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A Study on Adjustment of Benefit Relationships for the Development of China's Resources-dependent Cities

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Abstract

The transition development of resources-dependent cities is a significant component of Chinese economic transition. As a comprehensive and complicated system engineering, it is not merely the transition of economic structure, but combination with the richness of people, social development and environment management. Driven by fund support and mechanism safeguard, it will promote the upgraded economic transition of resources-dependent cities, harmonious development of society, improved city functions and perfect mechanism, and accordingly realize the sustainable development of resources-dependent cities.

Keywords: Resources-dependent City, Transition Development, Sustainable Development, Experience

1 Introduction

China has 118 resources-dependent cities till now. By types of resources exploitation, they are divided into coal cities, forest-industry cities, oil cities, nonferrous metallurgy cities, ferrous metallurgy cities, and other cities. By stages of resources development, they are divided into depleted, declining, mature, and growing types. Meanwhile, by locations, they are divided into northeast, western, middle and eastern regions. Different locations decide the economic foundation, human social environment, market development levels, local financial and supporting power for transition, which further decide the transition development progress and effect.

Because of the differences in resource type, development stage and location, the transition development of resource-dependent cities has no uniform model and the measures must be adopted according to the circumstances, time and locations.

2 Key Problems for Transition Development of Chinese Resources-dependent Cities

2.1 Problems in overall planning and classified guidance

In the transition development of resources-dependent cities, the relationship between the generality and specificity must be properly treated. It means to properly deal with the relationship between overall planning and classified guidance in the policies. The overall planning is the macroscopic guiding framework for transition development of resources-dependent cities. Starting

from the general rules of transition development, it makes macroscopic rules with respect to basic principles, primary objective, economic re-structure direction, ecological environment management, social harmony and stability, instead of microscopic requirements and “universal application”. The classified guidance means that the state should respect the specificity of resources-dependent cities, and encourage those cities to choose transition development modes scientifically and flexibly based on their resources and locations. Especially, the national policies support must represent the differences of city types and regions, and give preferential to the transition development of resources-depleted cities in lagged regions. For resources-dependent cities in developed regions, the state shall define the responsibilities and financial supports of local government, and for the resources-dependent cities in growing and maturity periods, the state shall make planning for the transition to prevent the ending-up in “depleted resources and declined cities”.

2.2 Problems in relationship between resources-dependent industries and resources-independent industries

The simplicity and fragility of leading industry are typical characteristics of resources-dependent cities. A resources-dependent city is always accompanied by resource exploitation. The development scale and potential of such cities depend on the resource reserves. The development of resources-dependent industry brings along the expansion of city. Meanwhile, the resources-dependent industry greatly relies on the technology and government. As a result, it can hardly get supporting service from the civilian economy, and difficultly adapt to the sharp market changes, which further lead to the simplicity and fragility of leading industry in the city. Once the resource is depleted, the industry will decline and the city will be depressed. The success or failure of resources-dependent cities is all due to the resource. Therefore, the industry transition turns to be the kernel for transition development of resources-dependent cities. To realize the sustainable development of resources-dependent cities, the relationship between resources-dependent industries and resources-independent industries must be properly dealt with. By diversified industry structure, the industry transition brings along the city transition.

The resources-dependent industries and resources-independent industries are either consecutive or substitute, or the both, to each other.

2.3 Problems in relationship between industry and agriculture, urban and rural of resources-dependent cities

In the economic structure of resource-dependent cities, the industrial production and agricultural economy coexist, the economic and social connections of urban and rural are simple, and the gap between the two fields is huge. As a result, the urban-rural dual economic structure of resource-dependent cities is prominent compared with resources-independent cities. Nowadays, most resources-dependent cities of China have not formed kernel areas with high comprehensive functions and profits, especially no “technology, industry and trading” center shaped as the center of livelihood service and growth point of production, scientific research and business. It seriously affects the resources-independent industries centralizing to urban, production factors such as population agglomerating to urban and mineral areas transiting to urban, which finally cause the sustainable development of resources-dependent cities impossible. Therefore, in order to realize the sustainable

development of resources-dependent cities, the relationship between industry and agriculture, urban and rural must be properly treated. Urban functions are improved and optimized by industrial agglomeration and urban expansion. By cultivating industrial linkage between urban and rural, improving infrastructure connecting urban and rural, mediating the migrant channel of rural population, etc., the gap between resources-dependent city and surrounding rural is filled to change the dual economic structure and gradually realize the harmonious development of urban and rural economies. For this purpose, the first is to keep the urbanization and industrialization parallel, the second is to “quit the city”, “agglomerating to city”, and “expand the city” simultaneously, and the third is to integrate the city transition and new rural construction.

2.4 Problems in relationship between transition and livelihood improvement of resources-dependent cities

The social stability and livelihood improvement are the essential for transition development of resources-dependent cities. Most leading industries of resources-dependent cities are state-owned, resource-dependent, large-sized or super-sized enterprises. They assumed the responsibility of employment and employed excessive personnel since the period of planned economy, which caused disguised unemployment. Along with the transition of economic system from planning to marketing, the disguised unemployment turns to be dominating, and the unemployed is increasing. When the resource is depleted and the exploiting enterprise faces to shut-down, changing production, and even insolvent, the demand of labor appears linear decrease, which scales the unemployment. Meanwhile, the unemployed workers have single skills and poor industry mobility. It is very difficult for them to be reemployed. As a result, the resident income is reduced to very low or even zero. The livelihood problems such as medical care, education, housing, etc., come into focus. Especially if the social security is not improved and optimized, social conflicts are accumulated gradually, mass petitioners become more frequently, and social unstable factors increase greatly. Therefore, in order to realize the sustainable development of resources-dependent cities, the relationship between city transition and livelihood improvement must be properly treated. Insisting on the principle of human base and social harmony, the improvement of living quality shall be taken as the starting point and result of the transition development. By solving the realistic problems concerning vital interests of the people such as employment, reemployment, housing, poverty, education, and social security, accelerating the development of social undertakings, and emphasizing social fair, the population will share the result of transition development.

2.5 Problems in relationship between economic development and ecological environment of resources-dependent cities

Environmental pollution and ecological degradation are prominent symptoms of resources-depleted cities. When the resource exploitation brings along the economic development, the coarse exploitation caused the problem of three wastes, and intertwined with the geologic disasters such as water and soil erosion, surface collapse, cracks, etc. It leads to the environmental pollution, ecological degradation, and urban decline, and further the decreased funds inflow, increased talent outflow and lagged urban development. Therefore, environment management and ecology optimization are the essential for transition development of resources-dependent cities. In order to realize the

sustainable development of resources-dependent cities, the relationship between economic development and ecological environment must be properly treated. By establishing resources-intensified technical system and production system, the clean production shall be implemented to avoid the old way of “management after the pollution” or “management as the same time with pollution”. It will put forward the economic society to a civilized development track with developed production, rich livelihood, and good ecology.

2.6 Problems in relationship between financial support of government and mechanism construction of transition development

The shortage of money is the direct difficult for transition development of resources-dependent cities. The shortage of long-term effective mechanism for sustainable development is the deep problem for transition development of all resources-dependent cities. The financial transfer payment from central government relieves the difficult of resources-depleted cities in shortage of money for some time, but it cannot solve the problem of sustainable development for resources-dependent cities from the root. Therefore, in order to realize the sustainable development of resources-dependent cities, the relationship between financial support of government and long-term effective mechanism construction for sustainable development must be properly treated. In respect of financial support, the financial transfer payment from central government shall not only considers the regional differences to properly deal with the relationship between key regions and general regions, but also distinguishes the type of cities to properly deal with the relationship between resources-declining or depleted cities and resources-growing or mature cities, and between central urban and surrounding rural in resource-dependent cities. Moreover, the time span of financial support shall be mastered to properly deal with the relationship between long term and short term supports. The collocation with project support and mechanism construction must be emphasized to properly deal with the relationship between the “blood transfusion” and “hematopoiesis” supports. In respect of long-term effective mechanism construction for sustainable development, a long-term effective mechanism for sustainable development of resources-dependent cities shall be established as soon as possible through the country, including the pricing mechanism for resources-dependent products, early-warming mechanism for industrial decline, supporting mechanism for resources-dependent enterprises, compensation mechanism for ecological environment, aid mechanism for consecutive industry, sustainable development mechanism for regional economy, etc.

The properly treatment of relationship between financial support of government and long-term effective mechanism construction for sustainable development is in fact to integrate the startup effect of financial support with the long term effect of mechanism construction. The major-minor relationship as well as precedence relationship of the two will be distinguished by the regional differences, city types and time spans, in order to make full use of their advantages to realize the sustainable development of resources-dependent cities.

