

Analysis of the Factors Influencing the Dependence of Local Governments on Land Finance in China

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Abstract: With the increasing debt accumulated by local governments, land finance has become an important issue worth paying attention to in the China's economy. Based on the political economy literature, this paper selects general public budget expenditure, regional GDP, per Capita GDP, urbanization rate of permanent people, and the development of the secondary industry as independent variables and the dependence on land finance of the local government as dependent variable. Panel data from 22 provincial local governments is collected for empirical research. The empirical results indicate that accelerating urbanization, general public budget expenditure have led to local governments obtaining extra-budgetary land fiscal revenue. The growth of regional GDP and the expansion of the secondary industry will bring revenue to the region, which will help reduce the dependence of local governments on land finance. The political economics research on land finance helps to understand the economic behavior of local governments in China and also contributes to understanding the issue of soft budget constraint.

Keywords: land finance, budget, land transfer, government

1. Introduction

In recent years, the debt problem of local governments in China has become increasingly serious. As an important tool for local governments to invest in infrastructure construction and accelerate urbanization, local government financing platforms have played an important role in China's economic development, but have also accumulated a huge amount of debt. China's government has paid attention to it and has also taken many measures to alleviate debt pressure[1]. The model of local government financing platforms relying on the land for financing is also known as land finance. As an informal financial system, land finance has caused many social problems. When China's economic growth slows down and housing prices show a downward trend, land finance becomes increasingly difficult to sustain. Local governments' reliance on land finance is likely to lead to systemic economic problems. However, the analysis of literature up to now on what factors have caused local governments to rely on land finance is still limited. In this case, it is necessary to conduct a political-economic analysis of land finance and empirically examine the factors that lead to local governments relying on land finance.

Based on the political economics literature, this paper explains the preconditions and operational mechanisms of land finance. In the empirical part, multi-dimensional panel fixed effect methodology is applied to estimate. The analysis of the influencing factors of land fiscal dependence contributes to

understanding how land finance affects the economic behavior of local governments. As an important participant in economic development, the government's behavior has a profound impact on the economy.

2. Theoretical analysis

2.1. Analysis of land finance

After the tax-sharing reform in 1994, the proportion of local governments' fiscal revenue significantly decreased, but their administrative responsibilities continued to increase. Although the central government will provide transfer payments to local governments, they still face a heavy budget burden[2]. Moreover, the political tournament inside the government also encourages local government officials at any level to improve their political performance in order to capture opportunities for promotion. To showcase their political achievements, local government officials tend to expand spending or investment[3]. Therefore, the combination of the general budget revenue and transfer payments provided by the central government is insufficient to support the expenditure of local governments. Local governments have the motivation to obtain extra-budgetary income to alleviate fiscal pressure[4].

Due to the monopoly power of Chinese local governments in land use conversion, land finance has gradually become a method for Chinese local governments to obtain extra-budgetary income. The revenue of local governments in China is mainly divided into two items: general public budget revenue and government fund revenue. The revenue from land transfer, also known as land finance, constitutes the main part of government fund income. In 2020, China's fiscal revenue from land transfer reached 8414.2 billion yuan, while China's general public budget revenue in the same year was 18291.38 billion yuan[5]. The scale of revenue from the state-owned land transfer is close to half of the general public budget revenue. Obviously, local governments in China rely heavily on state-owned land transfer revenue. It should be pointed out that the land finance system has never been legally formalized by the Chinese central government. It is the revenue obtained by local governments through informal channels. The most direct way for local governments to obtain land transfer income is to sell the land to entities or individuals, which is also known as "equity financing". In addition, local governments also conduct more complex economic activities through debt financing. In the early 2000s, local governments set up local government financing platforms. These platforms are legal entities that carry out government investment projects owned and controlled by the local government[6]. The local government injects land, equity, and other assets into local government financing platforms, and then platforms borrow or issue bonds with these assets as collateral. These platforms will also apply for credit from financial institutions, using the future land transfer income of local governments as collateral. In summary, the local government provides an implicit guarantee for local government financing platforms[7].

