Borrowing Statistics and Modeling Analysis Methods to Explore Universal Laws in Economic and Financial Systems

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Abstract. After more than three decades of reform and opening up, China's socialist market economy has been recognized worldwide. Not only has the productivity and people's living standards greatly improved, but it has also won a high international reputation in China. The global market economy model includes the US free market economy, the Japanese-style executive market economy, and the northern welfare market economy. Each of these market economic models has its own characteristics, but some basic characteristics are the same. How to deeply analyze and understand the essential characteristics and development trends of the economy is of great significance. Therefore, in order to explore the universal laws in the economic and financial system and promote economic development, this paper specifically investigates and analyzes China's economic market through statistical and modeling analysis methods. It is found through investigation that China's primary and secondary industries are developed. However, for the sustainable and effective economic development, the development of the third economy is inevitable. I hope that the research in this article can provide a certain reference for China's economic development.

Keywords: Statistical Method, Modeling Analysis Method, Economy and Finance, Universal Law

1. Introduction
The formation and development of a market economy has existed in the human community for hundreds of years. At present, most countries in the world are implementing market economic systems. Their common features include recognition of economic interests, combining market mechanisms with government intervention, protecting economic activities and property rights through legislation, and integrating domestic and foreign markets [1-2]. So on and so forth. The general experience and particularities embodied in the Chinese model include the establishment of a socialist market economic system, the combination of personal and collective interests, the development and improvement of the socialist rule of law, and the combination of self-confidence and disclosure [3-4]. In improving the economic structure, regulating the structure of interests, changing the development mode, paying attention to people's living standards, changing government functions, and establishing a market economy under the rule of law, the Chinese model should be continuously improved [5].
The market economy is a market mechanism that guides production and exchange through market prices and competition mechanisms to spontaneously allocate resources in social and economic activities. Classical economists call this mechanism the "invisible hand". In a market economy, the "invisible hand" enables the economic system to automatically balance and maximize its social welfare. Enterprises are the main subject of social and economic activities, especially in a market economy [6-7]. In production and exchange activities, companies are always striving to reduce costs and maximize profits to maximize profits. In a market economy, increasing profits is the main goal of corporate activities. In a market economy, all economic activities must abide by the general market exchange rules, which is the law of the formation of market rules [8]. Common market laws and regulations include company law, tax law, land law, securities law, banking law, labor law, social security law and property law. The market economy can generally be understood as a series of rules or customs related to transactions. The above laws and regulations are the institutional guarantee of market transaction rules or practices, and the basis of this protection system is the definition and clarity of property rights [9]. Under the influence of price and competition, enterprises in a market economy realize their own interests through production and exchange. Market-based enterprises must not only compete with local enterprises, but also with foreign enterprises. Enterprises should not only seek domestic interests, but also open international markets [10].

This article hopes to analyze the economy and finance through analysis methods such as statistics and data modeling, and summarize the general laws reflected in China's socialist market economy or China's model construction, so as to provide benefits for China's economic development to a higher level.

2. Methods

2.1. Research Methods of Economics and Finance

(1) Methodology of systems science

Systems theory developed in the 1970s. The development of system science is not a revolution in a specific discipline, but a historical transformation of the entire science, that is, a transition from classical science to new science. The complexity of social development, globalization and integration is the objective environment for creating and developing systematic science. The contradiction between the development of disciplines from unity to differentiation, the disciplinary specialization and social connection is the basis for promoting the interdisciplinary and systematic scientific development, forming a deeper and deeper knowledge network structure. System science provides a scientific way of thinking for society, and provides a new intelligent tool as modern science. Self-organization and other organizational theories are the basic principles of systems science. Organization is a key element of the system. A self-organizing system is a system that is not affected by external interference. An organizational system is a system that obtains space, time, or functions under external interference. Finance, self-organization and other organizational systems are an open and complex system. As a self-contained system, the combination of financial resource operation mechanisms must provide specific specifications, and at the same time be affected by economic and social system resource linkage mechanisms. Constraints and influences constitute another complex organizational system. The openness and dynamics of this financial self-organizing system should be driven by interactions and interactions between financial, economic, and social resource elements and between different system levels.

(2) Coordination method

Coordination theory was originally a research method of human geography, and was proposed after World War II. The coordination of man-land relationship is the basic content of the study of coordination theory. In the face of the various crises facing the earth, humans have begun to pay attention to the coordination relationship between themselves and the living environment. This coordination contains two layers of meaning: First, human activities should be related to the geographical environment The development laws are coordinated to make more reasonable use of
their own living environment. The second is to modify the living environment that has been damaged, in short, to modify and adjust the uncoordinated relationship. Coordination theory aims to seek the harmonious development between human behavior and the natural environment. It is a new understanding of human-land relationship.

