

# Collaborative Analysis of Internet Financial Ecological Footprint and Economic Growth Model

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**Abstract:** In order to further study the current economic development mode and investigate the current development of modern network technology, In-depth understanding and analysis of the ecological footprint and development trend of Internet finance, and comparison with the known development of Internet finance, study the changes of China's economic growth pattern in recent years. Combined with the economic index function algorithm, the change value of the cooperative relationship between the two is calculated, so as to analyze and judge the cooperative development relationship between the two. Combined with the economic index function algorithm, the change value of the cooperative relationship between the two is calculated, so as to analyze and judge the cooperative development relationship between the two.

**Keywords:** Internet; Finance; Ecological footprint; Economic growth; Coordinated development

## 1. Introduction

With the acceleration of China's modernization process and the popularization of the Internet, the economic development presents a new ecological environment based on the Internet. Internet finance has had a great impact on the changes of China's overall economic structure and economic growth mode. In recent years, with the rapid development of Internet technology, Internet payment and financial ecological environment have gradually entered people's daily life and become an essential part of production and life[1]. It has also greatly promoted the growth of China's modern economy. At present, with the further deepening of reform and opening up, China's economic model is growing at a high speed. At the same time, it also brings pressure such as slow development and insufficient transformation of the traditional financial industry. In order to solve the above problems, under the background of the new normal of China's economic development, the fundamental needs of China's current financial ecological development and reform are investigated and studied in depth, the ecological development footprint of Internet finance is further understood, and the synergistic relationship between the ecological footprint of Internet finance and China's current and future economic growth models is scientifically explored[2]. With a view to scientifically and reasonably stimulating the economic development of our country. In order to make a better coordinated analysis of the ecological footprint of internet finance in the economic growth mode, and to analyze the representatives of the current common development mode of internet finance in China, the survey

found that the current development of internet finance industry in China has greatly impacted the traditional economic life and production mode. In order to better coordinate the development of traditional economic mode, the development trend and growth mode of the two are optimized according to the actual survey results.

## 2. Collaborative Analysis of Internet Financial Ecological Footprint and Economic Growth Model

### 2.1. Analysis on ecological footprint of internet finance

With the rapid development of modern new technologies, the Internet financial industry gradually occupies a more important position in China's economic structure. The most influential factors in the various financial industry structures in China are the traditional capital accumulation and investment activities such as financial position, risk management and resource allocation. In order to have a more detailed understanding of the ecological development of Internet finance and the impact on the traditional economic structure, the above survey results are further analyzed [3]. At present, the influence of China's Internet financial ecological environment on the economic growth trend and changes mainly lies in the macro guidance under China's market economy system. Under this policy environment, China's economic structure can be divided into two parts: the real economy and the financial system. For convenience of understanding, we regard the real economy as the main representative of traditional economic industrial organizations and the fi-

financial system as the main representative of Internet finance. We also make a systematic theoretical discussion on the current situation, development trend and structural transformation of the two parts and the influence on China's economic growth mode[4]. Under the background of changes in economic structure and development of economic system, the traditional economic system can be divided into two departments: industrial structure and financial management. The Internet financial structure is improved by adding an innovative industrial department on the basis of the traditional economic system. The industrial structure department is designated K1, the financial management department is designated K2, and the innovative industrial department under the Internet background is designated K3. The economic change relationship among the three is as follows:

$$d_n = \sum \Delta(\bar{K}_1 + K_2) \quad (1)$$

$$d_m = \sum \Delta(\bar{K}_1 + K_2) \xrightarrow{m-n} K_3$$

$$= d_n \xrightarrow{m-n} K_3 \quad (2)$$

Among them, M and N are respectively the changing trend ranges of the development of traditional economic system and the development of innovative economic system[5]. The Internet financial ecological development

matrix is recorded as S, s=(s1,s2,s3,...si). Based on the above data, the equilibrium ratio of capital stock in the state of balanced and stable economic growth in China is calculated as follows:

$$h_n' = \prod d_n + (s_1 - s_{i-1})(s_{i-1} - s_{i-2}) \dots (s_2 - s_1) \quad (3)$$

$$h_m' = \prod d_m + (s_1 - s_{i-1})(s_{i-1} - s_{i-2}) \dots (s_2 - s_1) \quad (4)$$

