The Impact of Fiscal Subsidy on China's New Rural Pension System

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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, where the fiscal subsidies include 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 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 goals of NRPS.

Introduction

The China's New Rural Pension Scheme (NRPS) has rapidly expanded since its first implementation in 2009, and has covered all counties of China since 2012[1]. The number of enrollees in NRPS reached 497.50 million. NRPS has unarguably been one of the world's most ambitious voluntary pension saving and minimum elderly assistance schemes in a low- or middle-income country (Mark C. Dorfman et al. 2013). However, despite of the government's effort in expanding the NRPS system, rural residents' lack of initiative to participate in the scheme has plagued the pension department. Studies have found that rural residents, especially young people, do not have much incentive to participate, and most who do participate choose the lowest amount of contribution of ￥100 (￥=CNY; 1 CNY = 0.15USD) per years (Feng, 2010; Feng & Dong, 2010; Zhang, C., 2010; Zhang J., 2010). A research by Lin and Wang (2012) had demonstrated there were around 49.15% of the rural contributor were reluctantly to contribute, which may indicate the inefficiency of the system

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[1] The original plan of NRPS was to cover all rural counties by the end of 2020. In June 2011, the Chinese authorities expanded the Scheme to urban residents .

（Robert et al., 2009）. If this situation does not improve, the NRPS system will fail to become a real social security system and the Chinese government will not be able to afford a welfare pension insurance system. Therefore, how to encourage the participation of the rural residents has become one of the main challenges to sustainability of the NRPS system (Lin, 2009; Deng & Xue, 2010). The Chinese NRPS system generally belongs to matching defined contribution (MDC) system. According to nationwide framework of the NRPS, the pension benefits given to people over age of 60 contain two components: 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".

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 in Fujian Province. The results of this study showed that the regional incentive mechanism achieved considerable effect in increasing the participation rate in the NRPS, however it does not solve the low contribution problems.

Data and Methodology

The data set used in this study includes regional statistical data of 64 counties in Fujian Province of China from 2011 to 2013. Fujian Province is among one of the NRPS pilot provinces and is one of the most successful ones with a participation rate of 93.26% (14.67 million people) by the end of 2013. 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.

The Incentive Pension contribution is extra 1% of base pension for each additional contribution year beyond 15 years. To encourage higher individual contributions, in 2010 Fujian province applied additional￥5 matching subsidy for each extra 100 contributions with the matching subsidy ceiling of￥50, ￥75, ￥85, ￥100, and even to￥125 in many counties. Fujian Province has become one of the most successful provinces in the NRPS system, with the participation rates of 83.66%,

87.81% and 91.35% for people under the age of 30, 30 to 44 and 45 to 59 years old respectively in 2013. However, the average contribution amount remains low with only ￥141.59 per year. Therefore, a question arises: does the government subsidy really improve the participation rates and contribution amounts? County-level data were used to study the impact of fiscal subsidies on the participation rate and contributions by the proportion analysis and difference-in-difference estimation.

Model 1 studies the effect of Incentive Pension on the participation rates of the rural residents in NRPS and takes the following function form:

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

where R_{it} is the participation rate. The Key variable *Incentive_pension* 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. Table 1 summarizes the variables used in model 1.

Model 2 estimates the effect of match subsidy on the contribution level of the rural residents. Functional form is as follows:

$$Contribution_{it} = \beta_0 + \beta_1 Max\_match_{it} + \rho Y + u_{it},$$

Where $Contribution_{it}$ is regional average contribution level. The key independent 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, 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. Table 2 summarizes the variables used in model 2.

Table 1 Variable definitions and descriptive statistics of model 1

Variable		Variable definitions	Mean	SD	Min	Max
R		Participation rate	0.8312	0.1369584	0.099	0.9916
Key variables：Incentive_P		Incentive Pension（Yuan）	0.323	0.474	0	2
	Age1	If age<30, Age1=1; if not, Age1=0	0.333	0.472	0	1

Variable	Variable definitions	Mean	SD	Min	Max
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
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
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 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

The "Control Variable" label spans the rows from Basic_P through Pilot2.

Results

The results showed that the incentive pension significantly increased the participation

rates (Table 1), however matching subsidies have no significant effect to rural residents' contribution level (Table 2). One possible explanation is that the current matching subsides is still too low to encourage higher contribution, with the rapid economic growth in China and Fujian being one of the most wealthy provinces in China. The highest matching ceiling among all counties is only ￥125 per year, while the average annual income in Fujian Province is ￥31,020. We further calculated rural resident's personal accounts' return on investment and found that their return for the investment is negatively correlated to the contribution level.

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%.

Concluding Remarks

The results of this study showed that the regional incentive mechanism achieved considerable effect in increasing the participation rate in the NRPS, however it does not solve the low contribution problems. One possible explanation is that the current matching subsides is too low to encourage higher contribution, with the rapid economic growth in China and Fujian Province being one of the most wealthy provinces in China. The highest matching ceiling of NRPS among all counties is only ￥125 per year, while the average annual income in Fujian Province is ￥31,020, which did not create **enough** incentive for rural residents to participate. Further study will include pilot experiments in some counties of Fujian with significantly higher subsidies. The results of this research will provide insights for policy-making in the NRPS of China and other developing countries as well. This study will enrich the theoretical and empirical researches on participation behavior in the pension schemes and its incentive policy design for the international academic community.

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