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Assessing the Role of Corporate Tax Burden on Economic Growth Based on Panel Data Analysis Modeling

Yao Tong[1], Boya Wu[2] and Xin Zhou[3,*]
[1] College of electrical engineering and information, Northeast Agricultural University, Harbin, Heilongjiang, 150030, China
[2] School of Finance and Economics, Hunan University of Technology and Business, Changsha, Hunan, 152100, China
[3] College of Water Conservancy and Civil Engineering, Northeast Agricultural University, Harbin, Heilongjiang, 150030, China
Corresponding authors: (e-mail: sos1821@163.com).

Abstract Fiscal and tax policy is an important means of economic restructuring, which has a direct impact on economic growth. This paper discusses the impact of fiscal and tax policy adjustment on enterprise investment decision and residents' consumption level from the perspectives of enterprise investment and residents' personal disposable income. On the basis of this theory, the GDP growth rate is chosen as a measure of economic growth, and the fiscal tax policy is adopted as a measure of corporate tax burden. Relevant independent variables and control variables are set to construct an analytical model of the impact of corporate tax burden on economic growth. Then we introduce the panel count model, design the quantile regression method for the data of the model, and propose the quantile regression model for the panel data. Based on this model, the parameter estimation and analysis of control variables and independent variables are carried out, and with the sequential addition of control variables (investment rate, consumption rate, total import and export), the regression coefficients of the core explanatory variables affecting the economic growth tend to stabilize and are significantly positive at the 1% level. The study points out that the government should take advantage of fiscal and tax policies to increase investment in enterprises and enhance the consumption level of residents to actively promote economic growth.

Index Terms fiscal tax policy, panel counting model, quantile regression, economic growth

I. Introduction

The tax burden, as the core of the tax system, has a direct impact on the distribution of interests among economic subjects. On the one hand, tax as the main source of national financial income, but also an important means of regulating economic operation, both by the economic situation determines the tax, and the tax will also react to the economy [1], [2]. For enterprises, the adjustment of taxes will have a great impact on the operation and structure of enterprises, taxes as a lever to regulate economic operation, through tax increases and reductions and other means of economic interests of the community, to guide the economic behavior of enterprises and individuals [3]-[6]. On the other hand, in recent years, national tax revenues, local tax revenues and regional totals have maintained rapid and coordinated growth, the national macro tax burden level has steadily improved, and most of the regional tax growth rate is higher than the growth rate [7]-[9]. It is not difficult to find that enterprises are the main bearers of national tax revenue, and an excessive tax burden, although it can increase the government's fiscal revenue in a short period of time, in the long run, it is bound to affect the development of enterprises, and then affect the overall growth situation of the economy [10]-[12].

Numerous economics researchers have examined the strong link between corporate taxation and economic growth.Gechert, S. and Heimberger, P. applied the multiple regression method to the analysis of corporate taxation and economic growth and showed that lowering the corporate tax burden would be conducive to the promotion of economic growth in the long run [13]. Khan, U. et al. explored the impact of differences in corporate income tax rates between countries on overall economic growth, concluding that higher tax rates would exacerbate the disconnect between the tax treatment and the production process of firms, which would lead to a reduction in the corporate profits used for investment, resulting in a slowdown in economic growth [14] ...Elshani, A. and Pula, L. analyzed the link between different types of taxes and economic growth, where corporate income tax contributes positively to the economic growth of the country, however higher taxes will inhibit the rate of economic growth, and the results of their analysis provide valuable references for policy makers [15]. Öz Yalaman, G. investigated the different dynamics exhibited by corporate tax rates and economic growth during financial crisis and non-crisis periods and found that there is a unidirectional causality between the two during non-crisis periods, while this interaction will disappear completely during crisis periods [16]. Liu, X. and Fang, H. assessed the impact of China's corporate VAT rate reform on corporate tax burden, the policy will have a significant impact on the production and

business activities of small and medium-sized enterprises (SMEs), and the downwardly adjusted corporate tax burden is conducive to stimulating efficient economic growth [17]. The above research proves that the role played by the tax burden in enterprise development is indisputable, while the study of how to adjust the tax burden to achieve the promotion of economic growth still need to carry out further research.

