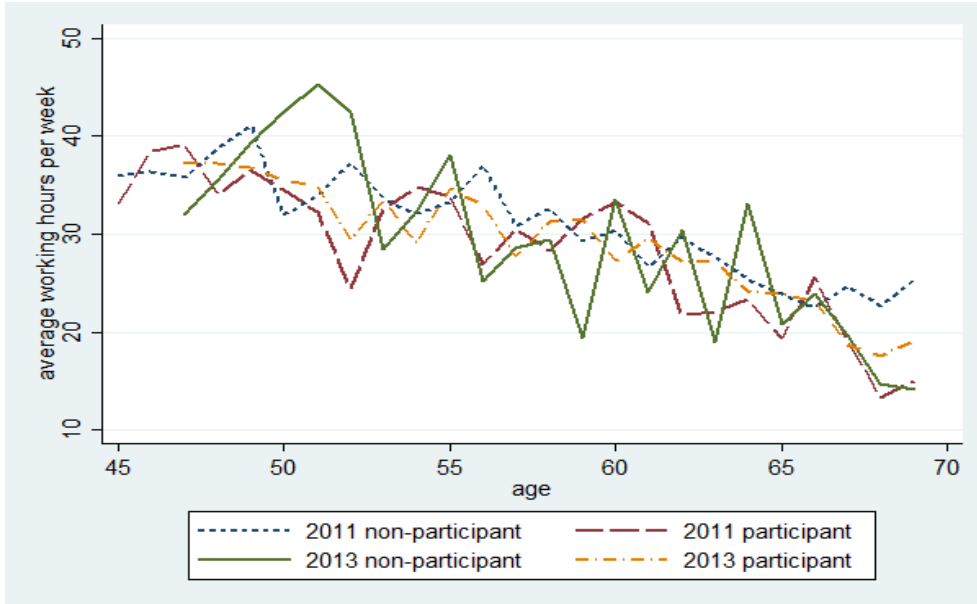


Figure 5: The average working hours per week by pension status and wave

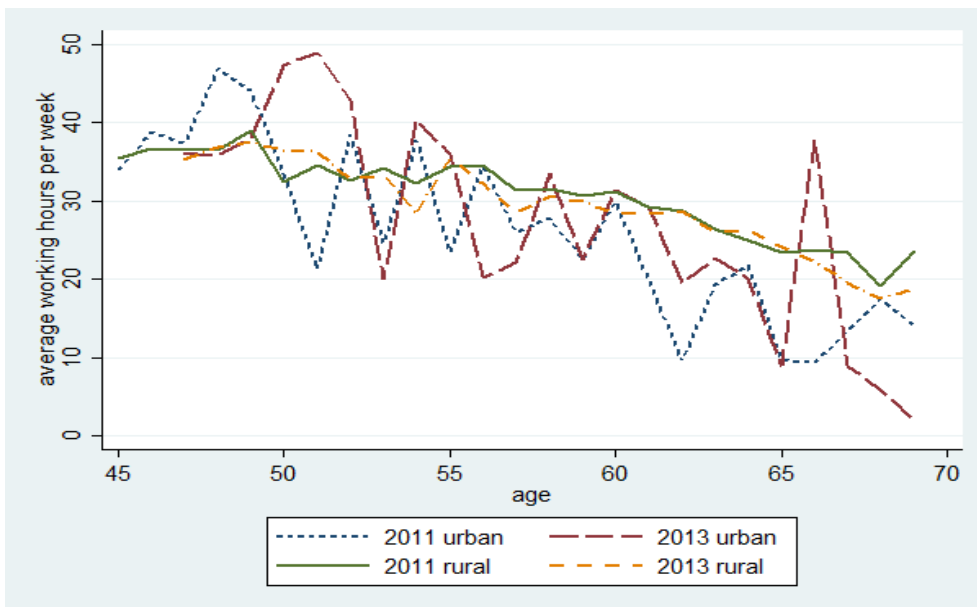


Figure 6: The average working hours per week by region wave

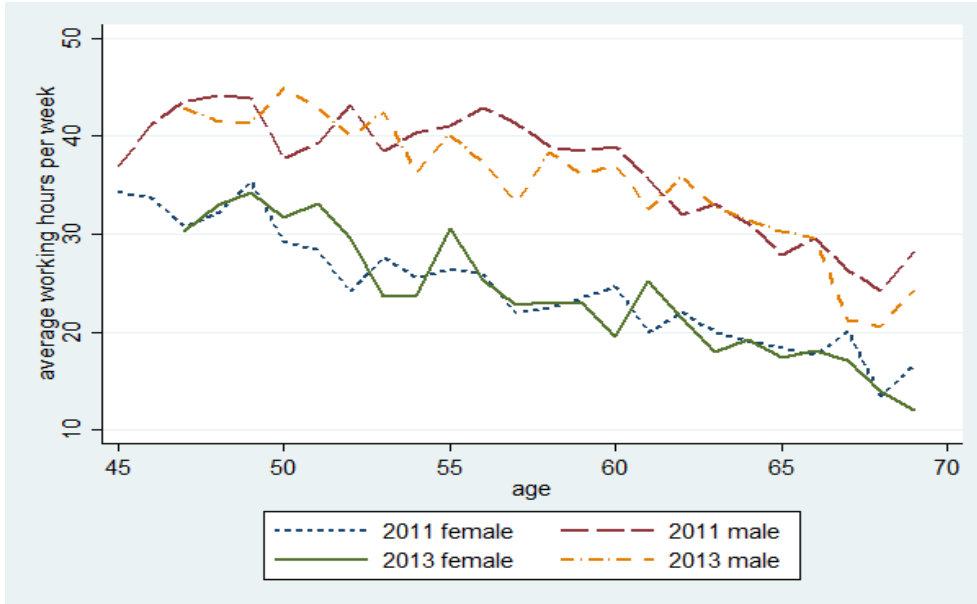


Figure 7: The average working hours per week by gender wave

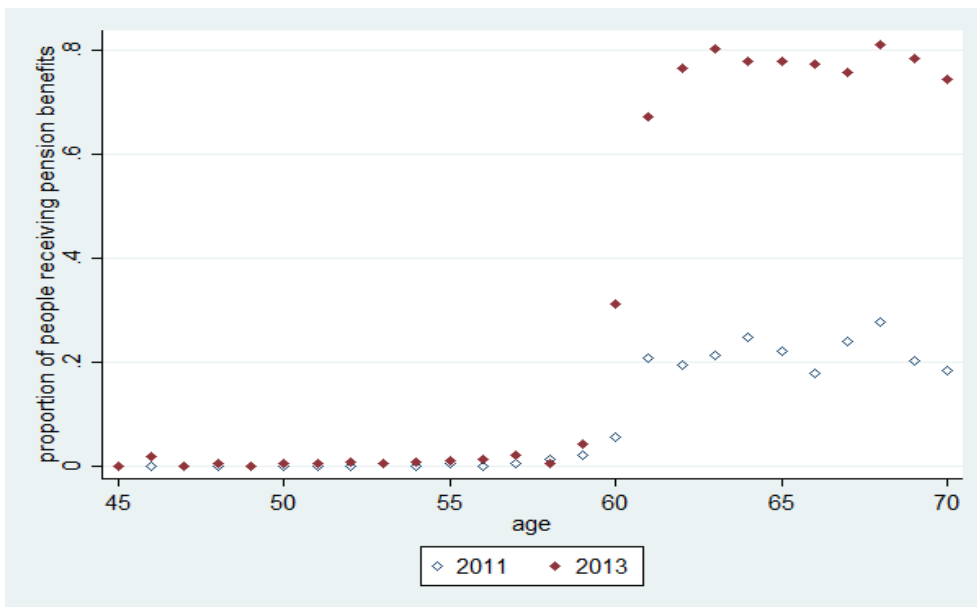


Figure 8: The proportion of people that receive pension benefits

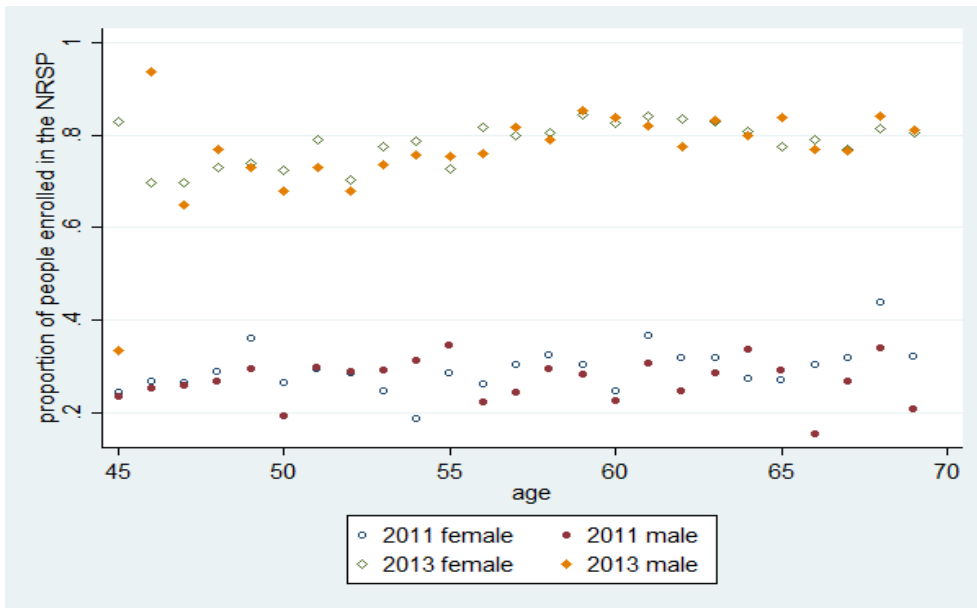


Figure 9: The proportion of people that enrolled in the New Rural Social Pension Insurance program by gender and wave.

