Proceedings of the 2nd International Conference on Management Research and Economic Development
DOI: 10.54254/2754-1169/100/20241106

Local Debt and Social Welfare in China: Evidence from Zhejiang and Anhui

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Abstract: Currently local government debt is a major concern for all sectors of society, but there is still a debate about the relationship between local government debt and social welfare. This paper addresses the question of the impact of local debt and social welfare in China, using a case study of data from Zhejiang and Anhui from 2014-2019 to qualitatively analyze the impact of local debt and social welfare in four dimensions: consumption, infrastructure, education, and health. The results found that: first, the growth of local debt has an inverted U-shaped impact on residents' welfare, which is manifested in the fact that before the size of local debt reaches the critical value, the increase of local debt can enhance social welfare, but after exceeding the critical value, the increase of local debt makes social welfare decline; second, in terms of sub-welfare index factors, there are different correlation degrees between different factors and the indicators of local debt, and thus have different characteristics of development at different stages are characterized by different developments.

Keywords: Local debt, Social welfare, Case Study, U-shaped impact

1. Introduction

In recent years, the issue of local debt has gradually become the primary problem facing China's development. On the one hand, in 2010, the macro leverage ratio of China's local governments exceeded that of the central government, and in 2014, China's central government for the first time explicitly issued a document on the remediation of local debt, "Opinions of the State Council on Strengthening the Management of Local Government Debt", the famous Document 43 [1-2]. On the other hand, since the 18th National Congress of the Communist Party of China (CPC), China began to shift from prioritizing economic development to focusing on people's well-being. Many scholars believe that local governments can provide a large number of public goods and services with positive externalities through debt, increasing the social welfare of residents and having spillover effects, while some scholars have found that the expansion of local government debt has a crowding-out effect, which can harm the social welfare of residents [3-4]. Facing the major problem of dealing with the relationship between local debt and social welfare, there is an urgent need to correctly understand the impact between local debt and social welfare in China and to provide academic support for economic development and improvement of people's well-being.

From the perspective of economic efficiency, the non-linear relationship between government debt and economic growth will produce an optimal government debt size, but the optimization of the structure of government debt size and the utilization of efficiency should be improved to enhance the level of social welfare rather than economic growth as the ultimate goal, therefore, from the perspective of social welfare, there should also be a moderate size of government debt is not only conducive to the enhancement of economic efficiency is more conducive to the enhancement of social welfare [5-6].

Therefore, what kind of impact exists between China's local debt and social welfare is the central concern of this paper. This paper adopts the case study method, drawing on and updating existing models and evaluation methods, to qualitatively analyze the characteristics, problems, and causes of local debt and social welfare data from Zhejiang and Anhui provinces from 2014-2019. This paper provides warnings and insights into the expansion of local government debt and the improvement of social welfare in China in recent years.

2. Methodology

2.1. Related work

This paper refers to the optimal debt size model, the three-sector dynamic game model, and the inverted U-shape relationship between local government indebtedness and residents' welfare, and adopts the case study method to compare the local debt and social welfare of the more developed Zhejiang Province and the relatively underdeveloped Anhui Province to study the impact of local debt and social welfare [6-9]. In additio, this paper combines the Human Development Index (HDI) issued by the United Nations and the Development and Livelihood Index (DLI) issued by the National Bureau of Statistics of China to score social welfare in four dimensions, namely, consumption, infrastructure, education and health [10].

Welfare Index:

$$\begin{aligned} \mathrm{WI} = {} & \mathrm{CE} * 0.4 + \mathrm{CEUR} * 0.4 + \mathrm{AR} * 0.2 + \mathrm{AP} * 0.2 + \mathrm{PT} * 0.1 + \mathrm{PV} * 0.2 + \mathrm{EST} * 0.15 + \mathrm{JST} \\ & * 0.15 + \mathrm{SST} * 0.15 + \mathrm{HT} * 0.2 + \mathrm{HTUR} * 0.15 + \mathrm{BM} * 0.2 + \mathrm{BMUR} * 0.15 + \mathrm{PL} \\ & * 0.1 + \mathrm{MI} * 0.1 \end{aligned}$$

Consumption Index (CI):

$$\mathrm{CI} = \mathrm{CE} * 2 + \mathrm{CEUR} * 2$$

Infrastructure Index (II):

$$\mathrm{II} = \mathrm{AR} * 2 + \mathrm{AP} * 2 + \mathrm{PT} + \mathrm{PV} * 2$$

