Prediction Study of China's "Universal Two-child Policy" on Pension Insurance Expenditure

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Abstract. Following the "selective two-child" policy, the Fifth Plenum of the 18th Central Committee of the Communist Party of China further proposed the "universal two-child" policy, to solve a series of outstanding problems in the development of population and economy currently. The impact of the policy on population size and structure and dividends is also a social concern. Therefore, this paper combines the Leslie model with Gray-Markov model, predicts the population structure scale after the implementation of the "universal two-child" policy, using EVIEWS quantitative analysis of the impact of the aging development level on the pension fund expenditure, and then predict the future pension insurance expenditure according to the predicted aging level. The results show that the policy is difficult to change the situation of “below-replacement and population aging” in the short term. Besides, the policy will bring some pressure on the pension expenditure. But in the long run, the reduction of population aging and the optimization of population structure and the reduction of social pension insurance expenditure brought by the policy will be very beneficial to the sustainable development of the future economy.

Introduction

In recent years, the aging of the population continues to spread all over the world, and has attracted widespread attention from all walks of life. Since 2000, China has officially entered the ranks of an aging society, which has lagged behind the developed countries for nearly 130 years. However, China has suddenly become the most populous country in the world, which is closely related to the huge population of china. Data show that by the end of 2015, China's total number of elderly population has exceeded 140 million. In addition, the negative effect at the beginning of the 1980s implementation of the "family planning" policy began to appear, the decline of the labor force, the deepening of the aging population and the decline of the window of population opportunities are affecting the vitality of China's economic growth. Now the "birth rate of aging", "continued warming old before getting rich" and "peasant worker shortage" and "labor shortage" problem, it is implied and the embodiment of population and economic deep-seated contradictions in China continues to deteriorate.

Based on the current situation of population and economic and social development in China, following the "selective two-child" policy, the Chinese government has further proposed the "universal two-child" policy to promote balanced development of the population, improve the population development strategy, and allow a couple to have two children. The introduction of the policy not only ushered in the "one-child" after the second historical change China population policy, but also has to promote the working age population growth, demographic dividend and delay time to resolve the structural problems of the population expectations.

For the pension insurance system, its direct service object is the elderly population, the spread of aging means that the pension insurance system will face a new round of shocks and challenges. In China, the pension fund expenditure is an important part of the social security expenditure system, will "universal two-child" policy in the future can put an impact on the social pension insurance expenditure? Whether it will ease the population aging in our country? This paper will forecast the

future population size and the endowment insurance fund expenditure, in order to provide reference for the answers to these questions.

literature review

Because of the "universal two-child" policy is still in the initial stage, the existing research mostly focus on the future population increment, qualitative prediction of population structure and demographic dividend. Ren Qiang, Hou Road (2011) used China population census data in ARMA model, and estimate the changes of China future fertility and mortality, and according to the auto correlation function, the partial auto correlation function of the tail distribution and Bayesian methods for model order determination, so as to realize the recognition of the ARMA model, the results show that the random population Leslie matrix prediction method based on ARMA model and is robust and has very strong applicability. Chen Jian (2014) pointed out that in the past our country's fertility rate was seriously overestimated, "universal two-child" policy can greatly increase the total fertility rate, prompting our country as soon as possible out of the "low birth trap". Zhai Zhenwu, Zhang Xianling and Jin Yongai (2014) argues that "universal two-child" policy will promote the increment of population sharply, reaching the peak and peak birth fertility level, but also can increase the future supply of labor resources, delaying the aging population and the extension of the demographic dividend period. Zhai Zhenwu and Li Long (2014) believe that the "universal two-child" policy will enlarge our country's population problems at this stage, "selective two-child" is a policy choice in line with the current realities. Tang Zhaoyun (2014) also agrees with this view that the premature birth control policy is not conducive to China's economic and social development, "universal two-child" policy should be implemented around 2020.

