Risk Assessment of Individual Payment in the New Rural Social Old-Age Insurance —— Hubei Province as An Example

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Abstract: Based on the framework of the new rural social old-age insurance system in China and demand-oriented, the thesis first builds the maximum payment ability coefficient as the risk assessment index of individual ability, and then sets the first and second batch pilot 26 counties (cities, areas) of Hubei province of the new rural social old-age insurance as an example. By using statistical data, in the year 2010 and 2009, it evaluated the risk of individual's payment ability. According to the result of the assessment, measured from the national and provincial average level, individual payment capacity of the new rural social old-age insurance has less risk; But from regional perspective, a part of farmers can not afford the highest grade of personal payment of the new rural social pension insurance, they can only choose to pay the lower standard.

Keywords: Hubei province, individual payment, risk assessment, the new rural social old-age insurance

1 Introduction

Because there is obvious gap between Chinese urban and rural areas, which is difficult to change in short-term under the dual economic pattern situation, and based on the actual situation, social old-age insurance system was implemented in the rural areas. Its objects and the target population are rural residents. In other words, the direct subject of the new rural social old-age insurance and benefit are rural residents. Such relevance and the particularity of the new rural social old-age insurance system can take into account the special needs of farmers betters, and in the light of these needs, more fit implementation measure will be made. From this perspective, the primary goal of the new rural social old-age insurance is to implement farmers' groups in equal opportunity of the access to social security rights.

In 2009 the implementation of the "new rural social old-age insurance system" in the pilot has achieved full coverage system in 2012. The funding of this system takes methods of non contributory financial subsidies,

combination of individual payment and collective benefits, which is of great significance in solving the problem of the old-age security in rural residents. The current financing assessment of new rural social old-age insurance system mainly is from the angle of the supply side of the system, the literature focuses on sustainability assessment of new rural social old-age insurance subsidies system.[1-2] In reality, the important factor which affects rural old-age insurance's establishment and sustainability is the farmers' payment capacity.[3] Therefore, as another financing subject, farmers' payment capacity determines the success and sustainability of the system in a large extent. The assessment will be carried out for individual farmers to the perfection of new rural social old-age insurance system and provide theoretical and practical reference for sustainable operations.

2 Risk assessment index of individual payment ability in the new rural social old-age insurance

After the farmers have achieved equality of access to social security resources and involving in social security, it can play an important role in guarantee the life of aged rural residents, social stability, and promotion of economic development in the new rural social old-age insurance and also enhance the rate of sustainable development and possible in the new rural social old-age insurance.

The payment ability risk, namely now or in the future the individual can not afford the risk of the new rural social old-age insurance. According to the theory of western economics, income is equal to consumption plus savings, namely after income minus consumption the rest of the savings can be used for investment (speculation) or a rainy day. The rest that the net income of farmers minus living expenses can be used for savings or other investment activities.

Therefore, whether the rural residents have the ability to pay depends on the money that net income minus the cost of the basic living.[4] Here, we defined the remaining part that the part of farmers' per capita net income minus the farmers' per capita living expenses as

the maximum payment ability of the new rural social old-age insurance.[①] Among them, the farmers "per capita living consumption expenditure" includes every aspect of life needs. It mainly includes clothing, food, housing, medical care, household appliances and services, cultural and educational entertainment products and services, transportation and communication, other goods and services.[②] Comparing the premiums grades of the new rural social old-age insurance with the maximum payment ability, the actual payment coefficient for the maximum payment ability which is known as the maximum payment ability coefficient (R).The specific formulation is as follows:

R= the new rural social old-age insurance premiums grades /（the per capita net income of farmers - per capita consumption expenditure of farmers） (1)

As grades of the new rural social old-age insurance payment is flexible; we choose the lowest and highest grades to calculate the lowest grade and highest grade maximum payment ability coefficient of the new rural social old-age insurance, the formulation is as follows:

R_{lowest}= the lowest grade of the new rural social old-age insurance /（the per capita net income of farmers- per capita consumption expenditure of farmers） (2)

$R_{highest}$= the highest grade of the new rural social old-age insurance/（the per capita net income of farmers- per capita consumption expenditure of farmers (3)

