Local government debt pressure and enterprise tax burden in China

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Abstract. This study examines the relations between local government debt pressure and corporate tax burden in China, using the data of China's A-share listed companies from 2009 to 2018, which turns out that there is a positive correlation between the two. Further examination revealed that the relationship between local government debt pressure and corporate tax burden is more pronounced in the sample of listed companies that belong to the state-owned holding companies, enterprises in eastern China, and the strong market allocation of economic resources. The research conclusion of this article supplements the theory and empirical study of the effect of the macro-financial system on the economic behavior of micro-enterprises, and also deepens the academic inquiry about the macro-environmental impact on the comprehensive tax burden of enterprises.

1. Introduction

China has formally implemented the tax sharing reform since 1994. The main content of the tax-sharing reform is to divide the powers of all levels of government, determine the limits of fiscal expenditure at all levels, and clearly separate the tax revenues of the central and local governments [1-3]. This measure can stimulate the enthusiasm of local governments and promote the development of local economy to a certain extent. However, local governments have more powers and expenditures, but there is no clear source of taxes stipulated by the law to support them, due to the joint effect of legal constraints and tax sharing reform. Local governments are caught in a dilemma: "One difficulty" lies in the fact that in the critical period of China's urbanization, local governments need to obtain sufficient funds for more infrastructure construction [4-6]. On the other hand, the tax sharing reform has led to a decline in local government revenue, while the law does not allow local governments to issue direct local government bonds to raise funds needed for infrastructure construction. While raising the central fiscal revenue ratio, lowering the local fiscal revenue ratio will lead to an increase in local fiscal expenditure and an increase in local government debt pressure. According to the calculations of the Chinese Academy of Social Sciences, by the end of 2017, the broad debt ratio, after including hidden debts, has exceeded the international standard warning line of 60%, and the debt pressure of local governments is increasing year by year.

The government can directly transfer the pressure of government debt to enterprises through means. Acemoglu suggested in 2003 that the government would plunder the enterprises in the jurisdiction and transfer the financial crisis when the financial pressure increased. At home, many scholars have confirmed that when local governments have "predatory hands" and face financial difficulties, they will...
"grab taxes" and pass on government pressure by intentionally interfering in the allocation of financial funds (Zhou Xueguang, 2005; Ma Guangrong and Li Lixing, 2012; Yao Jinwei, 2014; Chen Xiaoguang, 2016) [7-8].

With reference to the above documents, this paper attempts to show the impact of local government debt pressure on corporate tax burden under China's tax sharing system from a micro perspective.

Enterprise tax burden has been a hot topic in academic and practical circles. The tax burden of enterprises is the basis of many economic behaviors of enterprises and has an impact on macro-economic operation. In 2016, Cao Dewang, chairman of Fuyao Glass, said that China's tax burden was extremely high and Professor Li Weiguang's remarks on "death tax rate" aroused great panic among enterprises. Although China's central government has made some achievements in tax reform and nominal tax rate has dropped, the actual tax rate has always remained at a relatively high level, and the role of local government in it can be preliminarily assumed.

In fact, the actual tax rate depends on the collection efficiency of the tax authorities (Xie Zhenfa, Fan Ziyling, 2015) when the nominal tax rate is determined. The local government has handed over almost all the power to formulate and adjust the tax system with the legislative power as the core, under the tax sharing system. The local government is not totally powerless to adjust the tax revenue, which can realize partial adjustment of the tax revenue by adjusting the intensity of tax collection and administration. However, considering the horizontal tax competition and the feeling of enterprises in the jurisdiction, the local government needs to attract more working capital and more dynamic enterprises to settle in the region to expand the tax base, which prevents the government from strengthening tax supervision without restriction, thus inhibiting the government's ability to obtain excess tax revenue.