2.2. Determinants of local government's dependence on land finance

The revenue obtained by local governments through land finance has provided a strong impetus for China's rapid economic development. Literature has shown that urbanization is an important incentive for the Chinese government to expand land finance[8]. State-owned land transfer revenue is used to invest in infrastructure construction. The improvement of infrastructure has attracted investment from enterprises, promoted economic growth, and thus promoted urbanization[9]. Empirical research also supports the hypothesis that land transfer income is used to invest in infrastructure in China[10]. Therefore, this paper assumes that urbanization is an important factor leading to local governments expanding land finance. The urbanization rate of the permanent population (URPP) can be used to measure the degree of urbanization in a region, so it is chosen as the determinant factor. The

acceleration of urbanization will inevitably be accompanied by the expansion of general public budget expenditure[11]. Thus, general public budget expenditure should also be a determinant.

Attracting investment is another incentive for local governments to expand their land finance[12]. In fierce political tournaments, local governments must also attract enterprises' investment through tax incentives or subsidies[13]. Enterprises that need a large amount of industrial land are usually part of the secondary industry.[14] As local governments have the power to manage land, they will also help enterprises reduce costs by lowering industrial land prices[15]. These preferential policies for enterprises have further exacerbated the financial pressure on local governments. However, enterprises attracted will provide tax revenue and employment for the local area. Thus, the expansion of the secondary industry has both promoting and inhibiting effects on local government's dependence on land finance.

Local governments hope for economic growth to alleviate debt pressure and their dependence on land finance[16]. With the growth of the economy, the prices of real estate and land continue to rise, and the income from land transfer will also increase accordingly. As long as the land used for a mortgage by local government financing platforms continues to appreciate, local governments can obtain a continuous stream of income through land transfer. Therefore, this paper assumes that an increase in regional GDP will reduce the dependence of local governments on land finance.

The sensitivity of local governments to economic development has also been proven to be related to land finance[17]. Due to differences in regional culture, corruption level, and other factors, local governments in different regions have different sensitivities to economic development. Generally speaking, the initiative of local governments is positively correlated with the level of regional economic development. Local governments that are more sensitive to economic development will have a strong motivation to obtain land fiscal revenue to improve their political performance. If the per capita GDP is used to measure the level of regional economic development, then it will be positively correlated with the dependence of local governments on land finance.

3. Empirical analysis

3.1. Reduced formed model

According to the analysis in section 2, the reduced formed model of local governments' dependence on land transfer revenue is as follows:

$$DP_t = \alpha \ln GPBE_t + \beta G_t + \gamma \ln URPP_t + \delta \ln GDP_t + \theta AVSI_t + v_i + \eta_i + \varepsilon_i \quad (1)$$

Where $DP_t = [\text{land transfer revenue} / (\text{General public budget revenue} + \text{Government fund income})] * 100\%$, it measures local governments' dependence on land transfer revenue in year t ; $\ln GPBE_t$ is the logarithm of local governments' general public budget expenditure in year t ; G_t is per capita GDP in year t ; $\ln URPP_t$ is the logarithm of urbanization rate of permanent population in year t ; $\ln GDP_t$ is the logarithm of GDP in year t ; $AVSI_t$ is the proportion of added value of the secondary industry to GDP in year t ; v_i is the individual effect; η_i is the time effect; ε_i is the residual item. DP_t and $AVSI_t$ are measured in percent. G_t is measured in yuan. Other variables are measured in billions of yuan.

3.2. Data and descriptive statistics

Due to the integrity and availability of data, this paper collects the data of 22 provinces in the China Mainland from 2012 to 2021. The data is collected from the China Statistical Yearbook, Statistical Yearbook of Urban Construction in China, and Statistical Yearbook of 22 provinces in the China mainland. Due to a large amount of missing data, the data from Tibet, Xinjiang, Qinghai, Zhejiang,

Ningxia, Anhui, Inner Mongolia, Jiangxi, Hubei was not used. Table 1 reports descriptive statistics for the levels of the variables.

Table 1: Descriptive statistics of key variables measured in levels.

Variable	Obs	Mean	Std. Dev.	Min	Max
DP	198	31.30281	9.777438	11.47182	54.08027
IGPBE	220	10.83522	.5229786	9.117863	12.11301
G	220	10.88175	.4685519	9.849394	12.12258
IURPP	220	4.076967	.2167542	3.591818	4.495355
IGDP	220	12.27912	.787488	10.23616	14.03641
AVSI	220	39.76482	8.689018	15.8	58.7

The dependence of local governments on land finance (DP) and the proportion of added value of the secondary industry (AVSI) to GDP fluctuate significantly. The average value of DP is greater than 30%.

4. Methodology and empirical results

The panel data collected in this paper has both time effect and individual effect. In this case, multi-dimensional panel fixed effect approach is applied to exclude these two effects.