For the maximum payment capacity coefficient R, we draw up two warning lines according different level, respectively, R '=1 and R '=0.5. Among them, R '=1 expresses farmers' the maximum payment ability of the new rural social old-age insurance is just equal to the remaining after per capita net income of farmers minus living expenses. If the maximum payment capacity coefficient R is bigger than 1[③], it means the payment grade is higher than the farmer maximum payment ability. There are risk of payment ability and lack of sources of financing of individual accounts. If R is less than 1, it means that payment grade is lower than the maximum payment capacity of farmers and it had not the risk basically. If R '=0.5, indicated the half of remaining used to purchase insurance, the other half can be used for other purposes. If the maximum payment capacity coefficient R is bigger than 0.5, it shows that the payment grade is higher than the maximum payment ability of the farmers and exists the risk of payment capacity. R is less than 0.5, shows that the payment levels below the maximum payment ability of the farmers, there are no risk basically. Obviously warning line "0.5" is more restrictive than "1".

The following part sets the first and second batch pilot 26 counties (cities, areas) in Hubei Province of the

new rural social old-age insurance as an example; it assesses the lowest and highest grade of farmers' payment capacity risk of new rural social old-age insurance.

3 Payment grades and setting of the new rural social old-age insurance pilot areas in Hubei Province

In 2009, Huangpi District and other 12 counties (cities, areas) in Hubei Province were included in the first batch of pilot areas. In 2010, 13 counties (cities, areas) were approved as the second batch of the pilot areas, including Baokang County. Until August 2011, there have been 26 counties (city, district) included.[5] In September 2011, 39 counties (cities, areas) were included in the third batch of pilot areas, including Cidian district Wuhan City. At this time, there have been 65 counties (cities, areas) as pilots of the new rural social old-age insurance in the province, covering rural population of 29.83 million, accounting for 63% of 103 of the province's counties (cities, areas), accounting for 74% of the agricultural population. The enrollment number reached 5.8 million, and comprehensive participation rate reached 94%, of whom 1.35 million persons over the age of 60 have been paid in full and received a pension on time.[④] Because of the data acquisition, we assessed the ability of rural residents in the first and second batch of the new rural social old-age insurance pilot areas. The following is the per capita net income of farmers' insurance pilot areas in Hubei Province, living expenses and specific settings of pay grade in 2009 and 2010.

4 Risk assessment of individual payment ability in the new rural social old-age insurance

According to the chart, we evaluated individual accounts' the lowest grade and highest grade payment risk in the first, the second batch of the new rural social old-age insurance pilot areas of Hubei Province in 2010 and 2009.

4.1 Individual payment calculation of the first batch in the new rural social old-age insurance pilot areas
The results of the individual payment calculation of the first batch are as follows:

[①] the maximum payment ability = farmers' per capita net income - farmers' per capita living expenses
[②] It is based on national statistical yearbook index
[③] The farmers'all savings are used for payment of the new rural social pension insurance, which is the maximum payment line.

[④] Chinanews.com:"65 counties in Hubei Province included in the new rural social pension insurance pilot and make nearly 30 million farmers obtain benefits." http://www.chinanews.com/df/2011/10-10/3378638.shtml Time: December 10, 2011

Tab.1 In 2009 and 2010, per capita net income, living expenses and pay grade of the new rural social old-age insurance pilot areas in Hubei province

Cities	Pilot areas	Per capita net income（Yuan）		Per capita living expenses（Yuan）		Lowest grade(Yuan)	Highest grade（Yuan）
		2009	2010	2009	2010		
Nationwide		5153.17	5919.01	3993.45	4381.82	100	500
Hubei Province		5035.26	5832.27	3725.24	4090.78	100	500
Wuhan City	Huangpi District	6753	7950	4023	4653	100	1200
	Jiangxia District	7128	8317	5242	6608	100	1200
Huangshi City	Daye City	5604	6688	4763	4944	100	1500
Xiangfan City	Nanzhang County	5011	5872	4476	4767	100	500
	Baokang County	3425	4013	3508	3974	100	1200
Jingzhou City	Shishou City	5343	6515	4173	4173	100	1000
	Honghu City	5525	6430	3267	3536	100	1500
Yichang City	Yidong City	6515	7721	4838	4947	100	1200
	Zigui County	3177	3497	3257	3184	100	1500
Shiyan City	Zhuxi county	3072	3484	2880	3429	100	500
	Danjiangkou City	3657	4046	3203	3177	100	1200
Xiaogan City	Anlu City	5031	5878	3787	4324	100	1000
	Dawu County	3844	4346	3354	4110	100	1000
Jingmen City	Zhongxiang City	6032	7041	4840	5255	100	1200
Ezhou City	Liangzihu District	4779	5680	2624	2731	100	1000
	Huarong District	5792	6795	2710	3155	100	1200
Huanggang City	Tuanfeng County	3287	3617	2768	2684	100	500
	Huangmei County	4542	5268	3525	3810	100	2000
Xianning City	Chibi City	6120	7044	3898	4996	100	500
	Tongshan County	3141	3542	2360	2537	100	1000
Suizhou City	Zengdu District	5662	6737	3839	4523	100	500
Tujia Miao Autonomous Prefecture of Enshi	Laifeng County	2798	3240	2521	2976	100	500
	Badong County	2790	3244	2561	3198	100	500

