Research on the Relationship between the degree of tax planning and regional economic growth——Take the provinces of the country as examples

Chen Huiling[1], Su Xin[2]

[1]School of Economics, Yunnan University, Kunming, Yunnan, 650000, China
[2]School of Economics, Beijing Technology and Businesses University, Beijing, 100000, China

Abstract: With the continuous advancement of China's tax system reform, China is committed to using tax policies to guide resource allocation. Various tax preferential policies also provide more space for enterprises to carry out tax planning. Enterprises' tax planning has increasingly become one of the important daily activities of enterprises. In recent years, the influencing factors of economic growth have also begun to pay attention to the economic activities of micro subjects. Taking Chinese A-share listed companies from 2009 to 2019 as a sample, this paper uses multiple regression model to study the impact of enterprise tax planning on regional economic growth. The study found that enterprises' tax planning will leave more income in the enterprise, so that enterprises will have more power and take the initiative to expand the investment scale, and the output of enterprises' investment activities will be directly reflected in the regional GDP, which will indirectly affect the regional economic growth rate, which means that enterprises' tax planning behavior will promote the regional economic development.

Keywords: tax planning, economic growth, panel data

1. Introduction

In recent years, China has paid more and more attention to the legalization of tax collection, and is committed to continuously improving the tax system, establishing and perfecting a scientific tax system and promoting economic restructuring. For example, the implementation of the "replacing business tax with value-added tax" policy and the legislative work of various taxes have been completed in 12 of the 18 taxes. There are different preferential tax policies under each tax substantive law. According to the relevant collection provisions of the tax law and the preferential tax policies under various taxes, tax planning combined with the characteristics of the enterprise can reduce the taxes payable for the enterprise, including the expenditure of various turnover taxes and income taxes, so as to save the operation cost of the enterprise to a certain extent. In today's increasingly fierce market competition, the role of cash flow in the sustainable development of enterprises has become more and more important. Tax planning will become an important work in the future. Whether the economic activities of tax planning as the micro main body will have a certain impact on economic growth and the relationship between them is the theme of this paper.

The research on economic growth no longer stays at the level of macro indicators. More scholars begin to pay attention to the impact of the economic activities of micro subjects in the market on economic growth, such as the impact of enterprise investment on economic growth [1] and the impact of Private Finance on economic growth [2].As for the research on tax planning, in China, Tang TengXiang and others (1994) believe that tax savings can be realized through the prior arrangement and planning of a series of activities of enterprises on the basis of not violating the law [3]. Tax planning is a way to choose the best tax strategy to save costs for the development of enterprises. In recent years, there are many articles on the influencing factors of tax planning, such as the impact of management incentives on enterprise tax planning [4], the impact of enterprise accounting policies on tax planning [5]. Scholars also quantify the degree of tax planning, mainly using the company's effective tax rate (ETR) to measure the degree of tax planning, this also provides a reference value for this paper to study the relationship between tax planning and regional economic growth.

The state emphasizes the decisive role of the market in resource allocation, and enterprises are the main body of market economy. The economic activities of enterprises will have an impact on the economic growth of the country and regions. This paper focuses on the impact of enterprise tax planning

on regional economic growth.

2. Sample data and variable analysis

2.1 Data source

We selected the financial data of all A-share listed companies in the region from 2008 to 2019 and the regional relevant macro index data of 31 provinces and cities as samples. The reason why we took 2008 as the starting time is that the calculation of GDP growth rate needs to be based on the relevant data of the previous year, after obtaining the basic data, the data are processed as follows: (1) the data of ST and Pt enterprises are eliminated; (2) the listed companies with missing relevant indicators are eliminated.

This paper uses the data of listed companies. The data are mainly from the regional economic sector of guotai'an database, and the data of some macroeconomic indicators are from the National Bureau of statistics.