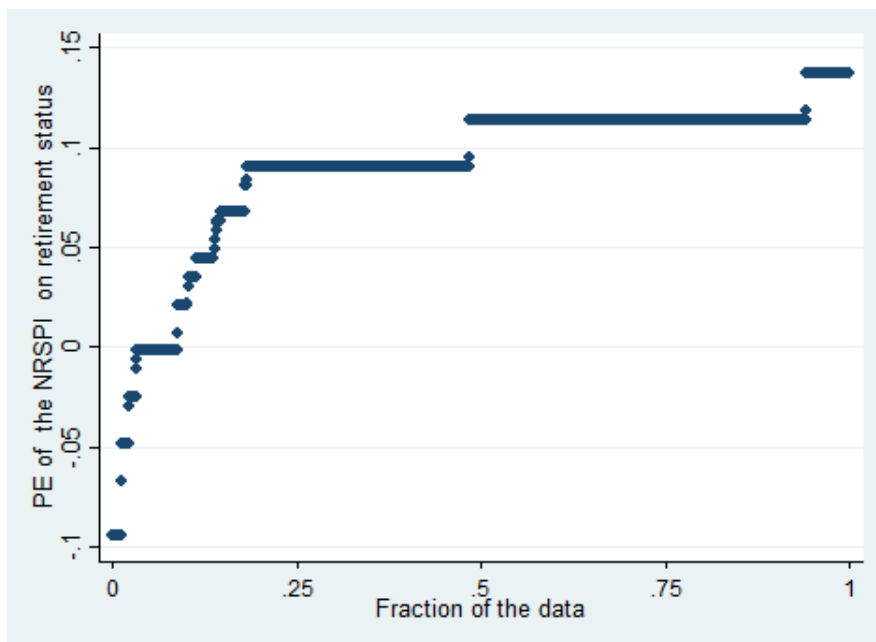


Figure 10: Partial Effect of receiving pension on retirement probability

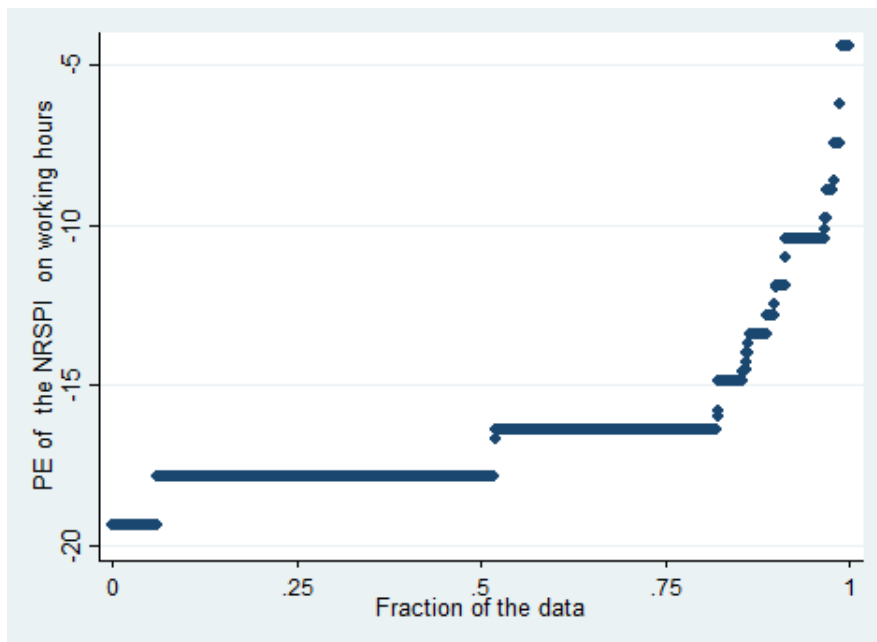


Figure 11: Partial Effect of receiving pension on weekly labor supply

Table 1: The sample average of the main variables. All the variables are expressed as percentage except *age*, *education*, *Health*, which is the self-reported health status, and *financial situation*. The column (1) represents rural residents without any participation in any other kinds of pension program except the New Rural Social Pension Insurance program. The column (2) includes rural residents and urban residents that are not covered by other urban pension programs and column (3) refers to urban residents.

	Female	Male	Overall
<i>Dependent variables</i>			
retired(%)	21.89	13.29	17.77
work status: non-agri. work (%)	14.92	30.00	22.15
work status: agri. work (%)	72.33	77.51	74.81
weekly working hours(H)	23.21	33.82	28.28
working hours on non-agri. work (H)	6.45	14.95	10.51
working hours on agri. work (H)	16.76	18.73	17.70
working hours on own field (H)	16.21	18.01	17.07
<i>Welfare</i>			
pension enrollment(%)	52.94	51.61	52.30
receive pension (%)	20.77	21.42	21.08
receive benefits (Yuan/year)	860.05	853.30	856.76
<i>Demographics</i>			
male(%)			47.93
married	0.86	0.91	0.89
agriculture-hukou(%)	98.88	98.78	98.83
education	2.37	3.53	2.92
age(year)	5.84	5.94	5.89
<i>Geography</i>			
East(%)	28.25	27.81	28.04
West(%)	36.71	36.41	36.57
Northeast(%)	7.44	7.20	7.33
Middle(%)	30.39	30.87	30.62
Observations	42 5884	5416	11300

There are less observations for the variable “plan retirement”, “weekly working hours”, “received benefits” and working hours and working status on specific kind of works.

Continue with table 1. The variable *care child* and *care parent* indicate whether they have grandchild under 6 or old parents to take care of.

	Female	Male	Overall
<i>Occupation</i>			
farming(%)	92.45	89.49	91.04
government(%)	1.00	1.96	1.46
firm(%)	2.02	4.71	3.31
other employed(%)	7.17	14.72	10.79
self-employed(%)	6.25	10.12	8.11
<i>Family Obligation</i>			
care child(%)	20.92	21.51	21.20
careparent(%)	6.63	5.87	6.27
<i>Health situation</i>			
self-reported health	1.94	2.09	2.01
household income(CNY/year)	11872.24	14576.34	13168.29
financial asset(CNY)	4156.79	7036.35	5536.94
financial liability(CNY)	2331.83	3043.59	2672.97
Observations	5884	5416	11300

Table 2: The weak instrument test.

