Hindawi

Research Article

Data Analysis of Fiscal Expenditure and GDP Based on Financial Budget Performance Evaluation Indicators

Jianhui Zhang [ID]

School of Economics and Management, Xi'an University, Xi'an, Shaanxi 710068, China

Correspondence should be addressed to Jianhui Zhang; zhangjianhui@xawl.edu.cn

The proportion of fiscal revenue in GDP and the multiplier of fiscal expenditure are important economic benefit indicators in the framework of a common index system for budget performance evaluation. The correlation between fiscal expenditure and GDP constitutes an important indicator to measure fiscal scale, and the scale and structure of fiscal expenditure play a guiding role in the distribution of social renewable production. At the same time, there is a certain mutual promotion between the two. This paper selects the data of China's GDP and fiscal expenditure from 1998 to 2019, analyzes the trend, respectively, and then carries out correlation and regression analysis. On this basis, it scientifically calculates the scale of China's GDP in the next five years and puts forward suggestions to optimize fiscal expenditure.

1. Introduction

In the document of Financial Budget No. 53 (2013), to comprehensively promote budget performance management and improve the unity and authority of performance evaluation, the Ministry of Finance formulated the framework of common indicators system for budget performance evaluation. The proportion of fiscal revenue in GDP is an important indicator of economic benefits [1], which is better measured. In fact, a better choice is to use fiscal spending as a share of GDP to measure. Fiscal participation in the distribution process of national production value needs to be reflected by fiscal expenditure because fiscal expenditure really shows where the funds flow and how much they flow out. The process of social reproduction is continuous, and resources need to be distributed among different undertakings, and the financial expenditure structure is its best embodiment. Therefore, financial expenditure has a significant impact on social reproduction. At the same time, fiscal expenditure also has the function of regulating the macroeconomy. Fiscal expenditure can stimulate the growth of GDP and promote economic development by affecting C (consumption) I (investment) x (export). Specifically, fiscal expenditure is divided into purchasing expenditure (recurrent and investment) and transfer expenditure. The traditional fiscal policy refers to purchasing expenditure, which can stimulate domestic investment. Transfer expenditure can increase residents' income, improve domestic consumption [2], and promote exports. This paper selects the data of China's GDP and fiscal expenditure from 1998 to 2019. Firstly, select one of the recurrent expenditure, investment expenditure, and transfer expenditure of fiscal expenditure to study its change, to reflect the change of fiscal expenditure structure, then analyze the change trend of GDP, and then use the regression model to explore the specific relationship between the two variables and predict the GDP trend in the next five years. It is forward-looking and finally puts forward relevant opinions to promote the appropriate growth of fiscal expenditure and optimize the structure of fiscal expenditure.

2. Theory and Literature Review

Fiscal expenditure, also known as public expenditure or government expenditure, is the government's control and use of social resources in a monetary form concentrated in the private sector to perform its own functions. "Fiscal expenditure" and "fiscal Spending" cannot be confused: in

the sense of fiscal budget, fiscal spending refers to the monetary amount that the government can control, while fiscal expenditure refers to the monetary amount actually spent by the government in a certain period of time. When the amount of the former is large, it is called the state of fiscal surplus; when the latter amount is large, it is called a fiscal deficit. The government's distribution activities mainly refer to fiscal expenditure, and the main way of fiscal impact on the social economy is also fiscal expenditure. On the one hand, the structure and scale of finance limit the scope of government activities. On the other hand, it also reflects the tendency of the government toward some industries and policies.

Gross domestic product (GDP) refers to the value of all final products and services produced in a country or region's economy in a certain period of time (a quarter or a year). It is often recognized as the best indicator to measure a country's economic situation. It can not only reflect a country's economic performance but also reflect a country's national strength and wealth.

In essence, the change of GDP reflects the situation of economic development in a period of time. As an important role of economic activity, the government's activities certainly play an important role in economic development. In the Keynesian view, the state's expenditure behavior will not only directly affect economic development such as consumption or investment but also indirectly affect economic development by affecting the behavior of individuals and groups in the market. To a large extent, fiscal expenditure is an important factor in GDP growth. What is the relationship between a region's GDP and its fiscal expenditure? Through consulting the research literature, this paper finds that the relationship between GDP and tax expenditure has been summarized by scholars as follows.

2.1. The Increase of Fiscal Expenditure Can Promote Economic Growth.
Gao and Chaocai [3] studied the provincial fiscal expenditure data of China from 1990 to 2012. He believed that fiscal expenditure in various regions of China can promote economic growth, but the promotion effect is different in different regions. It is suggested that the government adopt differentiated fiscal expenditure policies according to local conditions. If fiscal expenditure keeps increasing, GDP generally also shows an upward trend. Fiscal expenditure achieves this by stimulating demand and consumption. At present, China's economic development falls behind compared with the developed countries and needs financial support in many aspects. Then fiscal expenditure will have a relatively large marginal utility, which means one unit of fiscal expenditure can cause more units of GDP growth and play a great role in promoting. Since China's fiscal expenditure has a great impact on the economy and it is necessary to develop the economy, it is required that the structure of China's fiscal expenditure be reasonable. At the same time, in the process of economic growth driven by fiscal expenditure, fiscal expenditure should maintain a reasonable scale because the fiscal deficit for a long period is bound to be unworkable. From a comprehensive point of view, only an appropriate scale and a reasonable structure of fiscal expenditure can promote endogenous economic growth. Then, economic construction expenditure remains the first priority, and the economy should be continuously developed on the basis of stabilizing the general level of economic development. Secondly, it is also necessary to appropriately increase the expenditure on science, education, culture, and health and social security, especially we should pay more attention to the education expenditure to narrow the income distribution gap and promote social equity.

