The Impact of Fiscal Subsidy on China's New Rural Pension System: A Natural Experiment

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Abstract: This paper studied the impact of fiscal subsidies on the participation rate and contributions of the rural residents in the China's New Rural Pension Scheme (NRPS) program using a natural experiment, where the fiscal subsidies includes the incentive pension and the matching subsidy. The results showed that incentive pension can significantly improve the rural residents' participation rates, but participation rate of young residents are less than the older residents. We also showed that matching subsidy does not affect the rural residents' participation rates and contributions significantly. Our results suggest that the current fiscal subsidies play an important role in the establishment and expansion of the NRPS program, but have not increased the participation rate of younger people, which was one of the initial goal of NRPS..

Key words: The Chinese Pension System, New Rural Pension Scheme (NPRS); Incentive Pension; Matching Subsidy; Participation Rate in Pension System;Pension Contributions.

1. Introduction

The China's New Rural Pension Scheme (NRPS) has rapidly expanded since its first implementation in September 2009. In June 2011, the Chinese authorities expanded the Scheme to urban residents and set up

the Urban Resident Pension Scheme (URPS). By the end of 2012, the State Council declared its goal of expanding the program to all counties of China[1]. The number of the national urban and rural residents enrolled in the Pension Scheme is up to 497.5 million by the end of 2013, which means the NRPS has become the fundamental system for the rural residents. But in the process of rapidly expansion and development of the scheme, the rural residents' lack of initiative to participate the scheme has plagued the pension departments.

Despite the government's efforts, the relevant research demonstrate that rural residents, especially youth, do not have sufficient incentive to participate, and most who do participate choose the lowest grade of contribution ￥100 per years (Feng, 2010; Feng and Dong, 2010; Zhang, C., 2010; Zhang J., 2010). And the current design of the rural pension program is itself a disincentive（Lei, et al.，2013）. A research by Lin and Wang(2012) had demonstrated there were around 49.15% of the rural contributor were reluctantly to contribute, and all who choose the lowest contribution standard, which means that the high coverage rate at present has covered the seriousness of the incentive problem of the Scheme.

If the disincentive situation could not be reversed, according to the current contribution level of ￥100 per year, with contributing 15 years, individual pension accounts would be only about￥16.8 per months , which is only 30.5% of the basic pension ￥55 per months provide by government[2]. Considering some areas have improved the basic pension, the proportion of individual pension accounts will be lower. This will make the NRPS system become an institution that the government gives all rural presidents pension welfare rather than a real social security system. But fundamental national condition "age before it gets rich" determines that the government's finances can't afford a universal welfare pension insurance system. Some research show that when the participation rate of matching defined contribution is too low, the financial match is inefficient, the efficiency may be even lower than the universal welfare pension insurance system（Robert P., et al.，2009）.

[1]The original plan had been to realize nationwide coverage by the end of 2020. It was adjusted to 2012 in June 2011 in response to its rapid expansion since its inception.

[2] More detail about the NRPS system can be found in Mark C. Dorfman, et al.(2012) and Lei, et al.(2013).

Obviously, lack of participation enthusiasm will directly threaten the NRPS system to be a real social security system. Therefore, how to sustain the participation intention of rural residents has become one of the main challenges to sustainability of new agricultural insurance system (Lin, 2009; Deng &Xue, 2010).

Taking Fujian province for example, which having outstanding performance in the expansion of NRPS pilot,it has taken many measures to incentive the residents to contribute in the Scheme. The main measures include providing Incentive Pension and raising the match subsidy ceiling. According to nationwide framework of the NRPS, the pension benefits given to people over 60 contain twocomponents: the basic pension benefit and individual account pension benefit. In order to encourage young residents (age under 45) to participate the Scheme, many counties promised to give those who contribute for more than 15 years the Incentive Pension. The Incentive Pension contribution is extra ￥1-2 or 1% of basic pension each additional contribution year beyond 15 years. Aims to incentive higher individual contributions, Fujian province decided to increase matching subsidy of ￥30 for annual contributions in 2010, it would apply additional￥5 matching subsidy for each additional 100 contributions, and the match subsidy ceiling is ￥50.That is ￥30 match subsidy for ￥100 contribution, ￥35 match subsidy for ￥200 contribution, ￥40 match subsidy for ￥300 contribution, ￥45 match subsidy for ￥400 contribution, ￥50 match subsidy for ￥500 contribution and beyond ￥500 contribution.Based on this policy, many counties in Fujian raised the match subsidy ceiling to ￥75, ￥85, ￥100, and even to￥125.