	pension enrollment		pension income		self-reported health	
	RE panel (1)	Pooled OLS (2)	RE panel (3)	Pooled OLS (4)	RE panel (5)	Pooled OLS (6)
duration	0.100*** (0.003)	0.101*** (0.003)	0.009*** (0.001)	0.009*** (0.001)	0.010* (0.006)	0.012** (0.006)
federal revenue	-0.014*** (0.004)	-0.013*** (0.004)	0.005*** (0.001)	0.005*** (0.001)	-0.007 (0.008)	-0.008 (0.007)
physical	-0.003*** (0.001)	-0.002** (0.001)	-0.000 (0.000)	-0.000 (0.000)	-0.079*** (0.002)	-0.082*** (0.002)
pain	-0.004 (0.009)	-0.003 (0.009)	-0.000 (0.002)	-0.000 (0.002)	-0.230*** (0.017)	-0.251*** (0.017)
dyslipidemia	0.019 (0.016)	0.019 (0.016)	0.003 (0.004)	0.003 (0.004)	-0.170*** (0.031)	-0.166*** (0.031)
diabetes	0.042** (0.020)	0.042** (0.020)	0.006 (0.005)	0.006 (0.005)	-0.217*** (0.038)	-0.220*** (0.038)
cancer	-0.057 (0.046)	-0.059 (0.046)	0.003 (0.013)	0.003 (0.013)	-0.384*** (0.090)	-0.395*** (0.091)
heart	0.032** (0.014)	0.030** (0.013)	0.000 (0.004)	0.000 (0.004)	-0.305*** (0.026)	-0.301*** (0.026)
stroke	0.023 (0.027)	0.022 (0.027)	0.005 (0.007)	0.005 (0.007)	-0.168*** (0.053)	-0.156*** (0.053)
agri-hukou	0.118*** (0.030)	0.120*** (0.029)	0.010 (0.008)	0.010 (0.008)	-0.006 (0.062)	-0.008 (0.057)
male	-0.003 (0.008)	-0.003 (0.007)	-0.004** (0.002)	-0.004** (0.002)	-0.004 (0.015)	-0.008 (0.014)
no. never married sons	-0.002 (0.008)	-0.004 (0.008)	0.004* (0.002)	0.004* (0.002)	-0.043*** (0.015)	-0.047*** (0.015)
no. never married daughters	-0.001 (0.010)	0.000 (0.010)	0.007** (0.003)	0.007** (0.003)	-0.049** (0.020)	-0.058*** (0.020)
farming	0.099*** (0.013)	0.100*** (0.013)	0.010*** (0.004)	0.010*** (0.004)	-0.083*** (0.026)	-0.087*** (0.026)
government	-0.064** (0.025)	-0.062** (0.025)	0.005 (0.007)	0.005 (0.007)	0.097* (0.049)	0.077 (0.048)
firm	-0.024 (0.018)	-0.025 (0.018)	0.003 (0.005)	0.003 (0.005)	0.026 (0.035)	0.017 (0.034)
individual firm	-0.004 (0.012)	-0.004 (0.012)	-0.002 (0.003)	-0.002 (0.003)	0.065*** (0.024)	0.064*** (0.023)
self-employed	-0.001 (0.014)	-0.001 (0.014)	0.017*** (0.004)	0.017*** (0.004)	0.140*** (0.027)	0.145*** (0.027)
household income	0.157 (0.129)	0.169 (0.128)	0.018 (0.035)	0.018 (0.035)	0.937*** (0.249)	1.017*** (0.251)
education	-0.004 (0.002)	-0.003 (0.002)	-0.000 (0.001)	-0.000 (0.001)	0.010** (0.005)	0.009** (0.004)
age	-0.006 (0.005)	-0.006 (0.005)	-0.001 (0.001)	-0.001 (0.001)	0.029*** (0.010)	0.031*** (0.009)
financial asset	-0.421*** (0.142)	-0.436*** (0.141)	0.090** (0.038)	0.090** (0.038)	1.542*** (0.278)	1.637*** (0.277)
financial liability	0.135 (0.135)	0.135 (0.135)	0.038 (0.037)	0.038 (0.037)	-0.167 (0.260)	-0.219 (0.265)
east	-0.008 (0.021)	-0.008 (0.020)	-0.006 (0.005)	-0.006 (0.005)	-0.068 (0.042)	-0.074* (0.039)
west	-0.080*** (0.020)	-0.079*** (0.019)	0.004 (0.005)	0.004 (0.005)	-0.271*** (0.040)	-0.278*** (0.037)
northeast	-0.072*** (0.016)	-0.072*** (0.015)	-0.008* (0.004)	-0.008* (0.004)	-0.121*** (0.032)	-0.122*** (0.030)
middle	0.027 (0.019)	0.027 (0.018)	0.004 (0.005)	0.004 (0.005)	-0.186*** (0.038)	-0.189*** (0.035)
wave dummy	0.226*** (0.011)	0.222*** (0.011)	0.016*** (0.003)	0.016*** (0.003)	0.047** (0.021)	0.046** (0.022)
Observations	11410	11410	11410	11410	11410	11410
Wald chi2	7302.458		4814.212		3937.324	

The constant term, the coefficients on the number of sons, daughters, medical insurance programs, whether need to take care of grandchildren or old parents and district dummies are omitted from the report.

Table 3: Age range: 45+. The effect of NRSPI program on retirement status and work status of non-agriculture work

	retirement status			other work status		
	(1) all	(2) male	(3) female	(4) all	(5) male	(6) female
pension (%)	0.369** (0.147)	0.044 (0.148)	0.295** (0.148)	-0.177* (0.097)	-0.207 (0.133)	0.012 (0.099)
pension× benefits (thousand)	-0.386** (0.165)	-0.027 (0.174)	-0.274** (0.136)	0.123 (0.086)	0.045 (0.127)	0.003 (0.078)
self-reported health	-0.201*** (0.015)	-0.232*** (0.022)	-0.167*** (0.019)	0.040*** (0.007)	0.067*** (0.013)	0.026*** (0.009)
married	-0.110*** (0.017)	-0.129*** (0.026)	-0.102*** (0.021)	0.003 (0.008)	0.038*** (0.014)	-0.008 (0.010)
agriculture-hukou(%)	-0.101** (0.044)	-0.092 (0.065)	-0.125* (0.065)	0.046* (0.028)	0.041 (0.031)	0.064 (0.042)
male(%)	-0.084*** (0.010)			0.044*** (0.006)		
no. never married sons	-0.024** (0.010)	-0.013 (0.014)	-0.030** (0.014)	-0.001 (0.006)	-0.008 (0.010)	0.010 (0.008)
no. never married daughters	0.018 (0.013)	0.004 (0.016)	0.030 (0.019)	0.000 (0.008)	0.001 (0.012)	0.003 (0.011)
farming(%)	-0.051*** (0.018)	-0.029 (0.020)	-0.073*** (0.025)	-0.002 (0.016)	0.001 (0.019)	-0.025 (0.024)
government(%)	0.127*** (0.040)	0.090** (0.041)	0.182*** (0.060)	0.579*** (0.054)	0.659*** (0.063)	0.437*** (0.090)
firm(%)	0.154*** (0.026)	0.165*** (0.030)	0.127*** (0.040)	0.566*** (0.033)	0.584*** (0.038)	0.544*** (0.060)
other employed(%)	0.076*** (0.014)	0.060*** (0.014)	0.095*** (0.024)	0.719*** (0.016)	0.760*** (0.018)	0.636*** (0.028)
self-employed(%)	-0.044*** (0.014)	-0.012 (0.015)	-0.097*** (0.025)	0.847*** (0.012)	0.826*** (0.015)	0.873*** (0.016)
household income(CNY/year)	-0.120 (0.147)	0.119 (0.177)	-0.245 (0.224)	0.376*** (0.107)	0.484*** (0.160)	0.041 (0.142)
education	0.009*** (0.003)	0.005 (0.004)	0.010** (0.005)	-0.004** (0.002)	-0.006** (0.003)	-0.001 (0.002)
age(year)	0.106*** (0.019)	0.091*** (0.025)	0.116*** (0.024)	-0.022** (0.010)	-0.010 (0.016)	-0.027** (0.012)
financial asset(CNY)	0.595*** (0.220)	0.415* (0.241)	0.653* (0.344)	-0.224 (0.138)	-0.299* (0.156)	-0.044 (0.178)
financial liability(CNY)	0.017 (0.152)	-0.139 (0.180)	0.035 (0.162)	-0.108 (0.101)	-0.268 (0.218)	-0.077 (0.083)
East(%)	0.019 (0.026)	-0.009 (0.033)	0.021 (0.041)	0.022 (0.016)	0.016 (0.023)	0.041** (0.020)
West(%)	-0.074*** (0.026)	-0.068** (0.033)	-0.092** (0.040)	0.023 (0.015)	0.024 (0.022)	0.030 (0.019)
Northeast(%)	0.006 (0.022)	0.005 (0.028)	0.015 (0.032)	0.030*** (0.012)	0.024 (0.019)	0.032** (0.014)
Middle(%)	-0.053** (0.024)	-0.053* (0.031)	-0.052 (0.038)	0.035** (0.014)	0.045** (0.021)	0.025 (0.019)
wave dummy	0.008 (0.023)	0.023 (0.033)	-0.005 (0.028)	0.016 (0.013)	0.044** (0.021)	-0.011 (0.015)
Constant	0.227* (0.134)	0.300 (0.189)	0.140 (0.174)	0.015 (0.073)	-0.079 (0.111)	0.087 (0.092)
Observations	11300	5416	5884	11300	5416	5884
χ^2	1223.359	534.094	703.251	17202.819	9873.900	7398.696

