



# Financial Pressure, Efficiency of Tax Collection and Administration and Regional Heterogeneity Take the “2018 Consolidation of State and Local Taxes” as an Example

Cunhui Jia<sup>(✉)</sup>

Harbin University of Commerce, Harbin 150028, Heilongjiang, China  
2316140887@qq.com

**Abstract.** Based on the quasi-natural experiment of “the combination of state and local taxes in 2018” and the generalized double difference model, this paper discusses whether there is regional heterogeneity in the impact of the policy of “the combination of state and local taxes” on the changes in the impact of tax collection efficiency on local financial pressure. The experimental results show that under the policy impact of “the combination of state and local taxes”, the efficiency of tax collection and administration has a significant impact on local financial pressure, and education and science expenditure in livelihood expenditure has a significant effect on relieving financial pressure, while culture and health expenditure have no significant effect on relieving financial pressure. However, the effect of tax collection and administration efficiency on relieving financial pressure is not different in different regions with different levels of economic development. Therefore, in order to relieve the local financial pressure, the local government should, based on effectively improving the efficiency of tax collection and management, integrating the tax collection and management process, and perfecting the modern tax collection and management system, focus on broadening the channels of financial revenue, cultivating potential tax sources, and improving the efficiency of the use of financial funds.

**Keywords:** Financial Pressure · the Efficiency of Tax Collection and Administration · Fiscal Expenditure Structure

## 1 Introduction

In 2015, the State Council issued the “Plan for Deepening the Reform of Tax Collection and Administration System of State and Local Taxes”, which proposed to build a modern tax collection and administration system, improve the efficiency of tax collection and administration, reduce collection costs, better serve taxpayers and ensure the effective exertion of tax functions. Compared with the 1994 tax-sharing reform to mobilize the enthusiasm of local taxation and safeguard the central government revenue, the combination of state and local taxes in 2018 is a collection of tax resources based on the

reform of modern tax collection and management system. The similarities lie in that they all serve the needs of the times. Although the direction of change is different, the ultimate goal of change is closely related to the overall economic development of the society. So how much impact will the combination of state and local taxes have on the efficiency of tax collection and management, and how much will the local fiscal pressure change? Will the financial pressure on local governments with different levels of economic development change after the merger of national and local taxes in combination with the changes in the intensity of tax collection and administration? This is the main issue to be discussed in this paper.

On the basis of introducing the policy background, based on the panel data of 31 provinces in China from 2007 to 2020, this paper uses the generalized double difference method to assess the impact of the changes in tax collection efficiency on fiscal pressure after the merger of national and local taxes, taking the “merger of national and local taxes” as a quasi-natural experiment, and discusses the impact in groups according to the different levels of economic development. The results show that the effect of tax collection efficiency on local financial pressure is significantly negative, that is, with the improvement of tax collection efficiency, financial pressure will be reduced to a certain extent. However, this effect is not obvious in regions with different levels of economic development.

This paper holds that after the merger of the State and Local Taxation Bureau, the relevant work of the Local Taxation Bureau will be brought into the overall management of the State Taxation Bureau. On the one hand, it may affect the efficiency of tax collection and management in different regions with different levels of economic development. On the other hand, as the non-tax revenue originally collected by local financial departments and other institutions after the merger of the State and Local Taxation Bureau will be collected and managed by the tax department, it may have a direct impact on local financial revenue and an indirect impact on local financial pressure.

Based on the above analysis, the following assumptions are proposed:

Hypothesis 1: The change in tax collection efficiency caused by the combination of state and local taxes has a significant impact on local financial pressure.

Hypothesis 2: The effect of tax collection efficiency on fiscal pressure will vary with different levels of economic development.

This paper has the following marginal contributions: First, it takes “the combination of national and local taxes” as a quasi-natural experiment to discuss the impact on the local government’s financial pressure; Secondly, when discussing the effect of the efficiency of tax collection and administration on the financial pressure, the fiscal expenditure structure is taken as a consideration, trying to discuss the corresponding change of the financial pressure caused by the different fiscal expenditure structure; Third, different from domestic research on financial pressure and efficiency of tax collection and management, it tends to include corporate tax behavior for correlation analysis. This paper studies the relationship between efficiency of tax collection and management and local financial pressure from the perspective of the government.