2.2 Variable description

$GG_{i,t}$ represents the GDP growth rate of province I in year t, and $GG_{i,t-1}$ represents the GDP growth rate of province I in the previous year. This paper uses the consumer price index to adjust the nominal GDP to obtain the real GDP, takes the real growth rate of year t as the dependent variable, and takes the real growth rate of the previous year as the control variable.

$AVETR_{i,t-1}$ refers to the average value of the effective tax rate of all enterprises in each province in the previous year. The average value here is the average value weighted by the total assets of each enterprise at the end of the year. The extent of tax planning by an enterprise is intuitively understood as the difference between the tax burden before and after planning, but the tax burden indicator involves many accounting processing links and many taxes of the enterprise, which must be obtained through complex processing, and it is difficult to ensure the accuracy of the data, Therefore, this paper selects "actual income tax burden (ETR)" as the index to quantify the degree of enterprise tax planning. At the same time, in order to eliminate the interference of the enterprise's own scale on the data, the listed companies in each province are weighted and averaged through the asset scale to obtain the actual tax burden of each province in each year. According to our hypothesis, the higher the degree of enterprise tax planning, the smaller the ETR and the greater the economic growth rate. Therefore, it is assumed that there should be a negative correlation between AVETR and economic growth rate.

$CTB_{i,t-1}$ represents the proportion of income tax revenue of each province in the tax revenue of each province in the previous year, $FAI_{i,t-1}$ represents the proportion of total social investment in GDP of each province in the previous year, and $TRADE_{i,t-1}$ represents the degree of opening to the outside world of each province in the previous year. The above variables are control variables. The description of each variable is shown in Table 1.

Table 1: Variable description

	Variable name	Economic meaning	Variable definitions
Explained variable	GG	economic growth rate	Real economic growth rate adjusted by price index
Explanatory variables	AVETR	Effective tax rate	The effective tax rate of Listed Companies in each province is calculated by the weighted average of the company's assets at the end of the year
	CTB	Proportion of income tax income	Provincial income tax revenue / tax revenue
	FAI	Investment scale of fixed assets	Provincial fixed asset investment / GDP
	TRADE	Degree of opening to the outside world	Total import and export volume of each province / GDP

2.3 Descriptive statistics

First, perform a descriptive statistical analysis of the data, as shown in Table 2.

Table 2: Sample descriptive statistics

Variable name	Observations	Mean	Standard deviation	Min	Max
$GG_{i,t}$	373	0.1156	0.0039	-0.2501	0.3227
$AVETR_{i,t-1}$	373	-0.2571	0.0120	-0.2205	1.3554
$GG_{i,t-1}$	373	0.1272	0.0036	-0.2240	0.3227
$CTB_{i,t-1}$	373	0.1400	0.0019	0.0316	0.2801
$FAI_{i,t-1}$	373	0.1147	0.0269	-8.3535	1.4715
$TRADE_{i,t-1}$	373	0.1272	0.0036	-0.2240	0.3227

3. Empirical analysis

3.1 Measurement model

This article focuses on exploring the relationship between the degree of tax planning and the regional economic growth. In order to test our hypothesis, we set up a multiple regression equation to study the relationship between enterprise tax planning and economic growth. The analysis model is as follows:

$$GG_{i,t} = \alpha_0 + \alpha_1 AVETR_{i,t-1} + \alpha_2 GG_{i,t-1} + \alpha_3 CTB_{i,t-1} + \alpha_4 FAI_{i,t-1} + \alpha_5 TRADE_{i,t-1} + \varepsilon_{i,t}$$

Among them $\alpha_1, \alpha_2, \alpha_3$ are the regression coefficients of $AVETR_{i,t-1}$, $GG_{i,t-1}$, $CTB_{i,t-1}$, $FAI_{i,t-1}$, and $TRADE_{i,t-1}$ respectively.