Education Index (EI):

$$\mathrm{EI} = \mathrm{EST} + \mathrm{JST} + \mathrm{SST}$$

Hygiene Index (HI):

$$\mathrm{HI} = \mathrm{HT} + \mathrm{HTUR} + \mathrm{BM} + \mathrm{BMUR}$$

2.2. Data collection

2.2.1. Zhejiang

According to the China Local Government Bond Information Open Platform Network, local debt indicators of the Zhejiang region in 2015-2019 are shown in Table 1 [11]. It can be seen that the four

DOI: 10.54254/2754-1169/100/20241106

indicators show a gradual incremental trend, and the growth rate is getting faster and faster, in which the growth of governmental fund budget expenditure is very significant.

Table 1: Local debt indicators for the Zhejiang region

Norm	2015	2016	2017	2018	2019
Local government debt balance	6426	6994	7696	8987	10388
Local government debt limit	7325	7790	8541	9593	11008
General government public budget expenditure	5685	5393	6120	7035	8285
Governmental fund budget expenditures	3060	2253	5917	8046	8671
General government public budget revenue	4187	3804	4559	5219	5580
Budgetary income from governmental funds	3155	2274	5845	7737	8656

According to 2015-2019 the national data from the National Bureau of Statistics of China, the social welfare indicators in the Zhejiang region are displayed in Table 2 [12]. Infrastructure indicators show a trend of rising and then falling, with large changes. Education indicators show a year-on-year trend of increase, and the growth rate is very fast. As well, the health indicators show a year-on-year trend and a relatively stable rate of increase. The overall welfare indicators show a fluctuating and changing trend but remain stable.

Table 2: Social welfare indicators in the Zhejiang region

Norm	2014	2015	2016	2017	2018	2019
Consumption indicators	4.176938	4.193919	4.138344	4.089405	4.10812	4.10954
Infrastructure indicators	8.171081	8.286397	7.804852	7.519545	7.668402	7.677142
Education indicators	3.00509	3.090106	3.160372	3.213312	3.256795	3.314803
Hygiene indicators	3.077805	3.133184	3.272443	3.223291	3.315114	3.35022
Welfare indicators	2.852618	2.90305	2.883496	2.849728	2.894315	2.908772

2.2.2. Anhui

Table 3 shows the Local debt indicators in Anhui, according to the China Local Government Bond Information Open Platform Network (www.celma.org.cn). All four indicators show a gradual incremental trend, and the growth rate is getting faster and faster.

Table 3: Local debt indicators in the Anhui region

Norm	2015	2016	2017	2018	2019
Local government debt balance	5089	5319	5823	6705	7936
Local government debt limit	5424	5894	6622	7629	8913
General government public budget expenditure	5523	5239	6204	6572	7392
Governmental fund budget expenditures	2596	1796	3546	3607	4123
General government public budget revenue	2673	2454	2812	3049	3183
Budgetary income from governmental funds	2451	1726	3192	3031	3374

The social welfare indicators in Anhui for 2015-2019 (Table 4) are according to national data from the National Bureau of Statistics of China. Specifically, Consumption indicators show a trend of steady growth and a faster growth rate. Infrastructure indicators show a trend of steady growth, and the growth rate is unchanged. Education indicators show a trend of stable growth, and the rate of growth is not much change. And he health indicators show a rising trend but at a slower rate. The overall welfare indicators show a steady upward trend and a stable growth rate.

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Table 4: Social welfare indicators in the Anhui region

Norm	2014	2015	2016	2017	2018	2019
Consumption indicators	2.60952	2.675965	2.768968	2.790437	2.901714	2.998592
Infrastructure indicators	7.254208	7.318793	7.362825	7.469567	7.60996	7.693148
Education indicators	2.817726	2.853183	2.863202	2.888093	2.898558	2.926547
Hygiene indicators	2.505776	2.506318	2.517716	2.563499	2.557715	2.577319
Welfare indicators	2.18233	2.210144	2.236099	2.26668	2.30804	2.343256

2.3. Data comparison and analysis

2.3.1. Debt indicators

Comparison of debt indicators, Zhejiang's local government debt balance indicator is higher than Anhui's, but from the results of the comparison between the two, the gap between the two debt balances is increasing (Figure 1). The reason is that, on the one hand, Zhejiang's economic development level is higher than that of Anhui, which leads to Zhejiang using more local government debt to promote local economic development and social welfare improvement. On the other hand, compared with Zhejiang, Anhui's balance limit has more space for debt borrowing, that is, the difference between Anhui's local government debt limit and the balance of local government debt is bigger.