The implementation of these policies makes Fujian go ahead in the NRPS pilot: There are 14.6716 million people participate in the Scheme by the end of 2013, and the participation rate is up to 93.26%. However, the high rate depends on the government’s efforts, and it has concealed the fact that a considerable proportion of participants are reluctantly to contribute in the Scheme (Lin & Wang, 2012). Data from the social security sector of Fujian show that the participation rate of people under the age of 30, 30 to 44 and 45 to 59 years old are 83.66%, 87.81% and 91.35% respectively in 2013. Rural residents' average contribution amount is only

￥141.59 per year. Therefore, a question arises:Does fiscal subsidy improve the participation rates and contributions amount?

To answer this question, an empirical research is obviously needed. The Chinese NRPS system generally belongs to matching defined contribution (MDC) system. Although it is difficult to get a "right" level of subsidies, some international experience shows that subsidies play a more important role in the development of the system(the World Bank, 2012). As Robert Holzmann (2009) pointed out that the MDC effect improvement still needs more theoretical and empirical research and some national pilot. Fortunately,various counties' NRPS pilot in Fujian Province provides a natural experiment for our research. Some of Chinese Pilot regions of NRPS not only make amount of different attempt, but also provide additional Incentive Pension. Therefore the research on it can not only provide experience for the application of the MDC in the vast number of developing countries and even developed countries, but also enriched the empirical research on MDC applying in social security.

The paper proceeds as follows. The subsequent section puts forward the research hypothesis; Section 3 introduces the empirical model, sample and variable Settings; Section 4 provides the result of empirical analysis and discussion; Section 5 concludes this paper with policy implications.

2. Hypothesis

This paper focuses on the NRPS pilot and the effectiveness of in the operation of incentive pension and matching contribution subsidies policy. We use the sample data to do a scatter diagram as Figure 1. The relation between Incentive Pension and participation rate is positive correlation, and the relation between match subsidies and contribution is also positive. However, whether positive correlation relationship is significant remains to be further metrological verification.

Fig. 1.insert here

Therefore, this paper aims to answer two questions: One is the impact of Incentive Pension on participation rates of the rural presidents. If there is a significant effect, what is the influence degree? The other is the impact of match subsidy on rural presidents' contribution level. In view of the purpose of this research, we put forward the hypotheses as following:

Firsthypothesis: Incentive Pension has positive impact on participation rate of rural residents.

In order to attract more young residents (age under 45) to participate the Scheme, many counties decided to pay the Incentive Pension to those who contribute for more than 15 years, regardless of their contribution. Obviously, only those younger than 45 years old ones can contribute for more than 15 years and get the Incentive Pension. For visual observation, we divide the participants by age into16-29,30-44 and 45-59 three different groups. Taking the participation rate of the groups as dependent variable, and Incentive Pension as the key explanatory variables, groups' age as control variables, we set up a regression function. We take the interaction terms between the age and the Incentive Pension as a control variable by considering the differences of Incentive Pension's effect on different age groups at the same time.

The expected return of participant affects the residents' participant behavior and the the participation rate of the groups. While the expected return depends largely on the basic pension and the participant's contribution. therefore, the basic pension and the upper limit of highest contribution may affect the residents to participate the scheme or not[1].

According to the related research, during theNRPS pilot implementation phase, the Village key cadres played an important role in promoting NRPS driving the residents to participate the scheme. Therefore, providing Subsidies for the Village key cadres may affect the participation rate of an area(Lin & Wang, 2012). We take the subsidies for the Village key cadres as an important control variable. Income is an important variable affecting residents' economic behavior including pension insurance behavior, so the income level is an important control variable.