From the perspective of government choice, this paper theoretically analyzes the following points: on the one hand, local governments pay more attention to relieving the immediate debt pressure and have more sufficient motivation to strengthen tax supervision. Moreover, the local government's behavior is its desire for financial benefits and political promotion, which can alleviate the local financial risks and financial risks, narrow the gap between local financial revenues and expenditures, and meet the official GDP assessment standards. On the other hand, the government will pay more attention to tax incentives and tax base adjustment, and relax tax collection and management to attract more high-quality enterprises in the jurisdiction to enter, so as to obtain long-term tax revenue. On the whole, the government, based on its desire for financial benefits and political promotion, chose to strengthen tax supervision and increase the tax burden on enterprises when facing the pressure of local debts, thus directly achieving the goal of increasing government taxes and reducing the pressure of local government debts.

2. Research hypothesis
The relationship between local government debt pressure and corporate tax burden is not unified in academic circles. The government needs to consider two aspects at the same time.

First, according to the basic standard tax competition theory and the horizontal tax competition relationship theory between regions, local governments are independent of each other and need to compete for scarce resources. At this time, local governments usually reduce the tax burden on enterprises in their jurisdiction and reduce public expenditure. If a local government does not reduce the capital tax rate, capital will flow out of the jurisdiction and reduce the local current tax base.

According to the specific situation of our country, China's tax system has been shrinking and centralizing since the tax sharing reform. The central government has mastered all legislative powers related to the tax system, and has also reverted the authority to adjust policies to the central government. However, it still allows local governments to have certain functions and powers of tax collection and administration, which means that local governments have some role in determining the actual tax rate. Although the nominal tax rate is jointly formulated by the tax system in almost the whole country, the local government can influence the actual tax rate in the region through the tax collection intensity of the tax department, thus affecting the horizontal tax competition relationship between regions.
This theory will make the government not necessarily choose to directly raise the tax burden of enterprises and transfer the pressure to enterprises when the problem of local government debt pressure arises. It is possible to consider horizontal tax competition and indirectly increase the government's tax revenue through a series of chains such as relaxing supervision, reducing the tax burden on enterprises, attracting high-quality enterprises to settle in and expanding the tax base.

The other is a more direct relationship. The relaxation of tax supervision by local governments is conducive to horizontal tax competition, but the dividends brought by tax competition are lagging behind, which will directly lead to the reduction of current tax revenue and the increase of government liabilities. The local government may choose to take the lead in solving the immediate debt crisis, directly strengthen tax supervision, increase the tax burden on enterprises, and expand government tax revenue to reduce the pressure on local government debt. At this time, the pressure on local government debt is positively related to the tax burden on enterprises.

On this basis, the following assumptions are put forward:

H1: The increase of local government debt pressure will increase the tax burden of enterprises, i.e. there is a positive correlation between the two.

3. Research design

3.1. Pattern plan

According to the above theoretical analysis, the local government debt pressure will affect the actual tax burden of enterprises with the strength of government tax collection and management, so it can be preliminarily determined that the heavier the local government debt pressure, the higher the actual tax burden of enterprises under the premise of designing and establishing appropriate control variables. Therefore, the following model is designed to test hypothesis H1:

$$ETR = a_0 + a_1 \text{Debt}_\text{GDP} + a_2 \text{Size} + a_3 \text{Lev} + a_4 \text{PPE} + a_5 \text{INV} + a_6 \text{ROA} + a_7 \text{fcf} + a_8 \text{occupy} + \Sigma \text{Year}_i + \Sigma \text{SOE}_i + \Sigma \text{Area}_i + \varepsilon$$ (1)

Model (1) explores the relationship between local government debt pressure variables and actual corporate tax burden data. Among them, Debt_GDP represents the local government debt pressure index and ETR represents the actual tax burden index of enterprises. Seven indexes are selected as control variables.

3.2. Variable source and sample selection

In this paper, considering the impact of the 2008 financial crisis on macro-economy, 23,611 data of A-share listed companies from 2009 to 2018 are used in this paper. In order to reduce errors, the initial data are processed as follows: (1) ST company is eliminated; (2) Excluding samples with negative asset-liability ratio; (3) removing samples with negative earnings before interest and tax; (4) Remove samples lacking data. Finally, Winsorize is performed at the level of 1%.