Data source: "Statistical Yearbook of the Huber Province in 2011". The payment grades come from the various officials Web site.

The above-mentioned data make into line chart of payment ability. The results of the comparison are as follows.

Tab.2 The farmers' lowest grade and highest grade maximum payment ability coefficient in the pilot areas of Hubei Province in 2009

cities	Pilot areas	The lowest grade payment coefficient	The highest grade payment coefficient
Nationwide		0.086	0.431
Hubei province		0.076	0.382
Wuhan City	Huangpi District	0.037	0.440
Jingzhou City	Shishou City	0.085	0.855
Yichang City	Yidong City	0.060	0.716
Shiyan City	Zhuxi County	0.521	2.604
Xiaogan City	Anlu City	0.080	0.804
Jingmen City	Zhongxiang City	0.084	1.007
Ezhou City	Liangzihu District	0.046	0.464
Huanggang City	Tuanfeng District	0.193	0.964
Xianning City	Chibi City	0.045	0.225
Suizhou City	Zengdu District	0.055	0.274
Tujia Miao Autonomous Prefecture of Enshi	Laifeng County	0.361	1.805

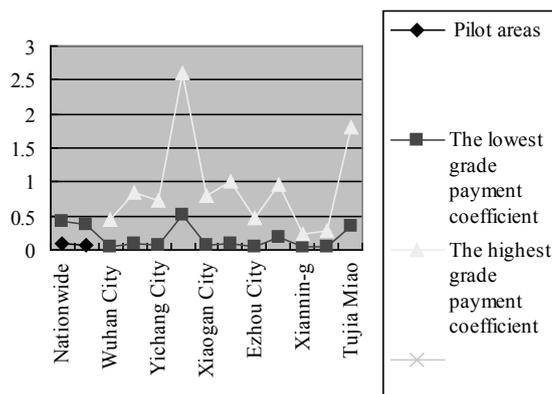Data sources: This research obtained by computation.

Fig.1 Farmers' lowest and highest grade payment coefficient and risk of payment ability in each area.

As can be seen from the figure, the individual payment of the new rural social old-age insurance whether the lowest payment coefficient (0.086, 0.076) or he highest grade payment coefficient (0.431, 0.382) are less than 1 in the average level of the whole nation and Hubei Province. It means that farmers can afford the

corresponding grade payment basically. In other words, measured from the national and the provincial average level, individual payment of the new rural social old-age insurance is less risk.

Looking from different areas, lowest grade payment coefficient of individual payment ability where farmers who live in the first batch of new rural social old-age insurance pilot areas in Hubei province were less than 1 in 2009. It means that the lowest grade of payment existed risk of personal payment capacity. Looking from the highest grade payment ability, the highest grade payment coefficient was less than 1 in most areas. Only in three areas the farmers' personal highest grade payment coefficient were bigger than 1, Respectively, Zhuxi County (2.604), Zhongxiang City (1.007) and Laifeng County (1.805). It explained that a part of farmers cannot afford individual highest grade payment of the new rural social old-age insurance, and explained the farmers did not adapt the highest grade payment standard and suitable to choose low grade payment standard in these three counties (cities).If we turn alert standard of payment coefficient to 0.5, the farmers take out half of the rest to pay the new rural social old-age insurance premium. Looking from the lowest grade payment capacity, we found that most farmers' personal lowest payment coefficient is less than 0.5. But Zhuxi County personal lowest grade payment coefficient is 0.521. When the warning line bigger than 0.5, a part of farmers can not afford personal lowest payment of the new rural social old-age insurance and there is a risk of individual payment ability. Looking From the highest grade payment capacity, more than half of the regions' personal highest grade payment coefficient exceeded 0.5, respectively, the Nanzhang County, Yidu City, Shishou City, Zhuxi County, Anlu City, Zhongxiang City, Tuanfeng County, Laifeng County. The highest grade coefficients are 0.935, 0.855, 0.716, 2.604, 0.804, 1.007 and 1.805. It explained that the farmers did not adapt to choose the highest payment standard in these areas. The farmers were suitable to choose higher grade; even choose the highest grade of payment standard in other areas.