2.2. Part of Fiscal Expenditure Is Not Necessarily Directly Related to Current GDP.
Wei [4] concluded that the role of science, education, culture and health expenditure, social security, and employment expenditure was not obvious by analyzing the impact of fiscal expenditure scale and fiscal expenditure structure on economic growth in Shanxi Province in the past ten years. The impact of the increase of fiscal expenditure on GDP often lags behind. If the fiscal expenditure in the current period is the investment in fixed assets, the impact on GDP may be after a long period of time. For example, the expenditure on education is a long-term investment. The current investment in education does not necessarily directly promote the economic development of the current period but promotes the economic development of a certain period in the future. However, the investment in education in the early stage may have a great impact on the current economic development, the expenditure on transfer payments. It does not directly drive the economy but has a transfer payment multiplier, which is often less than 1, indicating that the impact of transfer payment projects on the economy can only be realized through the transmission of individual consumption behavior. To sum up, the growth of fiscal expenditure is often related to the growth of GDP. The growth is not completely synchronous, but we should boldly predict that the change trend of the two should be roughly the same. In the later stage, we will find the cointegration relationship between the two through analysis and then conduct regression analysis.

2.3. Fiscal Expenditure Is Also Affected by Economic Development.
Jiang et al. [5] pointed out that economic growth can promote the growth of fiscal expenditure, and the increase of fiscal expenditure can also promote economic growth, but this promotion effect is slightly weaker. Economic factors will also affect fiscal expenditure in turn. The specific way is that affecting the scale of fiscal revenue can limit the scale of fiscal expenditure. The economic factors here mainly refer to the level of economic development, economic policy system, etc. China is still a developing country, and the scale and structure of fiscal expenditure are affected by the economic shape. We can observe that the structure of fiscal expenditure at the beginning of economic reform is clearly consistent with the characteristics of the planned economy period, which shows that infrastructure expenditure accounts for a relatively large proportion. The data in 1978 show that

infrastructure expenditure accounts for 40.3% of fiscal expenditure and economic construction expenditure account for 59.9%. When China's infrastructure construction is improved, the situation is completely different. In particular, it is verified that the basic trend of the change of China's fiscal expenditure structure must be closely related to the reform of the economic system, so it will also change with the change of the economic system.

The above research literature has reference significance for this paper. The following is a further discussion on establishing an econometric model.

3. Research on the Scale and Structure of Fiscal Expenditure

3.1. Analysis of the Change Trend of China's Fiscal Expenditure. The time series data histogram of China's fiscal expenditure from 1998 to 2019 is made according to the data of the statistical yearbook, as shown in Figure 1.

It can be seen that China's fiscal expenditure has shown a steady upward trend in the past 20 years. According to the growth rate of fiscal expenditure, it can be divided into one shock rising stage and two shock falling stages. 1998–2003 was the first period of shock and decline in the growth of fiscal expenditure, and the fiscal expenditure corresponding to this period increased from 1079.818 billion yuan to 2464.995 billion yuan; from 2003 to 2008, the growth rate of fiscal expenditure increased from 2464.995 billion yuan to 6259.266 billion yuan. During this period, the scale of fiscal expenditure in China continued to expand, the expenditure structure continued to be optimized and tended to be perfect and reasonable; 2008–2019 were the second shock decline stage of fiscal expenditure growth, and the corresponding fiscal expenditure increased from 6259.266 billion yuan to 23885.837 billion yuan.

3.2. Development and Change of Fiscal Expenditure Scale in China. We can see from Figure 2 that the scale of fiscal expenditure (the proportion of fiscal expenditure in GDP) has been increasing. Since 1998, China has implemented an active fiscal policy, and the fiscal scale has rebounded rapidly. Especially in 2000, the fiscal deficit rose sharply to 259.66 billion yuan, promoting the proportion of fiscal expenditure in GDP to 16%. In these five years, the fiscal scale has increased by 4.9%, with an average of 1% per year. In 2005, it turned into a prudent fiscal policy. In the following years, although the fiscal deficit was compressed, the fiscal revenue also increased due to the continuous rise of GDP, so the fiscal scale remained stable. At present, under the new economic normal, there is still downward pressure on economic development, and the growth rate of fiscal expenditure decreased significantly, from 21.6% in 2011 to 8.4% in 2015. However, in contrast, the growth rate of GDP is lower than that of fiscal expenditure, which leads to the increase of the growth elasticity coefficient and the marginal tendency of fiscal expenditure, so the fiscal scale is still rising slowly. 2016 is the first year to enter the decisive stage of building a well-off society in an all-around way, but the downward pressure is still large, and the growth rate of fiscal expenditure has decreased steadily.

3.3. Current Expenditure Item in Purchasing Expenditure Education Expenditure. Due to incomplete data, only the situation after 2007 is analyzed. The data is shown in Figure 3.

"Education is the foundation of the Centennial plan." The education level of a country's citizens reflects the national quality of the country. The Chinese government has always attached great importance to the issue of education investment. Government investment is still the main source of education funds at present. According to the outline of education planning, the proportion of national financial education expenditure in GDP should be increased and reach the goal of 4% in 2012. At present, this goal has already been realized and exceeded [6]. At present, the proportion of China's education expenditure in GDP is stable at about 15%. Moreover, the absolute value of education investment has been increasing, and the stable proportion in recent years also shows that the change rate of education expenditure is consistent with the growth rate of GDP. Of course, the overall often covers up some characteristics of the sample. With the overall investment rising, the investment in education has an obvious order of priority. The investment in higher education is far greater than that in basic education, resulting in the inability of the benefit of expenditure to reach a high level, which needs to be further optimized.

