

Analysis on the Influence of Fiscal Expenditure Structure on Industrial Organization

Zejiang Zhou*, Yabing Ren

School of Economics, Anhui University of Finance and Economics, China

* aczzj123456@163.com

Abstract

With the rapid development of China's economy, the structure of fiscal expenditure on the change of the industrial structure has a far-reaching impact. In order to analyze the specific relationship between fiscal expenditure structure and industrial structure, this paper established a dual difference model, and used panel data of 31 provinces and autonomous regions from 2008 to 2018 to conduct baseline regression and sub-sample regression. The relationship between people's livelihood fiscal expenditure and industrial structure upgrading is u-shaped, and there is an inverted u-shaped relationship between construction fiscal expenditure and industrial structure upgrading. However, in the long run, the increase of people's livelihood fiscal expenditure can promote industrial structure upgrading. Productive fiscal expenditure and welfare fiscal expenditure are conducive to the optimization and upgrading of China's industrial structure. Based on this, relevant policies and Suggestions are put forward to summarize relevant experience for the adjustment of industrial structure in the future.

Keywords

fiscal expenditure structure, industrial structure, sample regression analysis, benchmark regression analysis.

1. Introduction

On November 12, 2013, the third plenary session of the 18 pointed out that the economic system reform is the key of the comprehensively deepen reform, the core problem is to correctly handle the relationship between government and market, the market plays a decisive role in the allocation of resources and better give play to the role of the government, for the economic relationship between the government and the market under the new normal processing provides a strategic guidance. Fiscal expenditure is the main means for the government to participate in economic activities, which forms different fiscal expenditure structure, which is also the basic entry point to measure the relationship between the government and the market. Under the new situation, how to adjust the structure of the government's fiscal expenditure is a new relationship between the government and the market. Fiscal expenditure structure refers to the proportion of all kinds of fiscal expenditure in total expenditure. Fiscal expenditure structure is the ratio of each item in fiscal expenditure to the total amount of fiscal expenditure and its composition structure. Different proportions of fiscal expenditure constitute different fiscal expenditure structure, and different fiscal expenditure can achieve the goal of industrial adjustment by affecting different industrial development. The mechanism of fiscal expenditure influencing industrial structure is mainly that the change of expenditure scale and expenditure structure affects the accumulation and redistribution of social production factors among various industrial sectors, and then affects the development of different industries and the relative substitution and change among

industries, so as to realize the adjustment and upgrading of the overall industrial structure of the country.

Li Xiaoying and Li Lei (2020) established the industrial structure optimization index and used the factor analysis method to find out which fiscal expenditure direction has a greater impact on the industrial structure optimization index, so as to clarify the direction of financial investment and then take targeted fiscal countermeasures to promote the optimization and upgrading of industrial structure in Jilin province.[1]Based on the provincial panel data from 2001 to 2015, Yang Zhian and Li Menghan (2019) empirically tested the impact of expenditure scale and expenditure structure on industrial structure upgrading by using the system GMM model.[2]Yue Kai et al. (2019) analyzed the dynamic impact of fiscal expenditure structure on the industrial structure of different regions by using panel data of 31 provinces and autonomous regions in eastern, central and western China from 1996 to 2016 and using PVAR model.[3]Qian Long (2017), based on the panel data of 30 provinces in China from 2001 to 2013, tested the impact of local fiscal expenditure scale, structure and efficiency on industrial structure upgrading through theoretical analysis and empirical analysis.[4]Based on the research of these scholars, this paper establishes a dual difference model based on the panel data of 31 provinces in China, conducts a quantitative analysis of the relationship between fiscal expenditure structure and industrial structure, and puts forward relevant policies and Suggestions, so as to summarize relevant experience for China's industrial structure adjustment and economic development in the future.

2. Theoretical Mechanism and Current Situation Analysis

2.1. Theoretical Mechanism

Industrial structure also known as the sectoral structure of the national economy, refers to the proportion of agriculture, industry and service industry in the economic structure of a country, which can well reflect the economic development level, degree of development, and economic growth potential of a country or region. It is connected with demand structure, resource structure and allocation structure through product output, resource input and resource product transformation. If the balanced economic structure of a country can well promote the development of its own industry, drive economic growth and increase national income, on the contrary, the unbalanced industrial structure will lead to the unbalanced distribution of resources among various industries, which will reduce the synergies between industries and even hinder economic development. However, the existence of "market failure" and the existence of defects in the market mechanism make it difficult to rationalize the industrial structure, so the government can regulate the allocation of resources in various industries through finance and industrial policies, thus affecting the change of the industrial structure.

