Evaluation on the Construction of Economic and Financial Ecological Environment Based on Sustainable Development

Muyu Chang[1,a,*]

[1]*School of Management, Philippine Christian University, Malate, Manila, 1004, Philippine*
[a]*changmuyu021101@gmail.com*
[*]*Corresponding author*

Abstract: At present, China has entered a critical period of economic development. The quality of the regional financial ecological environment not only affects the efficiency of regional resource allocation and the stable development of finance, but also determines the attractiveness of the region to economic and financial resources, and ultimately promotes the sustainability of regional economic growth. However, the poor financial environment in some regions has become the main limiting factor of financial ecological environment management, weakening the role of finance in supporting local economy. Therefore, this paper analyzed the per capita GDP, GDP growth rate and environmental management level of the sample cities through the principal component analysis method, and obtained the financial ecology score. The trend of per capita GDP of the cities in the sample has a high similarity with the trend of financial ecological score, which is about 86.43%. To some extent, it showed that the factor that has the greatest impact on the financial ecological environment is the total level of local economic development. This paper provided some reference for improving the regional financial ecological environment and promoting the healthy development of the economy.

1. Introduction

The reason for the deterioration of the financial ecological environment is that the financial ecosystem is out of balance. If this state is not resolutely changed, it would endanger the stability of the financial industry and bring huge losses to economic development. A good financial ecology can not only promote the healthy and stable development of the financial industry, but also play a strong supporting role in economic development and social progress.

Now there are some researches on financial ecological environment construction by scholars. The main focus of Shah Wasi Ul Hassan's research was to estimate the relationship between carbon dioxide and financial development when there is an economic system as an interaction item [1]. Zakaria Muhammad investigated how South Asia's institutional strength and financial growth affected the region's ecology. Economic development, energy use, foreign direct investment, trade

openness, and institutional quality are other factors that affect environmental quality [2]. By balancing the effects of economic growth and energy consumption, Lahiani Amine evaluated the asymmetric influence of China's financial development on carbon dioxide emissions [3]. Using the prediction pursuit model, Moran index, and regression model, Peng Benhong's research calculated the evolution of green ecological characteristics in 37 Yangtze River Delta cities and assessed the effects of financial development on green ecology to support more environmentally friendly production. According to the study, the eastern region's green ecological index was greater than the western region's, and it also exhibited an increasing trend. A significant positive clustering characteristic in space was discovered for green ecology and its composition index [4]. Ling Gao investigated the long- and short-term nonlinear and time-varying link between China's globalization, natural resources, financial development, and carbon emissions from 1980 to 2017 using the framework of nonlinear autoregressive distribution lag and cross wavelet model [5]. Yasin Iftikhar suggested that flexible institutional reform should be carried out and environmental quality issues should be fully incorporated into financial reform to help underdeveloped economies mitigate pollution emissions and achieve sustainable economic growth [6]. Esmaeilpour Moghadam Hadi looked at how commerce and financial growth affected Iran's environmental standards. The results showed that financial development accelerated environmental degradation. However, the improvement of trade openness has reduced the damage to Iran's environment [7]. The above research has analyzed the construction of financial ecological environment.

Many scholars have studied sustainable development economy. Mikhno Inesa considered the effective indicators and tools that affect the level of ecological and economic development, as well as the main trends and problems when introducing the "green economy" [8]. By using exploratory factor analysis and associated analyses, Rodriguez-Anton J M established if there is a statistically significant link between the EU's circular economy initiatives and adherence to the SDGs [9]. Schroeder Patrick determined the correlation between circular economy practice and the implementation of sustainable development goals. The results showed that the practice of circular economy directly contributes to achieving a large number of sustainable development goals [10]. Kasztelan Armand studied the terms and relationship between green growth, green economy and sustainable development [11]. Zhang Yu measured the performance of low carbon economic efficiency from a global perspective, and used a measurement model based on super relaxation to analyze the low carbon economic performance of 115 sample countries from 1999 to 2013 [12]. Hao Yu's research goal was to find out what affects the willingness of local people in western China to participate in the circular economy. The research results showed that subjective criteria, willingness to make environmental sacrifices, perceived economic returns and optimistic expectations have a great impact on citizens' desire to participate in the circular economy [13]. The research of the above scholars has made fruitful progress in the aspect of sustainable economic development.