3.4. Investment Expenditure Item in Purchasing Expenditure Agriculture, Forestry, and Water Expenditure. The "three rural issues" have been concerned by the state and focused on by fourteen times in the No. 1 central document in 2017. Domestic scholars also pay attention to the relationship between fiscal expenditure and farmers' income and consumption levels. Through regression analysis, Kong and Qiang [7] concluded that the government expenditure on agriculture has increased the disposable income of rural residents and promoted the growth of rural consumption. There is a significant positive correlation between rural consumption demand and GDP growth. In their study, Li [8] found that although the impact of fiscal expenditure on the growth of farmers' income is not significant in the short term, it can significantly drive the rise of farmers' income in the long term. With Granger's analysis method of causality and cointegration, Wang and Wang [9] analyze the impact of agricultural financial expenditure on Farmers' income and come to the conclusion that for every 100 million yuan increase in agricultural financial expenditure, farmers' per capita net income increases by 1.88 yuan; that is, increasing agricultural financial expenditure is the reason for farmers' income growth, and striving to increase agricultural financial expenditure is an effective way to increase farmers' income at present. The results analyzed by various scholars show that the expenditure on agriculture can promote economic development, increase farmers' income in the long run, and help to narrow the gap between the rich and the
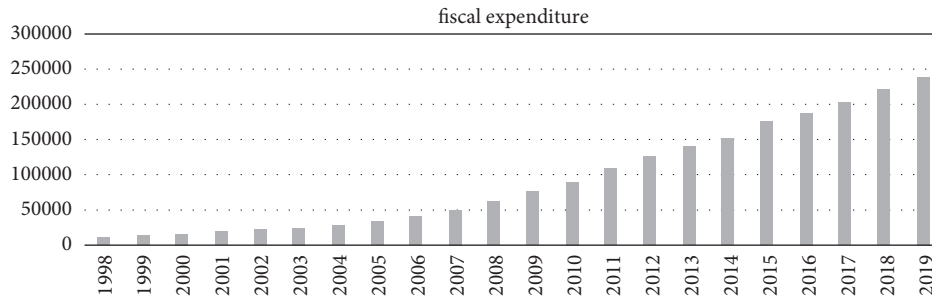
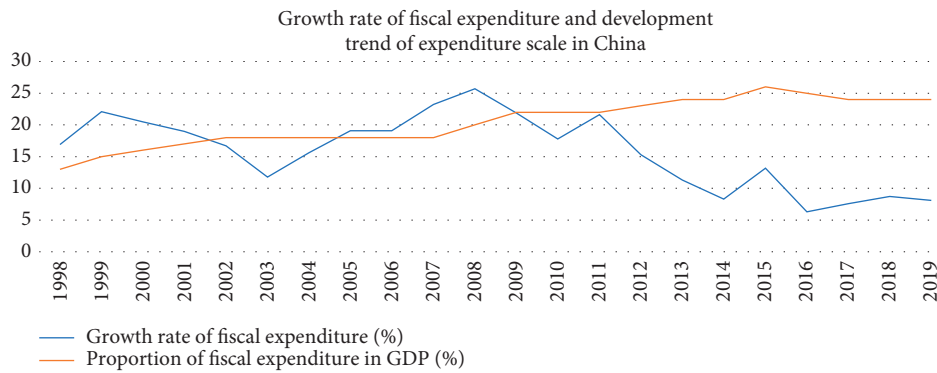FIGURE 1: Change trend of China's fiscal expenditure from 1998 to 2019.

FIGURE 2: Growth rate of fiscal expenditure and development trend of expenditure scale in China from 1998 to 2019.
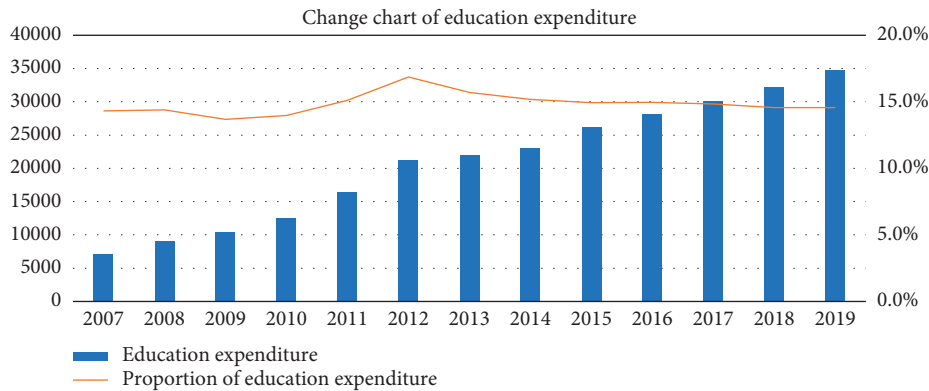

FIGURE 3: Trends of Education expenditure in China from 2007 to 2019.

poor. Through the analysis of Figure 4, in the current dual situation, China should continue to increase support for agriculture.

3.5. Transfer Expenditure-Social Security and Employment Expenditure. People often think that the market is the most effective, but there are still some failures in the market, and there are serious social problems such as unbalanced income distribution. The transfer payment items in fiscal expenditure are to ensure the products that the market cannot provide and adjust the unbalanced income distribution. As can be seen from Figure 5 the chart, after a short decline from 2007 to 2009, social security and unemployment

security expenditure items have increased steadily. In the era of comprehensively winning the well-off society, with the balance of distribution becoming an important topic, social security and unemployment security expenditure items have increased steadily. At present, it is stable at about 12%, which accounts for a large proportion of financial expenditure.