Fiscal expenditure structure refers to the proportion of various fiscal expenditure in the total expenditure. According to government functions, fiscal expenditure can be divided into four categories: (1)Expenditure on basic public services: expenditure on education, expenditure on social security and employment, expenditure on medical and health care. (2) Expenditure on general public services: expenditure on general public services, national defense and public security. (3)Expenditure on economic construction services: expenditure on urban and rural community affairs, expenditure on agriculture, forestry and water, transportation, etc. (4) Expenditure on high-level public services: expenditure on science and technology, expenditure on culture, media and sports.

Fiscal expenditure structure is the ratio of each item in fiscal expenditure to the total amount of fiscal expenditure and its composition structure. Different proportions of fiscal expenditure constitute different fiscal expenditure structure, and different fiscal expenditure can achieve

the goal of industrial adjustment by affecting different industrial development. By adjusting the amount of various expenditures, the government can form different fiscal expenditure structures to further affect the factor structure, resource allocation and income distribution, so as to promote the change of regional industrial structure. On the one hand, by setting inclined fiscal expenditure means, the demand structure can be affected, the rate of return on capital can be affected, and the capital flow can be guided. At the same time, the structure balance of consumer goods industry and investment product industry can be optimized by changing individual savings preference, income distribution and marginal propensity to consume. On the other hand, increasing investment in science and technology education, research and development, and infrastructure through supply-oriented fiscal expenditure can change the supply of labor, capital and technological factors in the production of micro-enterprises, and affect the development direction of the industry and the change of the industrial structure.

2.2. Analysis of Current Situation

By processing and analyzing the financial expenditure and industry-related panel data of 31 provinces in China, the relevant results of figure 1, 2 and 3 are obtained. From 2009 to 2018, China's fiscal expenditure structure is as follows:

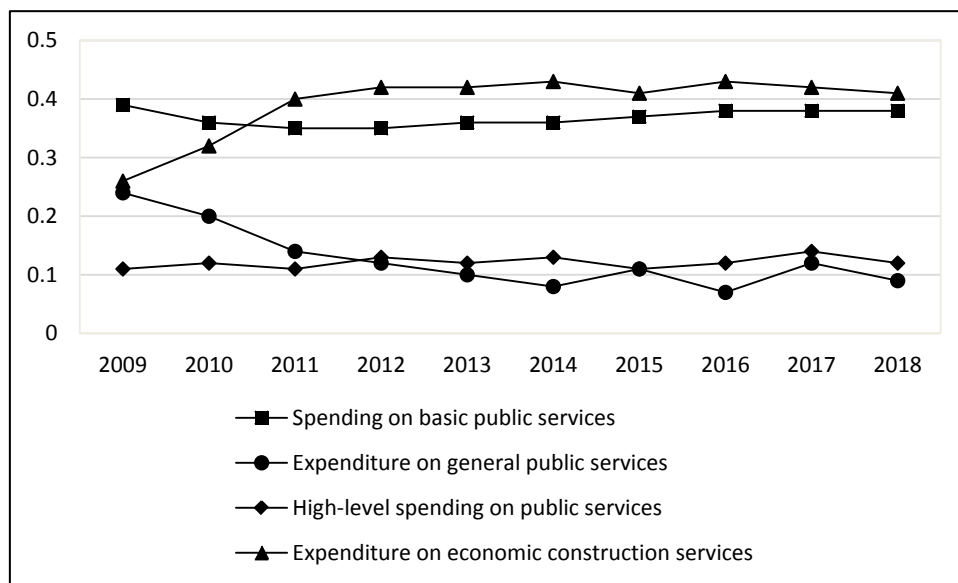


Fig.1 fiscal expenditure structure of China from 2009 to 2018

As can be seen from figure 1, fiscal and economic construction expenditure increased sharply in 2009, and the proportion of expenditure remained between 40% and 45% in 2017. The expenditure on basic public services is second only to the expenditure on economic construction, and shows a trend of slow increase. The trend of increase is small, and there are still many problems. The declining trend of general public service expenditure is relatively obvious, and the decreasing degree is almost the same in different years, presenting a linear decline. The proportion of expenditure on science, technology and culture is relatively low, and the proportion of expenditure on science, technology and culture has not changed significantly.