3 Conclusion

The problems of resources-dependent cities directly relate to the areal specialization shaped by the planned economy and resources mobilization mechanism in the progress of industrialization, the residuals of economic-construction-oriented government, and unconscionable taxation policies. It is impossible to realize the transition of resources-dependent cities only by market economy. The

government shall assume the historical and institutional responsibility. Therefore, in order to realize the sustainable development of resources-dependent cities, the relationship between city transition and mechanism reshuffling must be properly treated. Based on the idea of “reshuffling the mechanism before transition” and following the law of market economy, the mechanism reform must be deepened sufficiently to guarantee the city transition. For this purpose, the first is to properly deal with the relationship between government guidance and market adjustment. Insisting on the government leading, market impulse and mass participation, making full use of the control effect of governmental and market actions on the transition development of resources-dependent cities, the mechanism reforms in industrial development, social security, ecological construction and city transition will be accelerated for resources-dependent cities. By mobilizing all active factors in the region and striving for support and cooperation both home and abroad, diversified investment system will be established to form the controlling, operating and supervising mechanism for transition development of resources-dependent cities satisfying the law of market economy. The second is to properly deal with the relationship between the central and local governments, clarifying the responsibilities and work divisions. The central government shall intensify the financial transfer payment to sustainable development of resources-dependent cities, and establish the financial supporting mechanism of classified guidance, two-way and rolling promotion to expand the scope, level and term of financial support and to help resources-dependent cities step onto the track of sustainable development. Moreover, it shall put forward the establishment of long-term effective mechanism for sustainable development of resources-dependent cities, for example, making legislation on the sustainable development of resources-dependent cities as soon as possible, improving the reserve system for sustainable development of resources-dependent enterprises, setting up special-purpose loan for sustainable development of resources-dependent cities, and timely implementing the reform of resources taxation, etc. As to the local government, the provincial government shall timely amend the assessment criteria for transition development of resources-dependent cities, and intensify the guidance and support to transition development of resources-depleted cities. The local government of resources-dependent cities shall strive for the policy and capital support from the state and province, and positively promote the reform of economic administrative system, make full use of preferential policies and fund to improve the effect of transition. Reform of property rights system centered, it shall carry out diversified modes of leasing business, assets reorganization, separation of the auxiliary body from the main body, private equity participation, transfer of social functions, foreign cooperation, etc. By this way, the reform of local state-owned enterprises is deepened all-round to realize the diversification of investing body and build new-type enterprises. The government shall also promote the reform of investment and financing mechanism to bring in foreign banks and venture capital fund. In addition, it shall improve the public service level by public facilities extending to the rural and public service covering the rural.

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References

- [1] *Some Opinions of the State Council on Promoting the Sustainable Development of Resource-dependent Cities*, National Issue (2007) No.38, 2007-12-18.

- [2] Development and Reform Commission of Jilin Province, Resources-dependent City Research Center of Northeast Normal University. *The “Twelfth Five-Year” Development Planning for Economic Transition of Resources-dependent cities in Jilin Province* , 2010.
- [3] Baishan Municipal People’s Government, Resources-dependent City Research Center of Northeast Normal University. *Assessment Report on Transition Effects of Baishan—A Resource-depleted City* , 2010.
- [4] Dunhua Municipal People’s Government, Resources-dependent City Research Center of Northeast Normal University. *Assessment Report on Transition Effects of Dunhua—A Resource-depleted City* , 2010.

The Target and Countermeasure of the Current Wealth Structure Transformation in China

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Abstract Improving the wealth structure to transfer from disharmony to harmony is not only the basic requirements of optimizing the form and structure of the wealth, narrowing the gap between the main body of the wealth and the space structure, and reaching the target of common prosperity, but also one part of implementation of the overall development and the construction of a harmonious socialist society. If we want to transform the wealth structure harmoniously, especially if we want to optimize the form and structure of the wealth and try to equalize the distribution of every area, one of the most important way is to speed up the transformation of ways of increasing wealth and the creation of the wealth system in the premise of improving the social wealth creative ability.

Keywords: Wealth structure; Target transformation; Wealth creation; Wealth system

1. Introduction

Wealth is the carrier and target of living, multiply and developing of the human being. On one hand, it represents the transform relationship of the material, energy and information between labor and nature; on the other hand, it also represents the exchange relationship of material, economy, politics and mental between laborers. The transformation or exchange is the core issue of the human social development, so it attracts the high attentions of the theorists and practitioners.

There are no specialized classical works on the wealth structure transformation issue in the contemporary western society. Influenced by this fact that wealth is the core issue of the “National Economics” and its obvious sociality, periodicity and epochal character, the western society pay high attention to wealth, wealth structure and its transformation. From the existing works, contemporary western scholars have already given answers to the form, target and principle aspects. First, from the point of wealth structure transformation view, the wealth structure transformation theory mainly experienced the market regulation and the combination of market measure and government regulation. Adam Smith and Milton Friedman put an emphasis on the

natural regulatory role of the market mechanism. At the same time, Keynes and Samuelson put the emphasis on the government intervention of the adjustment function of the market mechanism to the wealth structure. Secondly, western society is mainly based on the equity theory from the angle of transformation target. For example, Pigou thought the economic welfare of one country will be increased if the government put the equalized of the redistribution policy in to practice and transfer some money from wealthy men to poor men. Third, from the angle of transformation principle, mainly including production efficiency principle, and utilitarian principle and so on, for example, it is reasonable for productive efficiency principle if the income difference is based on the individual ability and the different level of hard-working, and it requires the government take consideration of efficiency into the wealth adjustment policy. Utilitarianism thinks the individual ability difference can't explain the unfair division is reasonable, and it requires the equalization of the wealth and reach the interests balanced wealth structure.

Most of the Chinese scholars analyze the current status and structure of the wealth in the respect of the wealth rate of flow concept -----changes of income and division, but all the conclusions show that in our country at current stage, division of the wealth structure in the form, space and main body aspects is unreasonable. From the view of wealth form structure, the scholars mainly think either in the physical form or in the social form, they all lack of innovation or they all have unreasonable structure. From the view of wealth subject, most of the scholars think the structural division of the current wealth in government, firms and residents in China is suitable for the rule of economic society transformation in the transition period, but some scholars also consider that in the wealth subject structure, there are severe problems in the incomplete property system and the unbalances between the different ownership system. From the view of the wealth space structure, scholars generally agree with that the natural gift difference the unbalanced development of the different areas enlarge regional gap of wealth.

2. The Wealth Structure Transformation Target of China at the Present Stage

The conception of wealth is the general and the fundamental point of view of people on the sources, acquisition, distribution and use of the wealth. If the conception of wealth is conforms to the spirit of era, it can guide people to look upon wealth correctly, earn money lawfully and reasonably and divide, distribute the wealth fairly.

2.1. Harmonic Wealth View and Its Significance

Nowadays, the reform and opening up of our country is deepening; the market economic system is improving, the form of the wealth is emerging and the wealth structure is evolving, people's view of wealth is changing, different social groups have different conception of wealth

and it will influence people to implement different wealth behavior. Collisions among different interest group, different wealth conception and different wealth behavior need for the formation and development of the positive, correct wealth conception urgently.

Harmonious wealth view is the requirement of the era. It means looking upon the wealth correctly, developing the wealth scientifically, seeking distributing and dividing the wealth reasonably and legitimately. Realize a wealth view which the interest relationship between human and human, human and nature, economy and society, area and area is developing harmoniously, continuously and healthily. The establishment of the harmonious wealth view can clear up the former wealth view which is attached to the old system; scour the decadent and declining value consciousness in people's minds; Guide, correct and limit some unhealthy tendencies such as disorder wealth view, collapsing ideal and belief, low moral level, indifferent interpersonal relationship and individual behavior anomie. Strengthen people's moral and cultural quality; promote the comprehensive development of people and enhance the social cohesion and centripetal force.

2.2. The Wealth Structure Transformation Target of China at the Present Stage

The wealth structure transformation of China at the present stage must from harmonious wealth view, follow the wealth structure evolution rule, promote the transformation and upgrade of the wealth structure, achieve conversion of wealth structure from disharmony to harmony.

The wealth structure transformation targets of China at the present stage are shown: first, we must solve the outstanding problems during the course of the wealth structure transformation with the method of development, develop the wealth productivity vigorously, continuously create solid material base for the harmonious transformation of the wealth; second, we must adhere to the people-oriented principle, the wealth structure transformation should satisfy people's growing material and cultural needs ,social wealth should be shared by the people and promote people's comprehensive development; third, we must step up the construction of social equity justice system, ensure people's rights and interests in production, distribution, exchange, consumption, and other aspects of the wealth; fourth, implementing policies of industry nurtures agriculture, city supports country, giving more, taking less and loosening control. Promote the construction of the new rural areas solidly. Promote the coordinate development of the urban and rural wealth structure; fifth, implement the overall strategy for regional development, continue to promote the development of the western region, revitalize the Northeast China and other old industrial bases, promote the rise of the central region, encourage the eastern region to take the lead in the development and promote the coordinated development among regions; sixth, focus on solving the environmental problems which are harmful to the health of people and affective to the sustainable

development, accelerate the construction of resource-saving and environmental friendly society, promote the harmony between human and nature.

3. The Wealth Structure Transformation Countermeasures of China at the Present Stage

Under the lead of the harmonious concept of wealth, on the basis of improving the social wealth continuously, accelerating the transformation of the wealthy growth mode and the innovation of the wealth regime; promote the optimization of the physical and social structure of wealth, promote the basic balance between the wealth subject structure and wealth space structure, promote the wealth structure conversion from disharmony to harmony. Achieve the harmony between human and nature, human and human, economy and society, area and area, and finally achieve the goal of harmonious society.