The optimization of the financial ecological environment is not only conducive to the establishment and implementation of the scientific concept of development and the goal of sustainable development in the financial industry, but also conducive to grasping and correctly using the rules of financial operation, and maintaining the steady development of the financial industry for a long period of time and ultimately achieving a win-win situation for both finance and economy. Therefore, this paper conducts relevant research for this purpose.

2. Definition of Financial Ecology

(1) Financial ecological environment management
Broadly speaking, financial ecological environment management refers to the existence and

evolution of the macro-level financial environment and the total of various social and natural factors that interact with one another in the financial industry, such as political, economic, cultural, geographical, demographic, and other elements [14]. It interacts with the financial industry, focusing on the external environment faced by the financial operation and the basic conditions for financial operation.

(2) Theoretical source of financial ecological environment construction

Ecology, also known as ecosystem, is the law and state in the process of natural, social and human survival and growth, that is, a dynamic balance system in which biological and abiotic communities and biological populations are closely related and interact with each other in a specific period and range.

The financial industry has been evolving with the development of commodity production and circulation, and has formed its unique development law and internal logical arrangement in the long-term development process [15]. Just as the coordination between various organisms in the nature and between various organisms and the external natural environment has formed a good natural ecology, the coordination between various financial subjects and between financial subjects and the external environment is also the basic symbol of financial ecological balance. If people analyze and examine China's financial system with ecological methods and results, people would find that the financial system is also a system with many ecological characteristics. The various elements of the financial ecological environment are interconnected, interdependent and interacted to form an organic whole - the financial ecological chain. If it can be divided into three levels according to its directness and financial impact intensity, they are interrelated, interdependent and interactional, forming an organic financial ecological environment system.

(3) Basic characteristics of financial ecological environment construction

1) The regional characteristics of financial ecological environment construction.

Taking China as an example, due to the different natural conditions, economic development levels, customs and habits, the unification of legal systems and macro policies cannot achieve the same results. It is usually required that all regions, on the premise of meeting the above requirements, make special institutional arrangements in combination with local realities to ensure the nationwide hierarchical and phased improvement of financial ecological environment construction. It requires the local government to effectively play its role and make institutional arrangements that adapt to the local actual situation.

2) The construction of financial ecological environment is adaptive. For financial enterprises, it is quite reasonable to consciously conduct adaptive behavior in various forms [16]. One of them is imitation, which produces a new model that can bring innovation when the efforts of others are ineffective. When the environment changes, trial and error are equally adaptive. Under China's existing financial system, the market exit mechanism is not perfect enough, and a variety of corresponding rescue and risk control measures are not matched. The failure of the exit mechanism of financial enterprises makes it impossible for the market's spontaneous forces to play their due role. On the one hand, it hinders the growth momentum of good financial enterprises, while making imitation and innovation disappear. Due to the differences in the economic environment, legal system and social and cultural external environments of each country, a country's financial activity subject must dynamically adjust its own strategy if it wants to adapt to its own environment. For this reason, people must start from reality and formulate a financial development model suitable for themselves rather than simply drawing on the financial ecology of mature western markets.

3) The factors of financial ecological environment construction are interdependent. The interdependence of financial ecology is reflected in two aspects. First, the subjects of financial activities are interdependent. For example, the financiers bring the possibility of obtaining excess returns to the fund suppliers and the channel fund suppliers bring the power source of survival and

development to the financiers, which is conducive to the capital adjustment between the fund supply and demand parties. Second, it is dependent on the external environment. Without a good economy, the legal environment and loose policy environment are bound to inhibit the financial activities of financial subjects, thus hindering economic development. Therefore, building a harmonious relationship among various factors of financial ecology is the core of improving financial ecology.

The basic characteristics of the financial environment are shown in Figure 1:
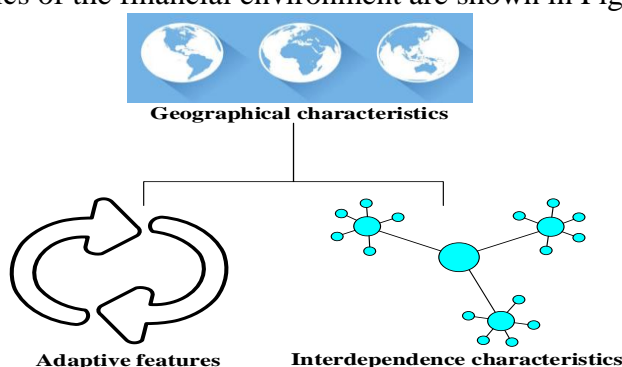

Figure 1: Basic features of the financial environment

The financial system in remote areas is characterised by several features.