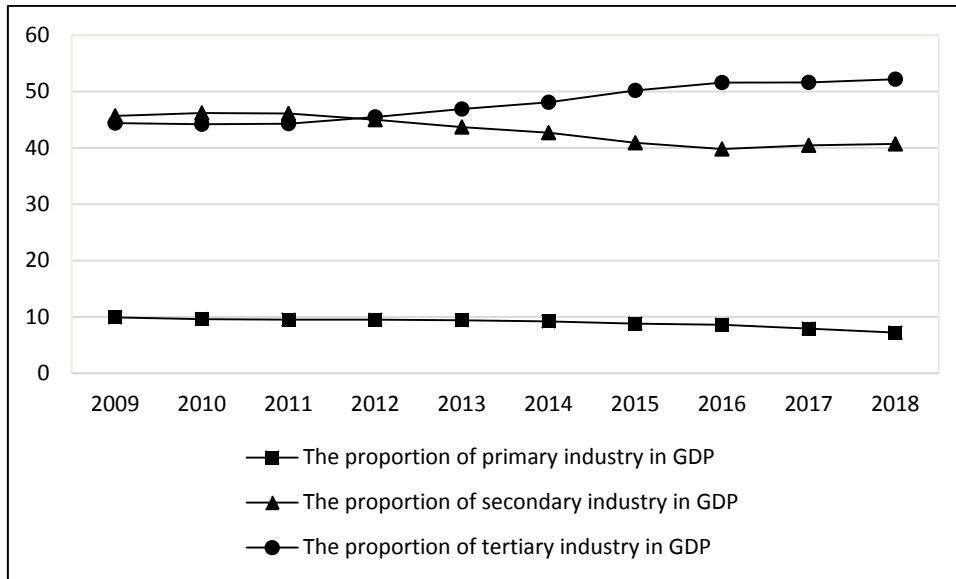


Fig.2 change trends of China's three major industries from 2009 to 2018

As can be seen from the figure 2, the proportion of agriculture in GDP is decreasing year by year. The proportion of the secondary industry in GDP began to decline year by year after 2010, while the proportion of the tertiary industry in GDP began to increase year by year. In 2012, the tertiary industry began to surpass the secondary industry and become the most important part of China's GDP.

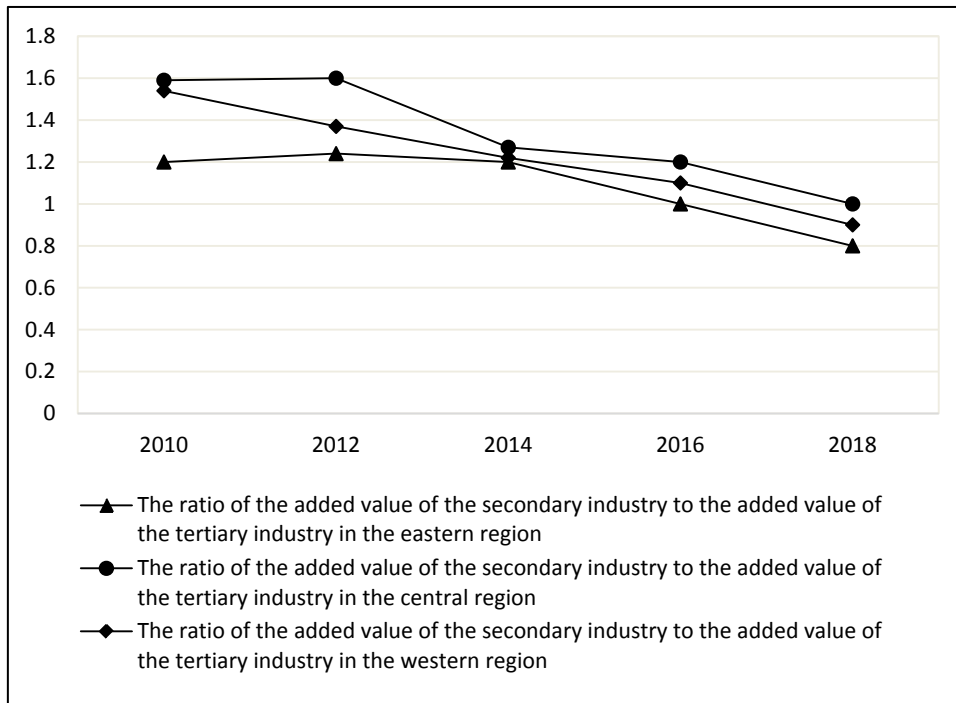


Fig.3 ratio of value-added of secondary industry and tertiary industry in China from 2009 to 2018

