



Local Financial Pressure and Corporate Tax Stickiness

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Abstract. In recent years, China's various tax reduction policies have achieved remarkable results, but the economic downturn has increased the financial pressure of local governments, and enterprises still feel that the tax burden is too heavy. By exploring the relationship between local financial pressure and corporate tax stickiness, this paper provides empirical evidence for enterprises to reduce the pain of tax burden. The empirical research finds that: with the increase of corporate pre-tax profit level, the increase of corporate tax burden is significantly higher than the decrease when corporate profit level drops, that is, there is tax stickiness; In addition, this paper also found that Local financial pressure can increase corporate tax stickiness. Based on this, this paper proposes that the government should perfect the fiscal decentralization system, release the financial pressure and ease the pain of tax burden.

Keywords: Local financial pressure; Corporate tax stickiness; Pain of tax burden

1 Introduction

In recent years, China has launched and implemented a series of policies to reduce taxes and fees to reduce enterprise costs and boost enterprise development. However, in this process, public opinion disputes that the corporate tax burden is painful are common (Ni Hongfu et al., 2020)[1]. In order to explore the causes of this phenomenon, scholars first proposed the concept of tax burden stickiness. Similar to cost stickiness, tax stickiness refers to the increase in tax burden for every 1% increase in profit level of a company is greater than the increase for every 1% decrease in profit level. This "asymmetric" feature enables enterprises to bear a relatively high tax burden when their operating conditions are poor, which increases the pain of tax burden for enterprises (Wei Zhihua et al., 2022)[2]. Since the tax-sharing reform in 1994, the local governments in our country have been facing great financial pressure. On this basis, in-depth analysis of the impact of local financial pressure on corporate tax stickiness enriches the research results of corporate tax stickiness.

2 Literature Review, Theoretical Analysis and Research Hypothesis

2.1 Literature Review

Scholars mainly discuss the impact of local financial pressure on corporate tax stickiness from the perspectives of tax collection and management and corporate tax avoidance. Some scholars have pointed out that when the local financial pressure becomes greater, the intensity of tax collection and administration will increase, regardless of whether it is value-added tax or enterprise income tax, thus increasing the tax burden on enterprises. In addition, the existence of local financial pressure is also beneficial. Sun Yupeng (2021) believes that when local governments have financial pressure, enterprises will obtain financial support from local governments by proactively reducing tax avoidance behavior [3]. Zhuang Xuying and others (2022)[4] found through empirical test that the fiscal pressure lagging behind will positively affect the tax stickiness of enterprises, and this effect is especially obvious in enterprises with high tax avoidance degree and large enterprise scale.

By combing the literature, it is found that predecessors have done some research on the local financial pressure, the existence of tax stickiness, the causes (such as tax inspection, bargaining power, tax radicalization, tax efforts, etc.), and the economic impact (profitability, industrial structure, etc.). However, the research on the impact of local financial pressure on tax stickiness is still relatively weak, so it is still necessary and space for in-depth discussion.

2.2 Theoretical analysis and research assumptions

1. Stickiness of tax burden.

Viscosity is characterized by asymmetry of marginal rate of change with the direction of traffic. Taxes paid by enterprises can be roughly divided into the following two categories: one is turnover taxes and income taxes related to business volume; The other category is the fixed nature tax related to fixed assets and enterprise scale [5]. During the period of economic operation, enterprises usually choose to increase investment and expand production scale, which results in the increase of turnover tax, income tax and fixed taxes. However, when the economy goes down, the fixed taxes may not be able to change significantly with the business volume. Therefore, this paper proposes the following assumptions:

H1: Tax burden stickiness exists widely in China's listed companies.