3.1. Promote Wealth Production; Lay the Foundation for Harmonious Conversion of the Wealth Structure

Produce or create wealth is the premise for the distribution, exchange and consumption of the wealth, and it's also the key and the foundation for the harmonious conversion of the wealth structure. So, first we should develop the wealth productivity vigorously, and promote the social wealth creative ability. If we want to improve the level of wealth productivity vigorously, we must improve the quantity and quality of all the wealth productivity factors, make the factors harmoniously and optimize the combination, improve the ability for producing and creating wealth. To achieve this goal, we should protect and make use of the land resources rationally, give full potential productivity play to the existing cultivated land, remiss the contradiction of large population with relatively little land, strive to improve the quality of labor force, enhance the ability of the labor force for creating wealth in order to alleviate the contradictions between the quality and quantity of the labor force; perfect the financial system, optimize capital structure, improve the capital formation scale and the use efficiency; promote technological innovation, in the past, the wealth growth mainly relied on increasing material resources consumption, now we should transform to rely on the progress of science and technology, improving of the workers' quality, management innovation to increase the wealth growth; Strengthen environmental protection, promoting the harmony between human and nature. Second, we should accelerate the transformation of the wealth growth mode; promote the sound and rapid growth of wealth. It will need we adhere to the new path of industrialization with Chinese characteristics, we should expand domestic demand, particularly consumer demand, improve the economic growth to transform from mainly relying on investment and export to rely on coordination of the consumption, investment and export. From mainly relying on the second industry change into

relying on the coordination drive of the first, second and third industry; from mainly relying on increasing material resource consumption change into rely on the progress of science and technology, improving of the workers' quality, management innovation. We should start work from the system innovation, establish the mechanism which can promote the transformation of the economic development mode, fully perform the basic function of market allocating resources, improve the finance and taxation policy and system which are advantageous to the transformation of the economic development mode, and establish scientific accounting system and environmental management supervision system.

3.2. Innovate the Wealth System and Provide Protection for the Harmonious Conversion of the Wealth Structure

System innovation means in the existing productive and life environmental conditions. People should realize the innovation of the sustainable development of economic society through creating a new, more effective incentive system which can inspire people's behavior. Reforming the unreasonable links and aspects of the current wealth system and making innovation for the imperfect and missing parts will be useful for the construction of the harmonious wealth system and further improve the harmonious conversion of the wealth structure. First, we should reform the tendency system arrangements. Improve the construction of the harmonious system, Improve the system and mechanism the coordination of rural and urban development. Vigorously promote the construction of new socialist countryside, implement the harmonious conversion for the wealth structure of urban and rural residents. Implement the general strategy for regional development, promote coordinated development of regions, achieve the harmonious conversion of wealth space structure, improve the system and mechanism for the overall economic and social developments, promote the harmonious development of economy and society, and provide sound social protection for the harmonious conversion of wealth structure. Second, make up for the defects of the current income and distribution system. Build up a fair and reasonable income distribution system. We need to uphold and improve the distribution according to work as the main body, a variety of modes of distribution coexist distribution system. Improve various production factors participate in the distribution system according to contribution, strengthen and improve the macro-adjusting of the income distribution, deal with the relationship between efficiency and fairness for the first time distribution and redistribution, further regulate the income distribution order, strive to raise the level of the low income people, expand the proportion of the medium income group, effectively regulate the excessively high income group, resolutely ban the illegal income, fundamentally reversed the trend that income distribution difference is enlarging among different areas and partial society members, and promote common prosperity. Build up a sound,

scientific and perfect salary system for the civil servants, Strengthen and improve the adjustment and control policies for the enterprise income distribution, set up and perfect the wealth statistical system, give full play to the role of tax policy to regulate excessively high incomes, advancing the innovation of legal system, eliminate corruption and other illicit enrichment behavior. Third, we should perfect the wealth consumption system; guide the residents to consume reasonably. We need to adjust the consumption tax policy, guide the residents to consume reasonably; collect ecological consumption tax, standardize the productive behavior of the producers; set up ecological consumption system, constructing the harmonious society. Fourth, the innovation of the land system, we should make a clear conception of the relationship between the land rights and interests. We should reform the land system, protect the land rights and interests of the farmers, and that is the important content for ensuring farmers make a harvest of wealth, especially we should give farmers a better and guaranteed land contractual management right, the existing land contract relationships should remain stable and unchanged for a long time; In accordance with the law, protect farmers' possession, use, income and other rights of the contracted land; strengthen the management and service for the transfer of the land contractual management right, set up and perfect the market for the transfer of the land contractual management right, according to the law, on a voluntary and compensatory basis, allow the farmers to transfer their land contractual management right in the form of sub-contract, renting, exchanging, transfer, and stock cooperation to develop various forms of moderate scale management.

4. Conclusion

Since the reform and opening up to the outside, China's economic society has made tremendous changes. The physical form of the wealth is becoming more and more abundant, from the ordinary commodity to luxury goods and collectibles, from movable to immovable property, from currency storage to investment products, real estate, house property and so on. The value form of the wealth is also constantly changing, from physical currency to virtual currency, especially with gradually widening of the income gap in subject structure and space structure, wealth structure and its conversion problem gradually fall into the domestic scholar's vision, and then become the focus of research. The author believes China's wealth structure appears phase characteristics with the rise and fall of the civilized countries, that is, in the creating course of the ancient civilization, promoted and led the world wealth structure conversion. In the modern world it remains stagnant in the course of the fast converting upgrades of the world wealth structure conversion. With the reform and opening up, the wealth structure is changing sharply. It indicates the transformation target of the future harmonious wealth structure in China to the world.

Reference

Baishan Municipal People's Government, Resources-dependent City Research Center of Northeast Normal University. Assessment Report on Transition Effects of Baishan—A Resource-depleted City, 2010 (in Chinese)

Development and Reform Commission of Jilin Province, Resources-dependent City Research Center of Northeast Normal University. The “Twelfth Five-Year” Development Planning for Economic Transition of Resources-dependent cities in Jilin Province, 2010 (in Chinese)

Some Opinions of the State Council on Promoting the Sustainable Development of Resource-dependent Cities, National Issue (2007) No.38, 2007-12-18 (in Chinese)

Research on the optimization of knowledge management system for high-tech enterprises in big data environment

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1 Abstract: Based on the influence analyses of big data to enterprise knowledge management, the optimization idea of knowledge management system for high-tech enterprises in big data environment is put forward. The knowledge management system is optimized by infrastructure system and process management system including knowledge discovery, knowledge integration and accumulation, knowledge learn and application, knowledge transformation and sharing, knowledge innovation from technical perspective, organization system, culture system and institutional system in management perspective, so as to realize the purpose of fast and efficient knowledge management in the big data era.

2 Keywords: Big Data; High-tech Enterprise; Knowledge Management System; Optimization

0 introduction

Into the era of knowledge economy, access to knowledge and management capabilities have gradually become the fundamental foothold of enterprises. High-tech enterprises, as a kind of typical enterprise strongly supported by our country, possess the characteristics of knowledge-intensive and talent-intensive, making knowledge management become their core competitiveness. However, in the new environment, the defects of knowledge management in high-tech enterprises are also increasingly prominent. The development of big data also requires us to rethink and expand the enterprise knowledge management system. This paper attempts to alleviate the high-tech enterprises knowledge discovery and integration is difficult, the low efficiency of knowledge innovation, combined with the background of big data era and the characteristics of high-tech enterprises, high-tech enterprise knowledge management system to optimize the overall framework of the study so that the fine and accurate so as to guide the activities of knowledge discovery, accumulation, application, sharing and innovation.

1 The Impact of Big Data on Enterprise Knowledge Management

Big data is a complex data set that can be transmitted freely and quickly. After Douglas Laney (2001) proposed large, diverse and rapidly updated 3V features of big data, Oracle proposed that big data should have the feature dimension of low value density (De Mauro A, Greco M, & Grimaldi M 2015, p.97-104). At the same time, some scholars think that the data also has online features (Assunção M D, Calheiros R N & Bianchi S. 2015, p.3-15). The characteristics of big data prompted enterprises to transform from data management to data-driven, thus affecting the method and platform of enterprise knowledge management (Figure 1), which are embodied in the following aspects:

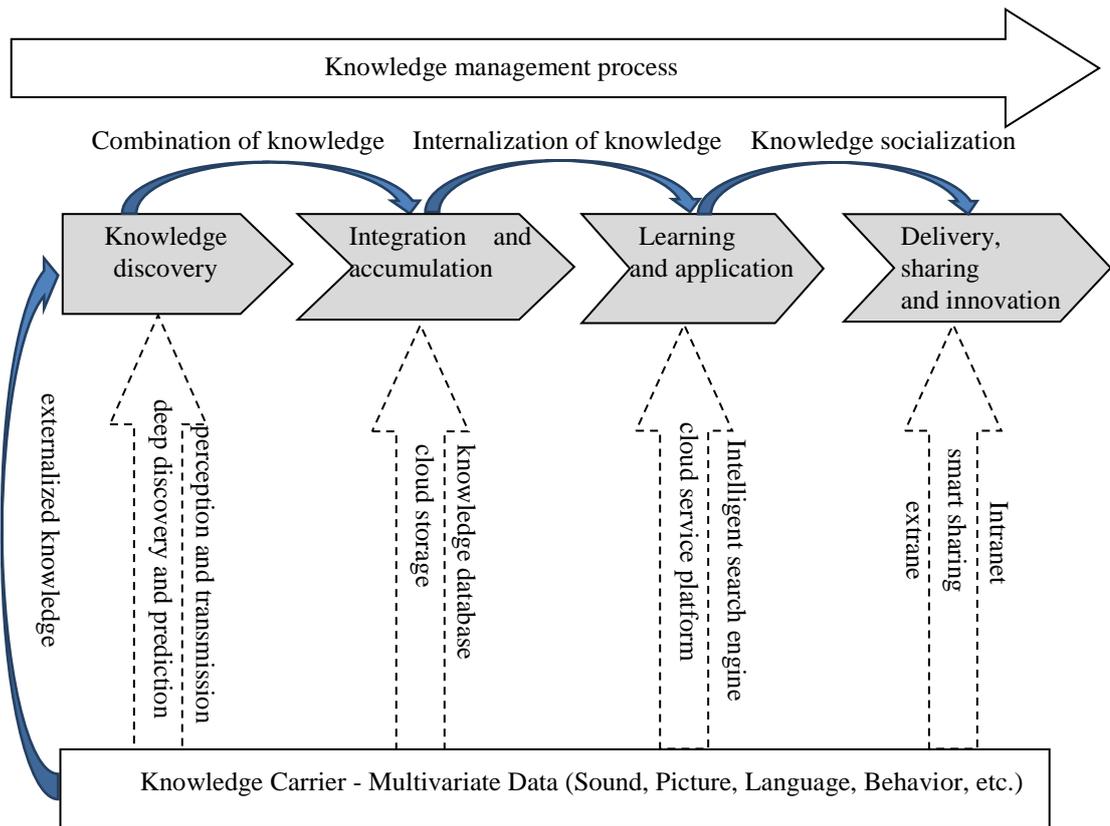


Figure.1 big data on the impact of enterprise knowledge management

1. Diversified knowledge carrier

Big data provides a rich source of knowledge for knowledge management. More than 1.8 billion users are using the Internet every day, and various electronic terminals generate and record data non-stop. In short, the knowledge base in the context of big data has been greatly expanded, and the data types and data presentation methods have also become diversified.

2. Knowledge mining deepening

The emergence of big data has spawned a knowledge discovery method based on big data analysis technology. At present, the big data technology that IBM is researching can form new data based on the indefinite mining analysis, and it is estimated that in the future, the simulation of human brain, quantum computation and the like will be performed. Mining, cloud computing as intelligent, to further enhance the data reception, processing accuracy, depth and speed. At the same time, big data technology can dig deeper into the tacit knowledge behind the data and thus promote the transformation from tacit knowledge to explicit knowledge.

3. Knowledge Storage Virtualization

On the one hand, enterprises can store data and knowledge resources in the virtualized storage pool. The storage pool can automatically monitor and update automatically and patch at the same time, so that calls can be retrieved at any time (Zeng, Zhao, and Shang, 2011, pp. 234-239). On the other hand, in the era of big data, some of the memory can be given to tools. This is a shift in the way people think and work because of big data.

4. Application decision-making precision

Decision-making is the end result of people's application of knowledge. First, the advent of big data allows people to trust more convincing data than feelings and experiences in their judgment. Second, the complexities the brain can not understand, the data can help us deal with it, as long as it allows us to know more than before, can guide us to what to do next, as to why it

seems less important (Zheng, 2013, pp.37-41). Finally, the highest expectations of big data lie in its predictive power because decisions are themselves future-proof. The key to predicting system success is that they are based on big data, and the more data, the more accurate the forecast is.

5. Knowledge sharing intelligent

Only knowledge in the process of communication and delivery can add value and innovation. Under the new age background, the main body of sharing is not only human, but also machines. Machines can understand, automate and share data, information and knowledge. Computer networks can effectively connect people, people and machines, machines and machines, people Machine interaction can break the barrier of knowledge flow inside and outside the enterprise so as to maximize the value of data and knowledge, reduce the waste of resources and further realize the collaborative innovation and development.

2 Knowledge Management System Optimization of High - tech Enterprises in the Background of Big Data

To optimize the knowledge management system of high-tech enterprises under the background of big data is to reshape the entire knowledge management system with new knowledge management concepts and big data technologies. The basic idea is as follows:

First of all, we should design a knowledge management system around the process of knowledge management, focusing on two aspects. One is to pay attention to the management of explicit knowledge, systematize and systematize the non-systematic explicit knowledge so that more employees can acquire knowledge and make use of it. Second, pay attention to the in-depth mining of tacit knowledge, dig out the hidden rules behind the data, and realize the explicitness of tacit knowledge so that employees can retrieve and invoke them at any time. At the same time, pay attention to knowledge exchange and creation caused by tacit knowledge, Means to create a good atmosphere of knowledge management.

Second, to ensure the availability of knowledge. Employees are the users and beneficiaries of the knowledge management system. Enterprises should ensure that the supply of knowledge matches the needs of employees. To ensure the quality of data and knowledge, employees should be provided with useful knowledge rather than just massive knowledge.

Finally, to improve the operational efficiency of the system. High-tech knowledge itself has strong timeliness, from identifying and processing data to generating knowledge, the efficiency of all aspects of which needs to be further improved, and enterprises should provide powerful software and hardware facilities for knowledge management to meet the market competitive environment data and Dynamic needs of knowledge.

3 The Overall Framework Design of High - tech Enterprise Knowledge Management System in the Background of Big Data

Based on the above optimization design ideas, this paper divided the high-tech enterprise knowledge management system under big data into five parts: process management system, infrastructure system, knowledge management organization system, knowledge management culture system, knowledge management system (Figure 2).

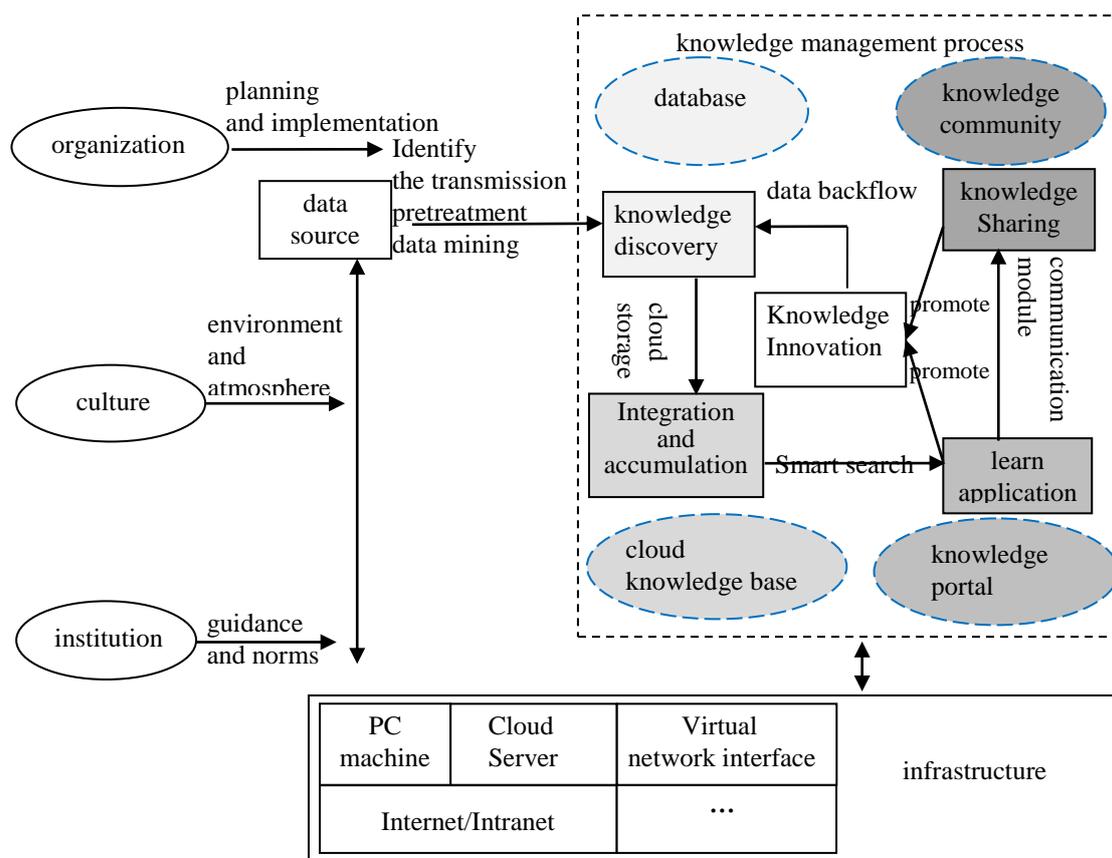


Figure 2. Big data under the background of high-tech enterprise knowledge management system framework map

4 Optimized Design of Knowledge Management System by Technical Means

The process management system and the infrastructure system constitute the software system and hardware system in the enterprise knowledge management system. Process management system is the core of the whole system, emphasizing the various technologies supported by the application software. Infrastructure system emphasizes the hardware system, also includes the supporting IT technology.