Table 4: Age range: 45+. The effect of NRSPI program on labor supply

	(1)	(2)	(3)	(4)	(5)	(6)
	weekly working hours			hours non-agri. work		
	all	male	female	all	male	female
pension	-34.265*** (11.142)	-10.888 (14.676)	-26.842** (11.935)	-5.555 (6.051)	5.724 (8.665)	-4.849 (6.320)
pension× benefits (thousand)	24.856** (11.423)	-2.912 (15.371)	17.284 (11.259)	5.648 (5.732)	-7.140 (9.767)	5.862 (5.194)
self-reported health	8.008*** (0.865)	10.833*** (1.301)	5.471*** (1.152)	2.225*** (0.480)	3.183*** (0.872)	1.578*** (0.568)
married	5.819*** (1.010)	11.616*** (1.748)	2.484** (1.200)	0.698 (0.554)	3.478*** (1.147)	-0.411 (0.615)
agri-hukou	5.706** (2.730)	7.227** (3.681)	5.942 (3.766)	-0.420 (2.176)	2.148 (2.628)	-1.968 (3.383)
male	6.494*** (0.693)			2.534*** (0.395)		
no. never married sons	2.103*** (0.725)	2.597** (1.019)	1.486 (1.001)	0.426 (0.412)	0.582 (0.683)	0.522 (0.529)
no. never married daughters	-0.899 (0.922)	-1.007 (1.230)	-0.818 (1.356)	-0.275 (0.552)	-0.604 (0.872)	0.138 (0.703)
farming	10.988*** (1.450)	12.654*** (1.848)	7.244*** (2.261)	-3.282*** (1.262)	-3.019*** (1.028)	-4.872** (1.906)
government	17.280*** (3.951)	20.683*** (4.584)	11.695** (5.922)	25.145*** (3.538)	28.516*** (2.039)	19.934*** (5.860)
firm	21.301*** (2.466)	23.321*** (3.058)	17.992*** (3.810)	31.696*** (2.192)	34.631*** (1.314)	26.327*** (3.655)
individual firm	28.884*** (1.421)	32.452*** (1.678)	23.387*** (2.602)	38.669*** (1.162)	42.732*** (0.868)	31.229*** (1.987)
self-employed	33.963*** (1.628)	33.635*** (2.036)	34.299*** (2.497)	41.151*** (1.283)	41.374*** (0.990)	39.842*** (2.009)
household income	41.641*** (13.851)	34.784* (20.416)	35.251* (18.941)	45.783*** (8.679)	55.201*** (10.345)	23.804** (10.047)
education	-0.778*** (0.216)	-0.490 (0.313)	-0.959*** (0.275)	0.081 (0.129)	0.034 (0.194)	0.198 (0.157)
age	-1.827 (1.193)	0.043 (1.741)	-3.387** (1.468)	-1.484** (0.673)	-1.616 (1.170)	-1.325* (0.794)
financial asset	-32.366* (18.203)	-23.907 (23.705)	-28.781 (29.606)	-6.742 (15.006)	-4.842 (10.098)	-11.308 (21.837)
financial liability	3.701 (7.563)	31.357 (24.405)	-0.472 (4.859)	-0.585 (5.405)	12.256 (15.217)	-3.002 (3.842)
east	3.292* (1.752)	3.641 (2.686)	4.323** (2.186)	-0.084 (1.209)	-0.740 (1.803)	1.272 (1.405)
west	8.992*** (1.693)	7.658*** (2.592)	10.809*** (2.081)	-0.159 (1.138)	-1.244 (1.767)	1.111 (1.314)
northeast	2.367* (1.378)	0.270 (2.083)	3.445* (1.775)	0.593 (0.886)	-1.380 (1.402)	2.077** (0.995)
middle	5.947*** (1.537)	5.164** (2.346)	6.186*** (1.944)	0.831 (1.074)	-0.209 (1.642)	1.580 (1.253)
wave dummy	1.937 (1.489)	1.470 (2.196)	2.156 (1.865)	0.428 (0.846)	0.666 (1.558)	-0.161 (1.027)
Constant	-9.617 (8.254)	-27.134** (12.447)	9.543 (10.546)	6.839 (4.898)	3.880 (8.430)	10.466* (6.176)
Observations	10428	4966	5462	10428	4966	5462
χ^2	2461.873	1489.965	868.057	4255.103	6222.335	1171.712

Table 5: Age range: 45+. The effect of NRSPI program on labor supply of agriculture work

	(1)	(2)	(3)	(4)	(5)	(6)
	hours agri. work			hours agri. work for own hh.		
	all	male	female	all	male	female
pension	-25.884*** (8.029)	-16.876* (10.046)	-23.473** (9.542)	-24.815*** (8.040)	-16.816* (9.610)	-21.360** (9.207)
pension× benefits (thousand)	17.704** (8.757)	3.747 (11.018)	12.941 (8.848)	19.152** (9.001)	8.111 (10.893)	12.159 (8.513)
self-reported health	5.694*** (0.713)	7.709*** (0.975)	3.843*** (0.959)	5.336*** (0.705)	7.423*** (0.974)	3.368*** (0.943)
married	5.003*** (0.792)	8.164*** (1.292)	2.999*** (0.998)	4.823*** (0.782)	7.588*** (1.280)	3.016*** (0.985)
agri-hukou	6.181*** (1.800)	5.198* (2.929)	7.952*** (2.186)	5.757*** (1.784)	4.526 (2.938)	7.725*** (2.160)
male	3.875*** (0.543)			3.685*** (0.536)		
no. never married sons	1.570*** (0.571)	1.990*** (0.771)	1.001 (0.814)	1.621*** (0.561)	2.136*** (0.762)	0.950 (0.780)
no. never married daughters	-0.527 (0.726)	-0.553 (0.991)	-0.770 (1.067)	-0.135 (0.725)	-0.219 (0.971)	-0.209 (1.057)
farming	14.303*** (0.652)	15.256*** (1.173)	12.947*** (1.041)	13.501*** (0.650)	14.400*** (1.144)	12.262*** (0.986)
government	-7.557*** (1.335)	-7.792*** (2.323)	-7.698*** (1.552)	-6.877*** (1.335)	-7.200*** (2.270)	-6.826*** (1.498)
firm	-9.894*** (0.985)	-11.110*** (1.505)	-8.430*** (1.634)	-9.225*** (0.965)	-10.186*** (1.462)	-7.852*** (1.523)
individual firm	-9.162*** (0.779)	-10.478*** (0.997)	-7.366*** (1.444)	-8.779*** (0.737)	-10.048*** (0.964)	-6.775*** (1.308)
self-employed	-6.180*** (0.896)	-7.890*** (1.134)	-4.563*** (1.268)	-5.498*** (0.865)	-7.011*** (1.100)	-3.887*** (1.230)
household income	0.434 (10.535)	-21.091* (11.857)	19.421 (14.890)	-4.167 (9.113)	-21.849* (11.501)	10.293 (12.144)
education	-0.878*** (0.165)	-0.530** (0.217)	-1.189*** (0.221)	-0.849*** (0.162)	-0.485** (0.217)	-1.166*** (0.214)
age	-0.624 (0.951)	1.772 (1.320)	-1.988 (1.222)	-0.745 (0.942)	1.395 (1.306)	-1.933 (1.194)
financial asset	-23.542** (10.860)	-17.382 (11.467)	-20.644 (19.858)	-28.780*** (9.798)	-25.032** (11.248)	-22.789 (19.554)
financial liability	5.275 (6.243)	16.655 (17.419)	1.856 (4.600)	5.537 (6.425)	17.283 (16.921)	1.872 (4.345)
east	3.402*** (1.290)	4.306** (2.017)	3.002* (1.738)	3.175** (1.265)	4.154** (2.015)	2.637 (1.682)
west	9.174*** (1.265)	8.899*** (1.974)	9.624*** (1.691)	9.104*** (1.243)	8.728*** (1.976)	9.535*** (1.642)
northeast	1.760 (1.073)	1.568 (1.566)	1.329 (1.486)	1.784* (1.056)	1.424 (1.568)	1.444 (1.463)
middle	4.974*** (1.146)	5.405*** (1.830)	4.624*** (1.585)	4.951*** (1.123)	5.246*** (1.836)	4.592*** (1.541)
wave dummy	1.198 (1.196)	0.984 (1.760)	2.459 (1.537)	0.622 (1.191)	0.123 (1.738)	1.979 (1.501)
Constant	-14.796** (6.508)	-31.428*** (9.460)	-2.184 (8.454)	-12.972** (6.452)	-28.000*** (9.412)	-1.379 (8.233)
Observations	10428	4966	5462	10428	4966	5462
χ^2	1971.916	819.202	941.464	1836.585	760.993	953.512

Table 6: Age range: 60-. The effect of NRSPI program on retirement status and work status of non-agriculture work