According to the above algorithm, the current development trend of Internet finance ecology can be obtained. The algorithm is

$$i = \prod_i \prod_{n=1}^m \frac{\sqrt{(h_m' - h_n')^{m-n}}}{k \rightarrow s_i} \quad (5)$$

Where k≠0 and si≠0, according to the above algorithm, the development trend of internet financial ecological footprint in a stable economic environment can be obtained[6]. However, in the process of actual investigation and research, it is necessary to investigate and analyze the changes of social environment, consumer's consumption concept and consumption demand, and to analyze the development trend of Internet financial ecological footprint according to its change trend. The specific marketing factor model for the Internet financial ecological environment is as follows:

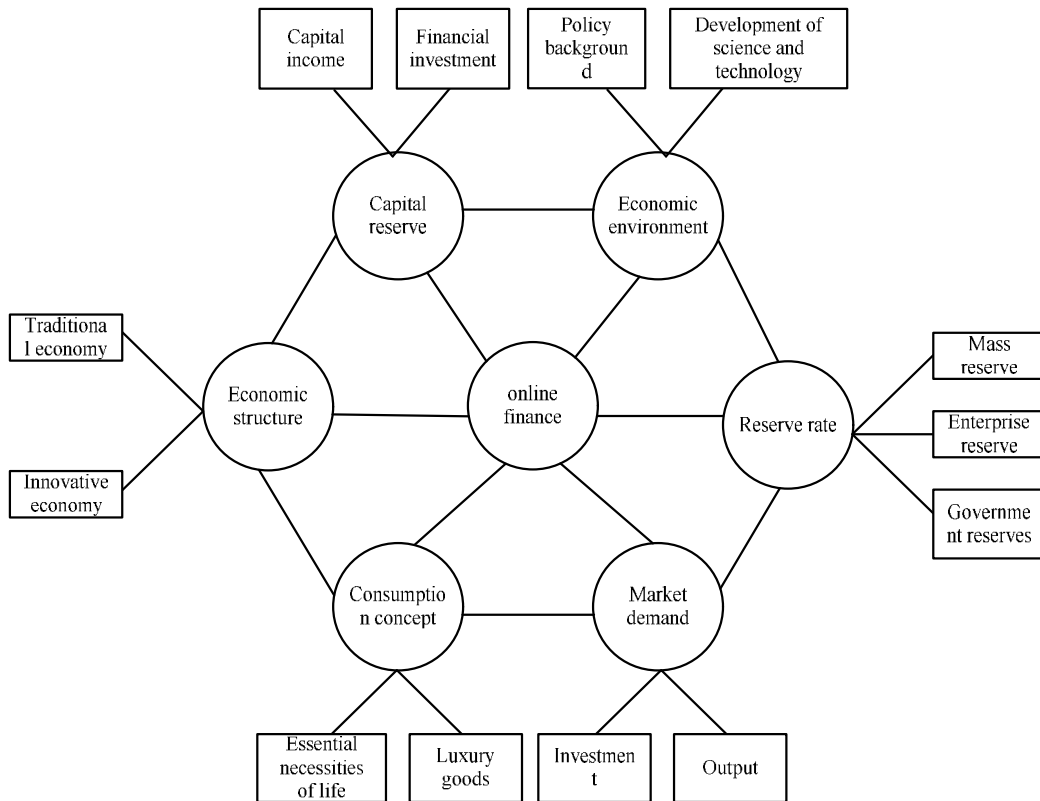


Figure 1. Factors affecting internet economy and ecological environment

According to the analysis of the development of the Internet economy based on the factors affecting the ecolog-

ical environment of the Internet economy, the current consumption concept of Chinese residents has undergone

great changes. After gradually entering a well-off society, the people's consumption concept has shifted from purchasing necessities to luxury goods, which has also greatly promoted the transformation of my economic structure[7].

