

Moderate Scale Estimates of Local Government Debt

Case of Jilin Province

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Abstract—In order to prevent local government debt crisis, we established a theoretical model to estimate appropriate scale of local government debt in this paper. Example of Jilin Province, we forecast a moderate scale of local government debt in Jilin Province in next few years. The results show that the local government debt in Jilin Province has been more than the appropriate scale calculated by us. Therefore, local government must take some measures to enhance the financial strength, reduce the unnecessary expenditure of financial, clean-up of the existing local government debt and establish a debt service reserve system.

Keywords—local government debt; appropriate scale; forecast; measure

In recent years, the scale of local government debt increased dramatically. As the end of 2010, the local government debt balance 10.717491 trillion yuan in the country. According to the data from Chinese Academy of Social Sciences, to 2013 or 2014, the local government debt is expected to reach 20 trillion yuan. Such large-scale debt has caused great concern of the government. Whether the scale of debt is reasonable, there are a lot of controversies in academia. We believe that, there should be a number of boundaries to determine the scale of local government debt Reasonable or not. Otherwise, the general talk about local government debt too much or not is the lack of a scientific basis.

Unfortunately, we have not found Empirical Study of appropriate scale for local government debt in the collected academic achievements. In this paper, we build a model to estimate the modest scales of local government debt, and calculate the appropriate scale of local government debt in Jilin Province in the next few years. We put forward the recommendations to control the reasonable scale of the local government debt also.

I. THE THEORETICAL BASIS TO CALCULATE THE APPROPRIATE SCALE OF LOCAL GOVERNMENT DEBT

A. The Necessity to Estimate the Appropriate scale of Local Government Debt

First, because of the differences between the national debt and the local government debt, “the modest scale of the national debt” is not a substitute for “the modest scale of local government debt”. The two scales of debt can not be directly compared, because their different investment directions. Thus,

the measure reasonableness standard of the scale is naturally not interoperable.

Second, the local government debt can play the positive role at the appropriate scale, otherwise, if the local government debt is too much or too little, can not fully play its positive role, or even bring negative effects. Theory, the appropriate scale of local government debt refers to its scale in such a number of state: the net positive effect of the local government debt is maximized [1]. This basic relationship can be expressed in Figure-1. X-axis represents the scale of the local government debt; Y-axis represents the net positive effect of local government debt.

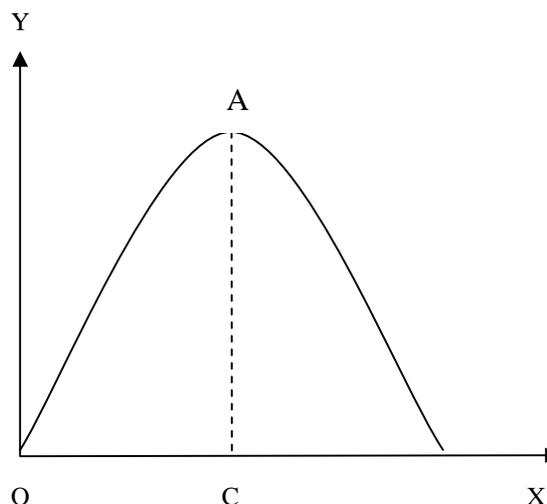


FIGURE 1. AN EFFECT DIAGRAM OF LOCAL GOVERNMENT DEBT

At point O, there is no local government debt, it would not exist that the effect of the local government debt. With the continuous expansion of the scale of local government debt, its net positive effect expresses as a curve. Before the curve reaches point A, the net positive effect of the local government debt is growing with the expansion of the scale of local government debt. When the curve reaches the point A, it would be maximize which the net positive effect of the local government debt, Since then, the net positive effect decreased with the scale of local governments debt to continue expanding.