[1]Although very few residents will pay the highest contribution, the upper limit of highest contribution decides the freedom of participation choice, so as to affect their participation behavior.

Since the urban enterprise workers are due to participate the pension insurancefor the urban working groupby mandatory insurance law, and both their contributions and their pension levels are significantly higher than the NRPS, therefore, the higher the level of urbanization, the more person participation in higher contribution pension insurance, the demonstration effects by the urban enterprise workersmay be more significant. Finally, taking into account the fact that the NRPS pilot is launched step by step, and the pension scheme has not been expanded to all of the counties in Fujian Province until the end of 2011, the residents' understanding of the scheme may be different from area to area. This paper set the first and second pilot area as dummy control variable.

Considering the influence of all these factors, we draw a function about the relation between Incentive Pension and rural presidents' participation rate:

Participation rate=F(Intensive Pension, Age, Interaction term between Intensive Pension & Age, Other variables)+Random disturbance

Second hypothesis: The match subsidy has positive impact on contributions of rural residents.

In addition to the Incentive Pension system, matching defined contribution subsidies is also a kind of widely used payment subsidy system. Rajasthan, Madhya Pradesh and Andhra Pradesh have carried out this system. In the Dominican Republic, Indonesia and Vietnam and other countries have passed legislation for MDC (World Bank, 2012). The evidence from high-income countries suggests that MDC has positive impact on improving the level of contribution (Robert Palacios，David A. Robalino.,2009). Because of MDCbeing aimed at improving the contribution, we take the average contribution of the area as dependent variable, and match subsidy as the key explanatory variables

Some research on pension plan contribution behavior suggest that older and high-income earners tend to pay contributions at the upper limit, whil the younger, lower income employees often pay contributions depending on the level of employer matching subsidy (Devaney & Zhang 2001; Wang & Gutter 2005) . The researches by Bajtelsmit et al. (1999) and

Bailey et al. (2004) suggest that men pay a higher level.On the contrary, Papke's (2003) conclude that the women tend to higher contribution.Therefore, this paper takes the structure of the regional population and gender as a control variable to control the effects of different age and gender on contribution levels. The residents' income determines their premium payment capacity. And regional basic pension level and the upper limit of highest contribution affect the expected benefits and contributions freedom respectively, these factors constitute important control variables.

As to the effect of subsidies for the Village key cadres, for one thing it improve contributionof the cadres who are also part of the residents, for another, higher contribution of the carders may encourage other residents to pay higher contribution. Considering the demonstration effects by the urban enterprise workers at the same time, we suppose that the urbanization Contribute higher contribution.Therefore, we draw a second function as following:

Contribution=F(Match subsidy,Policy variables,
Other variables)+Random disturbance

Policy variables contain: regional basic annuities level, the upper limit of highest contribution subsidies, the contribution subsidies for village cadres, whether it is the first or the second batch of NRPS pilot areas. Other variables contain: the rural residents' income level, population structure, urbanization rate.

3. Empirical Strategy

Empirical model

Our goal is to estimate the effect of Incentive pension on participation rate and that of match subsidy on contribution, we build two models.

Model 1 is about Incentive Pension and participation rates of the rural presidents. Functional form as follows:

$$R_{it} = \alpha_0 + \alpha_1 Incentive\_pension_{it} + \gamma X + \varepsilon_{it}$$

R_{it} is the dependent variableparticipationrate.The Key variable $Incentive\_pension_{it}$ represents Incentive Pension. Variable X represents other policy variables and the economic and social variables. It contains basic regional annuities level, the upper limit of highest contribution, the contribution subsidies for village cadres, the rural residents' income level, urbanization rate, the first and the batch of NRPS pilot areas.

Since the participationrateis percentagerangingfrom 0 to 1, OLS is misspecified due to the limited range of the dependent variable. According to the researches by Buis, M. L(2010)and Ferrari, S., &Cribari-Neto(2004), This paper assumes that dependentvariable subject to Beta Distribution, which is defined on the [0,1] interval and therefore suitable for the analysis of proportions. Therefore we take use of Analyzing Proportions to set up an econometric model.