This paper firstly discusses the adjustment of tax and fiscal policies, the impact on enterprise investment and personal disposable income. By the changes in enterprises and individuals, reflecting the overall changes in economic growth. Changes in fiscal and taxation policies are used to measure the tax burden of enterprises, and the GDP growth rate is used to measure economic growth. Corresponding independent variables and control variables are selected to propose an analytical model of the impact of corporate tax burden on economic growth. Secondly, we explain the construction steps and calculation process of the panel count model, analyze the method of panel data quantile regression, and establish the panel data quantile regression model. Based on the panel data quantile regression model, the empirical analysis of the impact of corporate tax burden on economic growth is carried out. The results of the empirical analysis are verified by exploring the endogenous relationship between the variables and testing the robustness of the parameters. Finally, the heterogeneity analysis of the explanatory variables (dependent variables) is carried out to further explore the role of corporate tax burden on economic growth in different regions.

II. Construction of the panel data analysis model

II. A. Overall impact of fiscal policy on economic growth

(1) Reducing corporate taxes and providing tax credits can incentivize firms to invest more. Corporate income tax is part of corporate earnings, and reducing the corporate income tax rate or providing tax credits can increase corporate cash flow and profits and stimulate the willingness of enterprises to increase investment. Reducing the corporate income tax rate can increase the return on investment of enterprises and increase their investment in new projects, technologies and equipment. Fiscal tax incentives can also encourage enterprises to increase investment in innovation, R&D and environmental protection, and promote the upgrading of economic structure and technological progress.

(2) Tax reduction policies can increase personal disposable income, thereby stimulating personal consumption. Tax cuts in personal income tax can directly increase the disposable income of individuals and improve their consumption capacity. When the tax burden of individuals is reduced, they have more money to spend on purchasing goods and services and increase consumption expenditure. This increased consumer demand can stimulate economic growth and promote increased enterprise production and employment.

II. B. Data Selection and Model Construction

(1) Data Selection

In this paper, economic data of the last ten years or longer time span are selected as samples, including the growth rate of gross domestic product (GDP) as a measure of economic growth, and total tax revenue (TTR), tax structure (TST) (ratio of direct and indirect taxes), and the share of government expenditures in GDP as proxies for fiscal and tax policies. Meanwhile, other factors that may affect economic growth, such as investment rate (IR), consumption rate (CR), total import and export (TEIV), etc., are also considered as control variables to be included in the model.

(2) Model construction

Based on the above data, this paper constructs a multiple linear regression model with GDP growth rate as the dependent variable, tax scale (TSC), tax structure (TST), and fiscal policy adjustment (FP) (expressed as changes in the share of government expenditure in GDP) as the independent variables, and also introduces control variables to eliminate the influence of other potential factors.

II. C. Panel data quantile regression models

II. C. 1) Panel Count Models

First a basic introduction to panel count modeling. Panel count data are mainly obtained from n independent individuals in the course of discrete observations. Each independent individual $i\left(i \in \{1,2,\ldots,n\}\right)$, $\tilde{H}_i(t)$ denotes is the process of counts generated by the individual i in the time point of the study observation $t_{i1} < t_{i2} < t_{i3} < \ldots < t_{im_i}$, in which m_i in t_{im_i} denotes all the times m that an independent individual i is observed in the study. The $N_i(t)$ denotes the total number of occurrences of observed events, i.e., recurrent events, that are repeated by the observed independent individual i at the above observation time point $(0,t]$, for which the value of $N_i(t)$ can be known only at the above time point at which the observation was made.