	(1)	(2)	(3)	(4)	(5)	(6)
	retirement status			other work status		
	all	male	female	all	male	female
prev. year pension enrollment	0.100** (0.041)	0.025 (0.058)	0.156*** (0.055)	-0.033 (0.022)	-0.064* (0.036)	-0.005 (0.026)
self-reported health	-0.207*** (0.016)	-0.234*** (0.023)	-0.179*** (0.019)	0.037*** (0.007)	0.062*** (0.013)	0.021** (0.009)
married	-0.128*** (0.016)	-0.134*** (0.025)	-0.116*** (0.021)	0.009 (0.008)	0.038*** (0.013)	-0.003 (0.010)
agri-hukou	-0.138*** (0.045)	-0.116 (0.071)	-0.168*** (0.064)	0.054* (0.028)	0.053* (0.030)	0.063 (0.044)
male	-0.082*** (0.010)			0.040*** (0.006)		
no. never married sons	-0.026*** (0.008)	-0.012 (0.012)	-0.040*** (0.013)	0.002 (0.005)	0.001 (0.008)	0.007 (0.006)
no. never married daughters	0.016 (0.011)	0.005 (0.014)	0.025 (0.017)	-0.002 (0.008)	0.008 (0.013)	-0.007 (0.009)
farming	-0.061*** (0.019)	-0.029 (0.022)	-0.099*** (0.027)	0.001 (0.015)	0.010 (0.020)	-0.020 (0.025)
government	0.128*** (0.040)	0.106** (0.044)	0.188*** (0.062)	0.592*** (0.053)	0.666*** (0.064)	0.460*** (0.090)
firm	0.155*** (0.026)	0.178*** (0.032)	0.113*** (0.041)	0.568*** (0.034)	0.582*** (0.039)	0.536*** (0.063)
individual firm	0.072*** (0.014)	0.066*** (0.016)	0.084*** (0.025)	0.727*** (0.016)	0.762*** (0.019)	0.646*** (0.029)
self-employed	-0.058*** (0.013)	-0.016 (0.016)	-0.119*** (0.026)	0.861*** (0.011)	0.837*** (0.016)	0.886*** (0.016)
household income	0.033 (0.143)	0.179 (0.174)	-0.108 (0.231)	0.318*** (0.105)	0.552*** (0.166)	-0.041 (0.134)
education	0.007** (0.003)	0.005 (0.004)	0.009* (0.005)	-0.002 (0.002)	-0.004 (0.003)	-0.001 (0.002)
age	0.113*** (0.007)	0.101*** (0.010)	0.122*** (0.010)	-0.033*** (0.004)	-0.041*** (0.006)	-0.022*** (0.004)
financial asset	0.416** (0.210)	0.395 (0.266)	0.486 (0.341)	-0.109 (0.151)	-0.241 (0.180)	0.043 (0.181)
financial liability	0.061 (0.127)	-0.194 (0.178)	0.123 (0.161)	-0.095 (0.082)	-0.202 (0.216)	-0.061 (0.076)
east	0.021 (0.026)	0.014 (0.035)	0.028 (0.040)	0.015 (0.015)	-0.004 (0.022)	0.032* (0.018)
west	-0.077*** (0.026)	-0.052 (0.033)	-0.095** (0.040)	0.014 (0.014)	-0.001 (0.021)	0.026 (0.017)
northeast	0.018 (0.023)	0.015 (0.030)	0.029 (0.032)	0.021* (0.011)	0.017 (0.019)	0.021* (0.012)
middle	-0.050** (0.025)	-0.034 (0.032)	-0.062 (0.038)	0.024* (0.013)	0.023 (0.020)	0.023 (0.017)
wave dummy	-0.039* (0.024)	0.011 (0.034)	-0.078** (0.032)	0.019 (0.013)	0.041* (0.021)	-0.003 (0.015)
Constant	0.243*** (0.081)	0.262** (0.121)	0.177 (0.114)	0.071 (0.046)	0.090 (0.065)	0.058 (0.064)
Observations	10428	4966	5462	10428	4966	5462
χ^2	1372.335	528.022	736.953	16274.244	9210.655	6988.311

Table 7: Age range: 60-. The effect of NRSPI program on work status of agriculture work

	(1)	(2)	(3)	(4)	(5)	(6)
	agriculture work status			agr. work for own hh.		
	all	male	female	all	male	female
prev. year pension enrollment	-0.068* (0.040)	0.014 (0.055)	-0.133** (0.056)	-0.123*** (0.033)	-0.114** (0.048)	-0.127*** (0.046)
self-reported health	0.202*** (0.015)	0.223*** (0.022)	0.176*** (0.020)	0.034*** (0.012)	0.039** (0.017)	0.029* (0.015)
married	0.125*** (0.016)	0.113*** (0.024)	0.122*** (0.022)	-0.017 (0.013)	0.014 (0.021)	-0.043** (0.017)
agri-hukou	0.123*** (0.045)	0.102 (0.071)	0.157*** (0.054)	-0.016 (0.031)	-0.014 (0.048)	-0.015 (0.038)
male	0.071*** (0.009)			0.002 (0.008)		
no. never married sons	0.027*** (0.008)	0.012 (0.011)	0.038*** (0.012)	0.005 (0.008)	0.019* (0.010)	-0.009 (0.011)
no. never married daughters	-0.009 (0.011)	0.002 (0.013)	-0.020 (0.017)	0.001 (0.011)	-0.004 (0.015)	0.006 (0.015)
farming	0.845*** (0.014)	0.886*** (0.018)	0.784*** (0.022)	0.528** (0.266)	0.433 (0.396)	0.692*** (0.056)
government	-0.084*** (0.031)	-0.060* (0.036)	-0.152** (0.060)	0.062** (0.027)	0.064* (0.033)	0.067*** (0.020)
firm	-0.143*** (0.024)	-0.154*** (0.031)	-0.114*** (0.040)	0.050** (0.020)	0.054** (0.023)	0.037 (0.040)
individual firm	-0.063*** (0.012)	-0.049*** (0.014)	-0.090*** (0.024)	-0.021 (0.014)	-0.012 (0.016)	-0.044 (0.030)
self-employed	0.006 (0.012)	-0.006 (0.014)	0.020 (0.020)	-0.024 (0.016)	-0.015 (0.019)	-0.035 (0.028)
household income	-0.251* (0.135)	-0.462*** (0.166)	0.025 (0.224)	-0.060 (0.143)	-0.028 (0.177)	-0.086 (0.233)
education	-0.008*** (0.003)	-0.007* (0.004)	-0.009** (0.004)	0.001 (0.002)	0.003 (0.003)	-0.001 (0.003)
age	-0.108*** (0.007)	-0.096*** (0.009)	-0.117*** (0.010)	-0.001 (0.006)	0.013 (0.008)	-0.015 (0.010)
financial asset	-0.419** (0.167)	-0.286 (0.200)	-0.681** (0.306)	0.087 (0.207)	-0.108 (0.257)	0.630* (0.353)
financial liability	-0.059 (0.117)	0.165 (0.177)	-0.118 (0.095)	-0.118 (0.217)	0.273 (0.212)	-0.620 (0.409)
east	-0.032 (0.026)	-0.005 (0.034)	-0.053 (0.039)	-0.039** (0.018)	-0.049** (0.024)	-0.027 (0.028)
west	0.063** (0.025)	0.050 (0.033)	0.072* (0.038)	-0.015 (0.018)	-0.030 (0.023)	-0.001 (0.028)
northeast	-0.035 (0.022)	-0.027 (0.029)	-0.046 (0.033)	0.005 (0.016)	0.007 (0.020)	-0.000 (0.024)
middle	0.035 (0.025)	0.022 (0.032)	0.047 (0.037)	-0.000 (0.017)	-0.012 (0.021)	0.013 (0.027)
wave dummy	0.018 (0.023)	-0.030 (0.031)	0.058* (0.032)	0.126*** (0.021)	0.113*** (0.030)	0.135*** (0.030)
Constant	-0.010 (0.079)	-0.089 (0.118)	0.149 (0.107)	0.363 (0.274)	0.361 (0.412)	0.286*** (0.081)
Observations	10428	4966	5462	6812	3424	3388
χ^2	7105.840	4622.120	2837.663	121.222	66.789	44117.571

Table 8: Age range: 60-. The effect of NRSPI program on labor supply

	weekly working hours			hours non-agri. work		
	(1) all	(2) male	(3) female	(4) all	(5) male	(6) female
prev. year pension enrollment	-10.245** (4.086)	-6.385 (6.420)	-12.144** (5.113)	-0.458 (2.640)	2.791 (4.324)	-2.867 (2.982)
self-reported health	5.453*** (1.193)	7.614*** (1.929)	3.854*** (1.494)	2.487*** (0.703)	3.662*** (1.255)	1.537* (0.812)
married	4.421** (1.742)	11.095*** (2.460)	-2.917 (2.326)	1.240 (1.020)	3.773** (1.853)	-1.692 (1.285)
agri-hukou	6.419* (3.694)	7.592 (4.975)	6.718 (5.169)	-3.750 (2.531)	0.540 (3.729)	-6.289 (4.008)
male	5.295*** (0.897)			2.740*** (0.573)		
no. never married sons	2.841*** (0.772)	2.921** (1.194)	2.912*** (1.009)	0.410 (0.497)	0.857 (0.800)	0.238 (0.573)
no. never married daughters	-0.020 (0.921)	-0.982 (1.328)	1.069 (1.284)	-0.568 (0.608)	-0.940 (0.984)	-0.022 (0.672)
farming	12.511*** (1.672)	13.518*** (2.155)	10.327*** (2.651)	-2.884* (1.480)	-2.518* (1.395)	-4.112* (2.277)
government	22.377*** (4.660)	25.622*** (5.099)	16.202* (8.794)	30.845*** (4.253)	33.203*** (2.814)	27.574*** (8.261)
firm	28.431*** (2.649)	30.119*** (3.363)	24.959*** (4.291)	37.660*** (2.449)	40.564*** (1.732)	32.784*** (4.160)
individual firm	32.622*** (1.539)	34.884*** (1.815)	28.114*** (2.820)	41.942*** (1.274)	45.505*** (1.081)	36.211*** (2.233)
self-employed	36.204*** (1.814)	34.621*** (2.291)	37.918*** (2.950)	43.222*** (1.494)	43.316*** (1.291)	43.206*** (2.303)
household income	40.578** (17.844)	52.715* (27.893)	22.303 (23.107)	48.744*** (11.529)	71.327*** (13.360)	20.324 (12.593)
education	-0.335 (0.263)	-0.042 (0.413)	-0.627* (0.338)	0.314* (0.174)	0.163 (0.270)	0.431** (0.206)
age	1.263 (1.016)	4.620*** (1.539)	-1.440 (1.343)	-0.873 (0.630)	-0.526 (1.047)	-1.196 (0.745)
financial asset	-14.115 (20.315)	-19.652 (25.679)	-2.613 (26.489)	-15.967 (16.557)	-21.637* (11.200)	-9.848 (23.152)
financial liability	1.880 (8.510)	39.634 (24.491)	-5.072 (5.172)	-1.107 (5.535)	17.284 (16.845)	-4.278 (5.473)
east	3.510* (2.099)	2.033 (3.238)	5.144* (2.712)	-0.515 (1.450)	-1.637 (2.327)	0.883 (1.625)
west	9.058*** (2.049)	5.352* (3.162)	12.072*** (2.634)	-0.089 (1.395)	-1.827 (2.296)	1.382 (1.536)
northeast	3.075* (1.824)	2.045 (2.840)	3.141 (2.339)	0.731 (1.257)	-0.977 (1.977)	1.613 (1.384)
middle	4.719** (1.972)	2.791 (2.990)	6.541** (2.555)	0.948 (1.350)	-0.115 (2.187)	1.912 (1.503)
wave dummy	4.127* (2.314)	1.741 (3.591)	5.235* (2.951)	0.603 (1.496)	-0.727 (2.539)	1.367 (1.761)
Constant	-21.616*** (7.978)	-46.435*** (12.149)	4.458 (10.753)	3.190 (5.156)	-4.965 (8.289)	13.360** (6.691)
Observations	5802	2686	3116	5802	2686	3116
χ^2	1298.857	758.356	440.994	3479.956	3860.509	1037.321