2. Local financial pressure and corporate tax stickiness.

Based on the theory of fiscal decentralization, China began to implement the tax-sharing system in 1994. There are some problems in this system. For example, the tax-sharing system only emphasizes the distribution of financial power between the central government and the local government, but does not regulate the financial responsibility between the two levels of government, resulting in the mismatch between

the powers and financial power of the local governments. When the local government's fiscal expenditure responsibility is greater than the tax revenue, there will be a "fiscal revenue gap". (Gao Peiyong et al., 2016)[6], and as the gap increases, local fiscal pressures will follow. Tax is the main source of finance. Local governments are more willing to collect more tax revenue to ease the financial pressure. This will inevitably spread to enterprises, so that even when profits are falling, the tax burden of enterprises is still high, thus increasing the stickiness level of tax burden of enterprises. Therefore, the following assumptions are made:

H2: When other factors remain unchanged, the greater the local financial pressure, the higher the stickiness of corporate tax burden.

3 Research and design

3.1 Model design

1. Corporate tax stickiness.

In order to test the existence of tax stickiness of listed companies, this paper builds the following model by referring to the cost stickiness model proposed by Anderson et al. (2003) [7].

$$\ln \frac{TB_{i,t}}{TB_{i,t-1}} = \alpha_0 + \alpha_1 \ln \frac{EBT_{i,t}}{EBT_{i,t-1}} + \alpha_2 D_{i,t} * \ln \frac{EBT_{i,t}}{EBT_{i,t-1}} + Control + Year + Industry + \varepsilon_{i,t} \quad (1)$$

Among them, $TB_{i,t}$ represents the consolidated tax burden of enterprise I in T year, and $TB_{i,t-1}$ represents the consolidated tax burden of enterprise t-1 year. This paper uses the natural logarithm of the ratio to measure the change of consolidated tax burden; $EBT_{i,t}$ represents the pre-tax profit of Enterprise I in the year of T, and $EBT_{i,t-1}$ represents the pre-tax profit of Enterprise t-1; D is a virtual variable. If D is 1, it means that the profit before tax of the current period is lower than that of the previous period; otherwise, it is 0; Control is a collection of all control variable; Year and Industry represent year and industry fixed effect respectively; $\varepsilon_{i,t}$ is the residual term.

2. Local financial pressure and tax stickiness.

In order to verify the effect of local financial pressure on corporate tax stickiness, based on model (1), this paper introduces triple cross terms $press * D_{i,t} * \ln(EBT_{i,t}/EBT_{i,t-1})$ and press, and constructs model (2). Among them, Press measures the state of fiscal pressure in each province, while the other variables are consistent with the above. This paper focuses on the coefficient α_3 of triple cross term. If α_3 is significantly negative, it indicates that local financial pressure can promote the stickiness of corporate tax burden.

$$\ln \frac{TB_{i,t}}{TB_{i,t-1}} = \alpha_0 + \alpha_1 \ln \frac{EBT_{i,t}}{EBT_{i,t-1}} + \alpha_2 D_{i,t} * \ln \frac{EBT_{i,t}}{EBT_{i,t-1}} + \alpha_3 press * D_{i,t} * \ln \frac{EBT_{i,t}}{EBT_{i,t-1}} + press \quad (2)$$

+ Control + Year + Industry + $\varepsilon_{i,t}$

3.2 Description of variables

1. Interpreted variables.

The stickiness of tax burden can be indirectly measured by the change of tax burden of enterprises. Referring to the research of Liu Jun and Liu Feng (2014)[8], Cheng Hongwei, et al. (2018)[9], the turnover tax is included in the measurement of corporate tax burden, which is defined as the current tax burden (TB)= various taxes paid–refunds of taxes received+final balances of taxes payable–opening balances of taxes payable, and the change rate of tax burden = $\ln(TB_{i,t}/TB_{i,t-1})$ is defined to measure the change degree of corporate tax burden. Referring to the research of Hu Hongshu et al. (2020)[10], this paper defines the enterprise taxable income (EBT)= total profit+asset impairment loss, which is used to measure the pre-tax profit of the enterprise. At the same time, the natural logarithm of the ratio of profit before tax of the current period to the previous period is used to reflect the change degree of profit before tax.