4.1 Process Management System

4.1.1 Knowledge discovery system

Knowledge discovery is the core of the process management system. Enterprises should establish a knowledge discovery system based on massive data resources. This system is a bridge between data warehouse and knowledge base, devoting itself to finding out the rules between data and realizing the transformation from data flow to knowledge flow. The content of knowledge discovery system should include:

1. data preparation

Today's big data exists in a network rather than in a traditional database (Tang, 2017, pp. 223-224). Enterprises first need to realize the data perception, identification and transmission through sensors, smart identification and other devices, and real-time monitoring. Because the data collected is tangled, fragmented "dirty data," pre-processing is also required to eliminate the heterogeneity of the data, the so-called ETL process (E decimation, T conversion, L loading). To reduce the data processing time, scientists proposed to T and L swap to ELT, but when the business has not been able to make such a shift, the scientists have proposed ELT to the EL upgrade, the future can even E, L can be merged. After the above treatment of data will be some form of unified loading into the network data warehouse (Figure 3), data warehouse construction is mainly for front-end query and analysis of the foundation.

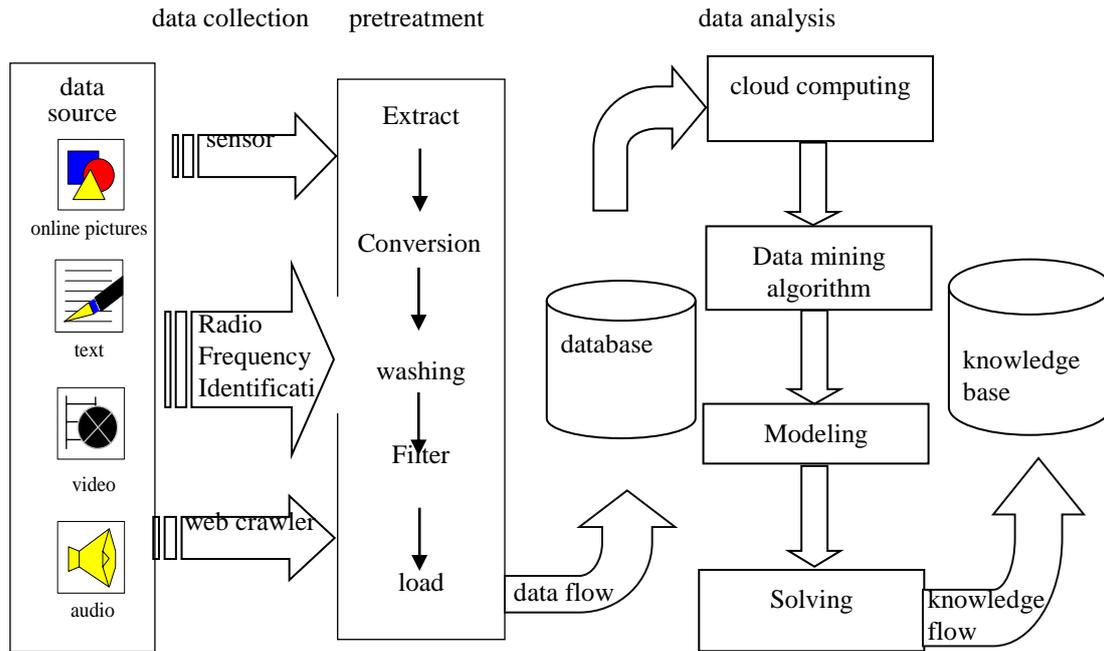


Figure 3. Knowledge discovery flow chart of high-tech enterprises under big data background

2. Knowledge mining

After preliminary preparation, the data in the data warehouse has been transformed into a form suitable for data mining. Enterprises should adopt the data mining technology based on cloud computing as the core of the knowledge identification and capture system, extract the hidden patterns and find the data Internal relations, and then complete the process of knowledge externalization. At the same time, the dynamic learning mechanism can be introduced in the process of data mining so that the knowledge mining model can make dynamic adjustment according to the needs of enterprises so as to timely feedback, correct and update the data content.

4.1.2 Knowledge integration and accumulation system

Identify and capture knowledge, managers need knowledge approval, sort out the content of knowledge, and complete the storage and maintenance of knowledge. .

1. Develop knowledge structure

Due to the huge amount of knowledge in big data, enterprises should sort out the content of knowledge according to its own characteristics and needs, create a knowledge classification architecture and make a cloud knowledge architecture map.

2. Knowledge storage

Businesses can take advantage of a "hybrid cloud" storage architecture that uses public cloud to coordinate private cloud operations and knowledge storage without having to purchase additional hardware. Enterprises use cloud storage technology based on distributed storage to upload knowledge to the cloud, form a cloud knowledge base system, and classify the cloud knowledge base according to the established knowledge structure, so as to provide more space for knowledge storage and accumulation (Figure 4) .

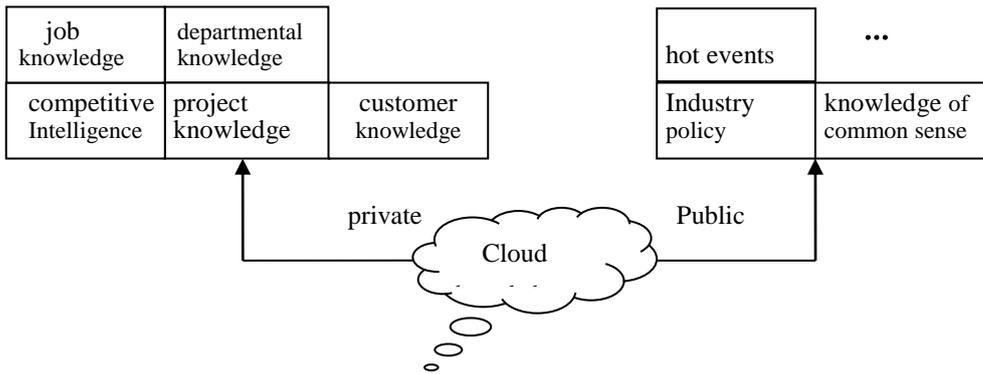


Figure 4. High-tech enterprise cloud knowledge base construction content in the background of big data

3 Knowledge maintenance

Cloud Storage Repository for multi-user services, which centrally manage a variety of knowledge in the cloud knowledge base to ensure that knowledge is automatically added, modified, and backed up, increasing the transparency of knowledge to system design and maintenance staff while reducing the need for Knowledge of the access process, management and maintenance of the difficulty (Huang, 2009, pp. 25-29).

4.1.3 Knowledge Learning and Application System

The key to moving the knowledge in the cloud knowledge base is "using", which is achieved through a knowledge portal system. Enterprise Knowledge Portal provides users with a virtual joint work site, the process of user access to knowledge is the process of continuous learning of knowledge, the explicit knowledge into the tacit knowledge in their mind, to achieve the internalization of knowledge, and ultimately to make the most Good decision (Yang, 2005, pp. 137-140).

With the advent of big data, knowledge portals should move toward automation, intelligence and personalization. They should break through the limitations of fuzzy inquiries and full-text search in the past, and create an intelligent search engine that supports word segmentation and knowledge querying to achieve millisecond-level Search, and provide users with interactive services, precise positioning of user knowledge needs, according to the user's application scenarios and usage habits to integrate knowledge content, the formation of "knowledge map", the appropriate knowledge at the right time to the appropriate user, rather than blindly Showing a dazzling array of knowledge fragments.

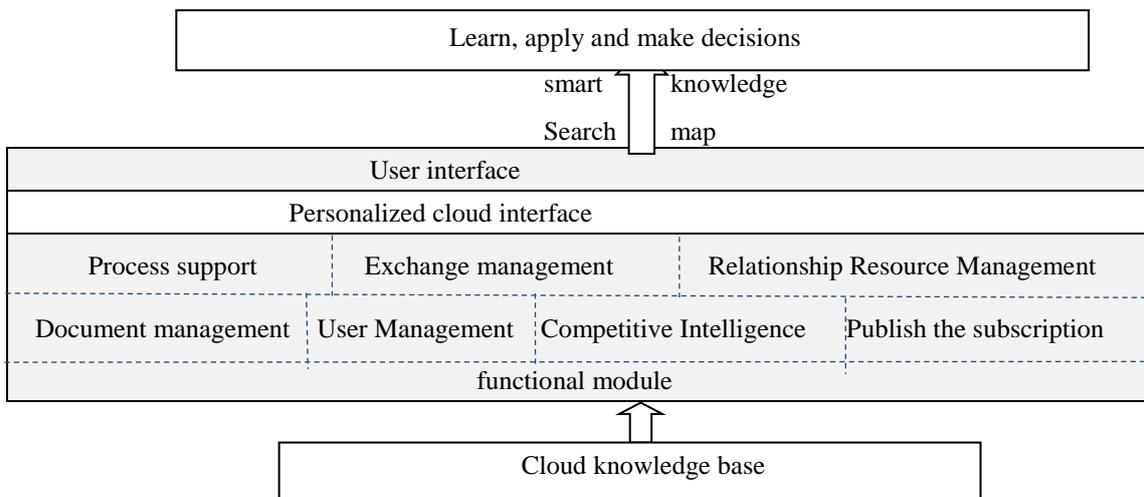


Figure 5. High-tech enterprise knowledge learning and application of big data background flow

chart

4.1.4 Knowledge transfer and sharing system

Practice shows that the transformation and sharing of tacit knowledge in enterprises is just as important as systematic management of explicit knowledge. High-tech knowledge is implicit and often difficult to transfer among different individuals, which not only hinders the accumulation of individual knowledge of employees, but also hinders teamwork and knowledge innovation. Therefore, high-tech enterprises should establish a special system of knowledge dissemination and sharing, which focuses on the application of knowledge at the organizational level and is the process of realizing knowledge socialization.

