

Financial Ecological Environment Situation Analysis and Optimization Strategies in Guangxi

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Keywords: Financial ecology environment, DEA, Evaluation index, Input-output, Economic development.

Abstract. The favorable financial ecological environment is the basis of promoting economic and social development. This study taking Liuzhou as an example establishes the financial ecological environment evaluation system based on DEA model. The assessment results of Guangxi financial ecological environment shows that the credit system is flawed, the administrative idea is over bureaucratic, the public security management is inefficiency and the economic is underactive. Directing against these questions, the paper puts forward the policy proposals such as strengthening the integrity education, changing the administrative ideas, enhancing the public security management and increasing economic activity to optimize the environment of financial ecological in Guangxi.

Introduction

Having a favorable financial ecological environment is the prerequisite for the financial industry and the common development of the regional economy. The state has approved the implementation of "Guangxi Beibu Gulf Economic Zone Development Plan" since January 16, 2008. The Zone has great significance for the nation to implement the overall strategy of regional development and opening-up strategy of mutual benefit and win-win. Based on this background, the government should create a favorable financial environment, strengthen the financial supervision, improve the ability of risk control, accelerate the construction of social credit system and improve the credit environment for economic zones. Above all, creating the "integrity northern Gulf" is imminent. Regard Liuzhou as a research object, this study analyses financial ecological environment Situation in Guangxi and proposes optimization strategies which has important theoretical and practical significance to improve the financial environment in Guangxi.

The Analysis of Financial Ecological Environment Theory

Traditional Financial Theory

Traditional finance theories appeared in late 1960s to 1980s. They achieved some initial results such as breaking the limitations which we only use the earlier financial theories to study the financial statements and establishing the market hypothesis theory. All of them constitute the financial architecture of capitalist [1]. All of them constitute the financial architecture of capitalist. China's financial industry has entered a phase of deep reform which involves a variety of issues and has some outstanding issues such as improving the market mechanism, varying financial instruments, dealing with bad debts of banks and protecting the interests of investors. The treatment of these issues will effect the future development of China's financial industry and determine whether the national economy can allocate resources efficaciously.

Ecological Finance Theory

The financial environment is a concept of bionics, which is also a dynamic organic chain that some factors which affect the existence and development of the finance interact and interplay through the financial media and credit chains [2]. The financial ecological environment includes some internal environment such as the management structure of financial companies, the integrity

situation of enterprises, the relationship between banks and companies, their own system and management level and the corporate culture. For Guangxi, a good financial environment not only effects mating industrial, financial and credit policies but also relate to the development of local economy which is healthy, stable and sustainable.

While the regional financial ecological environment involves ecological factors in a broad sense, the present study researches the questions based on the narrow financial environment factors mainly. In theory, the financial environment is one of the three aspects of the financial ecological system. The other two aspects are financial system and financial ecological regulation. The financial environment is the basis for the survival of the financial system, and the interaction between them will be achieved through the operation of eco-regulatory mechanisms [3].

Zhou Xiaochuan(2004) first proposed the "financial ecology" concept [4]. Subsequently, many organizations and scholars have done the research about this. Li Yang (2005) believes that the financial ecosystem which can be divided into financial body and financial ecological environment by using the ecological point is much more complex than the natural ecosystems due to the role of spillover effects. The interactive relationship between the financial body and financial ecological environment shows three-dimensional, diverse and normalization features [5].

Analysis of the Financial Environment in Guangxi

The Principles of Financial Ecological Environment Analysis

The principles should contain the scientific principle of the analysis and evaluation form the Environmental Quality Financial Ecology conclusions based on scientific analysis and quantitative calculation. Systematic principle means regard the social and economic development, the credit environment and the financial resources as a large system and reflect the link between social economic and financial ecological environment objectively through the evaluation of the financial environment. Comparability principle means evaluate the financial environment by considering vertical and horizontal comparison. The last principle is combining qualitative and quantitative analysis [6]. The analysis of the financial environment in a region is a very complex task. If we consider the index quantitatively, it will be lack of qualitative scientific evidence. So the research must be fully integrated the qualitative analysis in the actual operation.