Model 2 is about to estimate the effect of match subsidy oncontribution level of the rural presidents. Functional form is as follows:

$$\text{Contribution}_{it} = \beta_0 + \beta_1 \text{Max\_match}_{it} + \rho Y + u_{it}$$

Contribution_{it} is regional average contribution level. The keyindependent variable Max_match_{it} is the upper limit of highest match subsidies. Variable Y represents other policy variables and the economic and social variables. It contains basic regional annuities level, the upper limit of highest contribution, the contribution subsidies for village cadres, the rural residents' income level, and the male population proportion and urbanization rate, the first and second batch of NRPS pilot areas.

Sample

The samples of this paper are regional statistical data about NRPS from county in Fujian province. There are 85 counties (cities) and 88 NRPS statistical units in Fujian province. Considering the NRPS fundamental annuities is as high as ￥230 per month in Xiamen, which is significantly higher than the average provincial level. So six counties data from

Xiamen shall be excluded. None of the four development zone: Langqi economic zone, the Taiwanese investment zone, north shore of Meizhou bay and Meizhou Island Management Committee, is independent administrative region with independently economic and social development indicators, so the 4 unit data should be eliminated. And considering nine districts: the Yongtai county in Fuzhou, Yunxiao county, Changtai county, and Pinghe county in Zhangzhou , Jiaocheng, Shouning, Zhouning, Zherong county in Ningde, started to pilot NRPS in late of 2011, therefore rural residents in these counties could not contribution in time. The participation rate of these counties in 2011 is no more than 10%, while that of these counties in 2012 are higher than 60%. So the nine counties'(cities') sample shall also be excluded. These areas such as Cangshan district, Drum Tower district in Fuzhou, Licheng district and Fengze district in Quanzhou, don't have rural residents, so they are also removed. Finally we select 64counties'(cities') data in 2011-2013 as sample of this empirical research.

Variable Set

Variable set of model 1 is showing in table 1. The key independent variable is Incentive Pension. Considering the influence of age on the behavior of farmer participation, people who should contribute can be divided into three categories limited it to 30 and 45 years old. Taking the group age from 45 to 59 as benchmark group, the virtual variable Age1 and Age2 respectively represent two groups which age less than 30 years and which age from 30 to 44 years old. In order to disclose the difference of the impact of Incentive Pension to different age people, we set up an interaction term between Incentive Pension and age virtual variable: Incen_age1 and Incen_age2.

Three controlled variable, fundamental annuities, highest contribution level and the upper limit of contribution subsidies, are represented by actual value in current years. The virtual variable of the contribution subsidies for village cadres expresses in 0-1. According to 2013 sample data, there are 14 counties have given village cadres ￥600 to ￥2400 contribution subsidies. In order to simplify the research, we only take the condition whether there is clear stipulation to subsidize village cadres into

consideration. Considering the hysteresis and data availability of other control variables such as regional per capita net income of rural residents, agricultural population and the proportion of the male population and urbanization rate, we represent these control variables by the previous year’s data.

Table 1 insert here

Variable set of model 2 is showing in table 2. The key independent variable represents by the upper limit of contribution subsidies. Considering there may be differences in the different pilot areas, the model set up two virtual variables of the first batch of pilot and the second batch of pilot. We use some areas which is neither first batch of pilot nor second batch of pilot as a benchmark. Other variables set is the same as model 2.

Table 2 insert here

4. Empirical Results

Empirical Results

4.1 The Effect of Incentive Pension

For comparison, we also report regression results using the OLS as Table 3. Both OLS and Betafit are ignificant overall. OLS Model'sF(12，572) equal to 13.15 and Prob> F equal to 0.0000. BetafitModel's Wald chi2(12) equal to 160.66 and Prob> chi2equal to 0.0000. The empirical results show that Incentive Pension is suggested to positively influenced participation rates. In particular, the Betafit model estimates a marginal effects of 3.3%, An OLS estimate of the marginal effects is at 4.56%, similar to that form the Beta regression.