4.2 Individual payment calculation of the second batch of the new rural social old-age insurance pilot area

The results of the individual payment calculation of the first batch are as follows:

Looking from the average level of the whole nation and Hubei Province, the individual payment of the new rural social old-age insurance whether the lowest payment coefficient (0.065,0.057)or the highest grade payment coefficient(0.326,0.287)were less than 1 and 0.5 in 2010.

Tab.3 In 2010 farmers' lowest grade and highest grade payment ability coefficient in the pilot areas of Hubei Province

Cities	Pilot areas	The lowest grade payment coefficient (%)	The highest grade payment coefficient (%)
Nationwie	Nationwide	0.065	0.326
Hubei Province	Hubei Province	0.057	0.287
Wuhan City	Huangpi District	0.030	0.364
	Jiangxia District	0.059	0.702
Huangshi City	Daye City	0.057	0.860
Xiangfan City	Nanzhang County	0.090	0.452
	Baokang County	2.564	30.77
Jingzhou City	Shishou City	0.043	0.427
	Honghu City	0.035	0.518
Yichang City	Yidong City	0.036	0.433
	Zigui County	0.320	4.792
Shiyan City	Zhuxi county	1.818	9.091
	Danjiang-kou City	0.115	1.381
Xiaogan City	Anlu City	0.064	0.644
	Dawu County	0.424	4.237
Jingmen City	Zhongxia-ng City	0.056	0.672
Ezhou City	Liangzihu District	0.034	0.340
	Huarong District	0.027	0.330
Huanggang City	Tuanfeng County	0.107	0.536
	Huangmei County	0.069	1.372
Xianning City	Chibi City	0.049	0.244
	Tongshan County	0.100	0.995
Suizhou City	Zengdu District	0.045	0.226
Tujia Miao Autonomos Prefecture of Enshi	Laifeng County	0.379	1.894
	Badong County	2.174	10.870

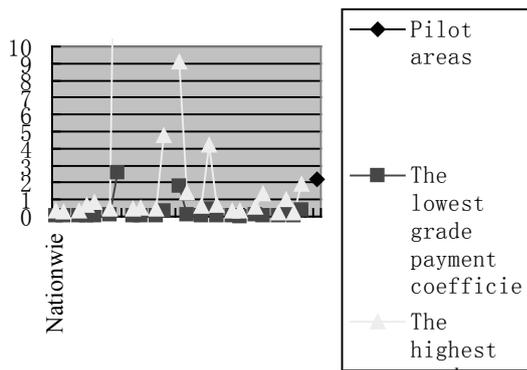Data sources: This research obtained by computation.

Fig.2 Farmers' lowest and highest grade payment coefficient and risk of payment ability in each area

It means that the farmer can afford the corresponding payment grade in nation and Hubei Province. From the point of view of the national and the province, the risk of individual payment ability did not exist. Compared with the 2009, the national per capita net income of farmers had grew 14.86% and the per capita living consumption expenditure had increased 9.73% in 2010, so the ability of maximum payment had growth 32.5%.[①] In this situation farmers' payment ability was relatively higher. Looking from the full of Hubei province, farmers'maximum payment ability had increased 32.9% in 2010. So for the province, farmers'payment ability will improve if payment grades do not improve.

