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Study of the Nonlinear Effects of Population Aging on Local Government Debt

-- Empirical Analysis based on Panel Threshold Regression Model

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Abstract: Along with the transformation of economic stage and the evolution of population structure, the local government debt problem brought by deep aging is an important proposition facing China's high-quality economic development. Based on the realistic background that China's population aging continues to deepen and the scale of local debts expands rapidly, this thesis systematically compares the impact mechanism of population aging on local government debts. Based on the provincial panel data from 2007-2021, the dynamic effects between the two are analyzed in depth based on the panel threshold regression model; finally, corresponding policy recommendations are proposed based on the research results and the actual situation in China, in order to effectively cope with the impact of population aging on local government debt in China.

Keywords: Population Aging; Local Government Debt; Panel Threshold Regression Model.

1. Introduction

Population aging is a basic national condition in the process of Chinese-style modernization and a factor that cannot be ignored on the road to sustainable economic development and high-quality improvement. A series of changes brought about by population aging not only have a huge impact on the country's economic development, but also impose a burden on government finance. As China steps into a deeply aging society, the literature that directly and explicitly incorporates population aging factors into the study of local government debt has been increasing, but the current direct research on population aging on local government debt sustainability is relatively reduced and lacks a completer and more systematic theoretical compendium.

As China is a populous country, with the deepening of population aging, local governments' fiscal revenues will become more strained, and population aging will significantly increase fiscal expenditures and lead to local government debt risks. Therefore, it is urgent to find ways to weaken the impact of population aging on government debt, and the existing studies in China focus on the sustainability of local debt from a macroeconomic perspective, but there are few precedents to study it directly from the perspective of population aging. It aims to help local governments to formulate policies according to local conditions, so as to control the scale of debt issuance and prevent debt risks.

2. Review of the Literature

Local government debt is the main source of local revenue and an important tool for regulating the macro economy (Jie Mao, 2022). In addition to the imbalance between revenues and expenditures in the traditional sense, under the macroeconomic pressure, the central government issued various tax reduction policies, which brought about an increased risk of government fiscal liabilities (Deyan Zhu, 2021), while given that the monitoring and management system of local government debt is still imperfect and the financial transparency of local governments is increasing, local governments tend to increase their debts illegally to cope with the financial pressure, leading to the hidden debt increase, which negatively affects the fiscal sustainability of local governments (Xiaosu Chang, 2022). From the above research literature related to local government debt sustainability, it is clear that the factors affecting local government debt sustainability are complex.

While the aging of the population is manifested in the aging of the population age structure, the deeper reasons are the decreasing fertility rate and the increasing life expectancy of the population. Studies have been conducted mainly from the perspective of the fiscal gap for logical arguments, from the expenditure side, the increase in the number of elderly people will lead to an increase in expenditure on the social health care system and welfare security system, etc., and the pressure to maintain a smooth and sustainable development of the social security system increases, and the government debt burden increases (Shiyu Li, 2014). From the revenue side, aging brings makes the proportion of working age of social population decreases, personal income tax collection decreases, which leads to the decrease of government tax revenue, the fiscal gap cannot be even filled, and the scale of government debt increases (Mengxuan Zhou, 2021). Although it has become a consensus that population aging increases the pressure of government debt, the specific impact mechanism is very complex and needs more in-depth research. Therefore, based on the existing research background, this thesis aims to expand and deepen the research related to population aging and local debt by contouring the threshold effect analysis mechanism and constructing a comprehensive indicator system.

3. Theoretical Analysis and Research Hypothesis

3.1. Theories Related to Population Aging

At present, there are two international definitions of population aging: one is the aging of the population age structure, and the other is the increase of the proportion of the elderly population to the total population. The criteria for judging whether a country enters a society with an aging population is that the population over 65 years old exceeds 7% or the population over 60 years old exceeds 10%. In this thesis, we choose the proportion of the population over 65 years old to the total population to measure the population aging rate of China.