Table 9: Age range: 60-. The effect of NRSPI program on labor supply of agriculture work

	(1)	(2)	(3)	(4)	(5)	(6)
	hours agri. work			hours agri. work for own hh.		
	all	male	female	all	male	female
prev. year pension enrollment	-9.844*** (3.148)	-8.415* (4.566)	-9.407** (4.089)	-8.309*** (3.012)	-6.153 (4.387)	-8.565** (3.851)
self-reported health	2.774*** (0.944)	3.759*** (1.379)	2.208* (1.199)	2.558*** (0.909)	3.923*** (1.328)	1.712 (1.178)
married	3.144** (1.377)	7.457*** (2.015)	-1.179 (2.009)	2.750** (1.357)	6.450*** (1.939)	-1.167 (1.994)
agri-hukou	10.210*** (2.302)	6.964* (4.144)	13.091*** (2.395)	9.339*** (2.270)	5.792 (3.994)	12.560*** (2.420)
male	2.416*** (0.685)			2.128*** (0.663)		
no. never married sons	2.286*** (0.579)	1.837** (0.790)	2.661*** (0.808)	2.230*** (0.551)	1.924** (0.756)	2.496*** (0.775)
no. never married daughters	0.578 (0.718)	0.023 (0.971)	1.234 (1.064)	0.795 (0.699)	0.029 (0.929)	1.645 (1.044)
farming	15.639*** (0.734)	15.936*** (1.391)	15.183*** (1.153)	14.605*** (0.692)	14.805*** (1.333)	14.263*** (1.080)
government	-7.650*** (1.897)	-5.891** (2.861)	-10.960*** (2.064)	-6.464*** (1.839)	-5.072* (2.743)	-9.451*** (2.006)
firm	-8.643*** (0.998)	-9.619*** (1.717)	-7.411*** (1.542)	-7.834*** (0.948)	-8.714*** (1.645)	-6.800*** (1.437)
individual firm	-8.629*** (0.839)	-9.647*** (1.075)	-7.287*** (1.522)	-8.020*** (0.769)	-9.070*** (1.030)	-6.568*** (1.365)
self-employed	-5.929*** (0.940)	-7.396*** (1.281)	-4.114*** (1.458)	-4.977*** (0.911)	-6.419*** (1.227)	-3.236** (1.423)
household income	-2.145 (12.331)	-17.000 (13.018)	12.050 (17.411)	-9.997 (9.866)	-22.088* (12.457)	0.432 (13.529)
education	-0.678*** (0.197)	-0.234 (0.299)	-1.096*** (0.263)	-0.666*** (0.190)	-0.244 (0.288)	-1.065*** (0.252)
age	2.165*** (0.791)	5.258*** (1.152)	-0.206 (1.076)	2.389*** (0.766)	5.293*** (1.110)	0.163 (1.052)
financial asset	2.157 (9.930)	1.401 (11.325)	6.432 (16.482)	-5.085 (7.233)	-7.458 (10.857)	2.518 (15.688)
financial liability	3.092 (6.180)	20.446 (16.813)	-1.086 (3.852)	3.182 (5.906)	19.867 (16.107)	-0.819 (3.458)
east	3.903** (1.533)	3.575 (2.584)	4.242** (2.113)	3.618** (1.494)	3.603 (2.490)	3.631* (2.054)
west	9.056*** (1.514)	7.280*** (2.547)	10.612*** (2.095)	9.048*** (1.476)	7.422*** (2.455)	10.415*** (2.044)
northeast	2.226 (1.372)	2.974 (2.195)	1.448 (1.862)	2.277* (1.351)	2.842 (2.115)	1.552 (1.833)
middle	3.687** (1.448)	2.874 (2.428)	4.563** (2.018)	3.490** (1.415)	2.639 (2.340)	4.371** (1.971)
wave dummy	3.655** (1.774)	2.082 (2.645)	4.077* (2.307)	2.746 (1.705)	0.955 (2.540)	3.376 (2.182)
Constant	-24.804*** (5.797)	-41.782*** (9.100)	-9.826 (7.647)	-24.817*** (5.635)	-41.276*** (8.765)	-10.461 (7.523)
Observations	5802	2686	3116	5802	2686	3116
χ^2	2383.027	539.647	1199.279	2393.608	525.813	1227.174

Table 10: The effect of pension benefits on retirement status and work status of different work

	(1)	(2)	(3)	(4)	(5)	(6)
	all	male	female	all	male	female
<i>Panel A</i>						
	retirement status			other work status		
benefits	24.856** (11.423)	0.026 (0.085)	-0.138 (0.093)	0.014 (0.032)	0.011 (0.051)	0.011 (0.022)
self-reported health	8.008*** (0.865)	-0.297*** (0.036)	-0.233*** (0.042)	0.035*** (0.012)	0.055*** (0.018)	0.018 (0.014)
male	6.494*** (0.693)			0.032*** (0.011)		
no. never married sons	2.103*** (0.725)	-0.039 (0.033)	-0.060 (0.046)	0.003 (0.009)	-0.003 (0.014)	0.007 (0.014)
Observations	10428	1160	1222	2382	1160	1222
<i>Panel B</i>						
	agriculture work status			agr. work for own household.		
benefits	0.111 (0.070)	-0.025 (0.083)	0.135 (0.093)	-0.025 (0.043)	0.005 (0.054)	-0.059 (0.068)
self-reported health	0.275*** (0.028)	0.286*** (0.035)	0.236*** (0.042)	0.040* (0.022)	0.016 (0.026)	0.069* (0.037)
male	0.092*** (0.022)			0.023 (0.014)		
no. never married sons	0.063** (0.026)	0.042 (0.032)	0.057 (0.045)	0.003 (0.017)	0.011 (0.018)	0.012 (0.037)
Observations	2382	1160	1222	1601	836	765

Table 11: The effect of pension benefits on weekly working hours of different work

	(1)	(2)	(3)	(4)	(5)	(6)
	all	male	female	all	male	female
<i>Panel A</i>	weekly working hours			hours non-agri. work		
benefits	2.431 (3.447)	-4.414 (6.123)	3.774 (3.793)	-0.008 (2.020)	-2.339 (3.586)	1.910 (1.406)
self-reported health	7.228*** (1.381)	8.847*** (2.075)	5.005*** (1.840)	1.505** (0.755)	1.904 (1.309)	0.886 (0.776)
male	6.467*** (1.129)			1.772*** (0.636)		
no. never married sons	2.564* (1.331)	2.453 (2.013)	1.213 (2.007)	0.112 (0.675)	-0.893 (1.316)	0.425 (0.884)
Observations	2241	1087	1154	2241	1087	1154
<i>Panel B</i>	hours agri. work			hours agri. work for own hh.		
benefits	2.385 (2.866)	-2.198 (4.423)	1.833 (3.381)	2.664 (2.857)	-1.266 (4.381)	1.868 (3.369)
self-reported health	5.697*** (1.197)	6.912*** (1.615)	4.109** (1.813)	5.467*** (1.173)	6.937*** (1.600)	3.580** (1.800)
male	4.704*** (0.906)			4.681*** (0.903)		
no. never married sons	2.439** (1.151)	3.314** (1.623)	0.794 (1.687)	2.539** (1.147)	3.618** (1.608)	0.737 (1.679)
Observations	2241	1087	1154	2241	1087	1154

Table 12: Include urban migrants:Age range: 45+. The effect of NRSPI program on retirement status and work status of non-agriculture work

