

# New Rural Social Pension Insurance, Income and the Happiness of Rural Residents

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**Abstract:** With the implementation of the New Rural Social Pension Insurance (NRSPI) in China, many rural elderly people benefit from this program. But will the same grade of pension produce the same utility for each individual? This paper analyzes the panel data of China Health and Retirement Longitudinal Study (CHARLS) from 2011 to 2018, and uses the Continuous-Difference In Differences(Continuous DID) model to investigate the effect of the NRSPI on happiness improvement in individuals with different incomes. The results show that the pension can significantly improve the satisfaction of the rural elderly, and this utility will decrease with the increase of income. This study has reference significance for rural residents to choose the grade of the insurance according to their personal situation, and has reference value for the government to improve the old-age insurance policy.

**Keywords:** New Rural Social Pension Insurance, Happiness, Income, Continuous DID.

## 1. Introduction

In 2009, China launched the New Rural Social Pension Insurance pilot project. The rural registered elderly who have reached 60 years of age and have not enjoyed the basic insurance benefits for urban workers can receive monthly pension, which effectively alleviates the living pressure of rural elderly groups and improving their quality of life. Subjective well-being is a commonly used comprehensive index to measure the quality of life, and also an important orientation for the country to improve people's livelihood and well-being in recent years. The NRSPI Program is its important policy support. Therefore, it is necessary to explore the implementation effect of relevant policies, which has important reference value for the continued implementation and adjustment of the NRSPI.

## 2. Theoretical Analysis

### 2.1. Bounded Rationality Model

Simon's Bounded Rationality Model holds that making the optimal decision to maximize utility requires people to have the ability of "Omniscience and Omnipotence". But in reality, human rationality is always limited, and people are not looking for the "maximum" or "optimal" standard in the decision process, but only the "satisfaction" standard. In the process of decision-making, the decision-maker sets a basic requirement, and then examines the existing alternatives. If there is an alternative scheme that can better meet the minimum requirements, the decision makers will achieve the satisfaction standard. Based on it, this paper assumes that rural residents also follow the law of bounded rationality which includes individuals' overestimation of their pension ability, ignorance of policies, attention to immediate interests and unwillingness to spend too much on future pension risks [1]when making the decision of whether to participate in the NRSPI and the choice of the insurance grade. It is not that high-income groups will definitely choose the higher grade of the New Rural Social Pension Insurance when the budget constraint is sufficient, and the same amount of the NRSPI

corresponds to groups with multiple incomes.

### 2.2. The Diminishing Marginal Utility

According to the Diminishing Marginal Utility, this paper reckons that among the insured people who receive the same amount of pension, the utility improvement of low-income groups will be greater than that of high-income groups, that is, the happiness effect of the insured people with the same pension amount will decrease with the increase of income. At the same time, it also shows that for the rural elderly with higher income, this pension is for unexpected needs, while for the low-income groups, this pension is a fund for survival. Participating in the NRSPI can add a guarantee to the old-age life of the rural low-income groups whose children feed their parents back.

## 3. Literature Review

Most of the existing researches on the effect of the NRSPI on happiness only focused on the difference of whether they receive the pension. Zhang chuanchuan[2] used the Regression Discontinuity and DID to propose that the NRSPI plays a significant role in improving the poverty situation and the level of living welfare compared with the uninsured. However, other studies on the impact of social pensions on happiness generally believe that its impact is limited. Zhang Ye[3] made a survey on the quality of life and subjective well-being of the rural elderly, using the Fixed Effect model and Double Difference method and finally put forward that the NRSPI has significantly improved the quality of life of the elderly, but has no significant impact on the subjective well-being of the elderly; Chen Dong and Zhang Yuyang[4] also discuss the influence of different pension modes on the subjective well-being of the elderly, and the social pension did not significantly improve the happiness of the elderly.

The reasons why the results were not significant are as follows. Firstly, the selected age range is too wide. The sample includes people who have never paid the premiums and have not yet received the pension, leading to less significant results. Because the pension provided by the NRSPI comes not only from government and collective

subsidies, but also from individual contributions. Secondly, most of the data are cross-sectional data before 2015, and the policy effect has hysteresis. Finally, in terms of research issues, they seldom discussed the heterogeneity of the happiness improvement in rural elderly groups.

On the basis of the existing literature, the innovation of this paper are as follows. In theoretical analysis, combining Bounded Rationality with the Diminishing Marginal Utility to analyze the change degree of happiness. In the research method, continuous DID is used for analysis, and the panel data of CHALS in 2011-2018 is used to limit the age range of the sample, and the relationship between the improvement of happiness and the income level of the rural elderly who have experienced the NRSPI premium stages to the pension stages is analyzed. On the research issue, this paper considers the income heterogeneity of the rural old people's sense of well-being brought by the NRSPI, discusses the difference of the degree of well-being improvement of rural old people who get the same amount of pension due to different incomes. In this way, we offer an expansive view of the NRSPI and the improvement of well-being.

## 4. Variable Selection

The explained variable of this paper is life satisfaction, which is a measure of subjective well-being. The variables of life satisfaction in CHARLS data are classified variables, which are divided into "not satisfied at all", "not satisfied", "quite satisfied", "very satisfied" and "extremely satisfied", which are assigned to 1, 2, 3, 4 and 5 respectively.

The core explanatory variable is the interaction of income and pension. As pension is also a source of income, in order to avoid the problem of multicollinearity, this paper selects personal labor income as the income index. And they both take logarithm in regression.