In the past, knowledge sharing within the enterprise was achieved through spontaneous and manual operations, which affected the transmission of tacit knowledge, and the transfer of tacit knowledge deepened knowledge of knowledge, thereby creating more knowledge (Yan, & Bian, 2017, pp. 48-52). Therefore, enterprises should embed the knowledge exchange module in the knowledge portal to create a formal online knowledge community. Unlike traditional groupware systems, knowledge communities should have a dedicated leader who is responsible for regularly arranging discussion topics and defining clear community roles for each community member, establishing relationships between individuals, and allowing users access through knowledge access. Timely dialogue to capture fresh information, so as to break the barrier of knowledge transfer within and among various departments and realize the rapid sharing of knowledge.

4.1.5 Knowledge Innovation System

High-tech knowledge is the core knowledge of high-tech enterprises, but because of the uncertainty of technology and market changes, high-tech knowledge must continue to be rapidly updated. Therefore, knowledge innovation is an important goal of high-tech enterprise knowledge management.

Knowledge innovation is based on the application and sharing of knowledge. First of all, employees should solve the problem with new methods and ideas. The knowledge workers in high-tech enterprises are very good at thinking and strong in practical ability. They often bring their own ideas into learning and application of knowledge so as to promote knowledge innovation (Qi, Li, & Feng, 2015, pp. 48-52). Secondly, the knowledge community can always absorb some new ideas and suggestions, identify potential practices through expert argumentation, and thus the knowledge community becomes the place where knowledge is created. Finally, application software built on the knowledge cloud platform also generates multivariate data when it is used, and the data is returned to the data warehouse for knowledge discovery again to gain new knowledge. Thus, the five sub-systems of the process management system do not exist independently. The interconnection of the five parts of the process management system provides a closed-loop system for the production and utilization of the data cycle, resulting in a steady flow of data and knowledge.

4.2 Infrastructure system

Internet/Intranet, PC machine, server and so on provide the hardware support platform for the operation of knowledge management process system, which together constitute the knowledge management infrastructure system.

First of all, knowledge management in the 21st century can only survive if it relies on the network environment. Enterprises should proactively contact the Internet with business and management to promote Internet + construction so as to establish and cover systems for data acquisition and storage, knowledge mining and delivery at low cost. All aspects of production and operation of enterprises, and ultimately the establishment of large-scale closed-loop internal and external data.

Second, the process management of enterprise knowledge is realized through software such as data warehouse, knowledge base and knowledge portal. These softwares need to be built on a basic hardware underlying platform that allows access to various types of data resources. Unlike the upper level applications, the cost of replacing the traditional infrastructure is high, and customers are sticky, often without replacement. Nowadays, because of the frequent data interactions and the need for more powerful hardware infrastructures to support these massive amounts of data, enterprises need to build very large cloud-based servers. Cloud server can

improve the computer's computing, storage and data processing capabilities to help companies build stable and secure upper-layer applications, but also effectively reduce the difficulty of development and operation and IT costs and improve the service cost of the host(Liu, 2013, pp.70-73).

It is worth mentioning that the cloud server can also provide a complete backup and recovery mechanism, it has a strong resilience to fault tolerance, can provide security for the cloud server security, unless there is an error for each server in the cluster, or According to the existing backup a short time to resume operation(Wang, 2017, pp.150-152).

5 Optimized Design of Knowledge Management System by Means of Management

Knowledge management is a long-term work to promote the transformation of enterprises to knowledge-oriented. Knowledge can create value through "management." The process management system and infrastructure system focus on the technical aspects. Knowledge management organizations, culture and institutional systems focus on management and policy. "Management" refers to all aspects of the enterprise, and its significance lies in creating conditions for knowledge discovery, accumulation, application, sharing and innovation .

5.1 Knowledge Management Organization System

An effective knowledge management system is rooted in the organizational system in terms of function, system and strategy. The knowledge of high-tech enterprises is very difficult to transfer because of their professional complexity, resulting in the need of coordinating knowledge. The knowledge management organization system Due to transport. In high-tech enterprises, work is focused on technologies and products. Knowledge management is more task-oriented or project-oriented. Therefore, enterprises should be equipped with appropriate management organizations around the knowledge management project.

1. Knowledge Management Leadership Council

Currently, many information-intensive organizations have the CIO position, which was gradually replaced by the Data Supervisor (CDO) in the Big Data era. The Enterprise Knowledge Management Leadership Committee is the leadership team composed of data executives and department leaders. It is mainly responsible for creating an environment suitable for knowledge management of big data enterprises, formulating a knowledge management strategy that matches the overall strategy of the enterprise, and arranging various supporting software Hardware facilities, and regular strategic adjustments and reconfiguration of resources based on the knowledge management team's feedback(Yao,2010). Among them, the data supervisor as a leader in knowledge management should have strong IT skills and business management capabilities, is responsible for controlling and supervising knowledge management, so as to meet the strategic goals of knowledge management expectations.

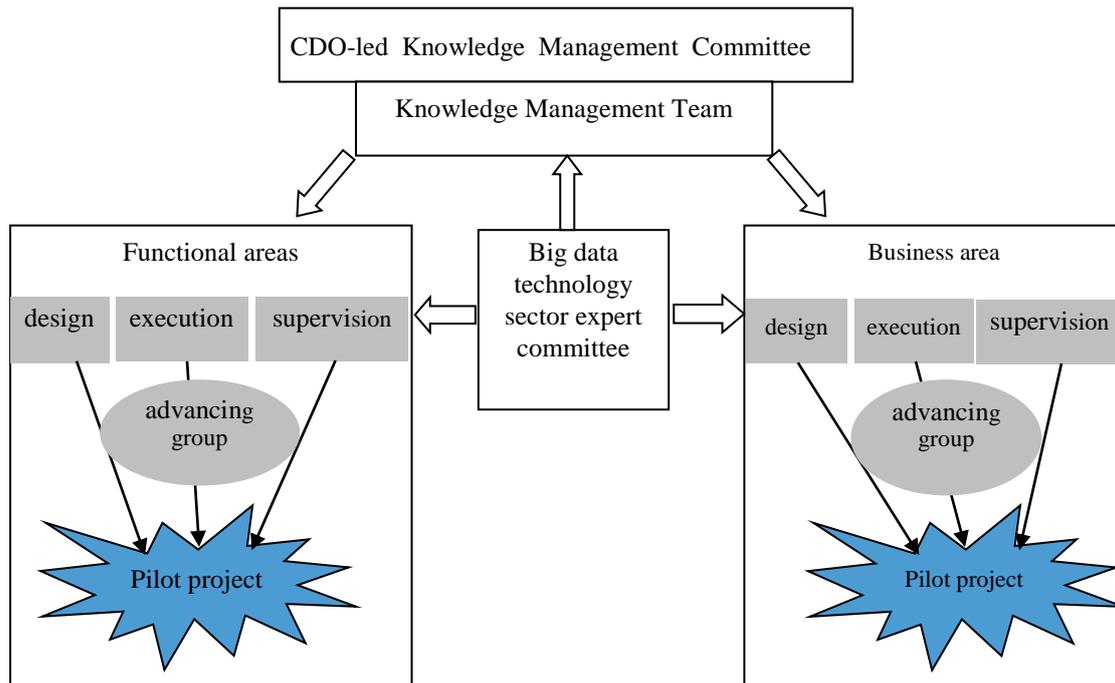


Figure 6. Knowledge Management Organization System of High-tech Enterprises in the Background of Big Data

2. Knowledge Management Team

The knowledge management team is the executive layer of knowledge management and is the principal person in the knowledge management project, providing training and education to other roles in knowledge management. The knowledge management team focuses on a specific area and has a big data technology department that takes advantage of localized needs and resources to understand industry dynamics and test new ways to find suitable applications for enterprise knowledge needs and to conduct day-to-day management and maintenance. Knowledge management team under the Knowledge Management Committee of Experts, knowledge management experts with knowledge management skills and experience, to coordinate the design and operation of knowledge management system.

3. Knowledge Management Promotion Group

Knowledge Management Promotion Group includes other employees related to enterprise knowledge management, business units and functional departments should participate in their own knowledge management projects, the organization's opinion leaders can become the facilitator of knowledge management, with the maturity of knowledge management, There will be many new roles, such as technical experts, to adapt to the organizational structure and knowledge management needs.

5.2 Knowledge Management Culture System

As an informal system, corporate culture guides the value concept of an enterprise. In order to ensure that the construction and operation of knowledge management system can achieve the strategic goal, it is necessary for high-tech enterprises to define the cultural system for knowledge management of big data. This article focuses on the process of knowledge management, combined with the requirements of high-tech enterprises for professional skills and talents, the cultural system is divided as follows.

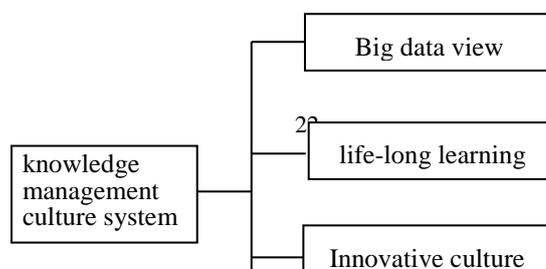


Figure 7. Knowledge Management Culture System of High-tech Enterprises in the Background of Big

Data

Big data concept: Big data is a subversive traditional way of thinking and technological change, can change the mode of economic growth, of course, can become the end result of knowledge management, high-tech enterprises should advance with the times, and actively change the concept of knowledge management, establish The concept of big data under the era of "Internet +", with the help of internal and external forces, digitized the production and operation of enterprises and tapped more commercial value from the data.