The rest of this paper is structured as follows: The second part reviews the literature; The third part constructs the theoretical mechanism; The fourth part and the fifth part set up and test the model; The sixth part is the conclusion analysis. Due to the limitation of

data availability, the model setting is somewhat inadequate in this paper, the experimental conclusions are limited, and the corresponding results need to be further improved.

## 2 Literature Review

In the study of the formation of financial pressure, it is generally believed that the formation of financial pressure is related to the level of economic development, the degree of national autonomy, the level of income collection and management technology, government functions and other factors. Tax efforts have strategic imitation competition among regions, and the transmission of fiscal pressure has strategic substitution with local tax efforts [1]. Promotion incentive has more obvious impact on the collection and management of large enterprises, non-state-owned enterprises and municipal enterprises [2]. Fiscal pressure will curb the fiscal absorptive capacity of local governments through effectiveness and standardization. And this kind of influence will be different because of the degree of decentralization and the influence of intergovernmental competition [3].

Most scholars believe that financial pressure has a certain positive effect on improving the efficiency of tax collection and management, and this effect will be transmitted through corporate tax avoidance behavior: Tax collection and management departments to improve the degree of tax collection efforts is the main reason to promote the growth of tax revenue [4]. The change of local government will improve the tax collection and administration of tax authorities [5], and local officials mainly influence the effective tax rate of enterprises by strengthening the tax inspection within their respective jurisdictions [6]. The greater the financial pressure, the lower the degree of tax avoidance, and mainly exists in private enterprises [7]. Financial pressure has a significant impact on the operating performance of micro-enterprises, and this impact is transmitted by influencing the financial pressure to urge the tax authorities to improve the degree of tax efforts, and enterprises will be more likely to evade taxes and reduce financing constraints [8]. In conclusion, from the financial pressure to the transmission mechanism of tax collection and management, most of them take corporate tax behavior as the intermediate research object and tax collection and management as the secondary effect research.

However, some scholars believe that improving the level of tax collection and administration can alleviate the local financial pressure. However, improving the level of tax collection and administration may not necessarily effectively alleviate the financial pressure: Local government will increase the actual tax burden on enterprises, thus transferring the financial pressure faced by some governments, but will lead to more tax evasion by enterprises, while the level of local tax collection and administration has not actually improved [9]. The improvement in the level of tax collection and administration will have a certain inhibitory effect on the illegal tax avoidance behavior of private enterprises with political status in the region, and thus will have a certain effect on alleviating the financial pressure [10]. The “multiplier effect” brought into play by tax collection and management will be transmitted to the regional economic development due to the difference in fiscal pressure among regions, which will further expand the difference in GDP per capita among regions [11].

In conclusion, when studying the interaction between the efficiency of tax collection and management and financial pressure, it is limited to the availability of data. Domestic

research mostly focuses on the change of corporate tax burden under the influence of financial pressure, in which tax collection and management plays a conductive role. And think that the impact of financial pressure on the efficiency of tax collection and management is mostly considered to be a positive impact, that is, the greater the financial pressure faced by the local government, the corresponding tax department's tax collection and management efficiency will be improved to a certain extent, or the tax department's tax efforts will be relatively improved. There are few studies on the analysis of financial pressure and tax collection and management from the perspective of non-enterprise tax behavior.

### **3 Theoretical Mechanism**

The procedures and means of tax collection and administration are directly affected by the central government. The procedures are consistent across the country and there is no regional heterogeneity. However, in terms of changes in financial pressure, provinces and cities have different problems that need to be solved urgently, and local financial departments have different priorities. In order to achieve the goals set by the higher authorities, the local government will significantly increase the overall financial pressure of the government by increasing the expenditure on education. However, different regions with different economic levels pay different costs if they fail to reach the policy objectives of their superiors [3]. Secondly, the focus of local government investment in related industries is different, which also affects the source of tax revenue of related industries. There is a lag effect in the use of fiscal expenditure funds. The change in the proportion of local finance expenditure in various fields will affect the development trend of this field in the next few years. When the government is under financial pressure, it will selectively contract and relax its spending on people's livelihood, and it will tighten its spending on technological innovation and the introduction of human capital [12]. Thirdly, each province has different areas of tax revenue growth under different situations of the subsequent development priorities of different provinces, and as the areas of financial capital tend to cultivate and stabilize new tax revenue growth points, that is, the local government's resource endowments will affect the local government's choice of livelihood expenditure areas for key arrangements. When local governments face financial pressure, the quality of public services will be significantly reduced, and this transmission relationship is achieved through the change in the structure of fiscal expenditures [13], which also confirms that the change in the structure of fiscal expenditures when local governments change the input of fiscal funds will lead to a series of effects in the development of public services and subsequent industrial development.