The sources of empirical data in this paper are as follows. WIND Database provides relatively complete data on local government debt pressures from 2009 to 2018. CSMAR Database provides all kinds of data needed to calculate the tax burden of enterprises with explained variables.

3.3. Variable design

3.3.1. Dependent variable. For the measurement of corporate taxes and fees based on cash basis, the tax burden pressure of enterprises is described by cash flow statement data, drawing on the practices of corporate tax burden indicators using cash flow statements such as Liu Jun and Liu Feng (2014), Li Shushu and Wang Chong (2017). The specific formula is as follows:

$$ETR= \frac{\text{Payments of all types of taxes} - \text{Refund of tax and levies}}{\text{Total operating revenue}}$$
3.3.2. **Independent variable.** Local government debt pressure (debt_gdp). Debt_gdp data is obtained by dividing the local government debt pressure data from WIND database by the local GDP data of that year.

Control variables at the company level include company size (size), asset-liability ratio (lev), capital intensity (PPE), inventory intensity (INV), return on net assets (ROA), free cash flow (FCF), major shareholders Occupy (Occupy), company property rights (SOE). The macro level is mainly the macroeconomic prosperity index (lagging data), which is represented by BIME_post. At the same time control the year (year) fixed effect.

4. **Empirical results and analysis**

4.1. **Descriptive statistics**

According to the specific data in Table 1, from 2009 to 2018, the average value of ETR is 6.08%. The average value of the local government debt pressure index (Debt_GDP) is 14%, the minimum value is 0% and the maximum value is 72.5%, which indicates that there is a heavy debt pressure in all regions and the local debt is quite different. The average value of SOE is 37.5%, indicating that the number of state-owned enterprises in the sample companies exceeds one third. The results of other control variables are mostly the same as the actual situation of the enterprise, so there is no need to repeat them.

**Table 1. Descriptive Statistics.**

| VARIABLES   | N   | mean  | sd   | min   | max  |
|-------------|-----|-------|------|-------|------|
| etr1        | 23,590 | 0.0608 | 0.0569 | -0.0591 | 0.282 |
| etr2        | 23,590 | 0.0762 | 0.209 | -0.0163 | 23.55 |
| debt_gdp    | 23,611 | 0.140 | 0.139 | 0 | 0.725 |
| ctz         | 23,611 | 0.0509 | 0.0433 | 0 | 0.220 |
| SOE         | 23,611 | 0.375 | 0.484 | 0 | 1 |
| area        | 23,611 | 1.454 | 0.729 | 1 | 3 |
| Sch         | 23,611 | 7.881 | 1.885 | -0.300 | 11.11 |

4.2. **Correlation test**

Based on correlation coefficient analysis, Pearson correlation coefficient is at the bottom left and Spearman correlation coefficient is at the top right of the table 2. The correlation coefficients between Debt_GDP and ETR are 0.017 and 0.01, showing positive correlation. Most of the ETR and variables have statistical significance, which shows that the selection of control variables covers a wide range and is reasonable, and there is no serious multicollinearity problem.

**Table 2. Correlation Test.**

|            | etr1    | debt_gdp | size   | lev    | Ppe    | inv     | roa    | BIME_post |
|------------|---------|----------|--------|--------|--------|---------|--------|-----------|
| etr1       | 1       | 0.01     | -0.067*** | -0.240*** | -0.036*** | -0.230*** | -0.152*** | -0.028*** |
| Debt_gdp   | 0.017** | 1        | 0.174*** | -0.061*** | -0.125*** | -0.082*** | 0.025*** | 0.020*** |
| size       | -0.028*** | 0.163*** | 1      | 0.467*** | 0.110*** | -0.01    | -0.050*** | -0.012*   |
| lev        | -0.203*** | -0.051*** | 0.440*** | 1      | 0.161*** | 0.210*** | -0.118*** | -0.022*** |
| Ppe        | 0.012* | -0.113*** | 0.165*** | 0.187*** | 1    | -0.119*** | 0.037*** | -0.060*** |
| inv        | -0.125*** | -0.074*** | 0.002  | 0.236*** | -0.218*** | 1      | 0.011* | 0.004     |
| roa        | -0.099*** | -0.011*  | -0.01  | -0.043*** | 0.053*** | -0.002  | 1      | -0.034*** |
| BIME_post | -0.029*** | 0.108*** | -0.005 | -0.024*** | -0.057*** | 0.001  | -0.041*** | 1        |