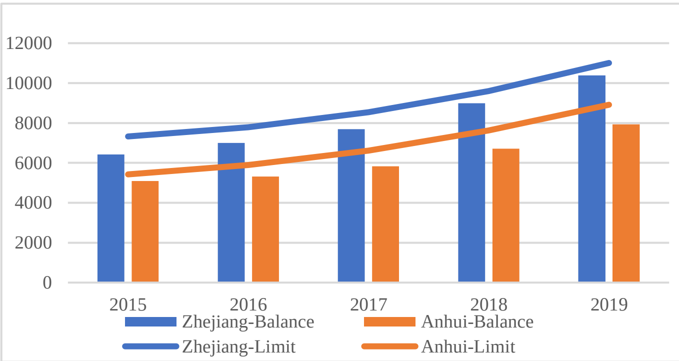
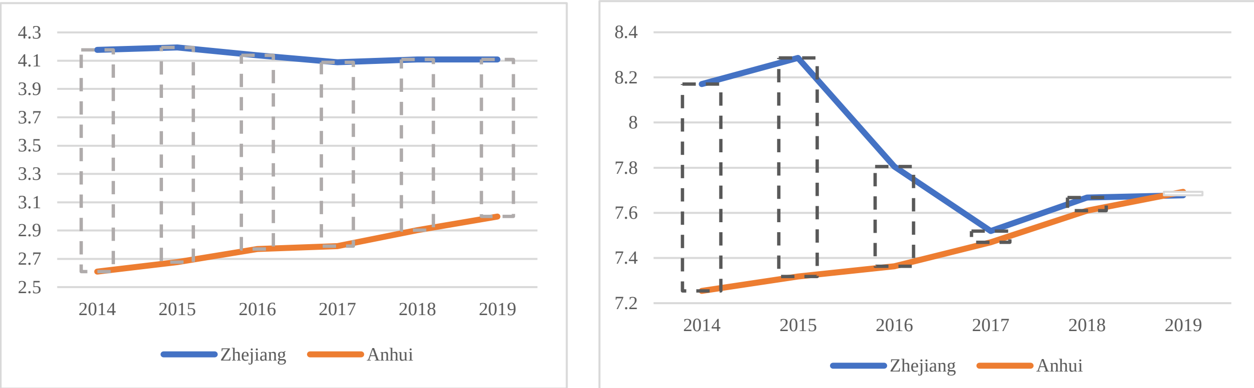


Figure 1: Local government debt balance and limit (billion yuan)

2.3.2. Consumption and Infrastructure indicators

Comparison of consumption indicators, Zhejiang's consumption indicators are much higher than Anhui's, but in terms of development trend, Zhejiang's indicators have declined, but Anhui's indicators are rapidly rising, and the gap between the two is narrowing (Figure 2a). For Zhejiang, due to its higher level of economic development, its economic growth rate has slowed down, resulting in a slight decline in its consumption indicators. Excessive local debt has also led to a slowdown in its economic growth rate, squeezing the consumption space of residents, resulting in a decline in the consumption indicators. Compared with the high level and decreasing trend of Zhejiang, consumption indicators of Anhui, due to the lower degree of economic development, increased faster than the national rate of economic development. With the increase of local debt, the positive effect of debt promotes the development of the economy, expanding the consumption space of residents.

Comparison of infrastructure indicators, in the early stage of Zhejiang's index is much larger than that of Anhui, but in the later stage, as the index of Zhejiang declines and the index of Anhui rises, the gap between the two is approaching, and finally, in 2019, Anhui's index exceeds that of Zhejiang (Figure 2b). For Zhejiang, in the past rapid development stage, the local debt had a facilitating effect on infrastructure construction. The construction of infrastructure reached its peak, which is manifested in the increase in the early stages. However, with the basic improvement of infrastructure construction, its growth rate naturally slows down, and the debt burden brought by excessive local debt also impedes its infrastructure construction. Compared to Zhejiang's dramatic decline, for Anhui, which is in the rapid development stage, the accelerated speed of infrastructure construction and increasing local debt have strongly enhanced infrastructure construction speed, and performance is consistently higher than the national average.