The level of monetisation of the economy in remote areas is not high. From the general process of world economic development, when the level of economic activity does not change, the higher the frequency of commodity monetary activity in the economy, the greater the amount of money it requires. Because China's agricultural market system is not perfect, circulation channels are not smooth enough, price formation mechanism is not sound enough and other reasons, remote areas of the economy total commodity rate is affected, and farmers income monetisation level continues to increase. As agricultural production is distinctly seasonal, the circulation of money in remote areas is bound to have its corresponding characteristics, which are unchangeable due to changes in the economic system.

The modern financial sector consists mostly of state-owned commercial banks, policy banks, joint-stock banks and other dominant state-owned banking institutions, while the traditional financial sector consists mostly of credit cooperatives and non-government recognised institutions in remote areas, and there are cooperative funds, private money changers, loan sharks and other private financial organisations in reality. On the one hand, large and medium-sized state-owned enterprises are able to obtain large amounts of funds at low interest rates from state-owned banks and other modern financial institutions, which are used very inefficiently; on the other hand, small enterprises, co-operative banner organisations, individual entrepreneurs and farmers, who account for a large proportion of economic activities, are unable to obtain money from large banks and can only seek help from traditional financial institutions such as credit unions in remote areas, while informal private financial institutions such as money changers, pawnshops and foundations seek help. In remote areas, financial markets are not well developed.

In remote areas, financial markets are not sufficiently developed. Due to the low level of monetisation of the economy in remote areas of China and the low demand for credit funds, the "duality" of financial institutions in remote areas is evident and financial transactions are not regulated, coupled with the fact that remote areas are vast and the population lives in scattered areas where the natural risks of agricultural production and market risks are greater, resulting in the development of financial markets in remote areas. The development of financial markets in remote areas is seriously lagging behind. The coverage of financial institutions in remote financial markets and the density of financial institution distribution are low, with financial institutions acting as

intermediaries for indirect financing and direct financing still hovering in the initial stage.

Financial inhibition is widespread in remote areas. Financial inhibition is manifested by the government's administrative restrictions in financial activities, strict control of interest rates, foreign exchange and other acts, and excessive intervention would curb the development of the financial system, which leads to financial and economic development into a vicious circle of mutual restraint. This suggests that there is an urgent need to speed up financial construction in remote areas, and that the construction of a credit guarantee system should be accelerated to improve the existing financial system. Theoretically, the guarantee increases the contract cost but can effectively reduce the search cost and transaction cost. The construction of the guarantee system reduces the harm caused by human opportunism. While accelerating the development of the credit guarantee system, a financial system suitable for the actual economic structure of less developed regions is constructed. Specifically, on the premise of coordinating with the national monetary policy, the authority of monetary policy implementation in underdeveloped regions should be appropriately delegated according to regional differences. For example, the deposit reserve ratio and interest rate policy can make them adapt to the industrial policy of less developed regions to provide effective monetary policy and promote the economic development of less developed regions.

3. Construction of Financial Ecological Environment Evaluation System

As a system, the financial ecological environment is extremely complex internally, including multiple participants from the government, enterprises, financial sectors and residents [17]. In view of this, this paper selects ecological evaluation indicators from a comprehensive and overall perspective, and follows certain standards.

(1) Selection principle of evaluation index

The following principles should be followed when designing the index system, as shown in Figure 2:
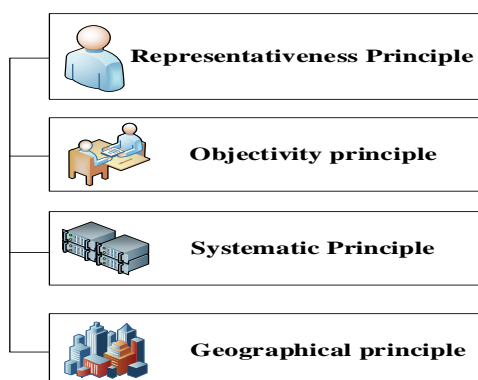

Figure 2: Basic features of the financial environment

Principle of representativeness: the selected indicators should be highly representative. Because the study of systematic problems involves many influencing factors, it is impossible to take all factors into account [18]. Therefore, representative factors can be selected among the factors with common features to represent such indicators. As a representative indicator, it must occupy the dominant position of similar indicators, and its final research results would be closer to the actual situation.