Table 3 insert here

As to age influence, participation rates of different age group is significantly different. Compared with 45 to 59 year old rural presidents, rural presidents under the age of 30 participation rate is 2.93% lower, and the significance level is as high as 0.1%. 30 to 44 years old rural residents' participation rate is 1.99% lower, whilethe result is not significant.

Considering influence of theinteraction variablebetween Incentive Pension and agevariable, the effects of Incentive Pension onrural residents diversify by ages, while the differences is not on statistical significance. The result shows that Incentive effect of Incentive Pension doesn’t fit the original intention to drive young rural presidents to participate. It also shows at the same time, that the action of Incentive Pension not for its economic incentives, but for its indicating the promise of the government effort to improve the scheme to assure long-term payback of the NRPS.

The fundamental annuitieshave a significant positive effect on the participation rate, the participation rate will improve 0.15% with the fundamental annuitiesincreasing ￥1.Both the upper limit of contributionand contribution subsidies for village cadres, have no significant effect on regional participation rate. While per capita net income of rural residents and urbanization levelhave significant effect on regional participation rate. When per capita net income of rural residents rise￥100 participation rate rise 0.2%. Which means that the higher income level the less care about ￥100 Minimum threshold of contribution, and the more likely to participate the scheme. And the participation rate will rise 0.11% with urbanization level increasing 1%. The NRPS pilotphase has no significant effect on rural residents’ participation rate.

Both the OLS model and Betafit model have consistent result overall, with some significant differences in the degree and coefficient of specific value. Therefore, the empirical results can be consideredrobust.

4.2 The effect of matching subsidy

Given the sample of this research is panel data, there are fixed effects estimation and random effects estimation to estimate the model. The advantage of panel data model lies in its capability to reduce the endogeneity. The model can control the factors constant at any time but change in individual by the fixed effects method, while the random effects model is more effective as the model has not endogeneity. The selection may be achieved by Hausman test. If there is not much difference between the two, the random effects model will be more acceptable, and vice versa. Taking into account some control variables constant by the time such as the subsidy policy, the pilot batches, etc., this paper take the within group estimation method to estimate the fixed effects in avoid that control variables are dropped by software automatically.Theregression results are shown by Table 4.

Table 4 insert here.

The F(12，572) of fixed effects estimation equal to 7.50 and Prob> F equal to 0.0000. The Wald chi2(10) of random effects estimation equal to 57.69 and Prob> F equal to 0.0000. Both of the estimations are significant overall and both results are basically of consistency.

The selection between fixed effects and random effects estimation by can be made by Hausman test. The chi2(9) of Hausman testequal to 23.62 and Prob> F equal to 0.0050.Thereforehypothesis 0 is rejected,the results by fixed effects are more efficient estimation. An advantage of fixed effect method lies in its allowing the correlation between loss and non-observed-effectαi(Woodridge, 2007). What's more, from the meaning of the estimation model point of view, residents of different area have themselves unobservable factors affecting their participation behavior, so it would be unreasonable to assume those unobservable factors having no effect on the participation behavior. Therefore, the fixed effects model is relatively better choiceoverall.

Concretely speaking, matching subsidy may have positive impact on rural

residents' contribution, while it is not significantin statistically. The non-significance may attribute to the subsidy level is too lowto affect the contribution. Fundamental annuities has significantly negative influence on the contribution, and the Significant probability equal to 0.103. Under other factors being constant, the contribution level of rural residents will drop by￥0.628 as fundamental annuities rise ￥1. Both the upper limit of contribution and the subsidies for village cadres have no significantinfluence on the contribution.

The average contribution will increase ￥1.125 with the proportion of elder than 44 participants increasing 1%. While the average contribution will decrease ￥8.08 with the male proportion of the participants increasing 1%.Both significance level of estimation reach at 1%.