(a) (b)

Figure 2: Comparison (a) consumption indicators; (b) infrastructure indicators

2.3.3. Education indicators

The comparison of education indicators from figure 3 (a) demonstrates that Zhejiang's education indicators are higher than Anhui's, and Zhejiang's growth rate is also much higher than Anhui's. The gap between the two is increasing. For Zhejiang, material consumption, infrastructure, and other hard indicators are met, thus a large amount of resources are into the education indicators to enhance and improve, The scale of local debt is also increasing to provide financial security for the improvement of education indicators. In the case of Anhui, the main resources are used to meet the hard indicators, but the development of education is not sufficient, and the increase in the scale of local debt has not yet fully benefited the education sector.

Comparison of hygiene indicators, Zhejiang's indicators are much larger than those of Anhui, but in terms of development trend, Zhejiang maintains a fluctuating and stable trend, while Anhui rises slowly (Figure 3(b)). For Zhejiang, the health indicators are gradually rising in the context of better fulfillment of economic development goals, but the excessive local debt has brought a huge debt burden, which is an obstacle to the construction of medical and health care. Unusually, Anhui’s main resources are invested in the development process of economic welfare. Nevertheless, the healthcare field lacks sufficient development and construction and develops slowly.

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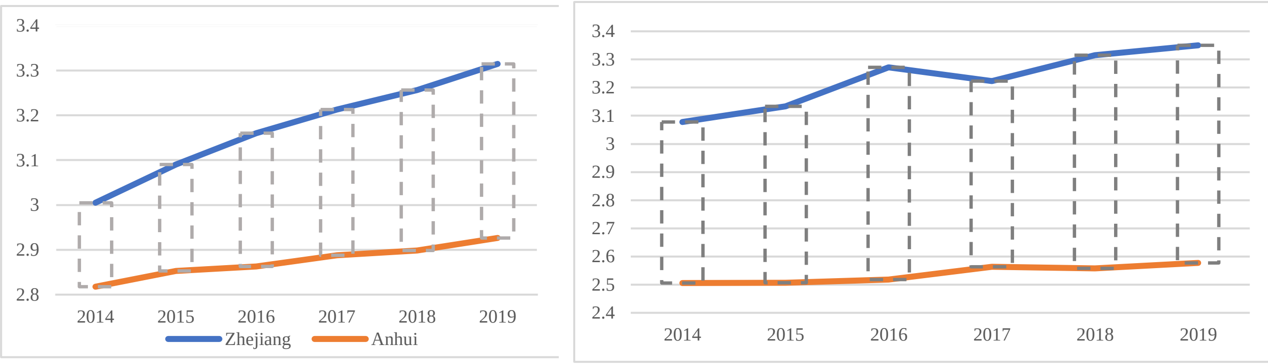

(a) (b)

Figure 3: Comparison (a) education indicators; (b) hygiene indicators

3. Analysis

3.1. Result

Through analysis, this paper confirms that local debt has an inverted U-shaped impact on residents' welfare. Specifically, as local government liabilities continue to increase, local debt growth can enhance social welfare before reaching the critical value. But after exceeding the critical value, local debt growth makes social welfare decline, thus showing an inverted U-shaped relationship between local debt and social welfare.

For Zhejiang, in the early stage of development with rapid development growth rate and the increasing scale of local debt, the development of consumption indicators and infrastructure indicators have a good role in promoting the development of education and health indicators, thereby contributing to the rapid increase in the level of welfare. But when the growth rate of development declines and the scale of the excessive local debt brought about by the heavy debt burden, the growth of consumption and infrastructure indicators slow down or even stagnate, which in turn causes the growth rate of welfare levels to slow down or even stop. In the middle and late stages of development, when the growth rate slows down, more resources will be tilted toward education and health indicators. Through its own higher level of economic development and higher rate of local debt expansion, the welfare level is raised with the improvement in education and health indicators. However, when the local debt continues to over-expand, bringing more and more pressure on local debt, it will not be able to continue to improve the level of welfare, and even lead to the deterioration of the level of welfare and the regression of economic development.

For Anhui, which is in the early stage of development, its own high-speed development growth rate and the increasing scale of local debt have contributed to the promotion of various indicators, and the high growth of consumption and infrastructure indicators has brought about a rapid increase in the level of welfare. But there is also the problem of the unbalanced development of the welfare indicators, and the debt burden brought about by the continuous expansion of the scale of local debt.

3.2. Suggestions

Based on the findings of this paper, the following policy recommendations are proposed. First, control the scale of local debt growth and prevent local debt risks. On the one hand, as local government debt continues to grow, its direct impact is to squeeze out the region's business investment, leading to a decline in the region's residents' income and consumption, and a reduction in social welfare benefits. On the other hand, the balance of local debt is constantly approaching the local debt limit, and the debt risk is seriously aggravated [13].