2. Interpretative variables.

Local financial pressure (press) is the core explanatory variable in this paper. This paper uses the design idea of Zhuang Xuying (2022) for reference and measures local financial pressure from the perspective of local government revenue and expenditure, i.e. financial pressure is the ratio of the difference between the general public budget expenditure and income of each province and the general public budget income.

3. Control variables.

Referring to Wang Baiqiang et al. (2018)[11] and Zhuang Xuying (2022) and other literatures on the stickiness of corporate tax burden, this paper selects the relevant control variables, including the Size of the enterprise, which is measured by the logarithm of the total assets at the end of the year; Level of debt (Lev), measured as the ratio of year-end debt to total assets; Capital intensity (INTAN/TAN) is measured as the ratio of net fixed assets or intangible assets to total assets at the end of the year; Profitability (ROA), measured as the ratio of net profit at the end of the year to total assets; Rate of return on investment (ROI), measured as the ratio of year-end investment income to total assets.

3.3 Sample data and data sources

In this paper, all A-share listed companies from 2009 to 2020 are selected as the sample companies, and the data are filtered according to the following criteria: (1) the ST or ST* class enterprise samples are excluded; (2) removing the sample of enterprises in the financial industry; (3) excluding the samples that are inconsistent with the actual

situation, such as comprehensive tax burden, pre-tax profit less than 0, nominal tax rate less than 0 or greater than 1; (4) In order to avoid the interference of extreme values on the regression results, the continuous variables are tail-reduced at 1% ~ 99% quantiles. The data used to measure the local financial pressure in this paper are from China Statistical Yearbook, the financial data of listed companies are from China Taian (CSMAR) database, and the nominal corporate tax rates are

Table 1. Descriptive Statistics of Main Variables

variable	Sample size	average value	standard deviation	minimum value	median	maximum
$\ln(TB_{i,t}/TB_{i,t-1})$	15148	0.099	0.517	-4.511	0.084	5.016
$\ln(EBT_{i,t}/EBT_{i,t-1})$	14550	0.105	0.563	-5.653	0.116	6.700
D	20567	0.246	0.431	0.000	0.000	1.000
press	20567	0.771	0.908	0.100	0.400	9.675
size	20567	22.020	1.320	19.320	21.850	26.150
lev	20567	0.396	0.203	0.047	0.382	0.868
Intan	20567	0.214	0.159	0.003	0.180	0.701
ltan	20567	0.046	0.046	0.000	0.034	0.292
roa	20567	0.054	0.044	0.000	0.045	0.219
roi	20567	0.006	0.012	-0.006	0.001	0.079

4 from wind database

4.1 Descriptive analysis of major variables

The descriptive analysis of the main variables in this paper is shown in Table 1: the median and average values of $\ln(TB_{i,t}/TB_{i,t-1})$ and $\ln(EBT_{i,t}/EBT_{i,t-1})$ are both positive, indicating that the tax burden and pre-tax profit of most listed enterprises are on the rise. The average value of the virtual variable (D) of the decrease in profit before tax is 0.246, which indicates that about 25% of the listed companies in the sample show a downward trend in profit. The minimum value of local financial pressure (Press) is 0.1, the maximum value is 9.675, and the average value is 0.771, which indicates that there are great differences in local financial pressure in different regions.

5 Analysis of empirical results

Model (1) studies the existence of corporate tax stickiness. According to the columns (1) and (2) in Table 2, before and after adding the control variables, the coefficients of $\ln(EBT_{i,t}/EBT_{i,t-1})$ are significantly positive at the confidence level of 1%, and the coefficients of $D_{i,t} * \ln(EBT_{i,t}/EBT_{i,t-1})$ are significantly negative at the level of 1%.