Corresponding to the inflection point A is point C of X-axis. It is theoretically optimal scale of local government debt. With

local government debt exceed point C, each unit increase in local government debt, the negative effect will be significantly increased also, so that the positive effect of local government debt appears a decline curve. If beyond excessive, it even led to a crisis. Obviously, the appropriate scale of local government debt is the scale of its positive net effect maximize, rather than the scale of the maximum possible.

B. The Principle to Estimate Appropriate Scale of Local Government Debt

To estimate appropriate scale of local government debt, we should stick to the two principles.

First, the principle of quantitative, it means that the estimation result must be a definite value. Because only through a number of clear boundaries, we will be able to determine the scale of local government debt is reasonable or not.

Second, the principle of function, the estimated moderate scale of local government debt must be with the functions of monitoring risk, foreseeing crisis and preventing crisis. According to the modest scale of the local government debt, if local government debt exposure to risks, we can take strong measures to prevent crises [2].

C. The Impact Factors of a Reasonable Scale of Local Government Debt

General, there are three main factors affecting local government debt.

I) the level of local economic development.

First, the level of economic development directly determines the scale of the debt. The higher the level of economic development, the local debt affordability is stronger. We use GDP, to represent the level of local economic development, and then the positive relationship exists between the scale of local government debt and economic development level (GDP).

II) local government revenue.

Because lack of local government revenue, it is necessary to borrowing for local government, the debt funds need more. The negative relationship exists between the scale of local government debt and local fiscal revenue [3].

III) Third, local government expenditure.

Corresponding with the local fiscal revenue, Local government fiscal expenditure directly determine to the financial indicator which is the surplus or deficit, the deficit part will be needed to make up with local government borrowing, so the positive relationship exists between the scale of local government debt and local fiscal expenditure[4].

II. THE CALCULATION MODEL OF MODERATE SCALE OF LOCAL GOVERNMENT DEBT

According to the local government debt in different periods, we build the following relationship:

$$D_t = D_{t-1} + B_t \quad (1)$$

D_t means the local government debt balance at current. D_{t-1} means the local government debt in the previous period. B_t means budget deficit at current.

Both sides of the equation (1) is divided by GDP, we get,

$$D_t / GDP_t = D_{t-1} / GDP_t + B_t / GDP_t$$

d_t represents the debt burden rate at current, b_t represents deficit rate at current, there is:

$$d_t = D_{t-1} / GDP_t + b_t \quad (2)$$

Consider economic growth and inflation, assume a_t to represent nominal rate of economic growth, d_{t-1} represents debt burden rate in the previous period. Δd_t represents the difference of debt burden rate between present and previous period. Put $GDP_t = GDP_{t-1} (1 + a_t)$ into formula (2) and derive as follow,

$$d_t = d_{t-1} / (1 + a_t) + b_t$$

$$d_t - d_{t-1} = d_{t-1} / (1 + a_t) - d_{t-1} + b_t$$

$$d_t - d_{t-1} = d_{t-1} [-a_t / (1 + a_t)] + b_t$$

$$\Delta d_t = d_{t-1} [-a_t / (1 + a_t)] + b_t \quad (3)$$

Suppose g_t represents economic growth rate, π_t represents inflation rate, then $a_t = g_t + \pi_t$, formula (3) becomes,

$$b_t = \Delta d_t + [(g_t + \pi_t) / (1 + g_t + \pi_t)] \times d_{t-1} \quad (4)$$

Taking into account the sustainability of public finance policy is defined to be that, the deficit and does not result in a continued increase of the proportion of debt and monetary income share in the national income.

Therefore, the scale of the government debt should not increase once they reach the most appropriate scale, that is Δd_t as zero. The deficit rate of Δd_t at zero should be exactly equal to the modest scale of the government debt multiplied the nominal rate of economic growth. Now, in theory, both debt burden rate and the deficit rate can be considered reached a

maximum in the steady state, it is the modest scale of the debt burden [5]. Then, d_{t-1} is equal to d_t . Formula (4) becomes formula (5)

$$d_t = b_t \times (1 + g_t + \pi_t) / (g_t + \pi_t) \quad (5)$$

d_t is the appropriate scale of the debt burden rate.