In addition, the model assumes that each individual i is observed for a certain period of time, and this observation time is denoted as the tracking time or the termination time T_i, i.e., for individual i, it is recorded from the beginning until time T_i. However, not all events can be observed for all individuals within the observation time T_i, so C_i^* is usually artificially denoted as the censoring time of individual i, i.e., it means that when the observed events are at $C_i^* < t_i < T_i$, it is not possible to observe the total number of recurrent events that occur in this independent individual $N_i(t)$. Based on this, the actual observation time of an independent individual i is denoted as C_i during the modeling process, which contains the meaning: $C_i = \min\left(C_i^*, T_i\right)$, and the followup time C_i^* may be related to the total number of observed events $N_i(t)$ as well as to the actual counting process $\tilde{H}_i(t)$, but the termination time T is independent of them. Then for the counting process $\tilde{H}_i(t)$, it is possible to make the real observation time course of the study process $H_i(t)$, defined as in equation (1):

$$H_i(t) = \tilde{H}_i\left(\min(t, C_i)\right) = \sum_{j=1}^{m_i} I(t_{ij} \le t) \tag{1}$$

Then where the total number of observed individual event occurrences $m_i = \tilde{H}_i(C_i)$ is the observed number of actual event occurrences, and also such that $F_{it} = \left\{\tilde{H}_i(s); 0 \le s \le t\right\}$ denotes the number of observations of an independent individual i at s moments before t moments. With Z_i denotes the $p \times 1$-dimensional auxiliary variables, also called covariates, of the independent individual i. The covariates Z_i have a great influence in both the recurrent events and the observation process. Summarizing, a panel data set can be obtained as in equation (2):

$$\left\{H_i(t), N_i(t) dH_i(t), C_i, Z_i; t \ge 0, i \in \{1, 2, \ldots, n\}\right\} \tag{2}$$

The effect of the covariate Z_i on the total number of recurrent events (observed events) $N_i(t)$ is the point to be considered during the study of panel data. Two models, the product-mean model as well as the additive mean function model, are often applied to analyze and study recurrent events. During the course of the study, the product estimation form of the parameters can lead to inaccurate estimates because the true potential covariate effects are not taken into account, which can have an impact on the estimation of the study. However, the use of additive mean models is able to estimate the absolute effects, especially for continuous covariates, and by considering the assumptions about the covariates as being attached to the unknown baseline rates, the use of additive models is able to more intuitively take into account the effects of the covariates on recurrent events.

Considering the above points, this paper adopts the additive mean function model to estimate the recurrence event process in order to solve the actual problem more efficiently and to make the calculation more convenient and fast.

Under the above panel data set conditions, the additive mean model for $N_i(t)$ can be written as equation (3):

$$E(N_i(t) \mid Z_i, F_{it}) = \mu_0(t) + \beta^T Z_i + r^T Q(F_{it}) \tag{3}$$

For equation (3), where $\mu_0(t)$ is a function of unknown specific form of change but possessing a smooth increasing trend and $t > 0$. β is an unknown parameter that requires further estimation. F_{it} denotes the number of observations of an independent individual i at moment s $F_{it} = \left\{\tilde{H}_i(s); 0 \le s \le t\right\}$, and $Q(F_{it})$ is a representational function of F_{it}, which is generally taken to be $Q(t)$ as if be a known function.

Since the actual counting process $\tilde{H}_i(t)$ is a non-zippered Poisson process, its intensity function model is defined as in equation (4):

$$\lambda_{it}(t \mid Z_i) = \nu_0(t) \exp(\gamma^T Z_i) \tag{4}$$

In equation (4) above, γ is an unknown parameter that requires further estimation. $\nu_0(t)$ is likewise an unknown benchmark function and satisfies equation (5):

$$V_0(t) = \int_0^t \nu_0(t) ds \tag{5}$$

That is, the continuous function $V_0(t)$ of the baseline needed for the study can be obtained by integrating $v_0(t)$ over t moments.

II. C. 2) Panel data quantile regression

Consider a panel data model with N cross sections and period T as in equation (6):

$$y_{it} = \alpha_i + x_{it}'\beta + u_{it}, i = 1,\ldots,N; t = 1,\ldots,T \tag{6}$$

Its matrix form is equation (7):

$$y = X\beta + Z\alpha + u \tag{7}$$

The quantile regression model dealing with panel data is shown in equation (8):

$$\begin{aligned}\left(\hat{\alpha}(\tau),\hat{\beta}(\tau)\right) &= \arg\min_{\alpha,\beta}\sum_i\sum_t \rho_\tau\left(y_{it} - x_{it}'\beta(\tau) - \alpha_i(\tau)\right) \\ &+\lambda\sum_{i=1}^{n}\left|\alpha_i(\tau)\right|\end{aligned} \tag{8}$$

One intention of introducing the penalty term $\sum_{i=1}^{n}\left|\alpha_i(\tau)\right|$ is to take into account the individual fixed effects in order to better estimate the individual quantile equations.