Regional urbanization level has significant effect on contribution level. The average contribution level willrise￥1.101as the urbanization level rise1%. While the income level has no significant effect on contributionlevel. This may indicate that industrialization and urbanization make the migrants increase and more local rural resident work in non-farm companies. There are more people participate in old-age insurance for enterprise employees, where the contribution level is significantly higher than the NRPS. So this reference effect improve consciousness of regional rural residents' contribution level, thus improve the overall level of contribution. It was not the increase of rural residents' income brought by urbanization and industrialization butthe leads to the reference effect that improve the contribution.

5. Conclusion and Implications

In this paper, basing on the framework of natural experiment, we study the effectiveness of the NRPS incentive policy. The results show that: Incentive Pension have significant impact on rural resident's participation rate. However, Incentive effect of Incentive Pension doesn't fit the original intention to drive young rural residents more than the elder to participate the Scheme. The incentive effect of Incentive Pension to those aged under 30 and 30 to 44 years old is less significantly than 45 to 59

years old rural residents. The result indicates that: ￥0.55 to ￥2 per month pension is not enough to encourage young rural residents to participate. Even though the impact of it to participation rate is significantly, it just because it conveys the message that the government has long-term intend to encourage participation rather than economic motivation itself. If economic stimulus work itself, only under the age of 45 rural presidents can really enjoy the benefits of Incentive Pension. In general, only those whose time of contribution canreach more than 15, and then they can enjoy the benefits of Incentive Pension. In addition, per capita net income of rural residents has significant effect to regional participation rate.

Contribution subsidies have no significant effect to rural residents contribution level. From the point of the design of contribution subsidies, although the upper limit of subsidy is different, in addition to Jinjiang, Shishi and Huian county, other counties contributes ￥100 and subsidies ￥30 in general. And then if the resident contribute extra ￥100, he(she) will receive ￥5 matching subsidies. But different area has different upper limit of contribution. This suggests that every extra￥5 match subsidies for extra ￥100 contribution is obviously insufficient. The result is verified again the result of study of Lei etc. (2013), Lin & Wang (2012). Lack of incentives makes rural residents choose ￥100 class as the most cost-effective option. Fundamental annuities has significantly negative influence on contribution level indicates that the purpose of rural residents contribution is to get fundamental annuities. The design of incentive mechanism is maybe not reasonable. The conclusion the contribution level of the first batch of NRPS pilot areas is significantly lower than non the first and second batch of pilot areas show that due to the unreasonable design of incentive mechanism, the first pilot areas rural residents fully realize this reverse incentive effect. So they choose a lower overall level of contribution.

The conclusion shows that the exploration of regional incentive mechanism achieved considerable effect, but it does not change disincentive mechanism overall. We calculate rural residents' personal accounts' return on investment who participates in the NRPS. The results show that return for the investment is negatively related to contribution

level and the year of contribution. The higher contribution level and the longer year of contribution, the more close to the bank’s one year deposit rate the investment rate will be, which is the government's commitment to personal account appreciation rate. However, the increment rate even lower than the same period of inflation (Lin &Wang, 2012). So the way to solve the problem is improving the return on investment of personal pension account (Lei etc.,2013). And the solution of problem obviously depends on the perfection of the capital market.

However, the improvement of the capital market cannot be achieved overnight. But the incentive mechanism of universal coverage of NRPS system has to be improved in order to reduce the cost of system operation. Previous studies haven't tell us what incentive mechanism is effective. At the same time, because of the rural residents' individual differences and bounded rationality, so the demand for return of different rural residents is different. And the cognition of the residents about different subsidies is also different. Actually, the preference for different subsidy policy is different. At present, various counties (cities) made a lot of beneficial exploration on incentive mechanism in Fujian province. This exploration plays an active role in setting up the NRPS and guiding the rural presidents to participate the Scheme, but it has limited impact on improving the contribution after the Scheme being set up with most have participated the Scheme. And it has not been completely solved the problem of incentive mechanism rationalization. Because of the lack of guidance of corresponding theory and the research conclusion, the improvement of the incentive mechanism is convergent. For example, in order to improve the level of contribution, different counties choose on the basis of form a complete set of ￥30 subsidy, if we contribute more ￥100 each, we will get extra ￥5 subsidy. But the study conclusion shows that with the increase of the contribution year, that subsidy plus one-year deposit rate is even not enough to compensate the effects of inflation. After full coverage of the NRPS, this "trial and error type" to perfect incentive mechanism of counties brings high time cost and system implement cost. Therefore, it is urgent to design several set of incentives based on scientific research for part of rural residents to experiment so as to reduce the huge time and administrative costs bring by all the counties’ "trial and error type" ameliorative means.