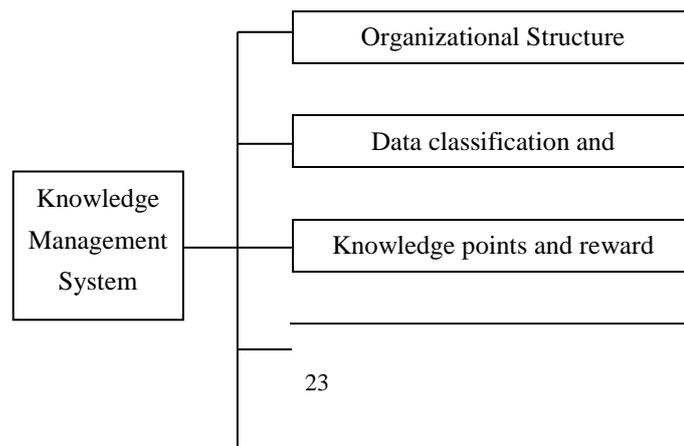
Lifelong Learning Culture: Establish the concept of lifelong learning and encourage employees to constantly upgrade their personal values in order to meet the needs of their survival and development. Mobilize their enthusiasm and encourage them to acquire and acquire the necessary knowledge through the use of a knowledge portal.

Innovative culture: Encourage employees to create new knowledge in the process of application and sharing of knowledge. Emphasize group creativity, encourage and respect individual creation, and allow employees to make mistakes. Because of the professionalism and complexity of high-tech knowledge, it is difficult for enterprises to form systematic innovations by relying solely on the individual's wisdom. Enterprises should not only attach importance to individual freedom and value realization, but also make collective wisdom cohesive (Zhang, 2015).

Efficient culture of excellence: As market competition continues to intensify, high-tech enterprise knowledge management pursues dual standards of effectiveness and efficiency, and pursues higher knowledge turnover rates. Enterprises should incorporate the spirit of pursuing high efficiency and excellence into the knowledge management culture system and urge knowledge quickly Discover, accumulate, apply, deliver and innovate to create the shortest flow of knowledge.

5.3 Knowledge Management System

Institutionalization marks the new beginning of knowledge management system, in which enterprises realize the strategic significance of knowledge management system and guarantee the orderly operation of knowledge management system by establishing codes of conduct and management methods [15]. The fundamental purpose of establishing the system of knowledge management system is to realize the full integration of the knowledge management system and the integrated operating mechanism of the organization. Figure 8 lists the main system of knowledge management of big data.



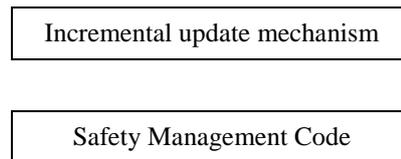


Figure 8. Institutional System of High-tech Enterprise Knowledge Management in the Background of Big Data

Organizational norms: the form of the system of enterprise knowledge management organizational structure, the role of departmental knowledge management roles and responsibilities of division of labor, knowledge management process options and audit specifications.

Data classification and standardization system: Classification and standardization are the bases of artificial intelligence. The system defines the basic principles that enterprise data and knowledge resource classification should follow and prepares knowledge storage so as to provide standardized knowledge display results.

Knowledge Score Management and Incentives: Knowledge Score Statistics is an intelligent monitoring KPI feedback mechanism that sets employee motivation scores by assigning actions to assess employee motivation and contribution to each knowledge management process.

Incremental update mechanism: knowledge management process system is dynamically running system, in view of the status of frequent interaction of data, regular inspection and update is conducive to system continuous operation and optimization, schedule triggered by the update, the need to update the data is the last update has Changed data. Incremental update mechanism for the examination of the content, time, candidates and update the content of the approval has a clear requirement.

Security Management Practices: Under the background of big data, all employees establish contact with the cloud platform through the network. However, core knowledge and special knowledge must be encrypted or set to prevent loss. The security management standard sets forth specific requirements and formulates specific requirements Process.

6Conclusion

This paper selects high-tech enterprises for targeted research, systematically analyzes the inherent impact of big data on enterprise knowledge management, and optimizes the knowledge management system of high-tech enterprises, which is divided into process management system, infrastructure system, knowledge management organization system, Knowledge management culture system, knowledge management system most of the system 5, the optimization content is described. The results of this paper provide a new perspective for the research of knowledge management in high-tech enterprises, and provide the foundation and reference for the research in related fields. It helps high-tech enterprises to explore fast and efficient knowledge management and take enterprises' knowledge discovery, accumulation, application, sharing and innovation to a new height.

In the future research, the author will conduct corresponding empirical research through scientific investigation methods and analytical tools to enhance the practicality and reliability of the optimization system. In addition, this paper only conceptualizes the overall structure of the high-tech enterprise knowledge management system, does not involve the specific technical functions of the knowledge management system, and has some limitations. These problems will be further explored in future research.

references :

1. Douglas Laney.(2001). 3D Data Management: Controlling Data Volume, Velocity and Variety. Gartner, 2001-02-06.
2. De Mauro, A., Greco, M., & Grimaldi, M. (2015). What is Big Data? A Consensual Definition and a Review of Key Research Topics. Proceedings of the 4th International Conference on Integrated Information. New York: AIP Publishing, 97-104.
3. Assunção, M. D., Calheiros, R. N., & Bianchi, S. (2015). Big Data computing and clouds: Trends and future directions. Journal of Parallel

& Distributed Computing, 7, 3-15.

4. Zeng Wenying, Zhao Yulong, and Shang Min. (2011). Research on Cloud Computing and Cloud Storage Ecosystem. *Journal of Computer Research and Development*, 48, 234-239.
5. Zheng Zhili. (2013). Mixed with "big data". *China Book Review*, 8, 37-41.
6. Tang Ying. (2017). Research on Computer Network Security Management Technology. *Digital Technology and Application*, 2, 223-224.
7. Huang Yi. (2009). Study of IT Service's Knowledge Based on System of Telecom. *Guangxi Communication Technology*, 4, 25-29.
8. Yang Bo. (2005). How to carry out knowledge management. Beijing: Peking University Press, 137-140.
9. Yan Zixiang, & Bian Yijie. (2017). Analysis of tacit knowledge transfer consistency and countermeasures. *Information Studies: Theory & Application*, 3, 48-52.
10. Qi Qi, Li Hui, & Feng Jiao. (2015). Human Resources Development Strategy of High-tech Enterprises from a Knowledge Management Perspective—Take D Company As an Example. *Human Resources Development of China*, 6, 48-52.
11. LIU Kun. (2013). The Research and Implementation of Security Virtual Experiment Platform Based on the Cloud Server. *Computer Security*, 3, 70-73.
12. Wang Peng. (2017). Cloud Computing Information Sharing Platform Data Service Security Implementation Strategy. *Ship Science and Technology*, 2, 150-152.
13. Yao Liang. (2010). Choose knowledge management strategy of Digital China Corporation [D]. Central South University.
14. Zhang Yinyin. (2015). Global Technology Innovation Capability of High-tech Enterprises under Global Value Chain: A Case Study of Jiangsu Province. Jiangsu University.
15. Lu Kang, & Zhou Zhi-li. (2017). Application of Big Data Technology in Knowledge Management System of Aerospace Enterprises. *Aerospace Industry Management*, 4, 33-36.

Study on the Shouguang Model in the Promotion of Rural Revitalization Strategy

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During the National People's Congress and the Chinese Political Consultative Conference in 2018,General Secretary Xi Jinping participated in the deliberations of the Shandong delegation, he fully affirmed the "Zhucheng Model", "Weifang Model" and "Shouguang Model" created by Shandong in the agricultural and rural reform,and earnestly hoped that Shandong would strive to become the "Shandong model of rural revitalization" and "the national model of agricultural modernization".

I. Basic Connotation and Characteristics of Shouguang Model

Since the reform and opening up of China, with good physical and geographical conditions, deep vegetable cultural foundation and harmonious social development environment, Shouguang gives full play to the role of government, example-driven, market-driven and innovation-driven development factors , takes the industrialization of vegetables as the leader, it has promoted the optimum spatial allocation of factors of production such as population, capital, technology and information,it promoted the base of vegetable production, parks and industrialization of agriculture, and promote the process of urbanization and peasant citizenization, it has realized the industry's enrichment of the people, the interaction of the city and the integration of urban and rural areas, and provided us with experience for the implementation of the rural revitalization strategy and the solid advancement of agricultural and rural modernization.

Under the background of the reform and opening up policy, especially since 1989, vegetable industrialization has led the Shouguang model of coordinated development of agriculture and non-agricultural industries,it has gone through four stages of development: “vegetable greenhouse production”, “agricultural industrialization management”, “coordinated development of agriculture and non-agricultural industries”, and “county economic development”,its connotation is constantly evolving and enriching.At present, the basic connotation of Shouguang model is: vegetable industrialization is the initial driving force of Shouguang agricultural rural modernization, industry enrichment is the target driving force, agricultural industrialization is the core path, agriculture promotes the coordinated development of industry, agriculture and

non-agricultural industries is an important feature, production-city interaction, urban-rural integration is the endogenous driving force, and residential farmers' citizenization is the development trend.