Wu Cang Ping (2004) believe that China's aging population is an important reason for the serious low fertility level, the elderly population, especially of continuing old before getting rich, and put forward some suggestions on how to solve the existing problems. Tong Yufen (2008), Huo Zhigang (2012) use time series data of the individual provinces as a basis for analysis of influence of aging on pension system. Wang Jun (2016) thought that "universal two-child" policy will have a positive impact on the Chinese economy, and he believes that compared with delaying the retirement age policy, the implementation of "universal two-child" policy and measures to encourage fertility will become a fundamental measure to deal with future China pension payment crisis. Gui Shixun (2016) predicts that Chinese "demographic dividend" window of opportunity will be closed around 2030, but the decline in the elderly dependency ratio will appear in the second half of twenty-first Century, and in the long run will be conducive to population development. Zhang Pengfei (2017) construct the basic old-age insurance for urban workers income and expenditure model, found that in the second half of twenty-first Century, with two more pension insurance expenditure and income gap growing bigger, indicating that the policy can alleviate the pension payment pressure. Zeng Yi (2016) found that in 2090 the pension insurance fund accumulated deficit in "universal two-child" policy is decreased significantly than in "selective two-child" policy. Tang Jincheng (2016) through the actuarial model reached that in 2035, the pension insurance fund accounts will have a certain surplus, and the surplus will increase as fertility will increase. Tang Yunshu (2016) analyzed the negative, neutral and optimistic situation by establishing the population forecasting model and the pension gap model respectively. Finally, the "universal two-child" policy were in favor of controlling the balance of income and expenditure of the old-age insurance, which appeared in 2037 and weakened in 2040.

Based on the above research, the domestic scholars focus on the theoretical research, some only empirical analysis of the individual provinces of the time series data, although some scholars predicted the size of the future population and the scale of the future pension fund, but the views are different. The innovation of this paper is based on "universal two-child" policy to predict the future changes in the population structure which combines the Leslie model with Gray-Markov model, then according to the quantitative analysis to explore the degree of influence on the aging development level of expenditure of the endowment insurance fund, and predict the future trend of

aging in China, and calculate the total amount of China's pension fund expenditure in the future.

The prediction of population development trend of the "universal two child" policy

Before analyzing the population self effect of the "universal two-child" policy, the most important thing is to predict the population development trend under the policy, and the key to the prediction of population development trend is to choose the proper population prediction method. At present, the mainstream population prediction methods include linear regression model, Leslie model, Malthus model and Logistic model, the Leslie model is able to calculate the population changes over a long period of time, and it incorporates many considerations, compared with the other two models, it has the advantages of long prediction time and high precision. However, the model has high requirements for fertility, mortality and sex ratio, when the correlation index has a large deviation, the increase of power operation will also increase the prediction error. Therefore, the population growth equation is constructed based on the Leslie model, determine fertility rates on the "universal two-child" policy, use the Grey-Markov model to predict the future population mortality rate, sex ratio, strive to predict the population development trend of China accurately and scientifically under the policy of "universal two-child".

Construct population development equation by Leslie model

Leslie is a model that count female fertility and death as the core of the advanced discrete model, it can not only predict the population, but also can conduct a comprehensive forecast on the population structure of the future, with its specific construction process of population development equation as follows:

Record "m" as the limit of human survival years, "$z_i(t)$" as the "i" female population when the number "t" year(i=0,1,2,... m). "d(t)" as the mortality rate for female population in "t". Under the situation witch only considering the birth, aging and death, irrespective of migration and other social factors, we can conclude the population age growth equation:

$$z_{i+1}(t+1) = \big(1 - d(t)\big) z_i(t) \qquad i = 0，\ 1，\ 2，\ \cdots，\ m-1 \qquad (1)$$

Record "f(t)" as the number "t" year's female total fertility rate, "r(t)" as the number "t" year's sex ratio (female = one hundred), [i_1， i_2] is the child-bearing age range, then the population growth equation is:

$$z_0(t+1) = \frac{100}{100 + r(t+1)} \sum_{i=i_1}^{i_2} z_i(t) f(t+1) \qquad (2)$$

Combining the population age growth equation with the population growth equation, we can get the development equations of female population in China:

$$\begin{cases} z_{i+1}(t+1) = \big(1 - d(t)\big) z_i(t) & i = 0，\ 1，\ 2，\ \cdots，\ m-1 \\ z_0(t+1) = \frac{100}{100 + r(t+1)} \sum_{i=i_1}^{i_2} z_i(t) f(t+1) \end{cases} \qquad (3)$$

After obtaining the population development equation group, take the age-specific population of women as raw data into the equations, according to the time sequence of calculating the annual age female population, finally the sex ratio can be calculated according to the annual discount year age population.