Table 2: Empirical result of Eqs.(1).

Variable	(1)
IGPBE	11.68* (2.29)
G	49.79** (2.69)
IURPP	25.52* (2.29)
IGDP	-31.68* (-2.10)
AVSI	-0.497* (-2.28)
_cons	-332.9*** (-3.56)

***, **, and * represent 1%, 5% and 10% significance levels respectively

The coefficients of IGPBE and IURPP are significantly positive at a 10% level. IGDP and AVSI are significantly negative with local government's dependence on land finance at a 10% level. The coefficient of G is significantly positive at 5% level.

The empirical results provide evidence for the correlation between the expansion of general public budget expenditures and urbanization with land finance. Per capita, GDP explains the positive correlation between local governments' sensitivity to economic development and land finance. These evidence shows that local governments obtain income through land finance, then invest in urbanization construction and increase public expenditure, which is characteristic of China's economic development[18]. The increase in GDP has suppressed the dependence of local governments on land finance. The expansion of the economy has raised asset prices and alleviated the debt pressure on land finance. The expansion of the secondary industry has a more significant

inhibitory effect on land finance. This indicates that the benefits brought by industrial development to the region are sufficient to compensate for the costs paid by local governments.

5. Robustness test

In the robust test, this paper considers penalty and confiscatory income (P_t). Due to the government's discretionary power, it has the motivation to expand confiscated revenue to alleviate financial pressure[19]. The dependence on confiscated income reflects the deterioration of the financial situation of local governments, so the expansion of confiscated income is positively correlated with local government's dependence on land finance. To examine the effect of urbanization, this paper also replaces the urbanization rate of permanent people with the proportion of built-up area/urban area ($BUAUA_t$). The new reduced formed model is as follows:

$$DP_t = \alpha IGPBE_t + \beta G_t + \rho P_t + \gamma BUAUA_t + \delta IGDP_t + \theta AVSI_t + v_i + \eta_i + \varepsilon_i \quad (2)$$

Where P_t is penalty and confiscatory income in year t, which is measured in yuan; $BUAUA_t$ is the proportion of built-up area/urban area in year t, which is measured in percent. Table 3 provides the empirical result of Eqs.(2).

Table 3: Robustness test result

Variable	(2)
IGPBE	12.35* (2.39)
G	56.64*** (3.37)
P	-3.919* (-2.12)
BUAUA	0.191* (2.01)
IGDP	-30.71* (-2.13)
AVSI	-0.678** (-3.28)
cons	-295.7**

***, **, and * represent 1%, 5% and 10% significance levels respectively

Coefficients of P and BUAUA are significantly positive with DP at 10%. The significance level of G and AVSI has improved respectively. Local governments have the impulse to impose penalties and confiscatory income to supplement fiscal revenue when facing the expansion of debt. This indicates that the analysis of land finance can explain the behavior of local governments in China and further illustrate the important role of land finance in China's economic development.

6. Conclusion

This paper selects general public budget expenditure, per capita GDP, urbanization rate of permanent people, regional GDP, and the proportion of the added value of the secondary industry to GDP for empirical analysis. The empirical results indicate that general public budget expenditure, per capita GDP, and urbanization rate of permanent residents has a significant promoting effect on local government's dependence on land finance. The proportion of regional GDP and the added value of the secondary industry to GDP suppresses the dependence. Robustness test verifies the above results.

This indicates that increasing public expenditure, investing in infrastructure construction, and accelerating urbanization are the direct reasons for obtaining land fiscal revenue.

The drawback of this study is that it did not incorporate the competitive effects between local governments into the model. It is necessary to refer to political and economic literature to find more variables that lead to local government's dependence on land finance and then improve the reduced formed model. Moreover, selecting data from municipal governments for empirical analysis will yield more significant results. The empirical method is also worth improving. The dependence of local governments on land finance may have a lag effect, but the empirical model in this article did not capture this dynamic relationship.

From a broader perspective, the reason why local governments are able to obtain a large amount of land finance revenue outside of budget is precisely due to the soft budget constraint. In the process of China's economic development, the Chinese government has introduced many policies and even carried out political and economic reform to solve this problem. The impact of these policy shocks on soft budget constraint provides valuable data and facts for empirical research. How to solve budget soft constraints is an important issue faced by economics, and political economic analysis based on China's land finance problem will contribute to understand soft budget constraint.

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