3.6. Summary. Gwana's law puts forward that with the economic development, the government financial expenditure is increasing, which includes both absolute expenditure and relative expenditure [10]. Among them, the increase of absolute expenditure refers to the continuous increase of the total government financial expenditure, and
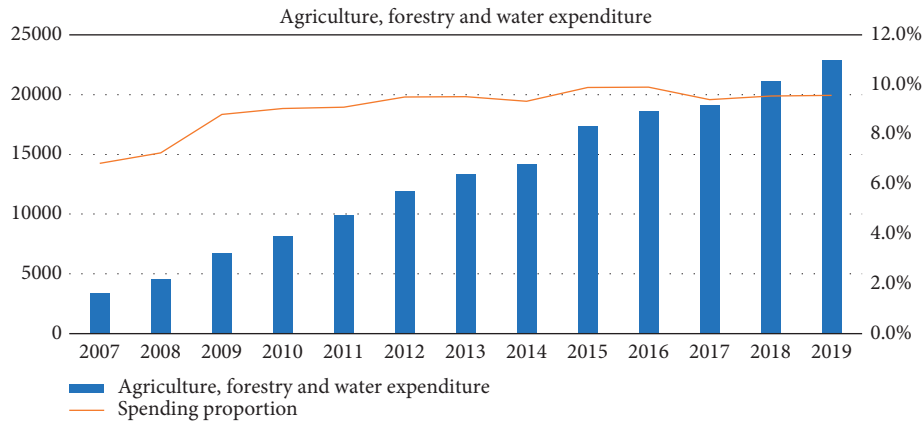
Figure 4: Trends of expenditure on agriculture, forestry, and water in China from 2007 to 2019.
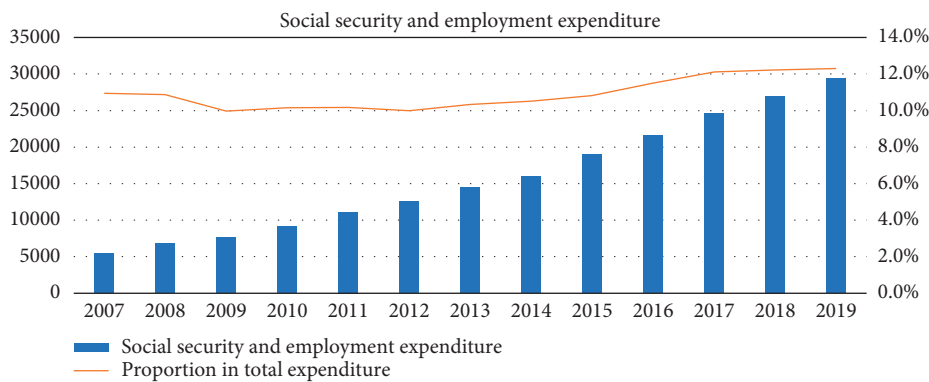

Figure 5: Change trend of social security and employment expenditure in China from 2007 to 2019.

the increase of relative expenditure is that the proportion of government financial expenditure in GDP is increased with the increase of per capita GDP.

Based on the above data, the growth of China's fiscal expenditure scale conforms to this law. At the same time, the absolute value of the three main fiscal expenditure items analyzed above has maintained an upward trend, and the relative proportion has also increased steadily in recent years. It is also observed that the growth of education expenditure in the proportion of GDP is large. The analysis is similar to today's "mass entrepreneurship and innovation." At the same time, the rural revitalization plan also promoted the rise of agricultural financial expenditure, and the pressure of social security funds also forced the financial expenditure to maintain a certain growth rate. However, we ignore other data. In terms of horizontal comparison, China's expenditure structure is still unreasonable, the administrative fee is still too high, the mobilization of resources by fiscal expenditure is still insufficient, and the redistribution function of fiscal expenditure is not strong enough. There is still a lot of room for improvement in the follow-up.

4. Analysis of GDP Change Trend

As can be seen from Figure 6, the total data of China's GDP is rising. However, the growth rate fluctuated greatly, peaked in 2007, but fluctuated downward in the future. According to

the analysis, Premier Zhu Rongji took office in 1998 and opened the activity of "cleaning up the triangular debt." In that year, the number of small and medium-sized enterprises decreased by nearly 1/3, and then the GDP growth rate decreased in the following year. However, in the later stage, due to the improvement of the political atmosphere and the recovery of production, the GDP growth rate rose. After China's accession to the WTO in 2001, the growth of foreign trade led to rapid economic development, and the total GDP and growth rate rose rapidly [11]. Premier Wen Jiabao took office in 2003. In the first four years of his 10-year term of office, driven by the 30% month-on-month growth of foreign trade, the upward trend of GDP continued [12]. After the world economic crisis in 2008, the GDP growth rate fluctuated downward. In 2013, Premier Li Keqiang took office, and the downward pressure on GDP remained unabated. By 2019, the data showed that the GDP growth rate was 7.8%. When the epidemic struck in 2020, it is predicted that GDP growth will further decline, with a target of 5% in 2020.

5. Regression and Prediction

5.1. Data Collection. This paper selects five economic indicators: China's GDP, China's GDP growth rate, China's fiscal expenditure, China's fiscal expenditure growth rate, and the proportion of fiscal expenditure in GDP over the calendar years 1998–2019. The specific data are shown in Table 1.
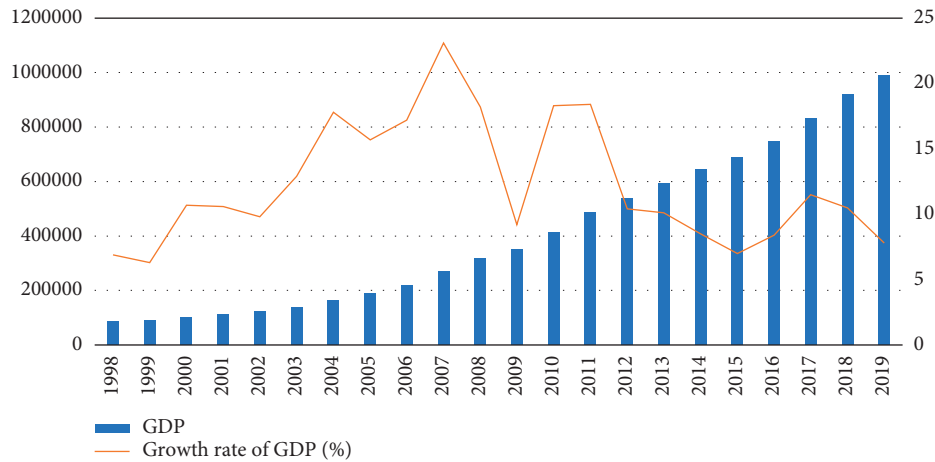
Figure 6: Analysis of GDP change trend.