## **4 Sample Selection and Data Sources**

### **4.1 Sample Selection**

In this paper, the main data sources are the provincial databases and local statistical yearbooks. The relevant data of 31 provinces and cities in China from 2007 to 2020 are screened, the influencing factors of local financial pressure are screened, and indicators are selected to form a model.

## 4.2 Data Sources

This paper studies the effect of tax collection efficiency on local financial pressure, with tax collection efficiency as the main explanatory variable and other factors affecting local financial pressure as the control variable. As the local industrial structure and economic development foundation significantly affect the local fiscal revenue, indirectly affect the change of local fiscal pressure. Therefore, the control variables mainly select indicators that represent the fiscal expenditure structure and the level of economic development, effectively covering the local government's investment in improving people's livelihood and development priorities. The structure of fiscal expenditure is measured by the proportion of people's livelihood expenditure in fiscal expenditure, and the level of economic development is measured by GDP per capita.

The following generalized double difference model is constructed:

$$pressure_{i,t} = \beta_0 + \beta_1 \times TF_{i,t} \times post_{i,t} + \beta_2 TF_{i,t} + \beta_3 educate_{i,t} + \beta_4 technology_{i,t} + \beta_5 culture_{i,t} + \beta_6 health_{i,t} + \beta_7 personGDP_{i,t} + \gamma_i + \delta_t + \varepsilon_{i,t}$$

$pressure_{i,t}$  represents the dependent variable in this paper, i.e. the financial pressure of local government  $i$  and  $t$  represent provinces and time,  $\gamma_i$ ,  $\delta_t$  represent fixed effects of regions and time, and  $\varepsilon_{i,t}$  are random error terms.

As mentioned above, the impact of the policy impact of the combination of state and local taxes on the efficiency of tax collection and management, and the change in the impact between the efficiency of tax collection and management and the local financial pressure,  $TF_{i,t} \times post_{i,t}$  as a continuous variable of policy intensity, is used to measure the level of tax collection and management efficiency faced by various provinces and cities after the "combination of state and local taxes".  $post_{i,t}$  Represents the province and time dummy variable, and the time dummy variable is 1 in 2018 and beyond; otherwise, it is 0; And set group regression. Referring to Chen. (2016) research [14], the efficiency of tax collection and administration ( $TF$ ) is measured by the proportion of actual tax revenue and expected tax revenue in each region. In the regression analysis,  $post$  and  $TF$  are interacted to examine the influence of different tax collection levels on the change of local financial pressure. And control the following variables: efficiency of tax collection and administration ( $TF$ ), proportion of education expenditure to fiscal expenditure ( $educate$ ), proportion of science expenditure to fiscal expenditure ( $technology$ ), proportion of culture expenditure to fiscal expenditure ( $culture$ ), proportion of health expenditure to fiscal expenditure ( $health$ ), per capita GDP( $person GDP$ ), etc.

## 4.3 Balance Inspection

In order to test the rationality of the index selection in this paper, the balance test is carried out. The results of balance test show that the control variables selected in this paper are significantly different between the treatment group and the experimental group after they are grouped according to the level of economic development. Before the variables are controlled, there are significant differences in the impact of tax collection efficiency on local financial pressure between regions with different levels of economic development, and the differences are no longer significant after the variables are controlled.