The demographic dividend is classified by Ronald Lee and Andrew Mason (2006) as the first demographic dividend and the second demographic dividend. [1] The first demographic dividend refers to a period of time when the birth rate decreases, the dependency ratio of young children and the elderly is lower, and the proportion of the working-age population in the total population increases, which is favorable for economic growth; the second demographic dividend refers to the background of the changing age structure of the population, in which people will make scientific and rational adjustments in output and consumption with economic development as well as ageing, while the working-age population in the total population At the same time, the proportion of the working-age population in the total population decreases, which will reduce the willingness of residents to save and enterprises to invest. In the context of low birth rate, low mortality rate and low natural growth rate, people will adjust their output and consumption decisions, such as reducing consumption and increasing savings, which will inevitably have an impact on government revenue by affecting tax revenue. At the same time, the government level will increase education expenditure and social security expenditure to cope with the impact of population aging, which makes fiscal expenditure increase. Taken together, local government debt sustainability is bound to be affected by the impact of population aging. The intergenerational overlap model proposed by French economist Ales and continuously improved by Samuelson and Diamond is an important tool for a large number of scholars to study the influence of micro factor son macro factors. Therefore, the overlapping generations model is also an important theoretical basis for this thesis.

3.2. Theories Related to Local Government Debt Sustainability

In this thesis, we refer to the method of Jinri Wei (2018), which uses the difference between fiscal expenditure and fiscal revenue as a share of regional GDP to measure local government debt sustainability.

Sustainable development first appeared in the field of ecological environmental protection, but has now expanded to all areas of politics, economy and society, and in 1995 China adopted sustainable development as a basic national strategy. Currently, China is facing economic downward pressure and the country is vigorously promoting tax reduction and fee reduction, which undoubtedly poses a challenge to the sustainability of local government debt. Therefore, studying the influencing factors of local government debt sustainability and how to improve local government debt sustainability is an important issue facing China. According to the public goods theory, due to the characteristics of public goods and the existence of externalities, the use of public goods may lead to "free ridership", resulting in market failure. Therefore, in the context of an aging population, the government, as a provider of public goods, should ensure a reasonable distribution of resources for the elderly and maintain fiscal sustainability.

In recent years, China has vigorously implemented tax reduction policies to reduce the tax burden of market players, but at the same time, it has also greatly reduced the tax revenue of the financial sector. According to the typical supply school theory "Laffer curve", the tax rate has an inverted "U" shape effect on tax revenue, and there is an optimal tax rate to maximize the total government tax revenue. Therefore, this thesis argues that the government can actively explore and find the conditions that best meet the optimal tax rate to ensure fiscal revenue and thus government debt sustainability.

3.3. Mechanisms of Population Aging on Local Government Debt Sustainability

Through literature review and relevant theoretical analysis, it is clear that population aging will affect local fiscal revenue by reducing the personal income tax base through reducing labor supply and expanding the commodity tax base through increasing consumption of the elderly, while local governments need to continuously increase fiscal expenditures to meet the medical and social security needs of the elderly. However, the mechanism by which population aging affects local government debt sustainability is uncertain and needs further study. This thesis finds that the contribution to fiscal revenue is lower when the tax burden of goods for the elderly is lower, and the expenditure effect of population aging is greater than the revenue effect, which is not conducive to local government debt sustainability; if the tax burden of goods for the elderly is higher, the contribution to fiscal revenue will increase, and the revenue effect of population aging is greater than the expenditure effect, which will reduce the burden of local government debt and achieve fiscal This will reduce the debt burden of local governments and achieve fiscal sustainability. Therefore, this thesis proposes the following two hypotheses:

Hypothesis 1: The rate of population aging is not conducive to achieving local government debt sustainability when the GST burden for the elderly is below the threshold.