Looking from different areas, all areas of the farmers who live in the second batch of new rural social old-age insurance pilot areas in Hubei province lowest grade payment coefficient of individual payment ability were less than 1 in 2009. But in several areas of farmers' personal lowest grade payment coefficient was bigger than 1, such as Baokang Count(**2.564**), Zhuxi County (**1.818**), Badong County(**2.174**). It shows that a part of farmers can not afford personal lowest payment of the new rural social old-age insurance and there is existing risk of individual payment ability in these areas. Baokang County as an example, the per capita net income of the farmers was 4013 Yuan, and the per capita consumption expenditure of farmers reached 3974 Yuan in 2010. The maximum payment capacity was only 39 Yuan, it much less than the lowest grade 100 Yuan. Zhuxi County and Badong County had the same problem that the farmers' ability of maximum payment was less than 100 Yuan. After net income minus basic living expenses, there was almost no remaining. And there a high risk of payment capacity. Participants must be given preferential policies. Looking from the highest grade payment ability, Zigui County (4.792), Danjiangkou (1.381), Dawu County (4.237), Huangmei County (1.372) and (Laifeng County 1.894) were all bigger than1 in the

highest payment coefficient, except Baokang County (30.77), Zhuxi county (9.091) and Badong county (10.87). This areas existed a risk of payment ability in lowest payment coefficient. It explained that the farmers do not adapt to choice the highest payment standard in these five areas. The farmers were suitable to choose higher grade; even choose the highest grade of payment standard in other areas. If the warning line is 0.5 that payment coefficient is bigger than 0.5 in Kangbao County (2.564), Zhuxi County (1.818) and the Badong County (2.174). It shows that a part of farmers can not afford personal lowest payment of the new rural social old-age insurance and there existed a risk of individual payment ability in these areas. Looking from the highest payment coefficient, the individual highest grade payment coefficient was over 0.5 in 5 areas. In Jiangxia District, Daye City, and Honghu, Zigui, Danjiangkou, Anlu, Zhongxiang, Dawu, Tuanfeng, Huangmei, Tongshan and LaiFeng, the coefficients of highest grade maximum payment ability were respectively as follows: 0.935, 0.855, 0.716, 2.604, 0.804, 1.007 and 1.805, except there was existing risk of personal payment capacity in baokang, and Zhuxi and in badong County zhiwai. It explained that the farmers did not adapt to choose the highest payment standard in these five areas. The farmers were suitable to choose higher grade of payment standard in other areas.

5 Conclusions

Looking from aggregate level in the whole nation and the Hubei Province, there is not existing risk of personal payment capacity. But because of the huge differences of China's regional economic and social development, it is easy for people to overlook the great differences behind average statistics. There is still existing problems that uncertainty of farmers' income and large differences of areas, so that some farmers who couldn't pay insurance premiums are excluded from the coverage system.

Looking from the pilot areas, regardless of take R' =1 or R' =0.5 as the warning line, a part of farmers who live in the three areas of Baokang County, Zhuxi county and Badong County in Hubei Province can't afford individual lowest payment grade of the new rural social old-age insurance and existed the risk of individual payment ability. Take R' =1 as the warning line in the highest payment ability, there had some farmers who live in Zhongxiang City, Laifeng County, Zigui County, Danjiangkou city, Dawu County, and Huangmei County did not adapt to choose highest grade payment standard, they were suitable to choose lower scale payment standard. There were 15 areas of individual highest grade Payment coefficient exceeded the warning line when R' =0.5 was the warning line in the highest payment ability. Except in Baokang, and Zhuxi and in Badong County Zhiwai where there existed risk of personal payment capacity, the farmers who live in Jiangxia District, Daye City, and Honghu, Zigui, Danjiangkou, Anlu,

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① (the ability of maximum payment in 2010 - the ability of maximum payment in 2009)/ the ability of maximum payment in 2009 [(5153.17-3993.45)-(5919.01-4381.82)] /(5919.01-4381.82)*100%=(1537.72- 1159.72)/1159.72*100%=32.5%

Zhongxiang, Dawu, Tuanfeng, Huangmei, Tongshan and Laifeng did not fit to choose the highest payment standard in these five areas. The farmers in other areas were suitable to choose higher grade of payment standard.

With the development of the economy, the per capita net income of farmers and the per capita living consumption expenditure is growing continually. According to economic theory, with the improvement of people's living standard, food and other basic living expenses will gradually decline in the proportion of total expenditure, so that the growth rate of farmers' per capita net income grow faster than growth of the per capita living expenses. The payment grades no improvement, farmers' payment ability is improved, and payment risks will fall. But it brings other risks actually, namely the risk of low capacity in old-age insurance because of the few payment and insufficiency of individual account. It will improve the degree of farmers' participation in the new rural social old-age insurance to accelerate the development of the rural economy, increasing the income of farmers and improve the living conditions of farmers. In addition, it can't wait in explored the new mode of capital value.

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