**2.2. Research on China's economic growth model**

With the popularization and application of online shopping platforms such as Taobao and Tmall, the current economic structure and purchase mode of our company have undergone great changes. The traditional economic consumption development mode has been impacted by the innovative Internet financial structure. In order to better promote the healthy and stable growth of our country's economy, we need to further strengthen the investment in modern economic technology and innovative industries to promote the transformation and upgrading of the economic structure[8]. Influenced by various factors such as the current socio-economic environment, the development of social science and technology, market demand, consumer groups and concepts, the economic development is constantly fluctuating, and the overall economic development trend is more towards innovative network finance. After analyzing and studying the current Internet financial ecological environment and economic structure, in order to further understand the changes in social and economic growth, the productive situation in the current social and financial environment is investigated. So as to accurately understand the current social and economic growth in the Internet financial ecological environment[9]. Based on the analysis and investigation of China's current actual economic development, this paper evaluates the degree of influence of Internet financial ecological environment data on the activity of market economy[10]. We should fully investigate and understand the changes of China's current financial growth data, and conduct research and calculation according to the development characteristic information of the time characteristic series. In the calculation process, we should collect the sample data of China's current economic growth indicators, and design the linear regression model of China's economic growth model according to the measurement method, taking into account the influence of cross-sectional interference data in economic growth, and analyzing the individual special effects of the model's economic growth factors. Based on the panel data model, the regression vector error in the economic development impact assessment algorithm is calculated as follows:

$$y_{it} = \beta(g_i + x_{it}'b_1 + k_{it}) \quad (i = 1, 2, \dots, N; t = 1, 2, \dots, T) \quad (6)$$

Among them,  $g_i$  is a random variable of Internet financial activity,  $x_{it}'$  is the degree of support for the social development environment,  $k_{it}$  is the regression of economic development. If the development scope of  $x_{it}'$  is

not limited. Then the model can be represented by a cross-sectional distance  $c_i (i = 1, 2, \dots, n)$  varying across the cross-section, The influence factors of economic individuals on the cross-section unit are deduced through  $C_i$ , and the coefficient vector  $K_{it} (i = 1, 2, \dots, n; t = 1, 2, \dots, T)$  is used to deduce the number. Explain the extent to which individual factors affect the overall structure. In addition, in order to study the influence degree of the internet financial ecological environment on the current economic growth model in China, it is necessary to study the relationship between the input cost  $f(x)$  and the output  $f(y)$  of the innovation network elements. therefore, using Cobb-Douglas production function for reference, an exponential function panel regression model is established, and in order to simplify the model, the comprehensive economic development level is merged into the random variable  $u$ . The basic model is as follows:

$$f(x) = [c_i g_i + a_i \ln K_{it} + b_i \ln L_{it} + k_{it}] / \sum_{i=1}^t Y_{it} \quad (7)$$

(i = 1, 2, ..., N; t = 1, 2, ..., T)

$$f(y) = \bar{u}_{it} [a_i \ln K_{it} + k_{it} \ln L_{it} + 1] / \sum_{i=1}^t Y_{it} \quad (8)$$

(i = 1, 2, ..., N; t = 1, 2, ..., T)

In combination with the above algorithm, an analysis model structure for the development activity of the Internet financial ecological environment is designed-the model includes a mechanism module for promoting the growth of entrepreneurial economy, and the specific structure is shown in the following Figure 2.

With the improvement of the current Internet economic environment, Internet finance has created a development path for the home country's economy, thus providing market opportunities for more economic development models and better promoting the growth of the national economy and employment opportunities.