	(1)	(2)		(3)	(4)	(5)		(6)
	all	retirement status male	female	female	all	other work status male	female	female
pension	0.279** (0.121)	-0.057 (0.156)	0.231* (0.126)		-0.129 (0.080)	-0.149 (0.140)	0.028 (0.078)	
pension× benefits (thousand)	-0.295** (0.117)	0.110 (0.187)	-0.251*** (0.090)		0.123* (0.068)	0.055 (0.140)	0.038 (0.051)	
self-reported health	-0.194*** (0.014)	-0.230*** (0.021)	-0.160*** (0.017)		0.045*** (0.007)	0.072*** (0.013)	0.028*** (0.009)	
urban	0.233*** (0.022)	0.183*** (0.028)	0.257*** (0.025)		-0.045*** (0.014)	-0.050** (0.020)	-0.031* (0.017)	
male	-0.093*** (0.010)				0.050*** (0.006)			
no. never married sons	-0.025*** (0.009)	-0.012 (0.013)	-0.033** (0.013)		-0.002 (0.006)	-0.008 (0.010)	0.007 (0.008)	
married	-0.102*** (0.016)	-0.125*** (0.025)	-0.090*** (0.019)		0.001 (0.009)	0.038** (0.016)	-0.012 (0.010)	
agri-hukou	-0.020 (0.031)	-0.017 (0.043)	-0.050 (0.041)		0.052** (0.022)	0.039 (0.031)	0.080*** (0.029)	
no. never married daughters	0.013 (0.012)	0.002 (0.015)	0.019 (0.017)		0.001 (0.008)	-0.001 (0.012)	0.010 (0.011)	
farming	-0.018 (0.016)	-0.001 (0.019)	-0.045* (0.023)		-0.018 (0.014)	-0.015 (0.018)	-0.038* (0.021)	
government	0.168*** (0.038)	0.128*** (0.038)	0.206*** (0.051)		0.490*** (0.049)	0.589*** (0.060)	0.353*** (0.075)	
firm	0.169*** (0.024)	0.168*** (0.027)	0.155*** (0.036)		0.517*** (0.030)	0.554*** (0.035)	0.457*** (0.050)	
individual firm	0.078*** (0.013)	0.065*** (0.014)	0.098*** (0.023)		0.691*** (0.015)	0.737*** (0.018)	0.601*** (0.026)	
self-employed	-0.073*** (0.013)	-0.022 (0.015)	-0.145*** (0.023)		0.844*** (0.011)	0.818*** (0.015)	0.871*** (0.015)	
household income	-0.085 (0.129)	0.185 (0.170)	-0.237 (0.203)		0.427*** (0.096)	0.469*** (0.150)	0.219* (0.125)	
education	0.010*** (0.003)	0.005 (0.004)	0.011** (0.004)		-0.004** (0.002)	-0.006** (0.003)	-0.001 (0.002)	
age	0.115*** (0.017)	0.090*** (0.024)	0.132*** (0.022)		-0.036*** (0.010)	-0.028* (0.017)	-0.039*** (0.012)	
financial asset	0.115 (0.115)	0.021 (0.085)	0.779** (0.327)		0.012 (0.079)	0.006 (0.085)	-0.075 (0.194)	
financial liability	0.149 (0.094)	-0.130 (0.162)	0.206 (0.154)		-0.131 (0.095)	-0.102 (0.169)	-0.163 (0.115)	
east	0.006 (0.025)	-0.015 (0.033)	-0.002 (0.037)		0.024 (0.016)	0.021 (0.024)	0.043** (0.019)	
west	-0.086*** (0.024)	-0.073** (0.032)	-0.106*** (0.036)		0.024 (0.015)	0.025 (0.023)	0.028 (0.018)	
northeast	0.005 (0.021)	0.003 (0.027)	0.014 (0.029)		0.028** (0.012)	0.026 (0.019)	0.027* (0.014)	
middle	-0.056** (0.023)	-0.052* (0.031)	-0.061* (0.035)		0.036** (0.014)	0.045** (0.022)	0.028 (0.018)	
wave dummy	0.010 (0.021)	0.019 (0.031)	0.002 (0.025)		0.003 (0.012)	0.022 (0.021)	-0.018 (0.014)	
Constant	0.051 (0.121)	0.196 (0.182)	-0.069 (0.156)		0.104 (0.071)	0.033 (0.115)	0.153* (0.087)	
Observations	12356	5876	6480		12356	5876	6480	
χ^2	1555.054	604.929	1010.726		20768.172	11821.516	9430.955	

Table 13: Include urban migrants:Age range: 45+. The effect of NRSPI program on work status of agriculture work

	(1) all	(2) agriculture work status male	(3) female	(4) all	(5) agr. work for own household. male	(6) female
pension	-0.124 (0.102)	0.130 (0.140)	-0.096 (0.134)	-0.447*** (0.146)	-0.396** (0.169)	-0.409** (0.199)
pension× benefits (thousand)	0.201** (0.100)	-0.157 (0.176)	0.166* (0.100)	0.199 (0.135)	0.191 (0.127)	0.123 (0.190)
self-reported health	0.184*** (0.014)	0.212*** (0.021)	0.154*** (0.018)	0.029** (0.011)	0.041** (0.017)	0.022 (0.015)
urban	-0.212*** (0.020)	-0.170*** (0.026)	-0.235*** (0.026)	-0.027 (0.023)	0.019 (0.027)	-0.064* (0.037)
male	0.076*** (0.009)			0.003 (0.008)		
no. never married sons	0.032*** (0.009)	0.014 (0.012)	0.042*** (0.012)	-0.004 (0.008)	0.013 (0.011)	-0.021* (0.012)
married	0.099*** (0.015)	0.107*** (0.024)	0.098*** (0.020)	-0.025* (0.014)	-0.011 (0.022)	-0.035* (0.018)
agri-hukou	-0.028 (0.029)	-0.018 (0.040)	-0.018 (0.042)	0.008 (0.031)	0.009 (0.037)	0.018 (0.051)
no. never married daughters	-0.005 (0.011)	0.002 (0.014)	-0.013 (0.017)	-0.014 (0.011)	-0.014 (0.015)	-0.012 (0.015)
farming	0.792*** (0.013)	0.860*** (0.015)	0.716*** (0.021)	0.560*** (0.211)	0.448 (0.318)	0.782*** (0.035)
government	-0.073*** (0.028)	-0.059* (0.033)	-0.087* (0.048)	0.044** (0.022)	0.044* (0.026)	0.054** (0.027)
firm	-0.124*** (0.022)	-0.131*** (0.026)	-0.093*** (0.036)	0.010 (0.023)	0.016 (0.026)	-0.001 (0.045)
individual firm	-0.066*** (0.011)	-0.042*** (0.013)	-0.105*** (0.021)	-0.023 (0.014)	-0.019 (0.016)	-0.033 (0.029)
self-employed	0.006 (0.010)	-0.003 (0.013)	0.016 (0.017)	-0.020 (0.015)	-0.011 (0.018)	-0.032 (0.026)
household income	-0.171 (0.122)	-0.481*** (0.162)	0.065 (0.182)	0.071 (0.144)	0.040 (0.176)	0.123 (0.232)
education	-0.009*** (0.003)	-0.006* (0.004)	-0.011*** (0.004)	0.001 (0.002)	0.001 (0.003)	0.002 (0.003)
age	-0.118*** (0.016)	-0.090*** (0.023)	-0.132*** (0.021)	0.059*** (0.020)	0.058** (0.026)	0.057* (0.030)
financial asset	-0.138 (0.085)	-0.019 (0.066)	-0.714** (0.286)	-0.355 (0.266)	-0.471 (0.334)	0.020 (0.378)
financial liability	-0.103 (0.098)	0.109 (0.154)	-0.165* (0.085)	-0.224 (0.199)	-0.042 (0.210)	-0.510 (0.379)
east	-0.027 (0.024)	0.007 (0.031)	-0.034 (0.035)	-0.037* (0.019)	-0.037 (0.025)	-0.030 (0.028)
west	0.059*** (0.023)	0.057* (0.031)	0.072** (0.034)	-0.014 (0.019)	-0.017 (0.025)	-0.007 (0.028)
northeast	-0.022 (0.020)	-0.016 (0.027)	-0.032 (0.030)	0.008 (0.016)	0.015 (0.020)	-0.005 (0.023)
middle	0.025 (0.022)	0.030 (0.030)	0.026 (0.033)	0.003 (0.017)	0.001 (0.023)	0.006 (0.026)
wave dummy	-0.031 (0.019)	-0.022 (0.029)	-0.025 (0.025)	0.113*** (0.020)	0.096*** (0.029)	0.123*** (0.027)
Constant	0.292** (0.115)	0.042 (0.173)	0.506*** (0.155)	-0.033 (0.243)	0.069 (0.363)	-0.263 (0.178)
Observations	12356	5876	6480	7688	3858	3830
χ^2	8946.565	6463.309	3831.404	115.824	65.268	43130.217

Table 14: Include urban migrants:Age range: 45+. The effect of NRSPI program on labor supply