III. THE ESTIMATES RESULTS OF APPROPRIATE SCALE OF LOCAL GOVERNMENT DEBT IN JILIN PROVINCE

According to the "12th Five-Year" of economic and social development planning in Jilin Province, in the next few years, the average annual growth rate of the GDP will reach 12%; inflation rate will be controlled at less than 4%, Local fiscal balance of payments is divided by the local GDP, the value is 3%. After calculation, the most moderate local government debt is 22% in Jilin Province.

According to the formula (5), the value of local government debt in Jilin Province is calculated for next five years; the appropriate scale is shown in Table 1 below.

TABLE I. THE ESTIMATED VALUE OF MODEST SCALE OF LOCAL GOVERNMENT DEBT IN JILIN PROVINCE (2012-2016) UNIT: TEN BILLION YUAN

Years	2012	2013	2014	2015	2016
Predictive value	2391.97	2679.01	3000.49	3360.55	3763.82

According to Table 1, the scale of local government debt in Jilin Province in the next five years will be upward trend. The data from the National Audit Office, The local government debt in Jilin Province had reached 303.3 billion yuan at the end of 2010. Obviously, this scale of local government debt has greatly exceeded the modest scale calculated by the model.

IV. THE PROPOSAL FOR CONTROLLING SCALE OF LOCAL GOVERNMENT DEBT

A. To Promote Economic Development Further and Enhance the Financial Strength

To control a reasonable scale of local government debt, the most fundamental way is to promote local economic development and increase revenues. Only local economic development, the local debt problems can be solved fundamentally. To expanding the local government financial resources is also an important means to reduce local government debt risk.

B. To Reduce Fiscal Unnecessary Expenditures

We should solve the problem of heavy burden on local government finances. Gradually dilute the way of assessing local government with economic development indicators. We should establish a local government to provide public management and service, through transformation of government functions. The government should streamline the organization, resolutely put an end to the "achievement projects", reduce fiscal spending, and prevent unnecessary liabilities.

C. To Establish a Debt Repayment System

The government should clean-up the present the local government debt and establish a debt repayment system. Local governments should draw up a reasonable repayment plan, figure down the scale, structure, distribution of local government debt, and put a scientific and reasonable statistical coverage of local government debt, standardize statistical behavior, improve the statistical efficiency, establish a regular reporting system. Financial departments should be responsible for local government debt management; to avoid nobody is responsible for local government debt. According to debt clean-up plan, set up a debt repayment accounts in the financial sector as soon as possible. For the debt repaid by the financial funds, financial sector directly transferred debt service funds to the debt account. unified restitution, and authorize an independent third party to supervise government debt.

D. Establish a Debt Reserve Fund System

The Government should establish a debt reserve fund system to improve the ability of debt settlement. This requires that the local government establish a sinking fund by fiscal balance, the capital operating income balance of the government, annual budget arrangements. To pay off the local government, debt, select a reasonable debt repayment term, avoid centralized settlement caused by the shortage of short-term funds, or government debt crisis.

V. CONCLUSION

A. It is Necessity to Estimate the Appropriate Scale of Local Government Debt

Because the scale of local government debt and its risk increased dramatically, "the modest scale of the national debt" is not a substitute for "the modest scale of local government debt", the local government debt can play the positive role at the appropriate scale.

B. This scale of Local Government Debt in Jilin Province has Greatly Exceeded the Modest Scale

The local government debt in Jilin Province had reached 303.3 billion yuan at the end of 2010. This scale has greatly exceeded the annually modest scale in Jilin Province during 2012-2016 calculated by the model.

C. Establish a Debt Repayment System.

We should promote economic development further and enhance the financial strength, reduce fiscal unnecessary

expenditures, establish a debt repayment system and establish a debt reserve fund system

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