Table 1: China's GDP and fiscal expenditure data from 1998 to 2019 (unit: 100 million yuan).

Year	GDP	Growth rate of GDP (%)	Fiscal expenditure	Growth rate of fiscal expenditure (%)	Proportion of fiscal expenditure in GDP (%)
1998	85195.5	6.9	10798.18	16.9	13
1999	90564.4	6.3	13187.67	22.1	15
2000	100280.1	10.7	15886.50	20.5	16
2001	110863.1	10.6	18902.58	19.0	17
2002	121717.4	9.8	22053.15	16.7	18
2003	137422.0	12.9	24649.95	11.8	18
2004	161840.2	17.8	28486.89	15.6	18
2005	187318.9	15.7	33930.28	19.1	18
2006	219438.5	17.2	40422.73	19.1	18
2007	270092.3	23.1	49781.35	23.2	18
2008	319244.6	18.2	62592.66	25.7	20
2009	348517.7	9.2	76299.93	21.9	22
2010	412119.3	18.3	89874.16	17.8	22
2011	487940.2	18.4	109247.79	21.6	22
2012	538580.0	10.4	125952.97	15.3	23
2013	592963.2	10.1	140212.10	11.3	24
2014	643563.1	8.5	151785.56	8.3	24
2015	688858.2	7.0	175877.77	13.2	26
2016	746395.1	8.4	187755.21	6.3	25
2017	832035.9	11.5	203085.49	7.6	24
2018	919281.1	10.5	220904.13	8.7	24
2019	990865.1	7.8	238858.37	8.1	24

Data source: China Statistical Yearbook 1998–2019.

5.2. Analysis of the Change Trend of China's GDP Growth Rate and Fiscal Expenditure Growth Rate. Make a broken line diagram of the time series data of China's GDP growth rate and fiscal expenditure growth rate from 1998 to 2019 in Table 1, as shown in Figure 7.

From the image alone, it can be found that China's GDP growth precedes the change of fiscal expenditure growth rate, and there is a lag between them, with a lag of about 1 year. The reason is that the relative growth of GDP in the previous period produced higher fiscal revenue, so the fiscal expenditure in the current period increased accordingly; the relative reduction of GDP in the previous period produced

relatively less fiscal revenue, so the fiscal expenditure in the current period decreased accordingly. The typical period of time lag effect is as follows: one year after the shock rise of GDP growth rate from 2002 to 2007, the fiscal expenditure growth rate oscillated upwards from 2003–2008, and the range of the two is the same; one year after the GDP growth rate decreased and rebounded in 2007–2010, the fiscal expenditure growth rate decreased and rebounded in 2008–2011. The two directions are the same, and the change range of the latter is roughly half that of the former. Due to the existence of fixed investment, annual continuous investment, and other fiscal expenditures, when the GDP
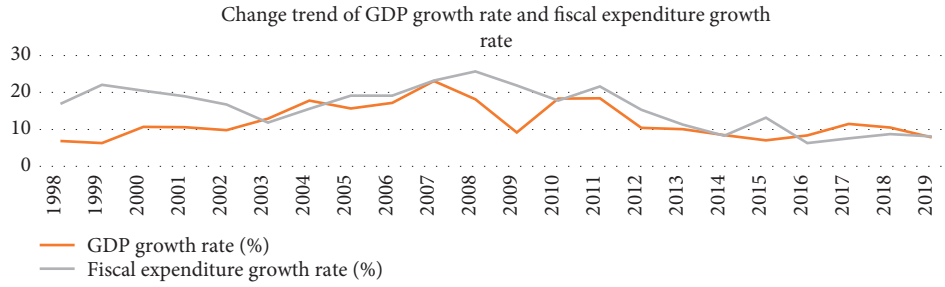
FIGURE 7: Change trend of China's GDP growth rate and fiscal expenditure growth rate from 1998 to 2019.

growth rate decreased in the previous period, the fiscal expenditure of the current period cannot be reduced by the same range.

5.3. Regression Model Construction. To empirically test the correlation between China's GDP and fiscal expenditure and make regression analysis, this paper constructs the following econometric model:

$$GDP1 = \alpha + \beta E1 + \mu. \tag{1}$$

Among them, the explained variable is GDP1: adjusted gross national product; the explanatory variable is $E1$: it is the financial expenditure after smoothing; the disturbance term is μ, which indicates other effects.

From the initial analysis of the above two steps, it can be found that China's GDP and fiscal expenditure showed a gradual upward trend from 1998 to 2019, and the growth trend was roughly the same. Therefore, we suspect that there is a positive correlation between them. With the help of Econometrics View software, the correlation between them is analyzed as follows. According to the data in Table 1, we first make a regression curve, in which the abscissa e (expenditure) represents fiscal expenditure and the ordinate is GDP. It can be seen from the scattered distribution that there is an obvious positive correlation between China's fiscal expenditure and GDP, and then observe the correlation between them by fitting the regression line, as shown in Figure 8.

It can be seen that most scatter points fall on the fitting regression line, indicating that there is a strong positive correlation between fiscal expenditure and GDP. Next, the correlation between the two is quantified by estimating the correlation coefficient, and the results are shown in Table 2.

The results show that the correlation coefficient between China's fiscal expenditure and GDP from 1998 to 2019 is as high as 0.998337, which is highly positive.

It can be observed from Figure 9 that both China's GDP data and fiscal expenditure data from 1998 to 2019 are time series data with obvious trends, but the trend direction and range are the same. Therefore, direct regression cannot be carried out. Otherwise, the problem of "pseudo regression" will appear. Then we need to take the logarithm of the two and smooth them, and then carry out the unit root test, respectively. If the two variables are of the same order, then we need to further carry out the cointegration analysis.