	(1)	(2)	(3)	(4)	(5)	(6)
	weekly working hours			hours non-agri. work		
	all	male	female	all	male	female
pension	-26.067*** (8.863)	-5.784 (15.964)	-19.480** (9.884)	-5.027 (5.022)	4.562 (9.391)	-3.008 (5.469)
pension× benefits (thousand)	18.364** (7.919)	-9.570 (17.261)	16.949** (7.652)	5.877 (4.385)	-6.290 (10.867)	6.753* (3.816)
self-reported health	8.036*** (0.794)	10.730*** (1.281)	5.652*** (1.010)	2.587*** (0.492)	3.481*** (0.874)	1.897*** (0.569)
urban	-10.045*** (1.361)	-9.007*** (2.086)	-9.720*** (1.648)	-1.943* (1.019)	-1.554 (1.294)	-1.631 (1.226)
male	6.733*** (0.653)			2.873*** (0.412)		
no. never married sons	1.933*** (0.674)	2.040** (1.027)	1.764* (0.923)	0.165 (0.422)	0.178 (0.700)	0.399 (0.532)
married	5.440*** (0.948)	11.279*** (1.805)	2.323** (1.124)	0.734 (0.566)	3.514*** (1.193)	-0.372 (0.638)
agri-hukou	3.744** (1.895)	6.000** (2.822)	2.965 (2.373)	2.271 (1.612)	4.590** (1.833)	0.991 (2.076)
no. never married daughters	-0.474 (0.870)	-1.009 (1.189)	0.317 (1.279)	-0.254 (0.562)	-0.885 (0.853)	0.615 (0.733)
farming	7.724*** (1.290)	9.341*** (1.770)	5.194*** (1.908)	-4.865*** (1.112)	-4.774*** (1.003)	-5.812*** (1.619)
government	12.296*** (3.404)	16.846*** (4.047)	6.867 (5.056)	19.909*** (3.054)	24.285*** (1.903)	13.928*** (4.654)
firm	17.672*** (2.182)	21.164*** (2.688)	13.003*** (3.336)	27.601*** (1.886)	32.004*** (1.252)	20.503*** (3.042)
individual firm	27.272*** (1.301)	30.970*** (1.654)	21.365*** (2.255)	36.678*** (1.098)	41.213*** (0.864)	28.965*** (1.809)
self-employed	34.887*** (1.433)	33.298*** (1.917)	36.697*** (2.136)	41.568*** (1.154)	41.175*** (0.961)	41.668*** (1.774)
household income	45.470*** (11.812)	39.068** (19.165)	36.514** (14.698)	51.740*** (7.917)	61.541*** (10.181)	30.082*** (8.537)
education	-0.817*** (0.202)	-0.459 (0.310)	-1.013*** (0.261)	0.045 (0.130)	0.070 (0.199)	0.138 (0.160)
age	-2.742** (1.087)	-0.245 (1.717)	-5.006*** (1.298)	-1.979*** (0.687)	-1.839 (1.164)	-2.153*** (0.802)
financial asset	-2.189 (7.252)	1.253 (6.852)	-33.308 (29.379)	4.009 (4.580)	4.489 (4.591)	-13.497 (20.404)
financial liability	-0.383 (6.851)	35.021* (20.793)	-8.354 (5.868)	0.219 (5.693)	23.102 (14.067)	-6.048 (5.567)
east	2.946* (1.672)	2.647 (2.726)	4.615** (1.978)	-0.051 (1.215)	-0.991 (1.792)	1.572 (1.294)
west	8.552*** (1.577)	6.486** (2.598)	10.728*** (1.866)	-0.211 (1.145)	-1.715 (1.725)	1.312 (1.212)
northeast	2.206* (1.325)	-0.120 (2.103)	3.705** (1.653)	0.462 (0.907)	-1.513 (1.408)	2.047** (0.957)
middle	5.044*** (1.487)	3.897 (2.405)	5.799*** (1.766)	0.770 (1.102)	-0.591 (1.627)	1.765 (1.160)
wave dummy	1.181 (1.346)	1.597 (2.134)	0.465 (1.647)	0.260 (0.855)	0.790 (1.510)	-0.695 (1.024)
Constant	1.803 (7.559)	-19.322 (12.558)	23.963*** (9.227)	8.273* (4.910)	4.488 (8.515)	12.882** (5.746)
Observations	11444	5400	6044	11444	5400	6044
χ^2	2928.616	1532.524	1141.131	4916.661	6527.714	1507.973

Table 15: Include urban migrants: Age range: 45+. The effect of NRSPI program on labor supply of agriculture work

	(1)	(2)	(3)	(4)	(5)	(6)
	all	hours agri. work male	female	hours agri. work all	work for own hh. male	female
pension	-19.596*** (6.164)	-11.204 (10.491)	-16.240** (7.370)	-19.842*** (6.123)	-12.855 (9.911)	-17.067** (7.157)
pension× benefits (thousand)	11.918** (5.626)	-4.087 (11.335)	10.678** (5.389)	13.373** (5.812)	1.445 (11.047)	11.009** (5.372)
self-reported health	5.458*** (0.621)	7.271*** (0.884)	3.758*** (0.826)	5.116*** (0.613)	7.005*** (0.873)	3.362*** (0.815)
urban	-8.035*** (0.779)	-7.145*** (1.310)	-8.118*** (0.965)	-8.199*** (0.765)	-7.239*** (1.293)	-8.386*** (0.887)
male	3.812*** (0.490)			3.663*** (0.482)		
no. never married sons	1.771*** (0.505)	1.881*** (0.727)	1.450** (0.714)	1.742*** (0.494)	1.989*** (0.709)	1.318* (0.691)
married	4.728*** (0.720)	7.931*** (1.232)	2.773*** (0.892)	4.492*** (0.714)	7.294*** (1.206)	2.723*** (0.890)
agri-hukou	1.622 (1.056)	1.866 (1.840)	1.881 (1.401)	1.170 (1.052)	1.218 (1.822)	1.589 (1.395)
no. never married daughters	-0.213 (0.652)	-0.327 (0.907)	-0.170 (0.972)	0.021 (0.647)	-0.118 (0.876)	0.159 (0.963)
farming	12.506*** (0.536)	13.687*** (1.070)	11.467*** (0.834)	11.754*** (0.524)	12.835*** (1.031)	10.821*** (0.807)
government	-7.356*** (1.229)	-7.525*** (2.019)	-6.881*** (1.800)	-6.974*** (1.250)	-7.110*** (1.951)	-6.377*** (1.782)
firm	-9.310*** (0.889)	-10.594*** (1.354)	-7.195*** (1.443)	-8.982*** (0.869)	-10.120*** (1.297)	-6.970*** (1.405)
individual firm	-8.966*** (0.647)	-10.433*** (0.941)	-7.018*** (1.127)	-8.698*** (0.606)	-10.081*** (0.898)	-6.766*** (1.034)
self-employed	-6.353*** (0.740)	-8.268*** (1.036)	-4.511*** (1.038)	-5.756*** (0.714)	-7.499*** (0.994)	-4.008*** (1.020)
household income	-4.583 (8.751)	-24.840** (11.018)	10.778 (11.581)	-8.189 (7.618)	-25.031** (10.552)	4.670 (9.650)
education	-0.875*** (0.149)	-0.524*** (0.201)	-1.175*** (0.200)	-0.833*** (0.146)	-0.487** (0.198)	-1.113*** (0.194)
age	-0.931 (0.811)	1.865 (1.217)	-2.959*** (1.027)	-0.847 (0.791)	1.591 (1.183)	-2.589*** (1.000)
financial asset	-6.181 (4.313)	-3.044 (4.750)	-22.830 (18.050)	-7.986 (4.894)	-4.910 (4.644)	-31.211* (17.538)
financial liability	-0.131 (3.932)	9.306 (15.240)	-2.369 (3.150)	0.086 (3.815)	9.805 (14.590)	-2.161 (2.950)
east	3.012*** (1.164)	3.644** (1.816)	3.010* (1.547)	2.710** (1.145)	3.385* (1.791)	2.540* (1.512)
west	8.766*** (1.108)	8.230*** (1.741)	9.356*** (1.497)	8.590*** (1.088)	8.016*** (1.720)	9.068*** (1.464)
northeast	1.717* (0.998)	1.278 (1.419)	1.661 (1.369)	1.658* (0.986)	1.120 (1.403)	1.631 (1.358)
middle	4.219*** (1.046)	4.659*** (1.635)	3.958*** (1.427)	4.221*** (1.029)	4.510*** (1.619)	3.983*** (1.401)
wave dummy	0.765 (0.991)	1.239 (1.591)	1.074 (1.270)	0.487 (0.971)	0.534 (1.539)	1.070 (1.231)
Constant	-5.748 (5.593)	-25.548*** (8.754)	11.210 (7.213)	-5.071 (5.489)	-22.604*** (8.580)	10.117 (7.032)
Observations	11444	5400	6044	11444	5400	6044
χ^2	2819.720	1089.369	1329.604	2628.597	1038.176	1300.235