It is inevitable that research on economic development will be coordinated. The harmonious development of man and nature is no longer enough to cover the rapid progress of today's society. With the rapid economic growth and continuous development of society, the existence of various disharmonious factors has weakened the overall efficiency of the social system. The financial system, the economic system, and the social system are all a collection of self-organizing systems and other organizational systems. In the play of the overall function of the system, the necessity and importance of coordination have received more and more attention. The financial system The improvement of functions cannot be achieved at the expense of the efficiency of the economic system and the social system. On the other hand, the overall efficiency of the social system is not a simple addition of the efficiency of the various systems. The interaction between the systems will increase or decrease the efficiency of the overall system. The forces between system elements will also increase or decrease the efficiency of the system itself.

(3) Theoretical research method
Carding and researching the function and role of financial development in economic development is one of the basic methods of this article. As a thesis mainly based on theoretical analysis, the main work in theoretical research is: theoretically combing many problems in the transformation of resource-based economy, research on the mechanism of fiscal and financial coordination, and the role of fiscal and financial coordination in commercial finance, economics Systematic analysis.

(4) Empirical analysis method
Five provinces are selected as the representatives of resource-based economy and non-resource-based economy, and the individual fixed regression model is used to investigate the influence of financial system elements and financial system elements on the formation of resource-based economic industrial structure. And the Granger causality test is used to test the functional correlation between financial factors and financial factors.

2.2. Modeling Method
(1) Microfinance modeling methods
The microstructure theory of financial markets is an important development arm of modern finance. It was founded in the late 1960s and developed from the 1980s to the 1990s. According to the theory of financial market microstructure theory, the research of financial microstructure theory mainly includes the study of the financial asset price determination mechanism; the study of investor trading strategies; the analysis of the information content of price series; the research and selection of trading mechanism.

(2) Macro financial modeling method
Common macro-financial modeling methods sometimes ask serial stochastic process models and log-periodic power-law models. Well-known examples of time series stochastic process models are ARCH and GARCH models. The full name of ARCH model is autoregressive conditional heteroscedasticity model, which is a method to describe the random process of time-varying variance. The ARCH model is a major innovation in the development of financial econometrics. It has developed rapidly in the past ten years and has been widely used in the description and prediction of financial markets. The full name of GARCH is a generalized autoregressive conditional heteroscedasticity model, which is more suitable for the analysis and prediction of return volatility. The log-periodic power-law model was first used in the study of geophysics and critical phenomena, and is a model with rich physical meaning. The application of this model to economic physics will be discussed in more detail later.
3. Experiment
After decades of reform and opening up, China's socialist market economy has achieved world-renowned achievements. Although its productivity and living standards have not improved much, it has also gained international recognition. In the context of the current capitalist financial crisis and economic crisis, it is particularly important to comprehensively analyze and understand the basic characteristics and development trends of the capitalist market economy and how to summarize the general laws of the Chinese socialist market economy.

This article explores the universal laws in the economic and financial system by using statistical and modeling analysis methods. Through a large number of market surveys, in order to investigate the true and clear data, then process and analyze the data, and finally use statistical and modeling methods to analyze. On this basis, by summing up the general laws of China's socialist market economy A characteristic socialist economy may contribute to a higher level of the socialist market economy and provide reference information for China's economic development.

4. Results

4.1. Experimental Results and Analysis
Figure 1 shows that from 2005 to 2018, the GDP of a certain region increased rapidly, from 320 billion yuan to 1.475 trillion yuan, a nearly five-fold increase, especially since 2010. There has been a substantial increase. The service structure level of the economic structure is often used as an indicator to measure the advanced level of the industrial structure. Therefore, the product value ratio of the tertiary industry and the intermediate industry can be used to measure the advanced level of the industrial structure. As can be seen from Table 1, especially in Henan, the advanced level of industrial structure in 2014 was at the lowest level among several provinces. However, with the support and development of the tertiary industry, especially the rise of tourism, He has made great contributions to the industrial restructuring of Heilongjiang Province. As a province with abundant resources, the resource industry has not become the pillar of its economic growth, which is a question worth pondering.

Table 1. Comparison of advanced industrial structure in some provinces

| Advanced industrial structure | Shanxi Province | Liaoning Province | Henan Province | Jiangsu Province |
|-------------------------------|-----------------|-------------------|----------------|-----------------|
| 2014                          | 0.68            | 0.67              | 0.67           | 0.84            |
| 2015                          | 0.65            | 0.63              | 0.79           | 0.86            |
| 2016                          | 0.72            | 0.65              | 0.91           | 0.91            |
| 2017                          | 0.75            | 0.69              | 1.07           | 0.93            |

Figure 1. Three industrial structure trends in a city
4.2. Suggestions for Economic Development

(1) There are varying degrees of causality between fiscal expenditure, economic monetization rate FIR, and loan size L, and they each have a causal relationship with the advanced GDP and industrial structure, and the need for coordination between the fiscal system and the financial system And both have important effects on the formation of a resource-based economic structure. But in the long run, finance is the driving force behind economic growth. Whether long-term or short-term, the effect of the financial system on the transformation of a resource-based economy is greater than the fiscal system.