**2.3. Collaborative analysis of internet financial ecological footprint and economic growth model**

When the market environment is in a turbulent state of change, it is easier to succeed when the innovation, creativity and reaction speed of Internet finance reach a higher level. At the same time, the Internet ecological environment plays a more significant role in promoting economic growth. The economic growth model of our country is calculated based on several issues, if:  $Q = (Q1, Q2, Q3, \dots, Qx)$ ,  $m$  is the solving equation group of financial growth;  $C = (Q1, Q2, Q3, \dots, Qy)$   $m$  is a variable of the model equation. When solving the economic model variable  $C_{m+1}$  in step  $m+1$ , the network financial environment equation variable  $A_{m+1}$  and the differential simulation variable  $C_{m+1}$  in step  $M+1$  are regarded as fixed values. The model adopts an explicit integration algorithm and its difference equation is as follows:

$$A_{m+1}^{n+1} = f(x)ZQ(B_{m+1}^n, A_{m+1}^n, C_{m+1})$$

$$B_{m+1}^{n+1} = f(y)PQ(B_{m+1}^n, A_{m+1}^n, C_{m+1})$$

(9)

Based on the above method, the characteristics and laws of China's economic growth mode are developed in the transient stability module, and the prediction objects and methods are selected in the transient stability calculation

considering the influence of the Internet. At the same time, we should consider the influence of technology forecast and demand forecast, and then forecast the economic effect of the product. The simple prediction process of the data growth model of modern market economy is shown in Figure 3.