If each cross-section contains a small number of samples, it would be too demanding to estimate the fully distributed effect $\alpha_i(\tau)$ for each cross-section at this point. An alternative treatment is to consider that $\alpha_i(\tau) = \alpha_i$ does not vary with τ. For this case, the model where K simultaneously estimates the joint quantile improves the estimation of the individual effect α_i, i.e., equation (9):

$$\min_{\alpha,\beta}\sum_{k=1}^{q}\sum_{i=1}^{n}\sum_{t=1}^{T}\omega_{ik}\rho_{\tau_k}\left(y_{it} - \alpha_i - x_{it'}\beta(\tau_k)\right) + \lambda\sum_{i=1}^{n}\left|\alpha_i(\tau)\right| \tag{9}$$

When $\lambda \to \infty$ when $\alpha_i \to 0, i = 1,\ldots,N$, the above model approximates no fixed effects. When $\lambda \to 0$ is equivalent to a model without penalty.

III. Analysis of the role of the corporate tax burden on economic growth

III. A. Descriptive statistics of variables

Based on the above analysis, this paper selects the GDP growth rate (GDP) as the dependent variable, the control variables are: investment rate (IR), consumption rate (CR), and total exports and imports (TEIV), and the independent variables are: tax size (TSC), tax structure (TST), and fiscal policy adjustments (FP). Table 1 shows the descriptive statistics of (a1) mean, (a2) standard deviation, (a3) minimum, (a4) median, and (a5) maximum for the main variables on a total of 77,982 samples. A comprehensive descriptive statistical analysis of the variables included in the study reveals that with regard to the explanatory variable, GDP growth rate (GDP), the mean value is 6.11 and the standard deviation is 0.83, a figure that indicates a relatively balanced distribution of this indicator throughout the sample set, with relatively limited fluctuations. At the same time, the mean value and standard deviation of the control variables fall within a reasonable range, which is in line with expectations and lays a solid data foundation for the subsequent regression analysis, basically meeting the requirements of regression analysis on the quality of variable data.

Table 1: Descriptive statistics of the main variables

Variable	Sample size	(a1)	(a2)	(a3)	(a4)	(a5)
GDP	82140	6.11	0.83	4.64	5.43	10.47
IR	82140	9.64	3.15	3.75	6.57	21.34
CR	82140	8.37	2.47	6.86	8.46	11.5
TEIV	82140	1.53	1.49	1.3	1.61	2.07
TSC	82140	1.21	1.28	0.63	1.34	1.67
TST	82140	1.69	1.65	1.43	1.72	2.14

RP	82140	3.18	2.29	2.07	3.1	8.47

III. B. Empirical analysis

III. B. 1) Parallel trend test

In order to further examine the consistency of changes in corporate tax burden on the trend of changes in China's economic growth, the year before the implementation of fiscal and tax incentives was selected as the base period, and data outside the policy window period were closed at both ends, focusing on testing the trend of changes in economic growth from the first five years of the reform up to the six years after the reform of the empirical results are shown in Figure 1.

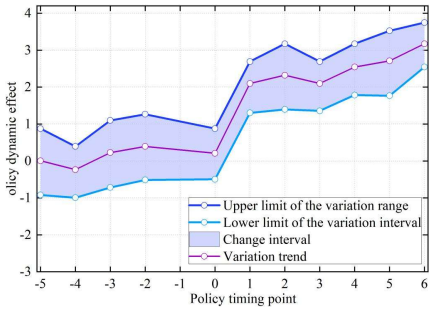

Figure 1: Parallel trend test

The results show that all regression coefficients do not reach the statistically significant level before the official implementation of the fiscal and tax incentives policy, thus satisfying the parallel trend assumption. After the implementation of the policy, especially in the year of policy implementation and in all subsequent periods, the regression coefficients show significant positive values and are far away from the value of 0, which strongly proves that China's GDP has significantly increased after the experience of fiscal and tax incentives compared with the pre-implementation period. Therefore, it can be concluded that the fiscal and tax incentives have played a positive role in promoting the growth of China's GDP.