Objectivity principle: the selected evaluation indicators must be objective. To obtain the research results closest to the actual situation, the indicators must be selected according to the actual situation. It is impossible to change the indicators artificially to study specific results. This also requires that people strive to be comprehensive and complete when screening indicators. The final

indicators should include all the elements that can affect the financial ecology, so that the analysis can be more convincing.

Systemic principle: the selected indicators must be systematic. Since financial ecology is the simulated object of ecological environment, it has multiple levels like the ecological environment. The level must be listed from the highest level to the lowest level, and promoted and deepened layer by layer to make the analysis process more hierarchical.

Regionality principle: when designing evaluation indicators, people must consider the regionality of financial ecology. Supported by such a vast geographical environment in China, different regions are affected by special historical and geographical policies, and their financial ecology would show distinctive regional characteristics. Therefore, people must consider regionality when designing indicators. When designing indicators, people must ensure their availability. Due to the limitations of statistical data or statistical methods, there are often cases where indicators are designed reasonably but relevant data cannot be found. Therefore, when indicators are designed properly, people must also ensure their availability. Finally, people must ensure the dynamic nature of indicators. As things in the ecological environment are constantly developing and changing, the selected indicators must ensure their renewability to ensure the vitality of the constructed evaluation system.

(2) Construction of financial ecological environment evaluation system

Based on the impact of various factors on the financial ecological environment, this paper finally screened out 4 primary indicators and 10 secondary indicators. The indicator system is shown in Figure 3:
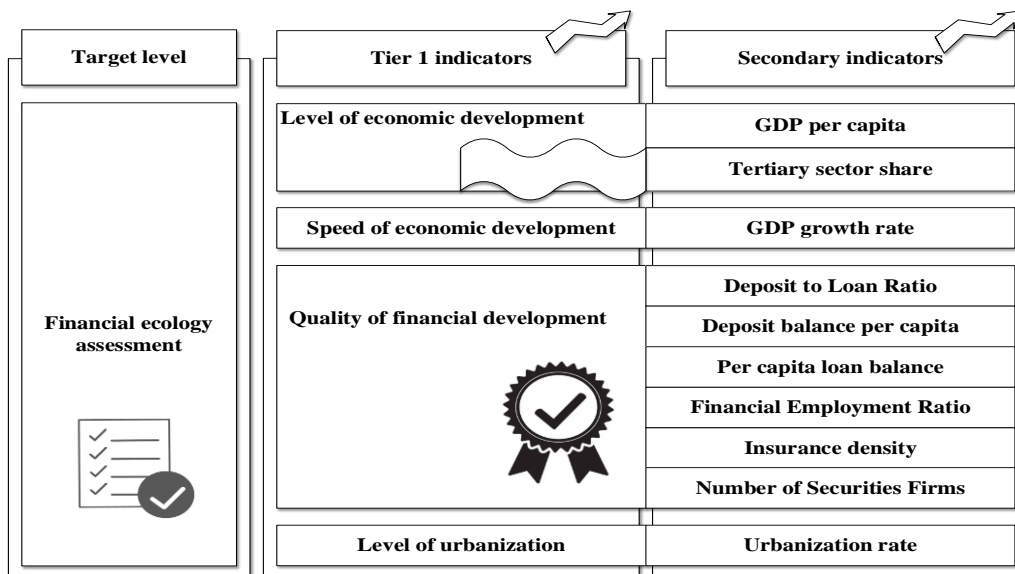

Figure 3: Indicator system

1) Economic development level

The level of economic development has laid the foundation for the development of the financial industry. The financial development of the city has a great relationship with the local economic foundation, and the financial industry would generally get better development in economically developed areas. The more economically based a place is, the more it needs financial products and services, which can continuously promote the development of local financial institutions. The economic base can be measured from two aspects: the level of economic development and the speed of economic development.

2) Economic development speed

The speed of economic development can reflect the potential of a city's economic development,

and it is also a sign that can most intuitively reflect the future prospects of the city. Whether foreign financial institutions enter or not usually takes into account the speed of local economic development. The faster the economic development, the greater the local market capacity.