The control variables include individual education,

intergenerational transfer of children, and physical health. Intergenerational transfer of children is measured by the dummy variable whether children have financial support or not, and it is assigned to 1 and 0 respectively. Other strictly exogenous control variables include gender and marital status.[5]

## 5. Empirical Analysis

### 5.1. Continuous DID

In order to overcome the bias caused by endogenous problems and eliminate the influence of the common trend experience by the treatment group and the control group, this paper uses the method of Continuous-Difference in Differences (continuous DID) to identify the policy effect of the NRSPI on the life satisfaction with the change of income level. The specific model is set as:

$$Y_{it} = \beta_0 + \beta_1 \ln Pension_{it} + \beta_2 \ln Pension_{it} \cdot \ln Income_{it} + \beta_3 X_{it} + u_i + \eta_t + \varepsilon_{it} \quad (1)$$

When  $\ln Pension = 0$ , it means not receiving pension or not participating in the NRSPI. When the individual reaches 60 years old,  $\ln Pension > 0$ , meaning that the sample has been impacted by policy.

When using the continuous DID model for estimation, this paper limits the sample range to the rural household registration samples born in 1952-1958. The reason is that the people born in 1952-1958 were under 60 years old in 2011, but they all reached 60 years old in 2018, which can ensure that all insured individuals have experienced a dynamic process from paying premiums to receiving pensions, and at the same time ensure that the control group is uninsured people.[6]

**Table 1.** Continuous DID estimates results

Variable	Basic Regression		Adding control variables	
	DID estimation	S.E.	DID estimation	S.E.
$\ln Pension_{it}$	0.766***	-0.295	1.050**	-0.455
$\ln Pension_{it} \times \ln Income_{it}$	-0.028*	-0.015	-0.023*	-0.012
Constant	-0.325	-1.685	-2.118	-3.335
Control variable				Control

The coefficient of receiving the pension amount is significantly positive, while the interaction coefficient is significantly negative, which indicates that for every 1% increase in individual labor income of rural elderly insured, the effect of the same pension income on happiness will decrease by 2.3%. On the one hand, due to the limited amount of the pension, for the rural elderly with higher personal labor income, although the NRSPI makes their consumption bundle under the budget constraint line bigger, the pressure of survival under the original budget constraint is smaller, and the improvement of utility by receiving the pension is marginally smaller. On the other hand, for the rural low-aged people, the pension can be used as a way to relieve the pressure of survival and guarantee the basic needs of life, so that the degree of happiness that can be obtained is more likely to be higher than that of the high-income rural elderly.

### 5.2. Placebo Test

The effectiveness of the continuous DID depends on the

same age trend between those who receive pensions and who are uninsured. This paper uses the Placebo Test proposed by Duflo [7].

Since all the samples do not meet the age standard of the NRSPI, the coefficient of interaction items in the model should not be significant, which means that the parallel trend hypothesis that supports the continuous DID is established. The model form of placebo test is as follows:

$$Y_{it} = \alpha_0 + \alpha_1 Newrural_{it} + \alpha_2 Age_{it} + \alpha_3 Newrural \cdot Age \cdot \ln Income + \alpha_4 X_{it} + u_i + \eta_t + \varepsilon_{it} \quad (2)$$

Where, the dummy variable  $Newrural_{it}$  indicates whether to participate in insurance.  $Age_{it}$  represents whether over 50 years old.

**Table 2.** Placebo Test estimates results

Variable	Basic Regression		Adding control variables	
	DID estimation	S.E.	DID estimation	S.E.
$Newrural_{it}$	0.075	-0.058	0.067	-0.058
$Age_{it}$	0.187***	-0.055	0.095	-0.059
$Newrural_{it} \times Age_{it}$	-0.04	-0.064	-0.051	-0.063
Constant	2.958***	-0.044	1.920***	-0.387
Control variable				Control

Note: The model estimates the mixed samples of the insured and uninsured groups aged 40-60.

The coefficient of the interaction item is not significant, which indicates that we are not sure that the rural elderly groups who are insured before receiving pension have different trends of happiness changes from those who are uninsured, so the parallel trend hypothesis which can support the continuous DID is established.

## 6. Conclusion and Policy Suggestions

Based on the theoretical framework of residents' bounded rationality and the law of diminishing marginal utility, this paper explains the reasons why different income individuals choose the same grade of the NRSPI, and uses the continuous DID model to investigate the reasons why every 1% extra pension leads to differences in happiness among different income individuals. The results show that receiving the NRSPI pension can significantly improve the happiness of the rural elderly. At the same time, the increase of income will reduce the marginal promotion of the pension on the happiness, and the research results remain steady. For high-income individuals, this pension income is not the foundation of survival, and its impact on their lives may not be so obvious; But for low-income individuals, this income may be the money to make a living.

Based on the above research conclusions, this paper proposes the following policy suggestions. Firstly, change insured people's understanding of the NRSPI and improve their willingness to participate in it. To do so, governments should take appropriate measures to reduce or subsidize the premium of the NRSPI, leading to the increase of the enthusiasm and proportion of rural low-income people to participate in the NRSPI. Secondly, improve the individual incentive of the payment for the NRSPI and highlight the flexibility and pertinence of it. When examining the effect of

the NRSPI on rural residents, we can't generalize them all and just focus on the overall benefits, while ignoring the heterogeneity among different groups. Therefore, the government should fully grasp the level of economic development in different regions, formulate a targeted and efficient old-age security system according to the local rural social development and the actual situation of different rural residents, and optimize the goal of the NRSPI.

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