4.3. **Empirical results**
In Table 3, the relationship between the independent variable Debt_GDP and the dependent variable ETR1 in the first column controls the dummy variable of the year, and the control variable is added in the second column. The coefficients of Debt_GDP are all positive. P>|t| are all 0.000, which indicates that the pressure of local government debt is positively related to the actual tax rate of enterprises within the significance level of 1%. The empirical results verify the hypothesis that the heavier the debt pressure of local government, the more the comprehensive tax burden of local enterprises.

In the third and fourth columns, they are grouped according to the nature of property rights, respectively showing the results of state-owned and non-state-owned enterprises. The results show that the positive correlation between local government debt pressure and enterprise tax burden only appears in state-owned enterprises. The empirical results of non-state-owned enterprises are not significant, and the mechanism of local government debt pressure and corporate tax burden is not obvious. The reason may be that the flexibility of state-owned enterprises in tax collection and management is more prominent, and the relevance between local government and state-owned enterprises is stronger.

### Table 3. Regression Results.

| VARIABLES | complete sample | complete sample | The state-owned | non-state-owned |
|-----------|-----------------|-----------------|-----------------|-----------------|
| debt_gdp  | 0.0217***       | 0.0160***       | 0.0204***       | 0.00332         |
|           | (0.00341)       | (0.00327)       | (0.00412)       | (0.00529)       |
| Controls  | Control         | Control         | Control         | Control         |
| YEAR      | Control         | Control         | Control         | Control         |
| Constant  | 0.0650***       | 0.345***        | 0.425***        | 0.203***        |
|           | (0.00154)       | (0.0327)        | (0.0458)        | (0.0495)        |
| Observations | 23,590         | 23,588          | 14,727          | 8,861           |
| R-squared | 0.004           | 0.082           | 0.081           | 0.122           |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

### 4.4. Robustness test

In order to improve the reliability of the research conclusion, the following robustness tests are further carried out in this paper. (1) The robustness test uses ETR2 (payments of all types of taxes /total operating income) for multiple regression analysis, and the results are shown in the first and second columns of Table 4. The results show that there is still a significant positive correlation between local government debt pressure and corporate tax burden, which confirms the reliability of the empirical results to some extent. (2) Many literatures use urban investment debt data to measure the debt pressure of local governments, so the robustness test uses urban investment debt data to re-test, and the results are shown in the third and fourth columns of Table 4. The results show that there is still a positive correlation between urban investment debt and corporate tax burden, though it is not significant enough, which preliminarily verifies the validity of the empirical results.

### Table 4. Robustness Test Results.

| VARIABLES | ETR2 | ETR2 | ETR1 | ETR1 |
|-----------|------|------|------|------|
| debt_gdp  | 0.0192*** | 0.0158*** | 0.00191 | 0.0153 |
|           | (0.00592) | (0.00522) | (0.0106) | (0.0100) |
| ctz       | Control | Control | Control | Control |
| YEAR      | Control | Control | Control | Control |
| Constant  | 0.0836*** | 0.237*** | 0.0654*** | 0.0640* |
|           | (0.00587) | (0.0639) | (0.00154) | (0.0330) |
| Observations | 23,590 | 23,588 | 23,590 | 23,588 |
| R-squared | 0.001 | 0.008 | 0.003 | 0.116 |
4.5. Group regression test

In order to further explore the operation mechanism of local government debt pressure affecting corporate tax burden, this paper respectively from the perspective of regional differences and marketization level, using grouping regression method to investigate the cross-sectional differences of local government debt pressure affecting corporate tax burden.