## 5 Regression Results and Testing

### 5.1 Descriptive Statistical Analysis

Table 1 reports the descriptive statistical results of the main variables, from which it can be found that the average value of the *pressure* variable is 1.6321, which indicates that the financial pressure of each province and city is generally large. While the minimum value of *pressure* is 0.0517. The maximum value is 14.6214, which indicates that the financial pressures of 31 provinces and cities in China are different. Combining with the performance of *Person GDP*, it also indirectly reflects the imbalance of regional economic development and fiscal revenue and expenditure. The average tax collection efficiency index is 0.0100, which needs to be improved as a whole. In the analysis of the fiscal expenditure structure that affects the local fiscal pressure, the average proportion of expenditure on science and technology and culture is about 0.02, and the expenditure on education accounts for a large part of the people's livelihood expenditure, which is 0.16. The average share of health expenditure was 0.07, which was higher than the share of science and culture expenditure.

**Table 1.** Summary Statistics

Variable	Mean	Std. Dev	Min	Max
<i>pressure</i>	1.6321	1.9627	0.0517	14.6241
<i>TF</i>	0.0100	0.0023	0.0038	0.0173
<i>educate</i>	0.1631	0.0263	0.0990	0.2222
<i>technology</i>	0.0207	0.0148	0.0030	0.0720
<i>culture</i>	0.0200	0.0070	0.0099	0.0580
<i>health</i>	0.0713	0.0161	0.0377	0.1208
<i>person GDP</i>	10.4749	0.6933	7.4082	12.0086

### 5.2 Analysis of Regression Results

Table 2 (1) and (2) show the regression results of the effect of “State-Local Tax Consolidation” on the relationship between tax collection efficiency and local financial pressure, which is the regression of the effect of “State-Local Tax Consolidation” on financial pressure, and the regression of the effect of “State-Local Tax Consolidation” on tax collection efficiency and local financial pressure. The results show that when the provinces and cities are not grouped according to the level of economic development, the regression coefficient of continuous variables of policy intensity is negative, and it is significant at 1%. This shows that after controlling other factors, the change in the efficiency of tax collection and administration caused by the “merger of state and local taxes” event slowed down the financial pressure of the local government. The regression results support the logic that the change in tax collection efficiency caused by the combination of

national and local taxes has slowed down the local financial pressure to a certain extent. Hypothesis 1 has been verified. On the one hand, the combination of national and local taxes has made the tax collection and management process clear and the scope clear, and the tax collection and management process has been improved towards integration and standardization; On the other hand, the combination of the state and local taxes relieves the local government from having to bear the salaries of the former local tax bureau personnel and reduces the local financial expenditure accordingly, thus easing the financial pressure.

Among the regression results of other variables, the regression coefficients of *educate*, *technology* and *Person GDP* are significantly negative at the confidence level of 0.01, indicating that the greater the education expenditure/science expenditure/GDP per capita, the smaller the financial pressure, the greater the investment in education, the more scientific investment, and the more economic development, the greater the mitigation effect on the local financial pressure, which is consistent with the reality. Local governments pay attention to education expenditure, research and development of science and technology, and economic development, not only to meet the needs of public services, but also to nurture local development. Effectively adjusting the future local industrial structure and the internal driving force of the economy from the perspective of fiscal expenditure structure will help cultivate high-quality tax sources with strong growth. The regression coefficient of *culture* is significantly positive at the confidence level of 0.01, which indicates that the more cultural expenditure is for people's livelihood, the greater the financial pressure. Cultural expenditure focuses on improving the overall cultural literacy level of the people, mostly for public welfare projects, with less revenue and less effect on relieving financial pressure. Cultural expenditure is similar to "pure public goods", spending in order to meet public demand, which brings less revenue and has no significant effect on relieving financial pressure.

The level of economic development will also affect the local financial pressure. To a certain extent, the level of economic development determines the revenue side of financial pressure: tax revenue. Areas with good economic development have a strong foundation for tax sources and strong revenue growth. On the contrary, the tax sources dried up and the tax growth rate gradually declined.