3) Quality of financial development

The financial resources in the region most intuitively reflect the financial ecological environment in the region, and the financial resources are the main components of the financial ecological environment. The proportion of financial institutions in a region, per capita deposits, per capita loans and other indicators can most intuitively reflect the financial development of the region. The increase in the concentration of financial institutions in a region shows that the competition among local financial industries is very fierce, the level of financial services tends to improve, financial products increase, and financing means are rich. On the other hand, it shows that the local economic development level has great potential, and more financial institutions can bring more capital to the local area, which has a strong role in promoting the local economic development. The financial ecological environment includes not only the development of the banking industry, but also the development of insurance and securities, and its proportion is increasing. The development of insurance industry and securities industry has increasingly become an indicator to measure the sound financial development of a certain region. With the financial mixed operation, the pattern of banking being the largest has gradually been broken through. The number of insurance institutions and securities institutions in the region usually represents the local financial development. However, from the perspective of government regulation, in order to enable banks to withstand risks, the deposit to loan ratio cannot be too high, because banking financial institutions also need to handle the problem of capital liquidity, and need to retain a certain amount of deposit reserves (including excess). If the deposit loan ratio is too large, the deposit reserve is insufficient, which would cause the payment crisis of the bank. Insurance density is the amount of per capita premium income in a region. It is the understanding of the insurance situation of the citizens in the region and measures the development of the insurance industry in the region. The influence of the securities industry in the financial industry is also increasing. The number of local listed companies can measure the level of local financial development. More listed companies can ensure that more foreign funds are injected into local financial resources. Therefore, when measuring whether the capital market supports economic growth, the number of listed companies in one place is usually used as an indicator of the development level of the securities industry. The improvement of urbanization level usually means that the larger the rural areas are integrated into the city, the larger the corresponding service radius and service population of financial institutions. At the same time, the improvement of urbanization level also brings financial resources to financial institutions. Therefore, the level of urbanization in a place also has a significant impact on the financial ecological environment.

(3) Analysis on research methods of financial ecological environment

As one of the multi criteria analysis methods, Analytic Hierarchy Process (AHP) is the most widely used method in multi criteria analysis. The analytic hierarchy process is used to determine the priority weight between the lower level elements and the upper level elements. The weighted sum of squares method is used to determine the final weight of the final goal for each combined backup scheme at the same time, and the scheme with the highest weight is taken as the optimal scheme. The application scope of AHP is to conduct systematic research on multi-level, which is characterized by containing a large amount of data, but the results to be obtained need quantitative description. It finds the maximum eigenvalue by constructing the relevant matrix and finding the eigenvalue of the matrix. First of all, the advantage of AHP is that it is a systematic characteristic analysis method. It follows the system level thinking from the beginning to operate, and always keeps the correlation between various factors, and gives different weights to different levels of data, which is clear and correct. Second, the analytic hierarchy process is simpler than the complex

econometric method, and it is not complex. It does not require a lot of mathematical operations and data analysis, and does not require computer software assistance. The complex problems are simplified through multi-level division. Third, its calculation and analysis do not require much data, while econometrics often requires tens of hundreds of data. Weight distribution is the core part of the analytic hierarchy process. After weight distribution, there is no need to obtain much data. However, everything has two sides. The determination of the weight distribution of the Analytic Hierarchy Process (AHP) and the subjective factors of people, especially the expert scoring method, have a greater impact, so this affects the analytic results of the AHP to some extent.

4. Experimental Evaluation on Regional Economy and Financial Ecological Environment

This paper makes an empirical analysis of the financial ecological environment from the city level, using the principal component analysis method. The data are from 10 cities in 2021. The purpose is to obtain the ranking of urban financial ecological environment in selected areas, and analyze the efficiency of each input factor in the financial ecological environment on this basis. This paper selects three indicators, GDP per capita, GDP growth rate and environmental management level, to verify the main determinants of financial ecological environment. The main method used is component analysis, and its application software is SPSS19.0. The questionnaire indicators are shown in Table 1:

Table 1: Questionnaire indicators

Type	Variable
Economic dimension	Gross Domestic Product(GDP) per capita
	GDP growth rate
Environmental aspects	Environmental management level