Determine the total fertility rate of the "universal two-child" policy

As the implementation of the "universal two-child" policy will lead to a fundamental shift in the level of fertility in our country, the method of direct quantitative analysis of the total fertility time series data in the previous study is clearly no longer applicable. However, in the process of continuous adjustment of fertility policy, the sum of fertility rate must also be improved, so the "family planning" policy and "selective two-child" policy under the sum of fertility data still has a greater reference value. For the "family planning" policy during the implementation of the total fertility rate, 2000 and 2010 census data were 1.22 and 1.18, but the academic community generally believe that the census data omission problem is more serious, and on this basis, the use of cohort analysis, survival inverted, regression fit, education statistics and other methods to calculate,

pointed out that between 2000 and 2010, China's total fertility rate should be between 1.5-1.7(Yu Xuejun, 2002; Zhang Weimin, 2003; Zhai Zhenwu, 2002; Chen Wei, Yang Fan, Zhao Menghan, Cui Hongyan, 2013; Xu Lan, 2013; Li Rui, Chen Wei, 2014). "China Development Report 2011/2012" pointed out that the "selective two-child" policy after the implementation of China's total fertility rate will rise to 1.8 or so, most scholars agree with this view (Yi Fuxian, Su Jian, 2014; Zhai Zhenwu, Li Long, 2015; Qiao Xiaochun, 2015).

Through the study of the above fertility finishing and induction, I believe that in the gradual adjustment and release of reproductive policy in the process, the total fertility rate should also continue to increase. The fertility rate of "selective two-child" policy has been improved at the level of "family planning" policy, and the "universal two-child" policy as a "selective two-child" policy continuation policy will further stimulate the increase in fertility wishes. According to the "Central Committee of the Communist Party of China on the development of national economic and social development thirteenth five-year plan proposal" in the "universal two-child" policy interpretation, the policy will promote China's total fertility rate to return to normal, that is internationally recognized fertility Change level 2.1. In addition, the author summarizes the recent research on the forecast of the development trend of the "universal two-child" policy. It is found that the setting of the total fertility rate is mainly concentrated in 2.0 (Yang Ge, 2016) and 2.1 (Yan Zhengren, Wei Yucui, Chen Qingwei, 2016). On the basis of referring to the existing fertility research and national development goals, this article holds that the total fertility rate will be stable at around 2.1 at the beginning of the implementation of the "universal two-child" policy. We choose 2.1 as to predict the trend of population development under the policy of the total fertility rate, and by Yi Fuxian, Zhai Chun etc selective two-child's birth rate is set to 1.8, so as to make a comparative analysis of the population self effects under Different Fertility Policies.

Use the Grey-Markov model to predict mortality and sex ratio

Scientific and effective prediction of mortality and sex ratio is especially important in predicting population trends. From the 1978 to 2014 population mortality data and sex ratio data, the mortality rate and sex ratio not only showed a strong overall trend, but also has a strong ups and downs. In the current prediction method, the Grey model and the classical Markov model can be used to predict the time series problem. If use the two models in combination, it can realize the complementary trend and volatility, so as to accurately predict our future mortality and sex ratio data, the population development trend of scientific predictions.

i. Grey model's prediction

Record "$X^{(0)} = \{x^{(0)}(1),\ x^{(0)}(2),\ \cdots,\ x^{(0)}(n)\}$" as the original time of death or sex ratio sequence, $x^{(0)}(k)$ is indicating the actual statistics mortality or sex ratio of the corresponding year.

i). Prior to making predictions, data validation requires a step wise test of the raw data, rank ratio formula:

$$\lambda(k) = \frac{x^{(0)}(k-1)}{x^{(0)}(k)} \quad (4)$$

If grade satisfy: $\lambda_x(k) \in (e^{-2/(n+1)},\ e^{2/(n+2)})$, it can be considered that the Grey model can be used to predict the sequence; if the ratio does not meet the conditions, the data must be processed to meet the conditions can be covered, commonly used data transformation with translation, logarithmic transformation, root transformation.