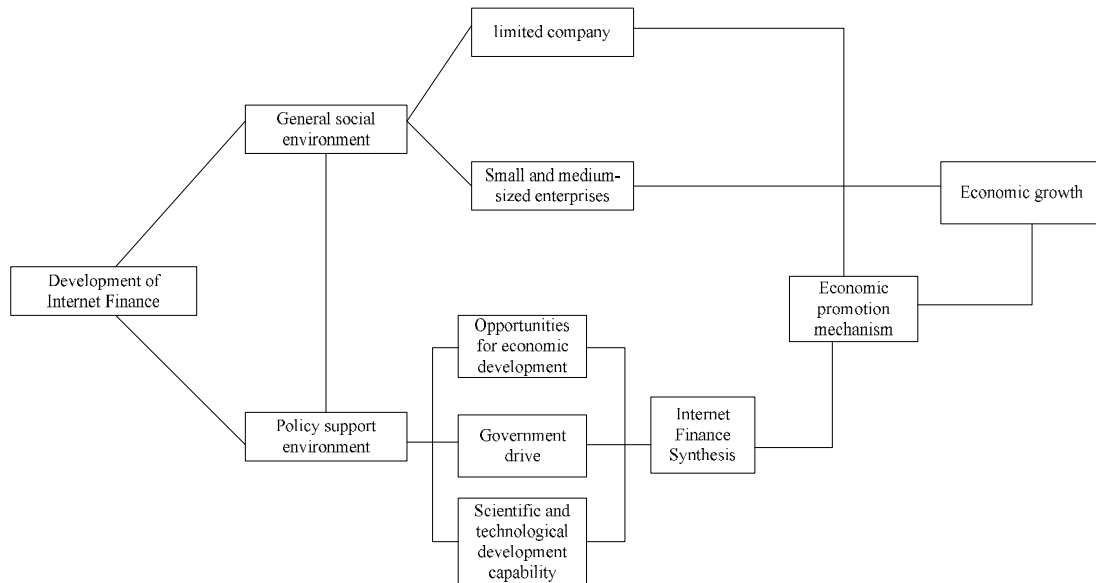


Figure 2. Principle of economic development activity detection

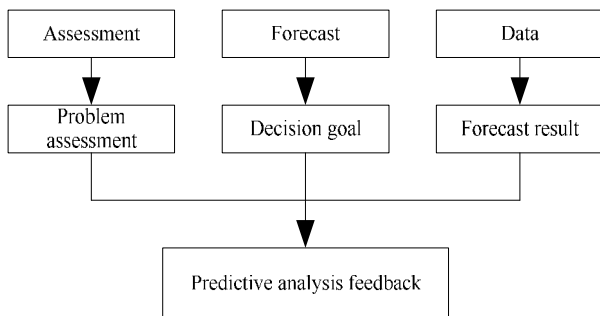


Figure 3. Evaluation and forecast of simple economic data growth model

According to the above prediction methods, as the changes in the country's economic structure are usually affected by many factors, such as the development level of social productivity, the income level of consumers, the overall level of prices, consumer expectations and consumer psychology, the traditional consumer finance influences the consumer behavior mainly through the smooth mechanism, the safeguard mechanism and the value-added mechanism. On this basis, the Internet finance is classified into business categories, and the mechanism of Internet finance on consumption structure should be established accordingly. As shown in the figure of Internet finance:

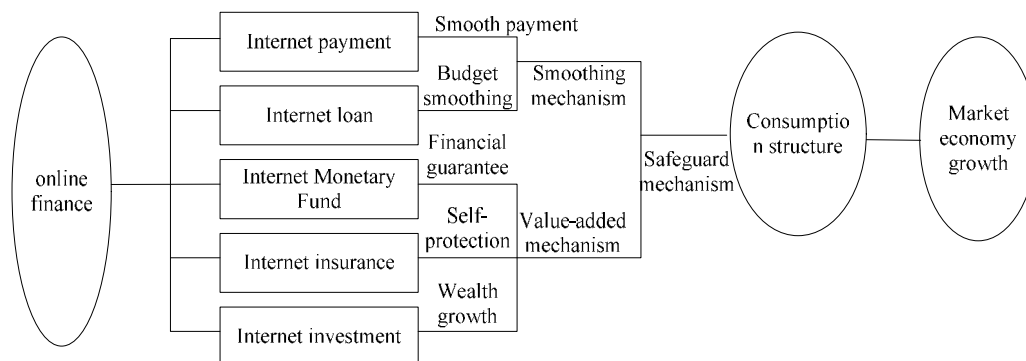


Figure 4. Mechanism of internet finance on economic growth

As shown in the figure, the more systematic evaluation of financial ecosystem through the mechanism of Internet finance on economic growth is currently the most common and important research direction in quantitative analysis of domestic financial ecosystem. The development of Internet finance has promoted the improvement of national income and consumption level, thus raising the level of savings in the whole society, ensuring the growth of the national economy while the changes in the financial structure have increased the savings rate, thus increasing investment and the increase in investment have promoted the increase in output. Finally, through the improvement of financial structure, capital and technological research and development, the ultimate efficiency has been improved and the economic development has been promoted.

### 3. Empirical Analysis

Based on the actual survey results, some provinces with relatively developed internet finance are randomly selected for investigation and comparison with the economic growth in underdeveloped internet finance regions such as northeast and northwest for empirical analysis, so as to explore the development degree of various dimensions in China's economic growth model and the contribution degree of internet finance ecological environment. In order to ensure the accuracy of the survey, the current economic market system structure is integrated according to the actual research results, and the corresponding development indexes of Internet financial development index (X1), peer-to-peer lending index (X2), Internet insurance economic index (X3), Internet monetary fund development index (X4), Internet asset investment index (X5), per capita tertiary industry and other related income

and consumption share total (Y) are collected. According to the survey results, corresponding assumptions are proposed as follows:

Assuming that the higher the 1: X1 index is, the more favorable it is to promote the upgrading of China's current consumption structure. Therefore, it can be assumed that x1 and y are significantly positively correlated and are recorded as lnx0.

Assuming that the higher the 2: X2 index is, the more favorable it is to promote the upgrading of China's current consumption structure. therefore, it can be assumed that X1 and y are significantly positively correlated and are recorded as lnx1.

Assuming that the higher the 3: X3 index, the more favorable it is to promote the upgrading of China's current consumption structure. Therefore, it can be assumed that X1 and Y have a significant positive correlation, which is recorded as lnx2.