Hypothesis 2: When the GST burden for the elderly is above the threshold, the rate of population aging is conducive to achieving local government debt sustainability.

4. Analysis of the Current Situation

4.1. Analysis of the Current Situation of Population Aging

In this thesis, we will analyze the current situation of population aging in China from two perspectives: scale analysis and regional analysis.

4.1.1. Scale Analysis

As far as the age structure of China's population is concerned, it can be seen that from 2007 to 2021, the size of China's population over 65 years old expands year by year, and the size of the population aged 0-14 and 15-64 years old both show a trend of shrinking year by year. At the same time,

the dependency ratio of the elderly in China also continues to rise, from 11.10% in 2007 to 20.80% in 2021, and the total dependency ratio has also been increasing in recent years, with the burden of the working population gradually increasing. To sum up, against the background that the proportion of elderly population in China continues to climb and the dependency ratio of the elderly continues to increase, the aging trend in China is irreversible, and a series of problems caused by the aging of population will gradually come to the fore. [2]

4.1.2. Regional Analysis

we can see that population aging in China is regionally heterogeneous, with significant inter-provincial and urban-rural differences. By region, population aging is most serious in the northeast region, followed by the central region, and lighter in the east and west; by province, there are also large differences in aging between different provinces in the same region.

4.2. Local Government Debt Sustainability Analysis

This thesis will analyze local government debt sustainability from three aspects: local revenue, local fiscal expenditure, and specific measures of local government debt sustainability.

4.2.1. Local Fiscal Revenue Growth Slowed Down

As can be seen from the graph, although China's local general budget revenue has been showing a year-on-year increase since 2007, the growth rate of local fiscal revenue has been slowing down year by year. The data in the figure fully reflects that China's current fiscal revenue growth has limited space and insufficient momentum, which is not conducive to China's local government debt sustainability in the long run.

4.2.2. Rigid Growth of Local Fiscal Expenditure

As can be seen from the figure, the general budget expenditure of local finance in China has grown rigidly and the growth rate tends to slow down. Due to the large fiscal expenditure base in China and its inertia and rigidity, the government has maintained local government debt sustainability by drastically reducing unnecessary fiscal expenditures in recent years, but it is unsustainable in the long run.

4.2.3. Local Government Debt Sustainability Faces Challenges

The fiscal deficit size and deficit rate can intuitively reflect the sustainability of China's local government debt. In recent years, China's fiscal deficit size as a whole has been on the rise, and the deficit rate has also been climbing, with China's fiscal deficit rate approaching 5% as early as 2019, and the continued rise in the fiscal deficit rate also means that the difficulty of achieving local government debt sustainability has further increased.

5. Empirical Study Design

5.1. Research Methodology

This thesis selects the idea of the threshold model proposed by Hansen and chooses the panel threshold model to study the effect of population aging on local government debt sustainability in China and analyzes whether there is a nonlinear relationship between its effect on local government debt sustainability. Based on the characteristics of the data itself, the effect of population aging on China's local government debt sustainability is studied under different commodity tax burdens for the elderly. The first step is to determine the number of threshold values that exist and to estimate the threshold values.

First, a threshold effect test is performed with the original hypothesis $H_0:\beta_1=\beta_2$, and the alternative hypothesis is $H_1:\beta_1\neq\beta_2$, and the test statistic is $F=\frac{S_0-S_1(\hat{\gamma})}{\hat{\sigma}^2}$. Next, the test threshold is tested to see if the estimated value is the true value, and the test statistic is constructed as $LR_1(\gamma)=\frac{S_0(\gamma)-S_1(\gamma)}{\hat{\sigma}^2}$. Based on the results, the single threshold test and the double threshold test were performed in turn.

5.2. Data Sources and Variable Descriptions

5.2.1. Data Source

This thesis is based on provincial panel data of 30 provinces in China from 2007-2021 and analyzed using Stata software. Among them, the initial data of individual income tax and commodity tax are obtained from the China Tax Yearbook, and the rest of the initial data are obtained from the China Statistical Yearbook and EPS Global Statistical Platform.