Taking the logarithm will have a certain smoothing effect on the data. Therefore, taking the logarithm of GDP will be smoothed to generate a new variable GDP1. Similarly, taking the logarithm of fiscal expenditure will be smoothed to generate a new variable $E1$.

$$GDP1 = \ln(GDP),$$
$$E1 = \ln(E). \tag{2}$$

First, perform a unit root test on GDP1 sequence:.

Models 3, 2, and 1 tests were carried out on the original values, and the p values of the results were 0.2597, 0.1159, and 0.9157, respectively, which accepted the assumption that H0 was "the original value was nonstationary;" Then, the first-order difference of the sequence is tested by models 3, 2 and 1, respectively. The p values of the results are 0.4199, 0.5268, and 0.4855, respectively, which accept the assumption that H0 is "the first-order difference is nonstationary;" then conduct model 3 on the second-order difference of the sequence, and the p value of the test result is 0.0004. Therefore, rejecting the assumption that H0 is "the second-order difference is nonstationary," then we say that the GDP1 sequence is an integration of order 2, that is, $GDP1 \sim I(2)$. The stability test result is shown in Table 3. (All taken $a = 5\%$).

Similarly, Carry Out the Unit Root Test for $E1$ Sequence

Models 3, 2, and 1 tests were carried out on the original values, and the p values of the results were 0.9826, 0.4965, and 0.8952, respectively, which accepted the assumption that H0 was "the original value was nonstationary;" then the first-order difference of the sequence is tested by model 3, 2 and 1 respectively. The p values of the results are 0.0533, 0.4955, and 0.2070, respectively, which accept the assumption that H0 is "the first-order difference is nonstationary;" the second-order difference of the sequence is tested by model 3, and the p value of the test result is 0.0341. Therefore, the hypothesis that H0 is "the second-order difference is nonstationary" is rejected. The second-order single integer of $E1$ sequence is $E1 \sim I(2)$. The stationarity test result is shown in Table 4. (All taken $a = 5\%$).

Through the above stationarity test of the GDP1 and $E1$ time series, it is concluded that GDP1 and $E1$ are second-order single integers. Next, GDP1 and $E1$ are regressed, and the results are shown in Table 5.

The regression equation is obtained from the regression results in the figure:
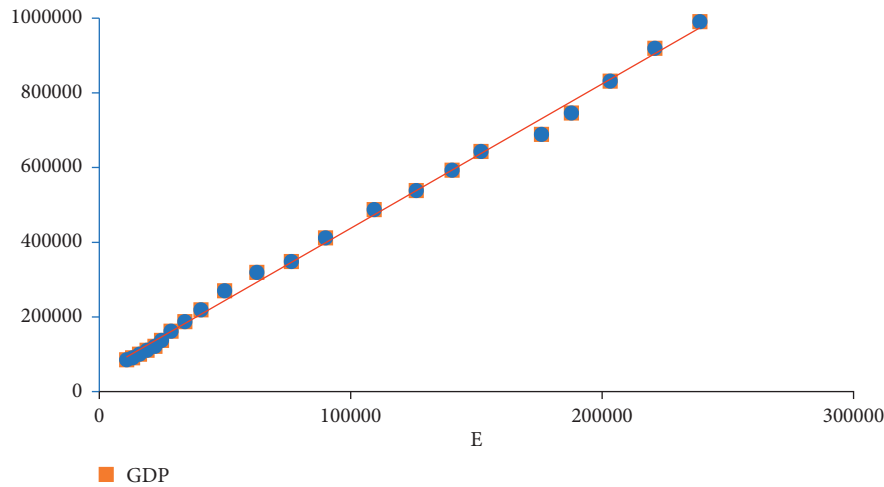
FIGURE 8: Scatter plot and fitting regression line of fiscal expenditure and GDP.

TABLE 2: The correlation coefficient between fiscal expenditure and GDP.

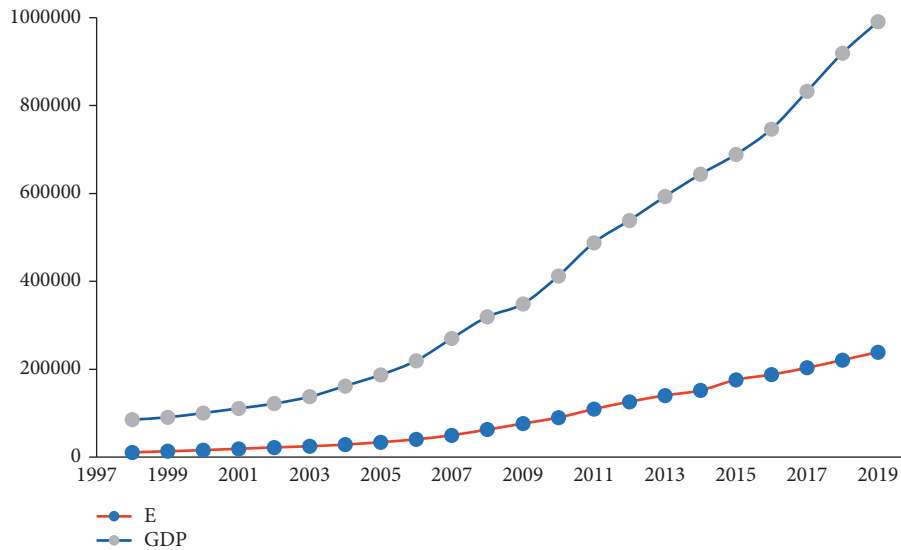|	GDP	E
GDP	1	0.998337
E	0.998337	1

FIGURE 9: Trend chart of the fiscal expenditure versus GDP.

$$\widehat{\text{GDP}}1 = 3.64 + 0.82E1. \tag{3}$$

The two coefficients are not 0, the explanatory variable is very significant, and R2 is 0.996419, indicating that the model fits well.