(1) Comparison of GDP per capita

Although GDP per capita is not directly equivalent to the per capita income and living standard of residents, it constitutes the main material basis for the per capita income and living standard of residents in a country, and is an important reference index for improving the per capita income and living standard of residents. The comparison of GDP per capita is shown in Figure 4:
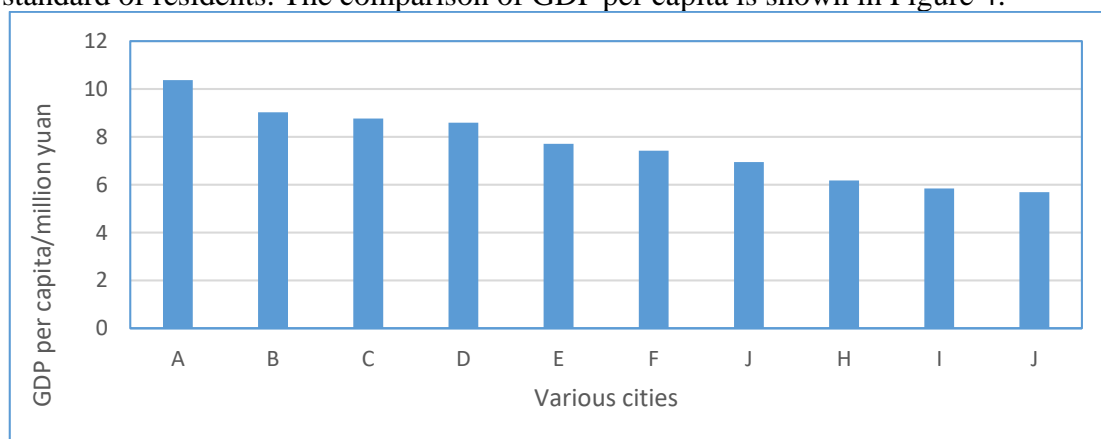

Figure 4: GDP per capita comparison

Figure 4 shows the per capita GDP of 10 cities. The per capita GDP of City A is the highest, while that of City J is the lowest. The trend of per capita GDP from City A to City J is gradually declining. This result provides a basis for the subsequent excavation of the main determinants of the financial ecological environment.

(2) GDP growth rate comparison

In recent years, the proportion of China's financial industry in GDP has remained at about 1%, and the GDP growth rate in 2021 is about 8.1%. There is no doubt that China is already a global financial power at this stage, but its financial development level is not very high in fact, and it is far from a financial power. GDP growth rate is shown in Figure 5:
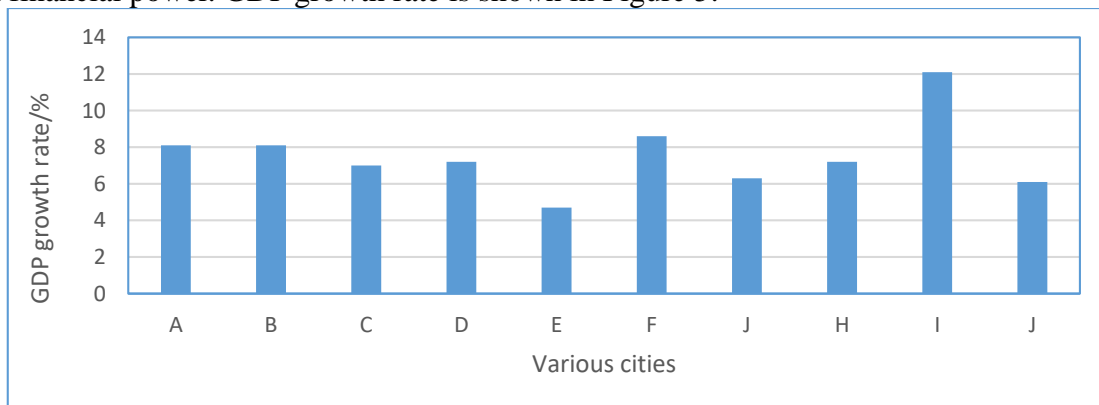

Figure 5: Comparison of GDP growth rates

Figure 5 reflects the GDP growth rate of 10 cities. Among them, the GDP growth rate of City I is the highest, and that of City E is the lowest. Except for City I, the GDP growth rate of other cities is between 4% and 10%, with no obvious regularity.