5.2.2. Variable Descriptions

(1) Explained variable: local government debt sustainability (FS)

In this thesis, we refer to the method of Jinrui Wei (2018) and Hongqian Qi (2021), and use the difference between local fiscal expenditure and local fiscal revenue as a percentage of regional GDP as a proxy variable for local government debt sustainability.

(2) Core explanatory variable: aging of population (AP)

In this thesis, we refer to Feng Gong and Jinliang Yu (2015) to measure the aging rate in China as the percentage of the population aged 65 and above in the total population.

(3) Threshold variables: GST liability for seniors (ECT):

2007, the starting year of the sample was chosen as the base year, represented by T_0, Assuming that in the base period year, the contribution of the elderly and the young to the commodity tax is equal, then the commodity tax of the elderly can be expressed as:

In t_0 period,$T_0^o=\alpha_0*T_0$;

In t_1 period,$T_1^o=\alpha_0*T_0+(T_1-T_0)*7.5\%$;

In t_j period, $T_j^o=\alpha_0*T_0+(\Delta T_1+\Delta T_2+\ldots+\Delta T_j)*7.5\%$ (j=1,2, …14).

Among them,$\Delta T_j=T_j-T_{j-1}$;T_j is the commodity tax of the t_j period,α_0 is the proportion of the elderly population in the base year; T_j^o is the commodity tax of the elderly of the t_j period. The old-age commodity tax burden is calculated by dividing the estimated old-age commodity tax by GDP. The final contribution of the old to the increase of commodity tax is 7.5%.

(4) Control variables

1)Fixed asset investment: In this thesis, we choose to introduce the deflated real per capita fixed asset investment to measure.

2)Economic growth rate: In this thesis, we choose real GDP growth rate to measure economic growth.

3)Optimization of industrial structure: this thesis uses the ratio of regional tertiary industry output value and regional secondary industry output value to measure.

4) Young people's GST burden: the measurement method is the same as the elderly GST burden, and the contribution of

the elderly to the GST growth is 60.8% through the measurement.

5) Young people's income tax burden: This thesis measures young people's income tax burden as a percentage of GDP using personal income tax.

Table 1. Variable selection table

Variable name (control variable)	Symbols
Industrial structure optimization	a
Economic growth rate	b
Fixed Asset Investment	c
Income tax liability for young people	d
GST liability for young people	f
Government Debt	g
Population aging rate	h
GST liability for the elderly	i

6. Empirical Results and Analysis

6.1. Model Setting

This study uses empirical evidence to analyze the impact of population aging on local government debt in the context of the current economic status quo. The specific model is set up as follows:

Single threshold:

$$g_{mn} = \beta_1 hI(i_{mn} \le \gamma) + \beta_2 hI(i_{mn} \ge \gamma) + \beta_3 a_{mn} + \beta_4 b_{mn} + \beta_5 c_{mn} + \beta_6 d_{mn} + \mu_{mn} + e_{mn}$$

Double threshold:

$$g_{mn} = \beta_1 hI(i_{mn} \le \gamma_1) + \beta_2 hI(\gamma_1 \le i_{mn} \le \gamma_2) + \beta_3 hI(i_{mn} \ge \gamma_2) + \beta_4 a_{mn} + \beta_5 b_{mn} + \beta_6 c_{mn} + \beta_7 d_{mn} + \mu_{mn} + e_{mn}$$

6.2. Return of the Threshold

In order to study the impact of population aging on local government debt, we selected relevant data for threshold regression analysis, and the following figure is the result of threshold regression using Stata. From the figure below, we can see that the threshold value when conducting a single threshold is 0.3000, and the p-value is 0.0000, which is much less than 0.1, rejecting the original hypothesis of the linear model, and there is a threshold effect.