ii). Construct the generating sequence and accumulate the original time series:

$$X^{(1)} = \{x^{(1)}(1) + x^{(1)}(2),\ \cdots,\ x^{(1)}(n-1) + x^{(1)}(n)\} \quad (5)$$

$$x^{(1)}(k) = \sum_{i=1}^{k} x^{(0)}(i),\ k = 1,\ 2,\ \cdots,\ n.$$

iii). put $X^{(1)}$ as close to the mean of the right sequence $Z^{(1)}$

$$Z^{(1)} = \{z^{(1)}(1),\ z^{(1)}(2),\ z^{(1)}(3),\ \cdots,\ z^{(1)}(n)\} \quad (6)$$

$$z^{(1)}(1) = x^{(1)}(1),\ z^{(1)}(k) = 0.5x^{(1)}(k) + 0.5x^{(1)}(k-1),\ k = 2,\ 3,\ \cdots,\ n.$$

iv). Using a single variable order differential equation to fit the generated sequence $X^{(1)}$, then

we can obtain the whitening form of the Grey model $\frac{dx^{(1)}}{dt} + ax^{(1)} = b$, in which "a" is the development parameter, and "b" is the Grey function.

Record parameter $\hat{a} = (a, b)^T$, it obtained by the least square method:

$$\hat{a} = \left(B^T B\right)^{-1} B^T Y = \left[a, b\right]^T \quad (7)$$

$$B = \begin{bmatrix} -z^{(1)}(2) & 1 \\ -z^{(1)}(3) & 1 \\ \vdots & 1 \\ -z^{(1)}(n) & 1 \end{bmatrix}, \quad Y = \begin{bmatrix} x^{(0)}(2) \\ x^{(0)}(3) \\ \vdots \\ x^{(0)}(n) \end{bmatrix}.$$

v). The solution of the whitening equation is derived

$$\begin{cases} \hat{x}^{(1)}(k+1) = \left(x^{(0)}(1) - \frac{b}{a}\right) e^{-ak} + \frac{b}{a} & k = 1, 2, \cdots, n-1 \\ \hat{x}^{(0)}(k+1) = \hat{x}^{(1)}(k+1) - \hat{x}^{(1)}(k) & k = 2, 3, \cdots, n-1 \end{cases} \quad (8)$$

vi). Put the original series into the calculation, the prediction of the sequence can be conclude:

$$\hat{X}^{(0)} = \{\hat{x}^{(0)}(1), \hat{x}^{(0)}(2), \cdots, \hat{x}^{(0)}(n)\} \quad (9)$$

ii. Prediction of volatility by Markov model

On the basis of the data which predicted by the Grey model, the Markov model is applied to predict volatility in order to improve the prediction accuracy.

i). Division of States. In order to make the annual variation of mortality data conform to Markov non-stationary sequence, the division of the state is based on the absolute precision value $\varepsilon(k)$ of the original value and the Grey prediction value.

$$\varepsilon(k) = x^{(0)}(k) - \hat{x}^{(0)}(k) \qquad k = 1, 2, \cdots, n \quad (10)$$

According to the range of absolute precision, the prediction sequence of mortality can be divided into several state intervals. $E_i = \left[E_{1i}, E_{2i}\right]$, $i = 1, 2, \cdots, n$.

ii). Calculate the state transition probability matrix. Pij=nij/Ni is defined as the data is transformed from state "Ei" to "Ej" by "k" step. The "nij" means the number of times the state "Ei" shifted to "Ej". "Ni" stands for the total number of times that "Ej" appears. Then we can conclude the "k" step state transition matrix:

$$P^{(k)} = \begin{bmatrix} P_{11}^{(k)} & \cdots & P_{1j}^{(k)} \\ \vdots & \ddots & \vdots \\ P_{i1}^{(k)} & \cdots & P_{ij}^{(k)} \end{bmatrix} \quad (11)$$

iii). Calculate the Gray-Markov predictor. According to Markov's no effect, the state is closest to the predicted time, and then the state of the next period is calculated from the initial state and the transfer matrix, and the predicted value is determined according to the state. In general, the midpoint of each state interval is taken as the relative value of the predicted value, take "L_{1k}" and "L_{2k}" to show the upper and lower bounds of the residual range of this state, The relative value of relative precision is revised as:

$$\varepsilon'(k) = \frac{L_{1k} + L_{2k}}{2} \quad (12)$$

Finally, the predictive value calculated by the Grey-Markov model is:

$$\hat{y}^{(0)}(k) = \hat{x}^{(0)}(k) + \varepsilon'(k) \quad (13)$$

iii. Mortality and sex ratio prediction

The mortality rate and sex ratio (female =one hundred) in the <China Statistical Yearbook 1978-2015> and the National Bureau of statistics were selected as the original sequence to predict the 2015-2100 year mortality rate and sex ratio. The results were shown in Table 1