Data Envelopment Analysis Principles

DEA is a method of data envelopment analysis of efficiency evaluation put forward by famous American operational researchers that are called A. Charnes and W. W. Cooper [7]. They have generalized the concept of the engineering efficiency of single input and single output to the decision making unit of multiple input and multiple output. We often call the measure performance in DEA as group decision making units. We suppose the number of decision making units ($j=1,2,3\dots n$) is n , each decision making units has the same item investment ($i=1,2,3\dots m$) and the same item output s ($r=1,2,3\dots s$). We use x_{ij} to represent the item i of the j unit and use item r to represent the j unit. To measure whether j_0 is an efficient DEA decision making unit, we should make sure whether it is in the production frontier envelope. For this, we construct a decision-making unit by n imaginary line consisting of the decision-making unit, item i put this

$$\text{hypothetical DMU} \quad \sum_{j=1}^n \lambda_j X_{ij} \quad (i = 1, 2, \dots, m) \quad \text{and} \quad \sum_{j=1}^n \lambda_j = 1 (\lambda_j \geq 0)$$

If the output of this unit is not less than the hypothetical output j_0 DMU, which are lower than those of the various inputs into the decision-making unit j_0 , that is

$\min E \quad ST.$

$$\sum_{j=1}^n \lambda_j Y_{rj} \geq Y_{rj} \quad (r = 1, 2, \dots, s) \tag{1}$$

$$\sum_{j=1}^n \lambda_j X_{ij} \geq E * X_{ij} \quad (i = 1, 2, \dots, m) \tag{2}$$

$$\sum_{j=1}^n \lambda_j = 1 (\lambda_j \geq 0) (j = 1, 2, \dots, n) \quad (3)$$

In this linear programming model, after we solve it, if $E < 1$, the decision-making unit j_0 is non-DEA effective, otherwise it is DEA effective. The CCR model which measures the relative efficiency of each decision-making unit by using a fixed scale of assumptions and the linear programming to estimate the production border is the most basic DEA model. The technical efficiency (TE) will be getting through this model; The BCC model is the one that can give the pure technical efficiency (PTE) of each decision unit and scale efficiency (SE) by decomposing the technical efficiency (TE). Judging whether each decision making unit (DMU) is in a increasing or decreasing returns to scale can provide a basis for decision-makers to adjust the scale;

Financial Ecological Environment Evaluation Index System Design and Data Sources

Table 1 Evaluation index system of financial ecological environment in Guangxi

Level indicators	The secondary indicators	Index code	Connotation	Number of Units
The economic base	Level of economic development	X1	Per capita GDP= total gross reporting period Production / Report of Population	Yuan/person
		X2	Rural and urban residents' disposable income growth / GDP growth	%
The economic base	The economic structure	X3	secondary industry share of GDP	%
		X4	The tertiary industry share of GDP	%
	Economic activity	X5	The total retail sales of social consumer goods	100 million yuan
	Economic stability	X6	The urban registered unemployment rate	%
Administrative environment	The government dominant	X7	(Public expenditure- Public income)/ Public expenditure	%
		X8	Public income Growth rate	%
	The government management level	X9	Public expenditure Growth rate	%
		X10	General public expenditure/GDP	%
Credit environment	Enterprise credit	X11	Provincial Credible Enterprise	house holds
Legal environment	Area Legal	X12	Per capita education expenditure = education expenses / total number	Yuan /person
Intermediary institutions	A third party conditions	X13	Number of Lawyers per 10 thousand people	%
		X14	Number of CPAs per 10 thousand people	%

Data sources "Guangxi Statistical Yearbook (2008-2013)", "2012 cities nationwide bank data and economic data - Guangxi Data", Guangxi Zhuang Autonomous Region Statistical Information Network, Liuzhou statistics net.

This article will use the CCR model and BCC model to test the output efficiency of the financial environment for the financial development. Pure technical efficiency refers to the relationship between the various inputs and outputs in the external environment. The financial ecology main

body is the one we call an operation output that various financial institutions subject which are resource consuming bodies generate value and profits and provide credit services. Scale efficiency is the one whether the financial ecology main body can achieve the optimal in the process of main financial ecological environment transform to the output elements in a variety of environment inputs.

According to the preceding analysis, the index can be summarized in the following aspects (Table 1). The selected input indicators in this study are economic base, administrative environment, credit environment, legal environment and intermediaries; the output indicator is financial development of Liuzhou various financial institutions and savings and loans. We choose the deposits and loans data as a financial develop metrics to reflect the actual situation of financial development Liuzhou is more reasonable because most financial assets are concentrated in the banking system and the assets of banking system is mainly deposits and loans.