(2) The economic monetization rate FIR promotes the rationalization of the industrial structure, but inhibits the growth of GDP. In a sense, it should be a contradiction between monetary policy and economic growth. Therefore, regionalization of monetary policy has its inevitability. Moreover, in the long run, the economic monetization rate is the driving force for economic growth and advanced industrial structure.

(3) Loan input has increased GDP and promoted the advancement of the industrial structure, but the impact is much lower than in other provinces. Therefore, there is still room for deepening this positive effect. Therefore, it is necessary and feasible to use the expansion of credit scale and the adjustment of credit structure to promote the transformation of a resource-based economy. And in the long run, credit supply is the driving force of economic growth and industrial structural transformation.

(4) Fiscal expenditure has a positive effect on economic growth, but at the same time inhibits the advanced process of industrial structure. Therefore, the structure of fiscal expenditure should be adjusted in a timely manner. In addition to providing a fair environment for the economic system, it should also reduce direct interference with the economy to promote the advanced development of the industrial structure. Fiscal expenditure can only cause economic growth in the short term, and fiscal expenditure is inefficient in the long term.

The contribution of fixed asset investment to GDP is significant, but it hinders the process of advanced industrial structure. Therefore, in addition to the necessary public products, fiscal direct investment in fixed assets should slow down. Human capital investment obviously contributes to the growth of GDP, but the appearance of human capital investment is a long process. Due to the limitation of time span, the impact on the advanced structure of the industry has not yet appeared. In all societies, the consumption ratio has a significant negative impact on GDP growth, which is reflected in consumption-oriented economic growth. In fact, the growth rate of consumption is lower than the growth rate of the economy, which has led to a decline in society's consumption rate. In the long run, stimulating consumption and expanding domestic demand are long-term strategies and foundations to ensure healthy and rapid economic growth.

5. Conclusion

This paper analyzes and studies economics and finance through two methods of statistics and modeling. Using the allocation function of the elements of the financial system to increase the degree of financial participation in the economy is the path choice for the transformation of a resource-based economy. The main responsibility of the financial system should be to provide public goods, resolve foreign financial characteristics such as foreigners, and minimize direct interference with competition. There is no suitable development model in the world, and the Chinese model is also constantly developing and developing. The Chinese model is highly dynamic and open, and this dynamic and openness is reflected in the supervision and improvement of existing practices. I hope the research in this article can provide a reference for China's economic development.

References
[1] M M Bandi, Prasenjit Das, Oleg Gendelman. Universal Scaling Laws for Shear Induced Dilation in Frictional Granular Media [J]. Granular Matter, 2019, 21(95):40.
[2] Nirali M. Chakraborty, Andrea Sprockett. Use of family planning and child health services in
the private sector: An equity analysis of 12 DHS surveys [J]. International Journal for Equity in Health, 2018, 17(1):50.

[3] David M. Phillippo, Sofia Dias, A. E. Ades. Sensitivity of treatment recommendations to bias in network meta-analysis [J]. Journal of the Royal Statistical Society, 2017, 181(3):843-867.

[4] Silvia Riva, Jane Bryce, Francesco De Lorenzo. Development and validation of a patient-reported outcome tool to assess cancer-related financial toxicity in Italy: a protocol [J]. BMJ Open, 2019, 9(9):e031485.

[5] M. Rodrigues, H. Boleskei, S. Draper. Introduction to the Issue on Information-Theoretic Methods in Data Acquisition, Analysis, and Processing [J]. IEEE Journal of Selected Topics in Signal Processing, 2018, 12(5):821-824.

[6] Yael Kedar, Giora Hon. Roger Bacon (c. 1220–1292) and his System of Laws of Nature: Classification, Hierarchy and Significance [J]. Perspectives on Science, 2017, 25(6):719-745.

[7] Ahmed S, Coulibaly B, Zlate A. International Financial Spillovers to Emerging Market Economies: How Important Are Economic Fundamentals?[J].Journal of International Money & Finance, 2017, 2015(1135):1-33.

[8] Ehsanullah Agha Syed, Mustafa Omar. Hiyal in Islamic finance: recognition of real economic need or circumvention of Ribā?[J]. Qualitative Research in Financial Markets, 2017, 9(1):00-00.

[9] Laura Baselga-Pascual, Olga del Orden-Olasagasti, Antonio Trujillo-Ponce. Toward a More Resilient Financial System: Should Banks Be Diversified? [J]. Sustainability, 2018, 10(6):1903.

[10] Mamunur Rashid, Xuan Hui Looi, Shao Jye Wong. Political stability and FDI in the most competitive Asia Pacific countries [J]. Journal of Financial Economic Policy, 2017, 9(2):140-155.