Secondly, transform the structure of fiscal investment and expenditure, strengthen the improvement of education, health, and other soft indicators, and adjust the proportion of resource inputs in a timely and appropriate manner to promote the balanced development of social welfare in the case of consumption indicators and infrastructure indicators have been fully developed and the growth rate of development has slowed down [14-15].

4. Conclusion

This paper investigates the problem of the impact relationship between local debt and social welfare in China, taking the optimization of social welfare rather than the optimization of economic efficiency as the ultimate goal, adopting the case study method, drawing on and updating existing models and evaluation methods, and taking the data on local debt and social welfare in the two provinces of Zhejiang and Anhui from 2014-2019 as examples to qualitatively study the impacts of local government indebtedness on social welfare more comprehensively from multiple dimensions.

However, there are some issues in this paper, Firstly, the measurement of debt size and composition in this paper is still insufficient to reflect the comprehensive and real debt size and debt composition. Secondly, there are also deficiencies in the measurement of social welfare, due to the indicators and methods of social welfare measurement are highly subjective and temporal, which cannot timely and accurately the real level of social welfare, which results in the study of the impact of local debt on social welfare can not draw accurate conclusions, and the exploration of the optimal debt scale can not be realized. Future research focuses on improving the measurement of social welfare, and measuring the impact of the portfolio ratios of different categories of local debt on social welfare. If non-economic welfare can be measured scientifically, social welfare can be measured comprehensively, and then more accurate research results on the relationship between local debt and residents' welfare can be obtained.

References

[1] *China's macro leverage ratio database. (2015). Retrieved from http://www.nifd.cn/home/index*

[2] *Opinions of the State Council on Strengthening Local Government Debt Management. (2014). Retrieved from https://www.gov.cn/zhengce/content/2014-10/02/content_9111.htm*

[3] *Sen, A. (2009). Inequality reexamined. Oxford: Oxford University Press.*

[4] *Zhu, Guanping, Hu, Wenxiu & Yang, Qu. (2021). Measuring the Size of Local Government Contingent Debt and Its Impact on Social Welfare. Statistics and Information Forum (10), 118-128.*

[5] *Grossman, P.J. Government and economic growth: A non-linear relationship. Public Choice 56, 193–200 (1988). https://doi.org/10.1007/BF00115758*

[6] *Aiyagari, S. R., & McGrattan, E. R. (1998). The optimum quantity of debt. Journal of Monetary Economics, 42(3), 447–469. doi:10.1016/s0304-3932(98)00031-2*

[7] *Chen, Shiyi & Wang, Li. (2016). Local debt and regional economic growth in China. Academic Monthly (06), 37-52. doi:10.19862/j.cnki.xsyk.2016.06.004.*

[8] *Mao, Jie & Huang, Chunyuan. (2018). Local Debt, Regional Differences and Economic Growth - A Validation Based on Data from Prefecture-Level Cities in China. Financial Research (05), 1-19.*

[9] *Zhou, Cheng. (2019). The inverted U-shaped relationship between local government indebtedness and residents' welfare. Auditing and Economic Research (02), 91-104.*

[10] *Chinese Statistical Society: 2011 Regional Development and Livelihood Index (DLI) Report. (2011). Retrieved from https://www.stats.gov.cn/sj/zxfb/202302/t20230203_1898262.html*

[11] *National local government debt data. (2015). China Electronic Local Government Bond Market Access (CELMA), Retrieved from https://www.celma.org.cn/zqsc/index.jhtml*

[12] *National Bureau of Statistics, 2015-2019 Zhejiang and Anhui province Social welfare indicators, Retrieved from https://data.stats.gov.cn/easyquery.htm?cn=E0103*

[13] *Zheng ZuYun & Huang Rui Ling. (2019). Research on hidden debt problems of local governments: a literature review. Local Finance Research (05), 41-50.*

[14] *Chen, Zhi-Hong & Li, Yang. (2018). Measuring the welfare level of urban residents in China by subregion. Finance and Economics Research (10), 111-124. doi:10.16538/j.cnki.jfe.2018.10.008.*

DOI: 10.54254/2754-1169/100/20241106

[15] Wen Yanbing. (2014). Expansion bias of government size and welfare effects--new theoretical hypotheses and empirical re-tests. China Industrial Economics (05), 31-43. doi:10.19581/j.cnki.ciejournal.2014.05.003.