Table 12015-2100 Mortality and Sex Ratio Prediction Results

Year	2015	2016	2017	2018	2019	2020	2030
Death Rate(‰)	7.19	7.20	7.22	7.23	7.24	7.26	7.41
Sex Ratio(Femininity=one hundred)	104.52	105.32	105.38	105.43	105.48	105.54	106.07

Year	2040	2050	2060	2070	2080	2090	2100
Death Rate(‰)	7.56	7.72	7.88	8.04	8.20	8.37	8.55
Sex Ratio(Femininity=one hundred)	106.61	107.14	107.69	108.23	108.78	109.32	109.88

iv. Population development forecast results of "universal two-child" policy

This paper is based on age population data in the sixth census data, combined with the "China Statistical Yearbook 2012-2015" in 2011-2014 per 1% of population changes in the sample by age population data, to calculate the number of people in each year in 2014, and then use the fertility rate, mortality rate and sex ratio derived from the above, to predict the population development scale of the "selective two-child" policy, the "universal two-child" policy in 2015-2001, 65 and older elderly population accounted for 15-64 years of age of labor-age ratio for the elderly dependency ratio. The forecast results are shown in the table below.

Table 2 Under the Different Fertility Policy, the Old Age Support Ratio, the Pension Insurance Fund Expenditure Forecast Results

Year	"Selective Two-child" Policy's Ratio between Working and Retired Population（%）	"Universal Two-child" Policy's Ratio between Working and Retired Population （%）
2016	16.15%	16.16%
2020	22.37%	22.37%
2030	40.28%	40.28%
2040	64.86%	62.70%
2050	82.62%	77.58%
2060	102.53%	92.28%
2070	91.25%	77.74%
2080	82.42%	66.50%
2090	84.51%	68.87%
2099	79.74%	64.54%

Note: only major years are listed

IV. Note: only major years are listed

As China entered the aging society in 1999, the range of sample data selected in this period is from 1999 to 2015, and the old age support ratio is chosen as the population aging index, indicated by the letter "XB", and the letter "YLF" is used as the social endowment insurance Fund expenditure, the data all from the "China Statistical Yearbook 2015".

Table 3 1999-2015 China 's Old-age Dependency Ratio and Social Pension Insurance Expenditure

Year	YLF(billion)	XB(%)
1999	1924.9	10.2
2000	2115.5	9.9
2001	2321.3	10.1
2002	2842.9	10.4
2003	3122.1	10.7
2004	3502.1	10.7
2005	4040.3	10.7
2006	4896.7	11
2007	5964.9	11.1
2008	7389.6	11.3
2009	8894.4	11.6
2010	10755.3	11.9
2011	13363.2	12.3
2012	16711.5	12.7
2013	19818.7	13.1
2014	23325.8	13.7
2015	27929.4	14.3

It can be seen from Table 3 that during the period from 1999 to 2015, China's old age support ratio increased from one hundred working population in 1999 to ten elderly people to 2015 about one hundred working population to raise fourteen elderly people, China's old age Raising pressure is increasing. At the same time, China's pension insurance fund spending also showed an increasing trend, the government's financial pressure is also increasing.

This paper makes a regression analysis of two variables: the old-age dependency ratio and the social endowment insurance expenditure in China, quantitative analysis of the impact of China's aging development on the expenditure of social endowment insurance fund. Use the EVIEWS7 to analyze the Table 3 data.

As the data involved in the regression is time series data, observe the long-term relationship between the two sets of data, we must first test the data in the model to check whether there is unit root, where the use of ADF unit root test. IIf the statistic ADF value is greater than the critical value, then the original variable is not stable, otherwise the original variable is considered stable. In order to reduce the heteroscedasticity of the data, this paper will take the value of the expenditure of China's old-age insurance fund, expressed as "Ln(YLF)", the stochastic disturbance is expressed as "u", then establish the model as follows.