III. B. 2) Benchmark regression

Based on the content of the above analysis, this paper puts forward the following hypothesis H1: Fiscal tax incentives can effectively reduce the tax burden of enterprises and thus effectively promote the improvement of China's GDP. The results of the benchmark regressions of different variables with GDP are shown in Table 2. Column (1) of Table 2 demonstrates the regression results of standard error clustering to the city-industry level without introducing control variables. The results show that the coefficient of the double difference term of fiscal and tax incentives is significantly positive, implying that fiscal and tax incentives have a significant positive effect on boosting GDP and pass the 5% significance test. In column (2) of Table 2, further control variables are introduced and the results show that the double difference term regression coefficient of (1) remains significantly positive even after the inclusion of the control variables, thus establishing the column as a reliable estimate of the baseline model. It is estimated that, all other things being equal, the implementation of fiscal tax incentives boosts GDP by an average of 6.03%, which verifies that fiscal tax incentives are effective in promoting GDP, and Hypothesis H1 is validated. Based on the above analysis, this paper confirms that there is a certain causal link between fiscal tax incentives and GDP, and it shows a positive incentive effect.

Table 2: Benchmark regression result

	(1)	(2)
	GDP	GDP
TSC	0.0698**	0.0603*
	(0.0297)	(0.0367)
TST	-0.0350**	-0.0456*
	(0.0098)	(0.0302)
RP	0.0061	0.0098**
	(0.023)	(0.062)
IR		0.0487*
		(0.0412)
CR		0.0504**

		(0.0461)
TEIV		0.0523**
		(0.0129)
Clustering hierarchy	City - Industry	City - Industry
N	82140	82140
R^2	0.2547	0.3607

Note:***, **, and * represent significance levels of 1%, 5%, and 10% respectively, the same below.

III. B. 3) Parameter estimation and analysis

This paper uses the panel data quantile regression model for empirical regression analysis, after determining the independent variables and dependent variables, firstly, without adding other control variables, analyze the impact of the proxy variables of the fiscal and tax policy on GDP growth alone, and then gradually add control variables for panel regression, and the overall panel regression results are shown in Table 3.

Table 3: Panel fixed effect regression results

Variable	(m1)	(m2)	(m3)	(m4)	(m5)	(m6)
TSC	2.604***	2.003***	1.963***	1.741***	1.505***	1.874***
	(17.88)	(10.89)	(9.84)	(9.25)	(8.03)	(8.83)
TST		2.631***	2.647***	2.635***	2.409***	2.562***
		(4.87)	(4.96)	(4.84)	(5.06)	(5.26)
RP			0.611	0.588	0.511	0.658
			(1.52)	(1.48)	(1.46)	(1.48)
IR				1.748	1.613	1.555
				(1.44)	(1.58)	(1.55)
CR					0.256***	0.249***
					(4.58)	(4.239)
TEIV						3.045***
						(5.741)
Constant term	7.001***	6.013***	5.589***	5.745***	5.369***	5.685***
	(120.36)	(29.866)	(22.45)	(22.45)	(22.63)	(21.59)
R^2	0.845	0.763	0.895	0.884	0.906	0.801

In Table 3, models (m1)-(m3) are the effects of fiscal and tax policies on GDP without the addition of control variables, and models (m4)-(m6) are the regression results after the addition of control variables such as the investment rate (IR), the consumption rate (CR), and the total amount of imports and exports (TEIV), respectively. From the regression results, as the control variables are added sequentially, the regression coefficients of the core explanatory variables affecting economic growth tend to stabilize and are significantly positive at the 1% level.