As can be seen from the figure3, the value added of secondary industry in eastern and western regions is close to that of tertiary industry, but the value added of secondary industry in central region is much higher than that of tertiary industry. After 2011, the tertiary industry in the eastern, central and western regions has been developing rapidly. In the eastern and

western regions in 2014 and the central regions in 2016, the tertiary industry has replaced the secondary industry as the most important component of GDP.

From the above situation, it can be seen that the fluctuation of different parts of fiscal expenditure has different influences on the upgrading of industrial structure. Education expenditure and science and technology expenditure positively promote the adjustment of industrial structure, especially the transfer of industrial structure to the tertiary industry. However, the fluctuation of administrative expenditure and government investment expenditure has more negative effects or is not conducive to the adjustment of industrial structure. The relationship between people's livelihood fiscal expenditure and industrial structure upgrading is u-shaped, and there is an inverted u-shaped relationship between construction fiscal expenditure and industrial structure upgrading. However, in the long run, the increase of people's livelihood fiscal expenditure can promote industrial structure upgrading. Productive fiscal expenditure and welfare fiscal expenditure are conducive to the optimization and upgrading of China's industrial structure.

3. Variable Selection, Data Description and Model Setting

3.1. Variable Selection

This paper takes the ratio of the added value of the secondary industry and the tertiary industry as the explained variable. The explanatory variables were the proportion of expenditure on basic public services in the general public expenditure, the proportion of expenditure on science and culture in the general public expenditure, the proportion of expenditure on public services in the general public expenditure, and the proportion of expenditure on economic construction in the general public expenditure. Take per capita GDP, urbanization rate and consumer price index as control variables. In GDP and urbanization rate have the consumer price index, under the condition of same basic analysis financial public service spending accounts for the ratio of the general public expenditure, financial science, culture accounts for the ratio of the general public expenditure, financial general public service accounts for the ratio of the general public expenditure, financial economic construction accounts for the ratio of the general public spending changes, different time in different areas of the second industry of the tertiary industry added value.

3.2. Data Description

This paper USES panel data of 31 provinces and autonomous regions in China from 2009 to 2018. The data were obtained from the national bureau of statistics and collated by the EPS database. Sample statistical indicators are shown in table 1:

Table 1. statistical description of variables

Variable	Obs	Mean	Std. Dev.	Min	Max
province	310	16	8.9587	1	31
year	310	2012.5	2.8769	2009	2018
Indus	310	1.1267	0.3572	0.2361	2.0035
basicfin	310	0.3594	0.4283	0.2167	0.4765
genfin	310	0.1657	0.0365	0.0865	0.2726
defin	310	0.0382	0.0156	0.0187	0.0987
ecofin	310	0.3949	0.0761	0.1664	0.5604
PGDP	310	4.3954	2.3689	0.8824	12.8994
urban	310	0.5376	0.1403	0.219	0.896
The cpi	310	2.7259	1.9669	2.3462	10.087

3.3. Model Setting

In this paper, the double-difference method is used to analyze the impact of fiscal expenditure structure on industrial structure. According to econometrics and stata application by Chen Qiang (2016), the following model is established:

$$\ln ppc(wasw/exgas)_{i,t} = \alpha + \beta X_{i,t} + \gamma controls_{i,t} + u_i + \lambda_t + \varepsilon_{it} \tag{1}$$

Where X is the independent variable cluster and controls is the control variable cluster.