In order to test the effect of the "combination of national and local taxes" on the efficiency of tax collection and administration and local financial pressure in different regions with different levels of economic development, the interaction term of *TF* and *post* is introduced to analyze the changes of local financial pressure. According to the economic development level of each province and city, the 31 provinces and cities in the country are divided into three levels: better, better and general. (3)(5) The central and eastern regions are the control group, while the central, western and northeastern regions are the experimental group, indicating better: good; (4)(6) The central and eastern regions are the control group, while the western and northeastern regions are divided into the experimental group, indicating good: average. The regression results in Table 2 show that the effect of "State-Local Tax Consolidation" on the relationship between tax collection efficiency and local fiscal pressure in regions with different levels of economic development is not significant, indicating that the change in fiscal pressure caused by the

change in tax collection efficiency in regions with different levels of economic development is not obvious and there is no difference between different regions. Assumption 2 is not true. However, the regression coefficients of tax collection efficiency, education expenditure proportion and GDP per capita are significantly negative at the level of 0.01. The regression coefficient of health expenditure is significant at 0.05 level.

(5)(6) The regression results show that the regression coefficients of the proportion of education expenditure are quite different, while the regression coefficients of health expenditure and GDP per capita are relatively small. It shows that in regions with different levels of economic development, the impact of education expenditure on the efficiency of tax collection and management and financial pressure is stronger in regions with good economic development level than in regions with normal economic development level. That is, in areas with better economic development, the greater the expenditure on education, the more significant the trend that the financial pressure will be relieved by the impact of the efficiency of tax collection and administration.

However, the regression coefficient of tax collection efficiency is significantly negative, indicating that the change in tax collection intensity has a significant effect on relieving financial pressure. Modern tax collection and management technology can

**Table 2.** Regression table

Variables	(1)	(2)	(3)	(4)	(5)	(6)
TF × post		−83.76***	0.180	0.136	−15.75	−14.32
		(30.37)	(0.122)	(0.118)	(11.82)	(11.63)
TF		−205.1***			−220.9***	−220.5***
		(20.62)			(20.30)	(20.29)
educate	−30.93***	−7.387***	−6.084**	−6.334**	−7.120***	−6.884***
	(3.365)	(2.212)	(2.535)	(2.543)	(2.226)	(2.233)
technology	−53.78***	2.239	0.986	2.213	4.558	3.584
	(5.963)	(4.576)	(5.082)	(5.333)	(4.508)	(4.699)
culture	41.43***	−7.476	−19.22**	−19.15**	−9.299	−9.648
	(12.64)	(6.851)	(7.790)	(7.830)	(6.904)	(6.935)
health	7.356	8.487**	18.51***	18.53***	7.617**	7.615**
	(5.718)	(3.489)	(3.829)	(3.833)	(3.506)	(3.508)
person GDP	−0.651***	−1.343***	−1.590***	−1.554***	−1.224***	−1.236***
	(0.126)	(0.266)	(0.309)	(0.307)	(0.271)	(0.270)
Constant	13.14***	18.62***	18.29***	17.95***	17.39***	17.50***
	(1.472)	(2.732)	(3.176)	(3.158)	(2.775)	(2.768)
Observations	434	434	434	434	434	434
R-squared	0.403	0.961	0.948	0.948	0.960	0.960

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

effectively reduce the cost of tax compliance. Standardized and process-oriented tax collection and management is one of the most effective ways to ease financial pressure before the development of new tax sources.

The regression coefficient between scientific expenditure and cultural expenditure is not significant. The possible reason is that cultural expenditure can't play a role in relieving financial pressure, and the effect of scientific expenditure on relieving financial pressure lags behind, which needs to be studied in a longer time line.

### 5.3 Robustness Test

In order to verify the robustness of the conclusions of this study, the variables are tail-reduced. The regression results in Table 3 show that the regression coefficient of the continuous variable of policy intensity is significantly negative and the regression coefficient of tax collection efficiency is significantly negative after the tail reduction of explanatory variables and control variables, indicating that the “combination of national and local taxes” has a significant impact on the relationship between tax collection intensity and local financial pressure. The robustness test results show that, excluding the abnormal discrete values, there is no significant difference between the basic regression results and DID results, further strengthening the reliability of the basic regression conclusions.