III. C. Endogenous exploration

The endogeneity problem is an issue that cannot be ignored when exploring the impact relationship between variables, which is generally caused by omitted variables, two-way causation and measurement error. As far as this paper explores the problem of the impact of fiscal and tax policies on GDP, there may also be two-way causality and omitted variable problems, therefore, this paper proposes to use the lagged first order of the explanatory variable (fiscal and tax policies on GDP) as an instrumental variable, on the one hand, the lagged explanatory variable is high, and the level of the explanatory variable in the current period is high, and the two have correlation. On the other hand, the lagged term of the explanatory variable is not directly related to the current period explanatory variable (economic growth) and satisfies exogeneity. The instrumental variable 2SLS regression results are presented in Table 4, where robust standard errors are within (). Under-identification test: Kleibergen-Paap rk LM statistic. Weak identification test: Kleibergen-Paap rk Wald F statistic, [] is the p-value and {} is the critical value at the 10% level of the Stock-Yogo test.

Table 4: Regression results of instrumental variable 2SLS

Variable	
Fiscal and tax policy	6.423***
GDP	(0.241)
Kleibergen-Paap	29.015

rk LM statistic	[0.000]
Kleibergen-Paap	2205.11
rk Wald F statistic	{17.45}
Fixed effect	YES

It can be found that the unidentifiable test shows that the Kleibergen-Paap rkLM statistic with a p-value of 0.000 strongly rejects the original hypothesis that the instrumental variables are under-identified. The weak identification test also shows a strong rejection of the original hypothesis, indicating that the control variables are valid. From the results, the regression coefficients of the core explanatory variables after the introduction of the control variables are of the same sign as the benchmark model and are significantly positive at the 1% level, which is consistent with the results of the benchmark regression in the previous section compared to the results of the benchmark regression, and serves as a strengthened validation of the findings of the benchmark regression.

III. D. Robustness test of parameters

In order to further verify the robustness of the above model parameters, this paper proposes to use the replacement of the explanatory variable (GDP) for the regression test. Since the regional per capita gross domestic product (RCGDP) and real per capita value added in production (ACGDP) are very consistent with the evolution trend of GDP, the regional per capita gross domestic product (RCGDP) and real per capita value added in production (ACGDP) can be used as the explanatory variables to test the robustness of the parameter estimation results. The results of the robustness test are shown in Table 5, where model (c1) represents the baseline regression, and models (c2) and (c3) represent the replacement of the explanatory variables as regional per capita gross domestic product (RCGDP) and real per capita value added in production (ACGDP), respectively. The findings of both models passed the 1% significance level test, indicating that the regression analysis is reliable.

Table 5: Robustness test of the panel regression model

Variable	Benchmark regression	(c1)	(c2)
RCGDP	1.506***	1.569***	0.834***
	(8.05)	(6.66)	(5.12)
ACGDP	2.401***	-0.325	2.089***
	(5.06)	(-0.54)	(5.27)
TSC	0.589	0.189	0.684**
	(1.36)	(0.44)	(2.11)
TST	1.601	0.888	2.202**
	(1.59)	(0.61)	(2.14)
RP	0.258***	0.189**	0.369***
	(4.57)	(2.74)	(5.55)
IR	1.494***	1.488***	0.823***
	(7.86)	(6.55)	(5.09)
CR	2.388***	-0.215	2.123***
	(4.97)	(-0.38)	(5.19)
TEIV	0.499	0.174	0.673**
	(1.28)	(0.38)	(2.06)
Constant term	5.369***	14.805***	8.582***
	(22.01)	(48.78)	(39.96)
R^2	0.745	0.896	0.903

III. E. Heterogeneity analysis

In order to test the regional differences in the impact of fiscal and tax incentives on economic growth, the eastern and central-western regions of China are selected for threshold regression to explore whether fiscal and tax incentives have different impacts on economic growth in different regions under the effect of different threshold variables (fiscal and tax incentives, tax relief policies). When the threshold variable is fiscal tax incentives, the results of the threshold regression of fiscal tax incentives on the economic growth of different regions are shown in Table 6. In the case of fiscal tax incentives itself as the threshold variable, all the index variables of the eastern region are all $\geqq 0$, while all the other indexes of the central and western regions are all $\leqq 0$ except for the investment rate (IR) which is 0.5986 $\geqq 0$, which indicates that the fiscal tax incentives acquired in the eastern region have a significant impact on the economic growth of their regions. Preferential policies in the eastern region have a significantly stronger role in promoting regional economic growth than in the central and western regions.