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Appendix

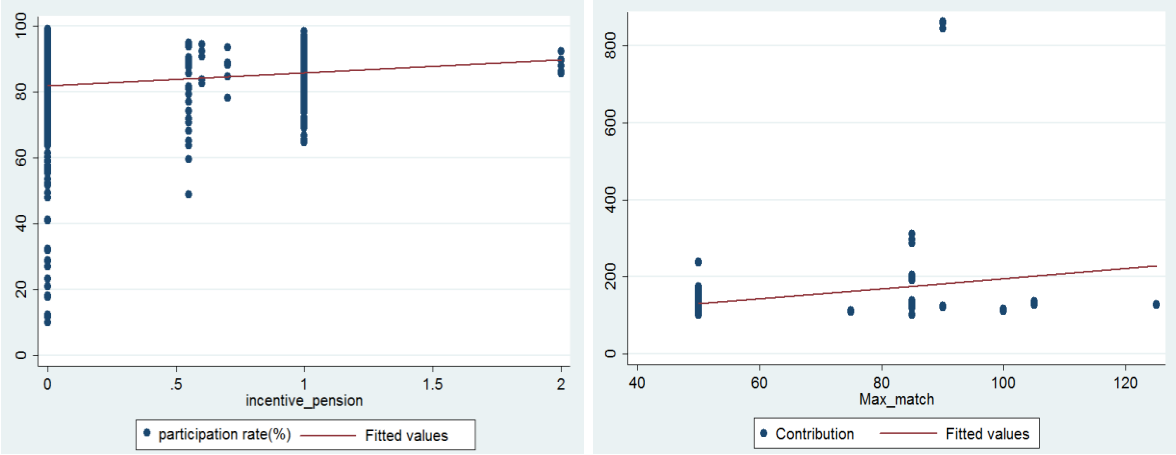

Fig.1. Relationship between Incentive Pension and participation rate, matching subsidy and Contributions.

Table 1 Variable definitions and descriptive statistics of model 1

Variable		Variable definitions	Mean	SD	Min	Max
Dependent variables：R		Participation rate	0.8312	0.1369584	0.099	0.9916
Key variables：Incentive_P		Incentive Pension（Yuan）	0.323	0.474	0	2
Group charactristic	Age1	If age<30, Age1=1; if not, Age1=0	0.333	0.472	0	1
	Age2	If age>30 and <45, Age2=1; if not, Age2=0	0.333	0.472	0	1
	Incen_age1	Interaction of Incentive Pension and age1	0.108	0.313	0	2
	Incen_age2	Interaction of Incentive Pension and age2	0.108	0.313	0	2
Control Variable	Basic_P	Fundamental annuities which is gotten by 60 years old people	59.410	9.777	55	110
	Subsidies_C	If subsidies for village cadres, Subsidies_c=1; if not, Subsidies_c=0	0.174	0.380	0	1

	Max_fee	The higest level of contribution	2148.72	795.17	1200	4000
	Income	Residents' per capita income(yuan)	8957.46	1941.00	4887	16043
	Urbanlization	Urbanization rate（%）	50.52	16.60	24.04	98.5
	Pilot1	If the area is the first batch of NRPS pilot areas, Pilot1=1; if not, Pilot1=0	0.108	0.311	0	1
	Pilot2	If the area is the second batch of NRPS pilot areas, Pilot2=1; if not, Pilot2=0	0.246	0.432	0	1