After adding the control variable, the coefficient of $\ln(EBTi_t/EBTi_{t-1})$ is 0.381, which indicates that when the profit before tax increases by 1%, the tax burden of the enterprise will increase by 0.381%; However, the coefficient of $Di_t * \ln(EBTi_t/EBTi_{t-1})$ is -0.227, which indicates that when the profit before tax is reduced by 1%, the tax burden of enterprises is only reduced by 0.154% (i.e. $0.381\% - 0.227\%$). Therefore, the change of corporate tax burden with the change of pre-tax profit is asymmetric, which indicates that tax burden stickiness exists widely in China's listed companies, assuming H1 is verified.

Model (2) studies the effect of local financial pressure on corporate tax stickiness. The regression results in columns (3) and (4) in Table 2 show that the coefficients of the cross-term $press * Di_t * \ln(EBTi_t/EBTi_{t-1})$ are significantly negative at the level of 1%, and the coefficients of $\ln(EBTi_t/EBTi_{t-1})$ are significantly positive, and the coefficients of $Di_t * \ln(EBTi_t/EBTi_{t-1})$ are significantly negative, regardless of whether the control variable is added. This indicates that local fiscal pressure promotes the tax burden stickiness of enterprises, which verifies the theoretical assumption H2 in this paper.

Table 2. Local Financial Pressure and Corporate Tax Stickiness

variable	Model (1)		Model (2)	
	(1)	(2)	(3)	(4)
$\ln(EBTi_t/EBTi_{t-1})$	0.378*** (12.01)	0.381*** (12.45)	0.379*** (11.99)	0.382*** (12.43)
$Di_t * \ln(EBTi_t/EBTi_{t-1})$	-0.207*** (-5.47)	-0.227*** (-6.21)	-0.161*** (-4.33)	-0.179*** (-4.97)
$press * Di_t * \ln(EBTi_t/EBTi_{t-1})$			-0.055*** (-3.01)	-0.055*** (-3.15)
press			-0.017** (-2.63)	-0.016** (-2.73)
constant term	0.032*** (4.26)	0.076 (1.46)	0.046*** (6.34)	0.094* (1.78)
Sample size	14,550	14,550	14,550	14,550
R2 value	0.119	0.124	0.120	0.125
Control variable	control	control	control	control
Industry/year	control	control	control	control

Note: ***, **, * are significant at 1%, 5% and 10% respectively; The value of T is shown in brackets. The standard error is adjusted by cluster at the provincial level. The following tables are the same.

6 Research conclusions and policy recommendations

6.1 Research conclusions

Based on the data of A-share listed companies from 2009 to 2020, this paper studies the relationship between local financial pressure and corporate tax stickiness. The results

show that: (1) the marginal change of corporate tax burden and the change of pre-tax profit present an "asymmetric" phenomenon, which indicates that there is a widespread stickiness phenomenon in China's listed companies' tax burden. (2) When the pre-tax profit of an enterprise changes, the direction of the local financial pressure coefficient is consistent and significant with that of the enterprise tax burden coefficient, that is, the local financial pressure plays a role in promoting the stickiness of the enterprise tax burden.

6.2 Policy recommendations

We will improve fiscal decentralization and release fiscal pressure. As can be seen from the foregoing analysis, due to the reform of the tax sharing system, the distribution of powers among governments at all levels is not clear enough, which increases the expenditure responsibility of local governments, increases their financial pressure and further increases the tax burden stickiness of enterprises. Therefore, the scope of powers and expenditure responsibilities between the central government and the local government should be further adjusted, and the powers and expenditure responsibilities of the central government should be appropriately increased to a certain extent, so as to improve the matching degree between the financial power and the powers of the local government and reduce its financial pressure. In addition, it can also raise the tax revenue of local governments. In order to obtain a sustainable and stable tax source, all localities should accelerate the establishment of local major taxes and introduce real estate taxes when appropriate (Tan Fei et al., 2019)[12]. To sum up, to ease the financial pressure of local governments and reduce the pain of corporate tax stickiness.

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