(3) Environmental management level

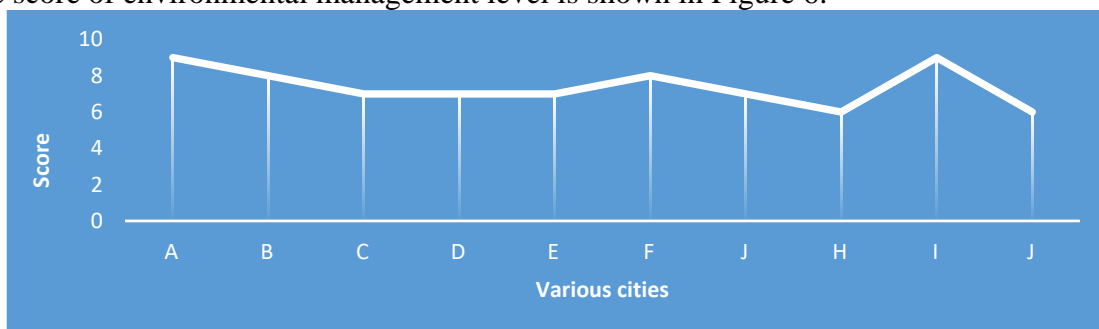The score of environmental management level is shown in Figure 6:

Figure 6: Environmental management level score

Figure 6 reflects the scores of environmental management level of 10 cities. Among them, City A and City I have the highest environmental management level score, while City H has the lowest environmental management level score. Green finance is a new economic engine under the current environmental protection background, and also plays a key role of resource support in environmental governance. It is necessary to take green credit, green bonds, green insurance, carbon trading finance, etc. as typical examples of green finance development in terms of environmental governance and ecological development.

(4) Score of financial ecology

The financial ecology score is obtained by calculating the indicators of the above sample cities, as shown in Figure 7.

The financial ecological scores of the sample cities are obtained from Figure 7. It can be seen that the trend is basically consistent with the trend of GDP per capita. Through Fourier analysis and calculation of the similarity, the similarity is about 86.43%, which proves that the financial ecology is positively related to GDP per capita, and the similarity with GDP growth rate and the trend of environmental management level is not obvious.
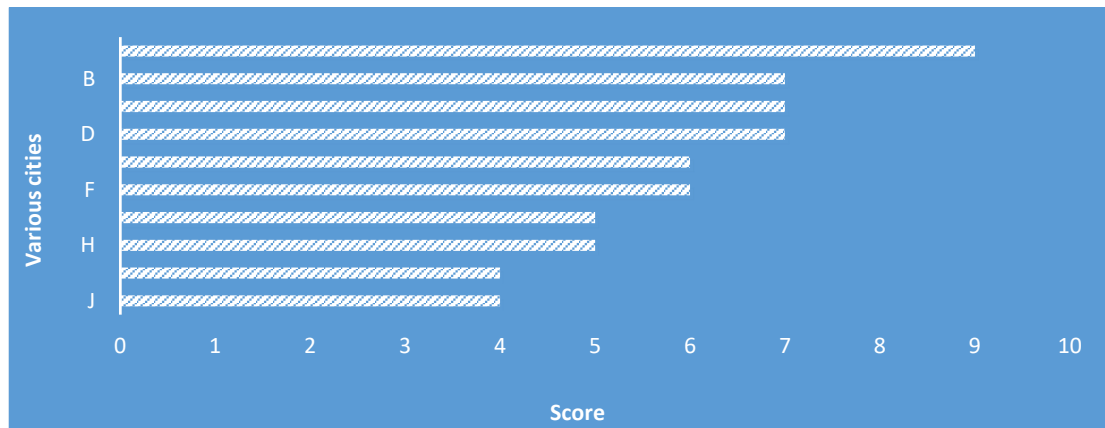
Figure 7: Financial ecology score

5. Conclusions

The financial industry is one of the main bodies of the financial ecological environment. The market environment it faces is changing rapidly. The financial industry itself should also have the hematopoietic function and crisis handling ability. Using the principal component analysis method to study the financial ecology of cities, people can find that there is a gap between the results obtained and the general understanding of the research object, indicating that the quality of the financial ecological environment depends to a certain extent on the GDP per capita. The results of the experiment include GDP per capita, GDP growth rate, environmental management level and financial ecology score. The conclusion of this paper showed that financial ecology is positively related to GDP per capita. Through the above research, people can promote the improvement of financial ecological environment and provide ideas for sustainable economic development.

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