3.2 Model checking

We use Stata software to carry out multiple linear regression analysis on the collected data, The results are shown in Table 3. The multiple linear regression equations of $AVETR_{i,t-1}, GG_{i,t-1}, CTB_{i,t-1}, FAI_{i,t-1}$ and $TRADE_{i,t-1}$ and $GG_{i,t}$ are as follows:

$$GG_{i,t} = 0.1221 - 0.1074 AVETR_{i,t-1} + 0.3197 GG_{i,t-1} + 0.0036 CTB_{i,t-1} + 0.1661 FAI_{i,t-1}$$
$$- 0.0070 TRADE_{i,t-1} + \varepsilon_{i,t}$$

Table 3: Regression results

Fixed-effects (within) regression Group variable: PROVINCE			Number of obs = 372 Number of groups = 31			
R-sq: within = 0.2829 between = 0.0064 overall = 0.2362			Obs per group: min = 12 avg = 12.0 max = 12			
Corr(u_i,Xb) =-0.1342			F(5,365) =26.51 Prob>F =0.0000			
$GG_{i,t}$	Coef.	Std.Err	t	P>|t|	[95% Conf.	Interval]
$AVETR_{i,t-1}$	-0.1074	0.0243	-4.41	0.000	-0.1553	-0.0594
$CTB_{i,t-1}$	0.0036	0.0066	0.54	0.587	-0.0095	0.0167
$GG_{i,t-1}$	0.3197	0.0656	4.87	0.000	0.1906	0.4489
$FAI_{i,t-1}$	0.1661	0.0914	1.82	0.07	-0.0136	0.3459
$TRADE_{i,t-1}$	-0.0070	0.0346	-0.20	0.840	-0.0751	0.0611
_cons	0.1221	0.0253	4.81	0.000	0.0721	0.1720

According to table 3, it can be seen that the relationship between effective tax rate and economic growth has passed the significance test, and there is a negative correlation between them, which confirms the initial assumption that the lower the effective tax rate, the higher the degree of tax planning of enterprises and the faster the economic growth. From the regression, it can be seen that the growth rate of the previous year undoubtedly has the greatest impact on the economic growth rate. There is a positive correlation between the two, and the correlation coefficient is 0.3197. The proportion of enterprise income tax revenue in tax revenue has little impact on economic growth, and the plan is not significantly

related, which further confirms that the enterprise's tax planning and keeping the output inside the enterprise is conducive to economic growth. Total social investment also plays a significant role in economic growth. The degree of opening to the outside world is not significantly related to economic growth, which is different from the actual situation. It is likely that there are great differences in the degree of opening to the outside world in different regions, which interferes with the model.

Through multiple linear regression analysis, it is confirmed that enterprises' tax planning activities are conducive to regional economic growth.

4. Conclusions and recommendations

This paper focuses on the impact of the economic behavior of micro subjects on economic growth, and pays attention to the impact of enterprise tax planning behavior on economic growth. Through the establishment of panel data of 31 provinces in different years to analyze the impact of enterprise tax planning activities on economic growth, through the data analysis of Stata software, we find that there is a positive correlation between the degree of tax planning and economic growth.

There are still some limitations in this paper, but there is also room for further research: (1) this paper believes that enterprises carry out tax planning to keep income within the enterprise, so as to expand the investment scale and promote economic growth, but there is still room for further research on the specific transmission mechanism; (2) for independent variables, this paper only selects the economic growth rate, effective tax rate, tax rate of the previous year The proportion of income tax, the proportion of total social investment and the degree of opening to the outside world are taken as independent variables without considering more influencing factors. It is necessary to add other influencing factors in future research to improve the accuracy of empirical research; (3) The improvement of after taxing profits of enterprises may not only be limited to further investment activities, but also may carry out more innovation activities to help China's economy achieve high-quality development. Therefore, whether tax planning will carry out innovation activities and increase R & D investment for enterprises to achieve fast and good economic quality is also worthy of further research and discussion;(4) The impact of enterprise investment activities and R & D activities on economic growth is also worthy of further study.

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