$$\mathrm{Ln(YLF)} = a + XB + u$$

Table 4 Unit Root Test Results Summary Variables

Variable	ADF test statistics	Check Critical Value			Conclusion
		1%	5%	10%	
XB	4.045151	-3.920350	-3.065585	-2.672459	No Pass
D1(XB)	0.973189	-4.121990	-3.144920	-2.713750	No Pass
D2(XB)	-3.110774	-4.200056	-3.175352	-2.728985	10%Pass
Ln(YLF)	2.507927	-3.920350	-3.065585	-2.673459	No Pass
D1(Ln(YLF))	-2.515889	-4.004425	-3.098896	-2.690439	No Pass
D2(Ln(YLF))	-3.295573	-4.121990	-3.144920	-2.713751	5%Pass

Note: D1 (XB) said the first difference, D2 (XB) said the two order difference, similar to YLF

By analyzing the two variables, we can see that the two variables are stable after the second

order difference. In order to test whether there is a long-term stable relationship between the two variables, the following two covariance tests, cointegration test method to take ENGLE-GRANGER two-step test.

First, the regression equation between two variables is constructed, and the error term e is calculated, and the smoothness of the residual sequence is then checked.

The regression analysis of two variables was carried out by EVIEWS7 econometric software. The regression equation was obtained as follows:

$$\mathrm{Ln(YLF)} = 1.204 + 0.658\mathrm{XB}$$

（2.562）（16.221）

$$R^2 = 0.946 \quad \bar{R}^2 = 0.942 \quad \mathrm{F} = 263.127 \quad \mathrm{n} = 17 \quad \mathrm{DW} = 1.838$$

Table5 Unit Root Test Results of Residual Sequences"e"

Variable	ADF test statistics	Check Critical Value			Conclusion
		1%	5%	10%	
e	-0.374258	-3.959148	-3.081002	-2.681330	No Pass
D1(e)	-2.769943	-3.959148	-3.081002	-2.681330	10%Pass

It can be seen from the test results that the residual sequence "e" is first order stationary. From the regression equation of the model, it can be seen that there is a positive correlation between the old age support ratio and the expenditure of China's basic old-age insurance fund, That is, as China's old-age dependency ratio continues to rise, China's pension insurance fund spending is also increasing. From the regression equation, we can tell Elderly dependency ratio impact on pension expenditure elasticity is 0.658. Indicating that the other variables remain unchanged, the annual support for each additional 1 percentage point, the old-age insurance expenditure increased by about 0.658 percentage points. According to "China Statistical Yearbook 2016", the total expenditure of endowment insurance fund in 2015 is 27929.4 billion yuan, the old age support ratio is 14.3%. According to the forecast, 2016 old age support ratio of 16.2%, according to projections, 2016 pension fund expenditure of 2,850.96 billion yuan. And so on, the annual pension fund expenditure of 296.94 billion yuan in 2020. The next four decades has been on the rise, and reached its peak in 2059, 464.42 billion yuan, followed by a downward trend, "universal two children" policy effect gradually emerged, in 2099 can be reduced to 386.25 billion yuan. Expenditure on old-age insurance funds in major years is shown below