Geographical location zoning may have some influence on the transmission of local government debt pressure. This paper divides the samples into east, middle and west for grouping regression analysis, and the results are shown in the first to third columns in Table 5. The results show that the impact of local government debt pressure on corporate tax burden is the most significant in the eastern region sample, and is significantly positive within the significance level of 1%, while the mechanism of action in the central and western regions is not obvious. The reason may be that the eastern provinces have relatively developed economy and high level of marketization, and the relationship between local government debt pressure and corporate tax burden is affected by market efficiency.

In order to investigate whether the market mechanism will affect the relationship between local government debt pressure and corporate tax burden, this paper further tests the model in multiple regression analysis according to the degree of market allocation of economic resources. The sample companies are grouped according to the market allocation economic resource index of the province where the sample companies are located (Fan Gang et al., 2010), dividing the strong and weak groups in the market allocation of economic resources by higher or lower than the provincial average. It can be seen that in the group with strong market allocation of economic resources, the mechanism of local government debt pressure and enterprise tax burden is significantly positive within the significance level of 1%. However, in the group with weak market allocation of economic resources, the mechanism of local government debt pressure and enterprise tax burden is not significant. Thus, to some extent, it is confirmed that the influence of local government debt pressure on the tax burden of enterprises exists in regions with relatively developed market mechanisms.

| VARIABLES | EAST     | MODERN   | WEST     | STRONG   | WEAK     |
|-----------|----------|----------|----------|----------|----------|
| debt_gdp  | 0.0173***| -0.0386  | 0.00965  | 0.0208***| -0.00535 |
|           | (0.00343)| (0.0249) | (0.0159) | (0.00401)| (0.00596)|
| Controls  | Control  | Control  | Control  | Control  | Controls |
| YEAR      | Control  | Control  | Control  | Control  | Control  |
| Constant  | 0.291*** | 0.280**  | 0.321**  | 0.133    | -0.0182  |
|           | (0.0374) | (0.130)  | (0.130)  | (0.0830) | (0.0542) |
| Observations | 16,241  | 4,003    | 3,344    | 12,591   | 10,997   |
| R-squared | 0.077    | 0.116    | 0.157    | 0.087    | 0.101    |

5. Conclusions

The coordination of the relationship between the local government debt pressure and the actual tax burden of listed companies is worth paying attention to, under the background that the local government debt in China is increasing year by year and the pressure is increasing. The greater the pressure on local government debts, the higher the company's comprehensive tax burden. When facing the pressure of local debts, the government may choose to strengthen tax supervision and other actions to increase the tax burden on enterprises based on the hope of alleviating local financial risks and financial risks as soon as possible, narrowing the gap between local financial revenues and expenditures, and meeting the dual incentives of financial benefits and political promotion, such as official GDP assessment standards, so as to directly achieve the purpose of increasing government tax revenue and alleviating the pressure of local government debts. Further tests show that the relationship between local government debt pressure and corporate tax burden is more significant in the samples of listed companies of state-owned holding enterprise groups, eastern enterprises and market allocation of economic resources.

This paper studies the impact of macro-political factors on corporate tax burden. For enterprises, the impact of local government debt pressure on corporate tax burden is widespread and profound.
Enterprises need to pay close attention to relevant information and data, and make timely adjustments to their financial behavior.

In recent years, the pressure of local government debt has increased year by year. Enterprises must respond to this pressure in advance by adjusting their investment behavior, financing methods and capital flow. Under the pressure and drive of this situation, manufacturing enterprises can achieve industrial transformation and upgrading as soon as possible and gradually move towards the goal of high-tech enterprises. Not only can we obtain tax preference and reduce the tax burden; it can also inject vitality into the floating tax base in the jurisdiction, promote the common development of regional enterprises, form regional industrial advantages and realize "win-win" between enterprises and local governments.

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