Threshold estimator (level = 95):

model	Threshold	Lower	Upper
Th-1	0.3000	.	.

Threshold effect test (bootstrap = 300):

Threshold	RSS	MSE	Fstat	Prob	Crit10	Crit5	Crit1
Single	0.2309	0.0010	70.52	0.0000	22.9263	25.9888	32.5446

Figure 1. Single threshold analysis

Using the same data for the two-threshold model, it can be seen from the figure below that the p-value is greater than 0.1 and there is no threshold effect, so we use a single-threshold model.

model	Threshold	Lower	Upper
Th-1	0.3000	.	.
Th-21	0.3000	.	.
Th-22	1.7400	1.4200	2.6600

Threshold effect test (bootstrap = 300 300):

Threshold	RSS	MSE	Fstat	Prob	Crit10	Crit5	Crit1
Single	0.2309	0.0010	70.52	0.0000	20.7235	26.8705	34.8331
Double	0.2183	0.0009	13.89	0.2267	19.9025	27.7136	38.2896

Figure 2. Double threshold analysis

The following figure shows the coefficient estimation results of the single-threshold model. A value of 0 for the dummy variable indicates the case where the aging rate is less than the threshold value of 0.3000, and the corresponding coefficient is the impact on local government debt when the aging rate is low, while a value of 1 for the dummy variable indicates the case where the aging rate is higher than the threshold value of 0.3000, and the corresponding coefficient is the impact on local government debt when the aging rate is high.

FS	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Government debt	-.0119355	.0023306	-5.12	0.000	-.0165309	-.0073402
GST liability for the elderly	-3.42e-07	2.79e-07	-1.23	0.221	-8.93e-07	2.08e-07
Fixed Asset Investment	2.04e-06	3.22e-07	6.33	0.000	1.40e-06	2.67e-06
Economic growth rate	.0037905	.0048178	0.79	0.432	-.0057089	.0132899
Industrial structure optimization	2.498914	1.277972	1.96	0.052	-.0208881	5.018715
_Iyear_2009	.0117061	.0086675	1.35	0.178	-.0053838	.0287959
_Iyear_2011	-.0126338	.0090158	-1.40	0.163	-.0304105	.0051429
_Iyear_2013	-.0412376	.0094675	-4.36	0.000	-.0599049	-.0225702
_Iyear_2015	-.0664608	.0103878	-6.40	0.000	-.0869427	-.0459789
_Iyear_2017	-.1059249	.0118638	-8.93	0.000	-.129317	-.0825327
_Iyear_2019	-.1320302	.0146337	-9.02	0.000	-.1608836	-.1031767
_Iyear_2021	-.1796332	.0178828	-10.05	0.000	-.214893	-.1443734
_cat#c. AP						
0	4.805613	.4855541	9.90	0.000	3.848237	5.762989
1	1.082775	.2608255	4.15	0.000	.5685004	1.597049
_cons	.0543062	.0304059	1.79	0.076	-.0056457	.114258
sigma_u	.1169747					
sigma_e	.03372544					
rho	.92325453	(fraction of variance due to u_i)				

F test that all u_i=0: F(30, 203) = 22.40 Prob > F = 0.0000

Figure 3. Coefficient estimation of single threshold model

6.3. Heterogeneity Analysis

After performing the threshold regression, we perform a heterogeneity analysis, and based on the data we find, we perform a regional heterogeneity analysis, dividing our regions into central and western China and other regions. The figure below shows the results of the heterogeneity analysis, which shows the different effects of the aging rate on the nonlinearity of local government debt in different regions.