Then, on the basis that the above unit root test conclusion is a second-order single integer, the stationarity test is carried out for the residuals of GDP1 and E1 : Mr. Cheng is a new variable R (residual sequence of regression).

$$r = \text{resid}. \tag{4}$$

The p value of the model 3 test result of the original value of the sequence is 0.1267, accept the hypothesis that H0 is "the original value is nonstationary," and then carry out the model 2 test on the original value of the sequence, the p value of the result is 0.0197, reject the hypothesis that H0 is "the original value is nonstationary" (any model can be judged as stable if it rejects the original hypothesis), that is, the residual sequence is stable, so the above relationship is reliable. The stability test results are shown in Table 6.

TABLE 3: Stationarity test results of China's GDP data from 1998 to 2019.

Null hypothesis: D(GDP1,2) has a unit root Exogenous: constant, linear trend Lag length: 1 (automatic-based on AIC, maxlag = 4)		
Augmented dickey-fuller test statistic	t-Statistic	Prob*
	−6.282976	0.0004
Test critical values	1% level	−4.571559
	5% level	−3.690814
	10% level	−3.286909

*MacKinnon (1996) one-sided p-values. Warning: probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 18 Augmented Dickey-Fuller test equation Dependent variable: D(GDP1.3) Method: least Squares.

TABLE 4: Stationarity test results of fiscal expenditure adjustment data in China from 1998 to 2019.

Null hypothesis: D(E1,2) has a unit root Exogenous: constant, linear trend Lag length: 4 (automatic-based on AIC, maxlag = 4)		
Augmented dickey-fuller test statistic	t-Statistic	Prob*
	−3.992231	0.0341
Test critical values	1% level	−4.728363
	5% level	−3.759743
	10% level	−3.324976

*MacKinnon (1996) one-sided p-values. Warning: probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 15 augmented Dickey-Fuller test equation dependent variable: D(E1,3) method: least squares.

TABLE 5: Regression results of China's GDP and fiscal expenditure data from 1998 to 2019.

Dependent variable: GDP1 Method: least squares Date: 11/30/20 time: 21 : 44 Sample: 1 22 Included observations: 22			
Variable	Coefficient	Std. Error	t-Statlstic	Prob*
C	3.636767	0.121032	30.04794	0.0000
E1	0.815901	0.010938	74.59486	0.0000
R-squared	0.996419	Mean dependent var	12.62911
Adjusted R-squared	0.996240	S.D. dependent var	0.826231
S.E. of regression	0.050667	Akaike info criterion	−3.040585
Sum squared resid	0.051342	Schwarz criterion	−2.941399
Log likelihood	35.44643	Hannan-quinn enter	−3.017220
F-statistic	5564.393	Durbin-watson stat	0.674709
Prob (F-statistic)	0.000000		

5.4. Forecast China's GDP in the Next Five Years. According to the above prediction and regression equation of China's fiscal expenditure in the next five years, China's GDP in the next five years is estimated as shown in Table 7:

TABLE 6: The stationarity test results of residuals of GDP and fiscal expenditure data from 1998 to 2019.

Null hypothesis: R has a unit root Exogenous: constant Lag length: 0 (automatic-based on AIC, maxlag = 4)		
Augmented dickey-fuller test statistic	t-Statistic	Prob*
	−3.469158	0.0197
Test critical values	1% level	−3.788030
	5% level	−3.012363
	10% level	−2.646119

*MacKinnon (1996) one-sided p-values.

TABLE 7: Forecast of China's GDP in the next five years (unit: 100 million yuan).

Years	GDP (亿元)
2020	1051154.88
2021	1122422.66
2022	1198522.37
2023	1290318.96
2024	1382782.04

Note. GDP is derived from the fiscal expenditure of the corresponding year through the regression equation, and the fiscal expenditure of the current year is calculated from the average growth rate of fiscal expenditure.

6. Policy Recommendations

Based on the above analysis results, the following suggestions are put forward to improve the relationship between China's fiscal expenditure and GDP.

6.1. The Government's Economic Policy Must Maintain Continuity and Stability. From the above analysis, it can be seen that the change trend of fiscal expenditure and GDP is almost synchronous and even plays a leading role in guiding the change of GDP. At the same time, fiscal expenditure also constitutes an important part of economic accounting. Therefore, to ensure the continuity and stability of economic development, it is necessary to maintain the continuity and stability of fiscal expenditure.

6.2. Ensure that the Growth of Fiscal Expenditure Is Commensurate with Economic Development. According to the current forms, we must implement the supply side structural reform, maintain a certain scale growth of fiscal expenditure, ensure the speed of economic growth, and maintain the intensity of the expenditure on individual key projects. First of all, we should appropriately expand the scale of the fiscal deficit. Under the current epidemic situation, supply side reform is imminent. Fiscal expenditure should be matched with it to continuously stimulate demand and increase effective supply. Secondly, we should effectively use the surplus of the previous year, make the existing stock funds active, and ensure the adequacy of the financial budget in the process of reducing the tax burden of enterprises [13]. The surplus funds are mainly used to make up for the lack of social security and maintain social stability [14]. At the same

time, we should also strengthen the reform of the budget management system, turn the government fund budget into a general public budget so that it can be arranged uniformly, to increase the scale of financial expenditure.