4. Empirical Results and Analysis

4.1. Baseline Regression Analysis

The benchmark regression analysis of panel data of 31 provinces and cities was carried out with stat, and the results in table 2 were obtained

Table 2. baseline regression results

	M21	M22	M23	m2-m24	M25
basicfin	2.207 *** (0.609)				
PGDP	0.0325 * (0.018)	0.0336 (0.022)	0.0260 (0.020)	0.0559 *** (0.019)	0.0198 (0.021)
urban	1.8038 ** (0.745)	2.5465 *** (0.881)	2.4552 *** (0.830)	2.6237 *** (0.881)	2.6696 *** (0.844)
The cpi	0.0282 *** (0.004)	0.0300 *** (0.004)	0.0294 *** (0.005)	0.0307 *** (0.005)	0.0261 *** (0.004)
genfin		0.6460 (1.110)			
defin			3.1263 (3.127)		
ecofin				0.9312 *** (0.302)	
esfin					2.2306 *** (0.684)
C0ns	2.9537 *** (0.406)	2.6685 *** (0.538)	2.3615 *** (0.362)	2.3315 *** (0.367)	2.1690 *** (0.358)
N	310	310	310	310	310
F	22.9350	26.5849	27.8382	28.2177	23.7329
r2_a	0.5390	0.4980	0.5001	0.5336	0.5126
N_g	31.0000	31.0000	31.0000	31.0000	31.0000

The following conclusions can be drawn from table 5: the increasing proportion of expenditure on basic public services such as education, medical care and social security in the fiscal expenditure significantly promotes the transformation of regional industry from the secondary industry to the tertiary industry. The increase in the proportion of general public service expenditure and expenditure on science, technology and culture has no significant effect on the change of industrial structure. Fiscal and economic construction expenditure has a significant impact on increasing the proportion of secondary industry.

4.2. Sample Regression Analysis

The data of 31 provinces and cities were divided into eastern, central and western regions according to the national geographic classification standard.

Table 3. empirical results (eastern region)

	M21	M22	M23	m2-m24
basicfin	1.6869 *** (0.105)			
PGDP	0.0236 *** (0.003)	0.0186 *** (0.001)	0.0292 *** (0.020)	0.0280 *** (0.002)
urban	2.0650 ** (0.059)	1.6341 *** (0.042)	1.8110 *** (0.066)	1.7452 *** (0.046)
The cpi	0.0191 *** (0.002)	0.0205 *** (0.000)	0.0229 *** (0.001)	0.0228 *** (0.001)
genfin		1.3782 *** (0.058)		
defin			0.5039 * (0.285)	
ecofin				0.0231 (0.048)
C0ns	3.0736 *** (0.065)	1.9405 *** (0.037)	2.3219 *** (0.039)	2.3090 *** (0.039)
N	120	120	120	120
F	8.9845	8.7863	8.8842	8.9603
r2_a	0.3952	0.3741	0.3856	0.3946
N_g	12.0000	12.0000	12.0000	12.0000

Table 4. empirical results (central region)

	M21	M22	M23	m2-m24
basicfin	2.0193 *** (0.520)			
PGDP	0.1165 *** (0.030)	0.1161 *** (0.026)	0.1284 *** (0.027)	0.0827 *** (0.024)
urban	5.1644 ** (0.672)	5.2781 *** (0.566)	5.4174 *** (0.579)	5.2331 *** (0.541)
The cpi	0.0220 *** (0.005)	0.0260 *** (0.006)	0.0238 *** (0.006)	0.0281 *** (0.005)
genfin		0.6556 *** (0.614)		
defin			1.4050 (1.819)	
ecofin				1.0148 *** (0.219)
C0ns	4.1794 *** (0.351)	3.5311 *** (0.231)	3.4003 *** (0.236)	3.1582 *** (0.225)
N	70	70	70	70
F	8.3765	8.4123	8.9653	9.0125
r2_a	0.3841	0.3876	0.3987	0.4001
N_g	7.0000	7.0000	7.0000	7.0000

From the above empirical results in $p < 0.01$ and $p < 0.05$, we can see the following conclusions: (1) Under the condition of economic construction spending for central and western region the industrial structure change has significant effect, main is to promote the development of the secondary industry, the second industry mainly refers to the mining, manufacturing, electricity, gas and water production and supply, but along with our country to speed up the construction of a resource-conserving, environment-friendly society, it can't be as the main growth point of economic development in our country, should speed up the industrial upgrading and transformation, at the same time of economic development can promote the environment protection and construction of better.(2) The increase in the proportion of expenditure on basic public services such as education, medical care and social security has a significant impact on the industrial structure changes in the eastern and central regions. The service industry includes the development of education, medical and health care, which can better promote the development of the society and the promotion of social soft power, and provide a better guarantee for the development of social industries. (3) The different industrial structure in different regions leads to the change of expenditure structure. Industrial structure of different largely affect the amount of spending on the scale of the expenditure and the type, more should be coordinated development between regions, accelerate the process of regional integration, enables the resources to flow faster, security

resources circulation at the same time, makes the product will also be able to exchange each other, to speed up the reform and opening up, make it can bring more economic dividends.