Table 2 Variable Definitions and Descriptive Statistics of Model 2

Variable		Variable definitions	Mean	SD	Min	Max
Dependent variables：Contribution		The average contribution of an area（Yuan）	130.421	31.959	100	310.87
Key variable：Max_match		The upper limit of highest contribution subsidies	58.359	17.915	50	125
Control Variable	Basic_P	Fundamental annuities which is gotten by 60 years oid people	59.410	9.777	55	110
	Max_fee	The higest level of contribution	2148.718	795.171	1200	4000
	Subsidies_C	If subsidies for village cadres, Subsidies_c=1; if not, Subsidies_c=0	0.174	0.380	0	1
	Income	Residents' per capita income(yuan)	8957.459	1940.998	4887	16043
	Eld_ ratio	Theproportion of elder than 45（%）	40.712	6.876	25.61	63.61
	Male_ratio	The male residents'proportion(%)	51.62	0.95	49.57	53.56
	Urbanlization	Urbanization rate（%）	50.52	16.63	24.04	98.5
	Pilot1	If the area is the first batch of NRPS pilot areas, Pilot1=1; if	0.108	0.311	0	1

	not, Pilot1=0				
Pilot2	If the area is the second batch of NRPS pilot areas, Pilot2=1; if not, Pilot2=0	0.246	0.432	0	1

Table 3 The empirical result of model 1

	OLS		Betafit		
	Coef.	P>t	Coef.	P>z	MarginalEffects
Incentive_P	0.0456**(0.0191)	0.017	0.234*(0.121)	0.052	0.033**(0.0162)
Age1	-0.0714***(0.0151)	0.000	-0.459***(0.0848)	0.000	
Age2	-0.0184(0.0151)	0.224	-0.109(0.0878)	0.216	
Incen_age1	-0.0262(0.0266)	0.324	-0.208(0.156)	0.182	-0.0293(0.0223)
Incen_age2	-0.0145(0.0266)	0.586	-0.141(0.163)	0.385	-0.0199(0.0231)
Basic_P	0.00111*(0.000578)	0.056	0.0109***(0.00391)	0.005	0.0015***(3.1e-04)
Subsidies_C	0.00246(0.0147)	0.868	-0.0267(0.0850)	0.753	
Max_fee	-7.71e-06(6.91e-06)	0.265	-2.34e-05(3.82e-05)	0.540	-3.3e-06(5.6e-06)
Income	1.79e-05***(3.23e-06)	0.000	0.000111***(1.95e-05)	0.000	1.6e-05***(9.4e-07)
Urbanlization	0.000960**(0.000380)	0.012	0.00760***(0.00225)	0.001	0.0011***(2.4e-04)
Pilot1	0.00379(0.0176)	0.830	-0.0331(0.104)	0.751	
Pilot2	-0.00345(0.0125)	0.782	-0.0472(0.0702)	0.501	
Constant	0.593***(0.0399)	0.000	-0.214(0.260)	0.411	
Observations	576		576		

Parameter estimated errors in parentheses; *significant at 1%; ** significant at 5%; *** significant at 10%.

Table 4 The empirical result of model 2

	OLS	BE	RE
Max_match	0.0608(0.117)	0.0689(0.225)	0.0182(0.0813)
Basic_P	-0.555***(0.196)	-0.628(0.378)	-0.145(0.106)
Max_fee	-0.00589***(0.00221)	-0.00629(0.00400)	-0.00183(0.00259)
Subsidies_C	1.697(4.473)	1.738(8.983)	0.924(2.108)
Income	-0.000287(0.00109)	6.60e-05(0.00270)	-9.43e-05(0.000453)
Eld_rate	1.051***(0.282)	1.125**(0.532)	0.401*(0.234)
Male_ratio	-4.811***(1.048)	-4.333**(1.993)	-8.081***(1.408)
Urbanlization	1.039***(0.120)	1.101***(0.233)	0.236***(0.0826)
Pilot1	-13.94**(5.453)	-14.30(9.855)	-9.045(9.659)
Pilot2	-2.749(3.835)	-2.706(6.900)	-1.505(6.970)
Constant	325.2***(59.65)	296.5**(117.2)	524.7***(73.19)
Observations	192	192	192
R-squared	0.562	0.584	

Note: Parameter estimated errors in parentheses; *significant at 1%; ** significant at 5%; *** significant at 10%.