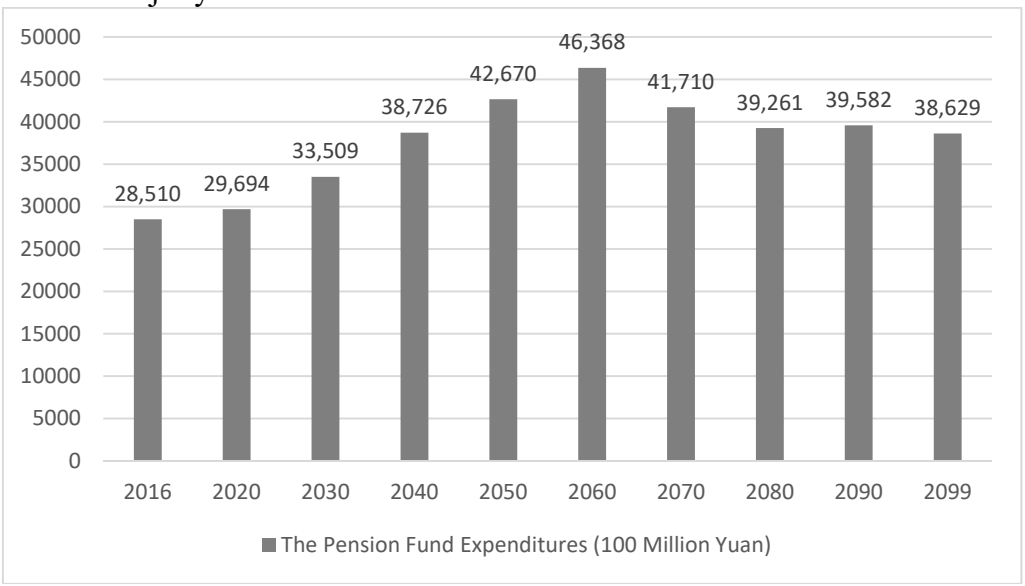

Figure 1 The Forecast of Expenditure on Old-age Insurance Funds in the Main Year under the Policy of "Universal Two-child" Policy

V. Conclusions and policy recommendations

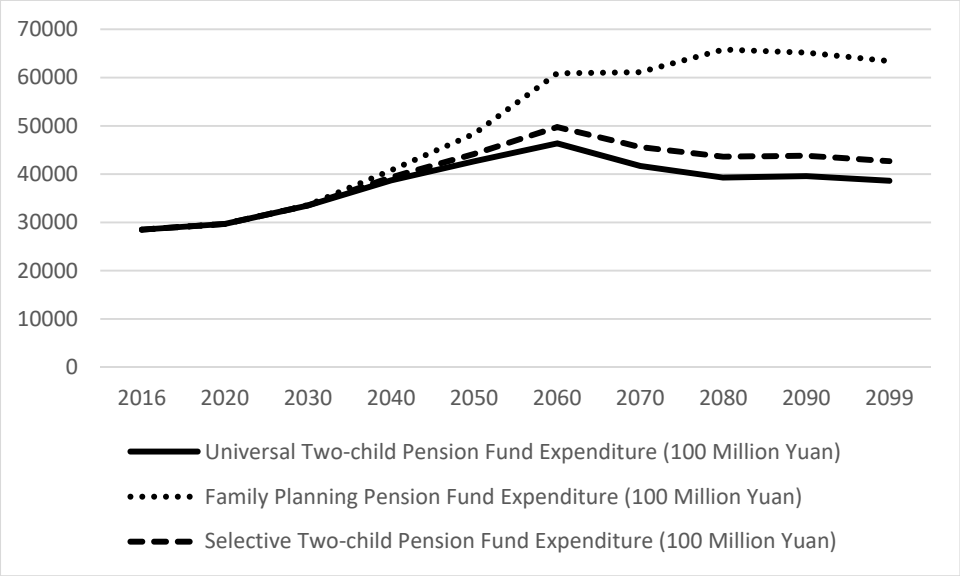

Figure 1 Forecast of Expenditure of Old - age Insurance Funds under Different Fertility Policy in 2016-2099

Through the comparison of the expenditure of the old-age insurance fund which is predicted under different fertility policies, it can be seen that the "universal two-child" policy is the same in the short term with the policy of "selective two-child" policy and "family planning" policy. The main reason is the cyclical nature of the cyclical nature of the policy. It can be seen from Figure 2, "universal two children" policy under the pension insurance fund spending reached its peak in 2060, reaching 463.68 billion yuan, then has shown a downward trend, and in 2099 386.28 billion yuan; and compared with the other two fertility policies, there was no significant difference in the expenditure on pension funds before 2030, and the gap widened gradually after 2040. The expenditure on the old-age insurance fund under the "universal two-child" policy was slightly faster than the "selective two-child" policy, and at the same time reached the peak value of 4,974.1 billion yuan in 2060. The gap between the "selective two-child" policy and the "universal two-child" policy is 337.3 billion yuan, although there is a downward trend after 2060, but the gap with the "universal two-child" policy always exists. While the "family planning" policy with a more steep curve growth, although in 2060 began to slow down, but has reached the value of 6008.95 billion, and in the follow-up period of pension insurance fund spending has been growing, in 2080 to reach 6,580.6 billion yuan, is the same period, "universal two-child" policy under 1.67 times. Although the follow-up years began to decline, the effect is not significant. It can be seen that by implementing the "universal two-child" policy to increase the number of people, increase the number of working-age population, and thus reduce the elderly population support ratio. The effect of coping with stress on the expenditure of the national pension insurance fund is remarkable. This also confirms that the "universal two-child" policy put forward by Gui Shixun (2016), Zhang Pengfei (2017), Zeng Yi (2016) and others will relieve the pressure on pensions in the second half of the 21st century.