Assuming that the higher the 4: X4 index is, the more favorable it is to promote the upgrading of China's current consumption structure. Therefore, it can be assumed that X1 and y are significantly positively correlated and are recorded as lnx3.

Assuming that the higher the 5: X5 index is, the more favorable it is to promote the upgrading of China's current consumption structure. Therefore, it can be assumed that X1 and Y have a significant positive correlation and are recorded as lnx4.

According to the above assumptions, the selected economic growth variables and the economic change data of the Internet financial ecological environment are collected, and the data relevance pretreatment is carried out on each variable. The preprocessed data are shown in the following table.

**Table 1. Regression Model under Sequence**

-	LnX0	LnX1	LnX2	LnX3	LnX4	LnX5
Variable	1345	1645	1371	1354	1511	1511
Differential end	0	1	0	2	1	2
Inspection form	Smooth	Smooth	Nonstationary	Smooth	Nonstationary	Nonstationary
f(x)	1312	1215	1110	1512	1214	1334
f(x)	1512	1543	1241	1543	1584	1544
A	12	13	13	12	11	13
B	15	12	12	15	11	12
Test result	A	B	A	B	B	B

According to the above data, the time series of economic development and network finance development are fixed so as to carry out regression analysis on the synergistic relationship between the two. The differential sequence of Ln0, LnX1, LnX2, LnX3, LnX4, LnX5 is checked by ADF unit root check method. And obtained through Eviews software. The constant term and trend term of the two are tested, and the specific test results are as follows Figure 5.

According to the above test results, it is not difficult to find that with the increase of the regression parameters of

the Internet financial ecological environment, China's economic growth model has also improved correspondingly. The two are positively correlated, and the Internet financial ecological footprint has a positive correlation with the economic growth model. Therefore, this is always true and accurate in the collaborative analysis of the ecological footprint of Internet finance and the economic growth model in this article, which fully meets the current research needs of modern Internet finance and the development of the national economy.

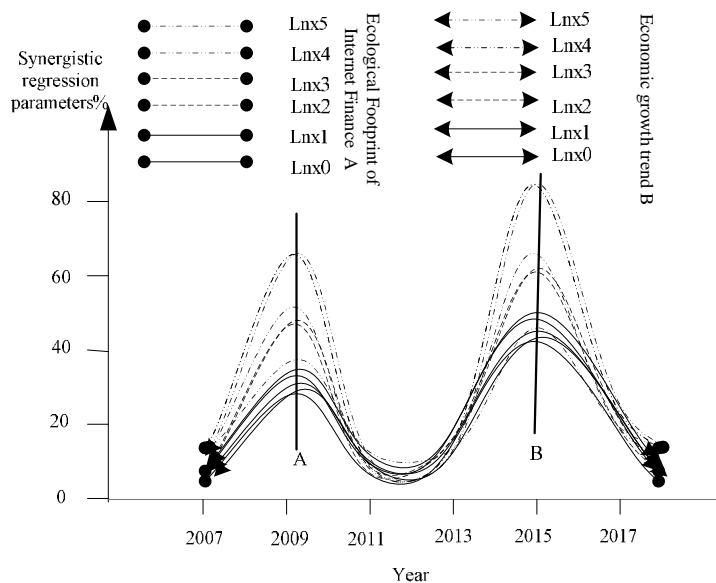


Figure 5. Comparison of constant term and trend term

#### 4. Concluding Remarks

In order to ensure the accuracy and scientificity of the research, the national economic development trend and Internet financial ecological environment information from January 2007 to December 2017 are collected. The research takes the changes of China's gross domestic product in the past ten years as the reference data of economic growth changes and the Internet payment and shopping platforms as the reference variables of the Internet financial ecological development footprint. Based on Granger causality test principle, this paper analyzes the development and changes of the two and their correlation. In order to ensure the accuracy of the analysis, it combines VEC information analysis model to process and test the data of accurate files, thus investigating the relationship between the changes and development of China's Internet financial ecological footprint, economic growth mode and economic production structure and other related data.

#### 5. Acknowledgment

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