Data Processing and Analysis of Empirical Results

We take the data from 2008 to 2013 in Liuzhou as the sample. Throughout the history of financial sector development, the entire ecological system is a process of continuous improvement. By the end of June 30, 2014, the total amount of the financial institutions and foreign currency deposits in Guangxi have amounted to 2.0121 trillion yuan, the total loans have achieved 1.5345 trillion yuan, the development of financial industry continues to accelerate, the foreign currency deposit, loan balances have amounted to 232.778 billion yuan and 164.057 billion yuan in 2013, which have increased 21% and 17%. The environment constantly optimizes and the financing channels continue to broaden. In three years ago, the downward pressure on economic growth and price pressures both exist, the macro-control policies have been issued frequently, the growth of deposits in financial institutions increase slowly and the loan growth return to normal in the situation of monetary policy being back to normal. We select DEA solver software to determine whether DEA is effective. For the multiple-input multiple-output decision-making unit, the optimal weight linear optimization results and the relative weight of each indicator of the efficiency of decision making unit index can be obtained through a comprehensive analysis of input and output data, whereby all decisions unit grading sort can determine the relative effective decision-making unit. The results are shown in Table 2.

Table 2 DEA Efficiency Analysis

firm	TE	PTE	SE	
2008	0.815	1.000	0.815	irs
2013	0.960	1.000	0.960	irs

It can be drawn that the unit θ value of in 2008 and 2013 of the decision-making is less than 1, which is non-DEA effective in both 2008 and 2013. It can indicate that its financial ecological environment in the role of financial development is not in the best condition. In the evaluation model units that is made up from six decisions, there are four θ of decision unit (2009-2012) is equal to 1, which can indicate that DEA in these four units are effective, and the financial environment is promoting financial development in those years.

Decision-making unit for 2013 are projected non-DEA effective analysis. The score date of 2013 is 0.96. From analyzing the input indicators, some redundant indicators exist including the level of economic law development, the economic activity, the degree of economic stability, the dominance of government and the management levels of government. The indicators that the redundancy of it is zero are legal environment and intermediaries. Among them, the government's dominant accounts for 20.39 %, in terms that the redundancy of the relative level of economic development is small, accounting for 5.44%. From analyzing the output indicators, put under constant and if the existing DEA valid state, the output can be optimized to improve 4.18% on the existing basis. The financial environment and financial development of the input-output system input-output system is different from the production sector, investment indicators factor indicators such as per capita GDP, the total

retail sales of social consumer goods will only continue to increase rather than decrease, so we can start from a relatively small number of redundant elements and increase the investment in order to make it more capable of redundant elements to match and improve output. According to the redundant evaluation and the actual situation, the problems are mainly in terms of the legal environment, economic base, agency, administrative environment, so the financial environment can be optimized from the above four aspects.

Table 3 Non-DEA effective analysis in 2013

DMU(I/O)	Score Data	Projection	Difference	%
X1	41638	39371.253	-2266.747	-5.44
X2	11.476	10.775	-0.701	-9.35
X3	0.635	0.594	-4.18E-02	-6.58
X4	0.279	0.267	-1.12E-02	-4.01
X5	568.42	545.643	-22.77661	-4.01
X6	3.97	3.592	-0.378073	-9.52
X7	0.246	0.195	-5.10E-02	-20.39
X8	0.189	0.181	-7.57E-03	-4.01
X9	0.096	0.092	-3.20E-03	-3.64
X10	0.088	0.085	-2.60E-03	-8.00
X11	0.275	0.275	0	0
X12	263.999	263.999	0	0
X13	0.06	0.06	0	0
X14	0.141	0.141	0	0
Output	2832.78	2951.11	118.33	4.18

The Countermeasures of Optimizing Financial Ecological Environment in Guangxi

Firstly, we must strengthen the education of social integrity and accelerate the construction of social credit system. Social credit system mainly includes government credit, corporate credit and personal credit. Transforming the government administrative concept and upgrading the management level. In a market economy and ecological environment construction finance process, the government should recognize that financial firms is a separate individual competition in the market and should not interfere with the financial business activities, while it needs to guide and support the development of economic environment and create a fair and efficient competition environment. Secondly, we must strengthen security management and reduce criminal cases. Social and economic development needs a safe, harmonious and healthy space. The quality of security environment directly affects the quality of the financial environment. Finally, we must enhance the economic activities and encourage the development of private economy. The market economic encourage the multiple ownership of economic entities to compete fairly. In the process of competitiveness, the enterprises can develop better and the economy will be healthy and beneficial, so is the financial environment is also beneficial.

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