FS	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Government debt	.0010006	.0033616	0.30	0.766	-.0056484	.0076496
GST liability for the elderly	-1.40e-06	4.15e-07	-3.37	0.001	-2.22e-06	-5.78e-07
Fixed Asset Investment	7.23e-07	4.97e-07	1.46	0.148	-2.59e-07	1.71e-06
Economic growth rate	-.0122154	.0061838	-1.98	0.050	-.0244467	.0000159
Industrial structure optimization	11.87158	3.461667	3.43	0.001	5.024537	18.71862
_cat#c. AP						
0	6.652539	.7041768	9.45	0.000	5.259704	8.045373
1	-.8843593	.266472	-3.32	0.001	-1.411431	-.357288
_cons	.1591704	.0402467	3.95	0.000	.0795639	.2387769
sigma_u	.06172815					
sigma_e	.04139202					
rho	.68982563	(fraction of variance due to u_i)				

F test that all u_i=0: F(19, 133) = 7.44 Prob > F = 0.0000

Figure 4. Analysis of central and western regions

To ensure the robustness of the regression results, this thesis adjusts the indicator data of the regression variables and uses individual panel fixed effects to conduct robustness tests, and the results are shown in the table. It can be seen that the results remain consistent with the baseline regression results, further confirming that the test results have good robustness.

6.4. Robustness Test

variable	FS		variable	FS	
	(1)	(2)		(3)	(4)
GST liability for young people	-0.0119***	-0.0119***	GST liability for young people	-0.00762**	-0.00690*
	(0.00233)	(0.00241)		(0.00350)	(0.00366)
Fixed Asset Investment	-3.42e-07	-3.02e-07	Fixed Asset Investment	-5.85e-07*	-4.70e-07
	(2.79e-07)	(2.89e-07)		(3.27e-07)	(3.09e-07)
Economic growth rate	2.04e-06***	1.98e-06***	Economic growth rate	1.99e-07	3.69e-07
	(3.22e-07)	(3.33e-07)		(3.05e-07)	(3.21e-07)
Industrial structure optimization	0.00379	0.00366	Industrial structure optimization	-0.0368***	-0.0324***
	(0.00482)	(0.00498)		(0.00978)	(0.0107)
Income tax liability for young people	2.499*	2.865**	Income tax liability for young people	1.383	0.956
	(1.278)	(1.315)		(0.976)	(1.008)
_Iyear_2009	0.0117	0.00398			
	(0.00867)	(0.0105)			
_Iyear_2011	-0.0126	-0.0348***			
	(0.00902)	(0.0126)			
_Iyear_2013	-0.0412***	-0.0607***			
	(0.00947)	(0.0148)			
_Iyear_2015	-0.0665***	-0.0816***			
	(0.0104)	(0.0168)			
_Iyear_2017	-0.106***	-0.115***			
	(0.0119)	(0.0186)			
_Iyear_2019	-0.132***	-0.125***			
	(0.0146)	(0.0180)			
_Iyear_2021	-0.180***	-0.154***			
	(0.0179)	(0.0187)			
Population aging rate <0.300	4.806***	2.815***	Population aging rate <2.550	0.172	0.106
	(0.486)	(0.472)		(0.192)	(0.114)
Population aging rate >0.300	1.083***	-0.341*	Population aging rate >2.550	-0.153	-0.134
	(0.261)	(0.176)		(0.234)	(0.161)
Cons	0.0543*	0.219***	Cons	0.139***	0.125**
	(0.0304)	(0.0406)		(0.0397)	(0.0532)
Observations	248	248	Observations	88	88
Number of provinces	31	31	Number of provinces	11	11
R-squared	0.676	0.655	R-squared	0.231	0.246

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Figure 5. Analysis of other regions