**Table 3.** Robust Test

VARIABLES		VARIABLES	
TF × post	−49.06*** (17.65)	culture	−10.11*** (3.587)
TF	−67.97*** (11.17)	health	−5.120*** (1.758)
educate	−1.440 (1.034)	person GDP	−0.335*** (0.126)
technology	−10.66*** (2.247)		
Constant		6.670*** (1.297)	
Observations		338	
R-squared		0.978	

## 6 Conclusions

Taxation is an important tool for local government to organize local revenue and an important component of local fiscal revenue. However, the legislative power of tax revenue is vested in the central government, and the way of tax revenue sharing cannot

be changed at will. Local governments can only supplement local fiscal revenue to maintain the provision of local public services by improving the performance of fiscal expenditure, effectively using debt funds and improving the efficiency of tax collection and management. The mandatory and unpaid nature of taxation in turn requires the government to provide matching public services. Among them, improving the efficiency of tax collection and administration can effectively increase the unnecessary waste of tax revenue, thus relieving the local financial pressure to a certain extent.

The regression results show that the local government's choice of ways to ease the financial pressure is related to the regional economic development, the financial expenditure structure also has an impact on the financial pressure, and the "state-land tax merger" as an event impact has a significant effect on the tax collection efficiency of 31 provinces and cities in the country, but this effect does not show regional heterogeneity. The first possible reason is that the narrowing of the financial pressure difference between regions cannot depend entirely on the efficiency of tax collection and administration; Second, the improvement of the efficiency of tax collection and administration will ease the financial pressure with the same intensity nationwide; Third, among the factors that affect the financial pressure, the easing of financial pressure brought by the improvement of tax collection and management efficiency cannot effectively solve the "fiscal expenditure dilemma".

Therefore, the local government should not only start from the port of tax collection and management to ease the local financial pressure, hoping to increase the fiscal revenue by reducing the cost of tax compliance or strict tax enforcement, timely collection of taxes and other "process" links, but should start from the "supply side" or "demand side" to effectively broaden the channels of fiscal revenue, cultivate potential tax sources and improve the efficiency of the use of fiscal funds. At the same time, the local financial expenditure structure should be adjusted accordingly, people's livelihood expenditures should be reasonably arranged, and the demand for public services should be balanced with the need for local financial pressure relief.

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## References

1. Yonghui, Z., et al.: Divided into incentives, budget constraints and local government taxation behavior. *Economics (quarterly)* **19**(01), 1–32 (2022)
2. Congshuai, Y., et al.: Promotion incentives and tax collection-evidence from breakpoint regression. *Financ. Econ.* **02**, 31–41 (2020)
3. Ping, G., et al.: Has fiscal pressure improved local governments' financial absorptive capacity? *Financ. Theory Pract.* **43**(02), 82–90 (2022)
4. Hongyou, L., et al.: Local government transition, tax collection and administration and tax radicalization. *Econ. Manage.* **38**(02), 160–168 (2016)
5. Tai Jie, T., et al.: Local officials' administrative pressure, financial target assessment and enterprise effective tax rate. *Econ. Rev.* (03), 89–103 (2019)
6. Peiyong, G.: Mystery of China's continuous high-speed tax growth. *Econ. Res.* (12), 13–23 (2006)

7. Yupeng, S., et al.: Financial pressure and enterprise tax avoidance: an empirical study based on endogenous perspective. *Financ. Econ.* (08), 22–31 (2020)
8. Baocong, H., et al.: Pressure is Power? Increasing financial pressure and improving enterprise quality and efficiency. *Tax Econ. Res.* **26**(05), 70–80 (2021)
9. Guangrong, M., et al.: Government size, local governance and corporate tax evasion. *World Econ.* **35**(06), 93–114 (2012)
10. Weian, L., et al.: Tax avoidance effect of political identity. *Financ. Res.* **03**, 114–129 (2013)
11. Xiaoguang, C.: Financial pressure, tax collection and administration and regional inequality. *China Soc. Sci.* (04), 53–70+206 (2016)
12. Deqian, Y., et al.: Financial pressure, the choice of government strategies below the provincial level and the structure of fiscal expenditure. *Financ. Res.* (08), 47–62 (2021)
13. Xinyu, Z., et al.: Quality effect of local financial pressure on economic development —— empirical evidence from panel data of 282 prefecture-level cities in China. *Financ. Res.* **06**, 57–71 (2019)
14. Deqiu, C., et al.: Policy uncertainty, efficiency of tax collection and administration and enterprise tax evasion. *Manage. World* (05), 151–163 (2016)