Therefore, in order to effectively promote the economic development of each region, it is possible to consider increasing the investment in the central and western regions.

Table 6: The regression result when the threshold variable is the tax preferential policy

Variable	East			Midwest		
	(e1)	(e2)	(e3)	(m1)	(m2)	(m3)
TSC	0.0789			-0.2698**		
	(0.0503)			(0.1301)		
TST	0.0112			-0.1547**		
	(0.0298)			(0.0781)		
RP		0.5906***			-0.5555**	
		(0.1906)			(0.1184)	
IR		0.1987***			0.5986***	
		(0.0656)			(0.1092)	
CR			0.0958			-0.0704
			(0.0926)			(0.0726)
TEIV			0.1954***			-0.0777
			(0.0655)			(0.0714)
N	230	230	230	230	230	230
R^2	0.8964	0.6583	0.8005	0.6478	0.0111	0.7562

Table 7 shows the estimation results with tax relief policy as the threshold variable. In the case of tax relief policy as a threshold variable, the eastern region shows significant differences in the consumption rate (CR) and total exports and imports (TEIV) variables, with marginal impacts of 0.1911 and 0.2658, respectively. The central and western regions, on the other hand, show significant differences in the government's overall tax structure (TST) and fiscal policy adjustment (FP), indicating that the fiscal and tax incentives in both the eastern and central and western regions have a certain impact on the overall economic growth of their regions.

Table 7: The regression result when the threshold variable is the tax relief policy

Variable	East			Midwest		
	(e1)	(e2)	(e3)	(m1)	(m2)	(m3)
TSC	-0.0294			0.0088		
	(0.0225)			(0.0345)		
TST	0.0397			0.0511*		
	(0.0299)			(0.0178)		
RP		-0.1247			-0.2562**	
		(0.1963)			(0.1113)	
IR		0.0189*			-0.1902	
		(0.1247)			(0.1263)	
CR			0.1911***			-0.0498
			(0.0555)			(0.0502)
TEIV			0.2698***			0.0155
			(0.0556)			(0.0509)
N	230	230	230	250	250	250
R^2	0.7895	0.0036	0.4978	0.7003	0.1256	0.7849

IV. Conclusion

Based on the panel data quantile regression modeling method, the research conclusions of this paper on the role of corporate tax burden on economic growth are as follows:

(1) Adopting the fiscal and tax policy to reflect the corporate tax burden, and the gross domestic product (GDP) growth rate to measure the level of economic growth and development, the impact analysis model of corporate tax burden on economic growth is constructed. And design the panel data quantile regression model as the parameter analysis method of the impact analysis model.

(2) In the empirical analysis based on the panel data quantile regression model, on the parallel trend test, after the implementation of fiscal and tax incentives, the regression coefficients are all significantly positive and away from the value of 0, and China's gross domestic product has a significant increase. In the benchmark regression, after the implementation of fiscal and tax incentives, the GDP increased by 6.03% on average. In the parameter

estimation and analysis of control variables and independent variables, with the sequential addition of control variables (investment rate, consumption rate, total import and export), the regression coefficients of the core explanatory variables affecting the economic growth tend to stabilize and are significantly positive at the 1% level. Meanwhile, the endogeneity test and robustness results of variables and models have passed the 1% significance level test, indicating that the designed impact analysis model and the regression analysis results of variables have high credibility.

(3) In the heterogeneity analysis of the impact of fiscal and tax incentives on regional differences in economic growth, with fiscal and tax incentives as the threshold variable, the marginal impact of the investment rate in the central and western regions reaches 0.5986, and with the tax exemption policy as the threshold variable, the marginal impact of the eastern region on the consumption rate and the total amount of imports and exports is 0.1911 and 0.2658, respectively.The study recommends that Different regions should be treated with different fiscal and tax policies in accordance with their economic development levels, so as to effectively promote economic growth and development.

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