As can be seen from the above, since 1999, China has entered an aging society, China's aging population increasingly serious, in the next few decades has developed rapidly, and the impact of old age support than the impact of pension funds to achieve the impact of 0.658, so reduce the pension insurance fund expenditure is an important aspect to ease the aging population. On the one hand, the increase in the level of pension insurance reflects the improvement of social welfare in China. On the other hand, due to the lack of material basis for survival, the increase in the level of old-age insurance is the improvement of the deformity, which will bring great pressure to the national finance and society as a whole. Therefore, China should continue to reform the old-age insurance system, and constantly explore and explore their own national conditions to adapt to the

old-age insurance system, in order to improve the quality of life of the elderly. In our country to implement the "universal two-child" policy also need other policies to implement, in order to more quickly, directly and effectively to alleviate the aging population and reduce the pension insurance fund expenditure purposes. The following will put forward specific policy recommendations.

Gradually delayed retirement age

If we implement the "universal two-child" policy with the policy of delayed retirement age, it will has a significant effect on alleviating population aging. Delayed retirement age can increase the working age population and reduce the elderly population, which can reduce the elderly population dependency ratio. "Social Insurance Law" promulgated the provisions to postpone the retirement age in 2013, China's male workers retirement age is 60 years of age, female cadres for 55 years of age, female workers for 50 years old. Recently, the Academy of Social Sciences has proposed a progressive delay in retirement program: "Since 2018, female retirement age is delayed by one year every three years, and male retirement age is one year old every six years. By 2045, male female retirement age will reach 65 years of age. That is to eliminate the "female first men", "female fast men slow", the ultimate realization of male and female retirement age is relatively equal." In the long run, this program is conducive to the people's livelihood, is to increase the supply of social labor a way to effectively alleviate the social burden. It also can make up for the pension gap, to solve the pension of the make ends meet. However, on the issue of delayed retirement age, we can not engage in a one size fits all, but should be flexible, flexible. According to the characteristics of men and women, the nature of the work of all walks of life, other relevant national policies, step by step delay in retirement age, has been to alleviate the aging of the population.

Deepening the reform of the old - age insurance system

Compared with developing countries, the aging problem of developed countries is more serious. In the process of development, these countries are trying to alleviate the aging and constantly reform of the old-age insurance system is worth learning and learning. In terms of improving the old-age insurance system. based on a compulsory pension insurance system, the United States is gradually developing private pension plans and enterprises to supplement the old-age insurance to achieve a hierarchical pension system. While Japan in the pension insurance system is also a leading country. Early in Japan, the pension system did not achieve full coverage, only the government and employees can enjoy, but since 1985, Japan has established a national pension system, and subdivided into employee annuities and enterprise annuities, and truly realized the full coverage of the old-age insurance system. China is a developing country, which step into the aging society time is relatively late, the pension system is not perfect and there are many problems. China after decades of exploration and practice, and gradually form a "social pooling and personal accounts combined" financing model, but there are still narrow coverage, low level of co-ordination, hidden debt and personal empty account and other issues. So there are many places where China needs to be reformed, such as organs and institutions should keep pace, and with the enterprise to establish the same pension insurance system. It should implement the unit and individual payment system, try to resolve the contradiction between the two-track system from the system. We can not ignore the wage reform system and the occupational pension system, those should be synchronized with the pension insurance system reform. Deepening Treatment adjustment mechanism and reforming method of making simultaneously. To achieve one unified, five simultaneous step by step.

But only rely on the country in the basic old-age insurance system to meet the needs of pension reform is far from enough, so as most developed countries to build a multi-level pension insurance system is the trend. The state should use economic and legal means to support the development of eligible enterprise annuity systems and commercial pension plans. For example, the EET tax model of the developed countries. The old-age insurance business is divided into purchase, use and collection stage, in the first two stages of tax-free, the third stage of taxation, so it can achieve the efficient use of pensions. In addition, the country should expand the scope of the pension investment, moderately increased in the proportion of high-yield market, such as the stock market,

the real estate market. Finally, we will continue to introduce new forms of supplementary insurance, and put forward some preferential policies to attract the majority of the public to buy supplementary commercial insurance and health insurance, and to encourage insurance companies to establish more profitable mode of the program.

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