Table 5. empirical results (western region)

	M21	M22	M23	m2-m24
basicfin	0.4774 (0.628)			
PGDP	0.0006 (0.084)	0.0359 (0.077)	0.0058 (0.083)	0.0440 (0.075)
urban	1.9690 (2.144)	2.4576 (1.932)	2.1751 (2.157)	2.2372 (2.161)
The cpi	0.0264 *** (0.007)	0.0314 ** (0.008)	0.0268 *** (0.006)	0.0278 *** (0.007)
genfin		3.0103 *** (0.958)		
defin			3.5239 (5.810)	
ecofin				1.12487 ** (0.437)
C0ns	2.0448 ** (0.710)	2.6896 *** (0.708)	2.0522 ** (0.778)	1.6144 ** (0.669)
N	120	120	120	120
F	9.0327	9.0813	9.3697	7.9817
r2_a	0.4171	0.4897	0.4189	0.4890
N_g	12.0000	12.0000	12.0000	12.0000

5. Conclusion and Suggestion

5.1. Conclusion

In this paper, panel data of 31 provinces and autonomous regions from 2008 to 2017 were used to establish a dual difference model, and then baseline regression and sub-sample regression were conducted to verify the impact of fiscal expenditure structure on industrial expenditure structure. Through theoretical analysis and empirical test to the following conclusions: (1)Whic can be seen through the benchmark return, education, health care, social security and other basic public services in the proportion of fiscal expenditure, significantly promoted the industry from the second industry to tertiary industry area change, fiscal expenditure economic construction has a significant influence to raise the proportion of secondary industry.(2) According to the sub-sample regression, it can be seen that the industrial structure of different regions is not the same, resulting in the change of expenditure structure. Industrial structure of different largely affect the amount of spending on the scale of the expenditure and the type, more should be coordinated development between regions, accelerate the process of regional integration, enables the resources to flow faster, security

resources circulation at the same time, makes the product will also be able to exchange each other, to speed up the reform and opening up, make it can bring more economic dividends.

5.2. Suggestion

Based on the above conclusions and the current situation of fiscal expenditure structure and industrial structure, the following five Suggestions are put forward: First, increase the financial investment in science and technology, cultural investment, enhance the endogenous growth momentum, and enhance the added value of products. Through the financial investment in science and technology, to promote scientific and technological innovation and industrial innovation, improve labor productivity, not only can drive the industrial development, but also can lay the industrial foundation for the future development of the industry, improve the power of industrial explosion in the later period. Cultural input will enhance China's cultural soft power, enhance industrial confidence and industrial culture, and provide necessary cultural support for the standardized development of the industry. Second, continue to increase education spending to enhance the competitive advantage of human capital. The cultivation of talents can not only bring hope for the technological innovation of enterprises, but also provide technical and talent support for industrial development. In order to create resource-saving, science and technology innovative industries to provide strong talent support. At the same time, it can enable enterprises to make up for their shortcomings, promote industrial upgrading, and enhance the overall regional industrial strength. The construction of a number of characteristic vocational and technical schools, so that enterprises and schools can be combined, face to face communication, training enterprises in need of talent. Third, increase spending on health and social security. Increasing medical and social security expenditures can not only guarantee the minimum standard of living of residents, improve the enthusiasm and enthusiasm of people to work, but also reduce the death rate and increase the birth rate, and continue to maintain the demographic dividend of our country. It makes residents happier. Fourth, the central and western regions should pay attention to the expenditure on basic public services while maintaining a certain amount of economic construction expenditure. In terms of industrial development between regions, the central and eastern regions enjoy rapid industrial development with relatively complete technical facilities, which can better promote the rapid development of industries, coordinate regional development and narrow the gap caused by resources. Western region infrastructure is weaker, should increase fund strength of infrastructure construction. Fifth, we will adjust the fiscal policies of the central and local governments and strengthen the scrutiny of the draft central and local budgets and their implementation by the people's congresses. To strengthen the management and supervision of the budget expenditure of the government, especially the local government. We will improve the market economy and promote coordinated reform of the fiscal, financial, and investment and financing systems. We will improve the current assessment mechanism for governments at all levels and dilute the weight of GDP indicators.

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