7. Conclusion and Policy Recommendations

The coordination between population and finance is one of the major problems facing China's economic development. In this thesis, we review the findings of existing studies, use a data retrieval platform to extract key information, design statistical charts to visually reflect the current situation of population aging and fiscal development in China, construct a panel threshold regression model, and analyze the empirical results, focusing on the direct or indirect relationship between population aging and local government debt in China. The

following conclusions are drawn: (1) China's population aging and fiscal sustainability have an "L" shaped relationship. (2) The relationship between population aging and fiscal sustainability in China is "L" shaped, that is, the increase of aging is not conducive to the development of fiscal sustainability, but the negative impact on fiscal scale will be gradually reduced as the tax burden of goods for the elderly increases. (3) The increase of population aging will lead to the uncoordinated development of industries in each region, causing the contradiction of supply and demand of funds, thus generating regional fiscal differences. The deepening of aging on both sides of the threshold in regions with weaker comprehensive economic strength will hold an adverse impact on fiscal sustainability, but this adverse impact will slowly diminish with the gradual increase of the GST burden on the elderly. Unlike regions with strong comprehensive economic strength, their aging coefficients change from positive to negative on both sides of the threshold, indicating that after the GST burden crosses the threshold, the GST revenue brought by the elderly has a boosting effect on fiscal sustainability, which not only accelerates the speed of capital operation but also enhances the space for social and economic growth. Combining the panel threshold regression model and the current fiscal reality, this thesis puts forward the following policy recommendations:

7.1. Optimize the Allocation of Financial Expenditure, Improve the Multi-Level Pension Security Supply System.

In line with the current development trend of aging, a reasonable level of pension expenditure is set to maintain a long-term pension balance and effectively avoid the risk of local government debt. The scale of local government debt is also closely related to the level of economic development of each region, thus the debts between regions do not exist in isolation, but affect each other. In order to mitigate the financial disparity between regions, balanced financial transfers should be made, while the current aging situation of each region should be fully considered to reduce the disparity of pension burden between regions and improve the population aging policy system in a targeted manner.

7.2. Optimize the Consumption Path of the Elderly, and Vigorously Develop the "Silver Hair Economy"

Make reasonable use of the time window of population aging, promote the development of aging industries, maintain moderate economic growth rates, actively and reasonably adjust industrial and consumption structures, and enhance the consumption willingness of the elderly. Promptly promote the development of aging-related industries, strengthen the construction of aging infrastructure, increase market supervision and regulate behavior, improve information asymmetry, and protect the legitimate rights and interests of the elderly. At the same time, we guide the elderly to change their consumption concept, break the original consumption concept, improve the scale of high-quality consumption of medical, food and aging tourism, meet the spiritual needs of the elderly, and deeply integrate the concept of positive aging and healthy aging into the whole process of economic and social development.

7.3. Deepen Policies Such as Labor Education Reform and Flexible Retirement

The aim is to weaken the negative impact of population aging on fiscal sustainability through policy incentives, promote the harmonious development of population and finance, scientifically and effectively increase the labor force participation rate, and slow down the rate of decline in labor supply due to population aging. Through low-skilled labor education and training, the labor capacity and labor participation rate of the elderly are continuously improved to hedge against the shrinking size of the labor force to a certain extent, while the policy of extending the retirement age is reasonably formulated to make full use of human resources and avoid wasting them, which in turn improves the labor productivity of the elderly, reduces the labor burden in the market, and lowers the level of pension expenditure.

7.4. Improve Family Planning Policies and Maintain a Moderate Fertility Rate.

In order to reduce the rate of population ageing, the population structure can be moderately adjusted to encourage childbirth, and efforts can be made to increase the proportion of young people to achieve a stable development of the population structure. China's family planning policy, while conforming to political, economic and cultural development, should also be based on the premise of respecting the laws of nature, not blindly promoting fertility, but more importantly, looking at the coordinated development of population with nature and society. The family planning policies between different regions should also be adjusted, and the differentiated family planning policies should be implemented according to the actual situation of each region, and the correct policies suitable for each region should be formulated, which will not only help to reduce the regional differences of aging in China, but also promote the harmonious development between regions. In addition, the family income security system and tax relief policy system can be improved to reduce the burden of raising and education, promote labor force development, improve the quality of new labor force, and buffer the negative impact of aging on local government debt by increasing the new population.

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