6.3. Increase Expenditure on Key Projects and Optimize the Expenditure Structure. While controlling the moderate growth of fiscal scale, we should also pay attention to the optimization of fiscal expenditure structure and strengthen its expenditure proportion for expenditure projects that promote large economic development. According to the research of [10], Qi and Yue, the contribution of social protection expenditure is the largest, 71.66%. The second is the proportion of health care expenditure, with a contribution of 34.15%, and the contribution of education expenditure is 10.47%. For these three items, the government should not only increase expenditure but also pay attention to the balance of expenditure within the project. At present, China's investment in higher education is strong, but it ignores the investment in basic education to a certain extent, which seriously affects the efficiency of this expenditure. Of course, the contribution to the economy is not the only criterion. Although the contribution of environmental protection expenditure to the economy is negative, we should also increase its expenditure. On the one hand, the output of such expenditure is difficult to measure, so it is possible to ignore its contribution in the calculation. On the other hand, just on the surface, President Xi also said, "Green water and green mountains are golden mountains and silver mountains." This shows that environmental improvement makes a great contribution to people's non-economy. At the same time, China's environmental expenditure accounts for only 4-5%, which is far from the standard of developed countries. In conclusion, we should continue to increase expenditure on some key projects to continuously optimize the expenditure structure and promote economic growth [15].

6.4. Maintain the Declining Trend of Administrative Expenses and Jointly Optimize the Expenditure Structure. With the development of the economy, the affairs of the government have become complicated, and the corresponding administrative fees will naturally increase. In the previous years, with the activity of "beat tigers and flies," administrative fees became less. Of course, administrative fees cannot disappear, and their increase is also proved by history. However, while administrative expenditure is bound to grow in absolute terms, we should keep its relative number declining, cooperate with the financial expenditure to turn to other key projects, and further optimize the expenditure structure.

6.5. We Should Give Full Play to the Strength of All Sectors of Society in the Construction of Social People's Livelihood. The original financial idea of package contracting has put great pressure on financial expenditure, which often makes the rational use of funds lose direction. The government cannot do everything. The way of financial expenditure needs to be innovated. Under the condition of a socialist market economy, we should strengthen the idea of taking from the people and using them for the people; on the one hand, continue to play the positive role of finance; on the other hand, allow social funds into some areas of financial management. Our social needs are diverse and rich in levels. For those needs that can be provided by the market, the government should open its arms and actively mobilize the enthusiasm of all sectors of society. Of course, while transferring part of investment expenditure to society, we should retain the expenditure in those areas with strong externalities and pay attention to the efficiency of fiscal expenditure to make better use of the determined scale funds. The popular PPP model (public private partnership) is the practice of this idea, such as "Beijing line 4," the quasipublic good, which is also a case of the PPP project. Therefore, the government can get rid of heavy affairs and gradually change from the past provider of infrastructure public services to a regulator, which not only pursues quality but also reduces the pressure on the government in terms of budget. Of course, to standardize the operation of this model, there must be more perfect legal support.

6.6. Continuously Strengthen the Construction of the System. While increasing financial investment, we must strengthen the cooperation of system construction. Otherwise, even if the investment continues to increase, it is difficult to give full play to the effectiveness of the goal. We must establish and improve relevant mechanisms for a series of problems existing in the management system and the problems found in the operation to ensure the development of social undertakings.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

There are no conflicts of interest in this article.

Acknowledgments

References

[1] Budget Department of the Ministry of Finance, "Achieving full coverage of performance objectives of central budget departments in 2016," *Budget Management and Accounting*, no. 7, pp. 2-3, 2016.

[2] Y. Jiang, J. Wang, and L. Wang, "Fiscal expenditure, household consumption and regional innovation—an empirical analysis based on provincial panel," *Industrial Technology and Economy*, vol. 39, no. 11, pp. 12–18, 2020.

[3] C. Gao and W. Chaocai, "Research on the relationship between local fiscal expenditure and economic growth in China—Analysis of linear mixed model based on provincial data from 1990 to 2012," *Fiscal Research*, no. 8, pp. 42–45, 2014.

[4] D. Wei, "Research on the impact of fiscal expenditure and structure on economic growth in Shanxi Province," *Shanxi Nongjing*, no. 18, pp. 1–4, 2021.

[5] L. Jiang, W. Qiongqiong, and Y. Cuiqi, "research on the relationship between fiscal expenditure and economic growth—Based on the empirical analysis of Guangzhou City, Guangdong Province from 1978 to 2016," *Financial Supervision*, no. 13, pp. 25–30, 2018.

[6] Z. Fan, "Analysis of regional differences between economic growth and educational fiscal expenditure," *Cooperative Economy and Science and Technology*, no. 16, pp. 6–9, 2019.

[7] X. Kong and S. Qiang, "Correlation between financial expenditure for new rural construction and rural consumption demand," *Journal of Yunnan University for Nationalities (Philosophy and Social Sciences Edition)*, no. 5, pp. 103–108, 2007.

[8] J. Li, "Urban residents' income, fiscal expenditure, and farmers' income," *Agricultural Technology and Economy*, no. 4, pp. 34–40, 2008.

[9] J. Wang and Q. Wang, "Empirical analysis of the impact of agricultural fiscal expenditure on Farmers' income based on Granger method," *Business Research*, no. 2, pp. 167–170, 2008.

[10] C. Qi and X. Yue, "The relationship between fiscal expenditure and economic development—a new interpretation of Wagner's law," *Economic Theory and Economic Management*, no. 7, pp. 43–57, 2020.

[11] N. Jiang, "Analysis of tax structure, government expenditure, and economic growth," *Economic Management Abstract*, no. 18, pp. 197-198, 2019.

[12] J. Liu, J. F. Hu, Q. H. Huang, and F. Zhang, "Public health expenditure and income redistribution: an empirical analysis based on China," *Indian Journal of Pharmaceutical Sciences*, no. 1, pp. 35-36, 2019.

[13] F. Zheng and F. Rui, "Performance evaluation of fiscal revenue: a tool for realizing the objectives of tax reduction and fee reduction policy," *China Social Sciences*, no. 6, pp. 85–105, 2019.

[14] F. Song and Y. Sun, "Path selection of performance budget management system in China," *Economic Research Reference*, no. 40, pp. 4–9, 2016.

[15] Y. Zeng, "Research on the impact of local fiscal expenditure on industrial structure—Based on China's provincial panel data from 2007 to 2017," *Special Economic Zone*, no. 12, pp. 102–105, 2019.