"Shouguang Model" with the main content of "farmers' richness, urban-rural integration and characteristic urbanization" led by vegetable industrialization and the coordinated development of agriculture and non-agricultural industries, following the inherent logic of "vegetable industrialization---agricultural industrialization ----coordinated development of agriculture and non-agricultural industries----industry enriches the people----industrial park----urbanization of parks----citizenization of farmers",it has thoroughly implemented the policy of "giving priority to the development of agriculture and rural areas",it has achieved the development effect of "remarkable results in practice, distinct local characteristics, sustained development momentum, wide social identity and high degree of reference and promotion",and finally it has become the "Shouguang Model" of China's agricultural and rural modernization.

II. The Enlightenment and Reference of the Formation and Development of Shouguang Model

The formation and development of the Shouguang model is the result of a combination of multiple development factors.Revealing the formation and development mechanism of the Shouguang model has important practical significance for drawing on the essence of the Shouguang model.

First, it gives full play to the advantages of vegetable cultivation and rationally chooses leading industries. Shouguang is the birthplace of Jia Sixie, a famous ancient agronomist,so both the agricultural civilization and vegetable planting have a long history. Since the reform and opening up, Sanyuanzhu Village in Sunjiayi Town has taken the lead in experimenting with the technology of "winter-warm vegetable greenhouse" and achieved success,this ended the history of "no fresh vegetables in winter" in northern China, which was called "green revolution",and it has led the vegetable planting boom and made vegetable cultivation a leading industry for Shouguang's agricultural development.Under the integration of government, market, science and technology, vegetable, as a small industry, has promoted the development of upstream industries such as seedling breeding, bio-medicine, technology research and development, agricultural machinery,and the development of downstream industries such as product marketing, logistics and transportation, food processing, rural tourism, agriculture-related finance, etc.,it has gradually formed greenhouse facilities manufacturing cluster, seed industry cluster, processing cluster, marketing service cluster, shipment industry cluster and so on, which has promoted the local economic and social development.

Second, it gives full play to the government's role in promoting and supporting the priority development of agriculture, rural areas and farmers. In line with the tide of reform and opening up, Shouguang City's decision-making level and the agriculture-related economic entities have formed a benign interaction and collaborative innovation between the expression of institutional demand and the optimization of institutional supply. The previous Shouguang Municipal Party Committee and the Municipal Government have given strong support to the development of the vegetable industry in terms of financial fund arrangement, technical strength investment, human capital cultivation, and infrastructure construction. For example, they have invested in the construction of productive public service facilities covering highway networks, high-tech demonstration parks, specialized production bases and specialized trading markets, they actively support leading enterprises in vegetable industry, take the lead in organizing vegetable farmers to establish or join rural economic cooperation organizations, implement the policy of introducing high-tech talents, continuously improve vegetable production technology, and establish international standards for vegetable quality, which greatly enhance the organization and standardization of vegetable production, and promote the development of vegetable cluster and agricultural industrialization.

Third, Communist Party members play a leading role and respect the creative spirit of the masses. In 1988, Comrade Wang Leyi, Secretary of the Party Branch of Sanyuanzhu Village, discovered Han Yongshan, the inventor of winter-warm vegetable greenhouse, with the support of Wang Boxiang, then Secretary of Shouguang County Party Committee, Wang Leyi spared no effort to invite Han Yongshan to teach winter-warm vegetable greenhouse technology, he also led the village Party members to grow off-season cucumbers successfully. Under the inspiration of Comrade Wang Boxiang and Comrade Wang Leyi's "Feelings of Home and Country", Sanyuanzhu Village unreservedly dedicated mature vegetable greenhouse planting and management technology to the whole county, the whole province and even the whole rural areas throughout the country in order to "make more people rich". It is precisely because of Comrade Wang Boxiang's pragmatic work for the people and the leading role of Party members and cadres such as Wang Leyi that Shouguang vegetable and Shouguang model have been created. Therefore, Comrade Wang Leyi is known as the "father of winter-warm greenhouse vegetables", and Comrade Wang Boxiang has won the title of "pioneer of reform" for the fortieth anniversary of reform and opening up.

Fourth, it gives full play to the role of market pulling and improves the market circulation system. On the basis of vegetable industrialization, they actively expanded the stretching industry chain and promoted the coordinated development of agriculture and non-agricultural industries. Especially through opening up the "green" channel of vegetables,

building specialized market of vegetables and perfecting marketing network of vegetables, the bottleneck of vegetable sales has been broken. They have built a large agricultural full circulation market system including specialized (logistics park) leading market, Township wholesale market, rural market, farmer's Direct stores and trading platforms such as "China Vegetable Market Network". It covers 210 cities in China, "buy from the whole country, sell to the whole country, buy big and sell big". At the same time, they have established long-term vegetable trade relations with Japan, South Korea, Russia and other countries. Large markets and large circulation have promoted the continuous upgrading of agricultural industrialization.

Fifth, it has played an innovative driving role and accelerated the transformation of new and old kinetic energy. Technological innovation drives industrial upgrading, which is the core driving force for the formation and sustainable development of Shouguang model. Winter-warm greenhouse vegetable planting technology is not the original of Shouguang, but Shouguang model is the original of Shouguang people. Because Shouguang is the only one that really popularizes and innovates the winter-warm greenhouse vegetable planting technology in the whole region; at the same time, it is still Shouguang that popularizes this technology, together with related complete sets of equipment and operation modes, to the whole country and even abroad. Shouguang is prosperous for its vegetables, and is also famous for its technological innovation in vegetables. Shouguang has held eighteen consecutive international vegetable science and technology expositions in China, the world vegetable production technology has gathered, experimented, tested, diffused and popularized at this place, under the backward force mechanism, the vegetable production technology has been innovated and upgraded one after another, which promotes the brand and internationalization of Shouguang vegetable industry.

III. Promoting the "Six Transformations" and Innovating Shouguang Model

Based on Comrade Xi Jinping's earnest hope and the goal and requirement of our country's Rural Revitalization strategy, Shouguang should innovate and upgrade Shouguang model, endow it with new connotation, new standards and new requirements, and actively create an upgraded version of Shouguang model. Only in this way can Shouguang model become "Qilu model of rural revitalization" and "national model of agricultural modernization". **The new era connotation of Shouguang model is:** taking agricultural supply-side reform as the main line, vegetable branding and production standardization as the guide, and the integration of agriculture and secondary and tertiary industries as the grasp, Shouguang model should actively promote the industrialization of agriculture, the professionalization of farmers, the livability of villages, the wisdom of cities and the integration of urban and rural areas.

Specifically, it should continue to adhere to the "Five Performance" and actively promote the "Six Transformations".

First, vegetable branding. Promoting the transformation from "Vegetable Industrialization Leading" to "Vegetable Branding Leading" is the requirement of rural revitalization and industrial prosperity. Shouguang should not only base itself on vegetable industrialization, but also not confine itself to vegetable industrialization. Shouguang should deepen the integration between vegetable industry and secondary and tertiary industries, advance to high quality, standardization and brand, and promote the upgrading of vegetable industry chain.

Second, the industrialization of agriculture. Promoting the transformation from "agricultural industrialization" to "agricultural workshop" is the technical requirement of rural revitalization. The concrete performance is "farmization", "factoryization" and "intelligentization", which represents the development direction of agricultural modernization. Agricultural workshop is not only the technical support of standardization of vegetable production, but also the material carrier of vegetable brand. It will promote the specialization, standardization and modernization of the technical ability of farmers or workers engaged in agricultural production, thus leading to the emergence of "new professional farmers".

Third, farmers' professionalization. Promoting the transformation from "traditional farmers" to "new professional farmers" is the main requirement of rural revitalization. It is not only the human guarantee of carrying out production standardization, vegetable brand and agricultural workshop, but also the source of strength to promote new standards and create new brands, which will inevitably promote the continuous renewal of human capital, so as to promote the development of agriculture and rural areas to maintain long-term vitality.

Fourth, the countryside is livable. Promoting the transformation from "traditional countryside" to "livable community" is the inherent requirement of rural modernization, and it is also the spatial carrier of rural revitalization's "ecological livable, rural style civilization and effective governance". Ecologically livable, community-based management and civilized countryside will not only enable residents to fully enjoy public services, but also stabilize the ranks of agricultural professionals, thus becoming the space guarantee of "citizenization of farmers living in villages".

Fifth, urban wisdom. It should promote the transformation of "traditional cities" to "smart cities", and form a "co-construction, co-governance and sharing" mechanism between urban and rural areas to enhance the convenience, efficiency and sustainability of urban-rural interaction. In the vertical direction, the interaction of "factor-subject-economy-society" should be formed. In the horizontal direction, the "park-community-town-city" should be formed to promote the function of the city, thus achieving "cities support rural areas, public services facilitate farmers, urban resources help agriculture" pattern.

Sixth, urban-rural integration.Promoting the transformation from "urban-rural segmentation" to "urban-rural integration" is the inevitable result of agricultural workshops, farmers' professionalization, rural livability, urban wisdom and the integration of urban and rural interaction,it is also the fundamental requirement of implementing the strategy of rural revitalization, and the premise of realizing the equalization of public services and allowing urban and rural residents to enjoy the development results equally. The interaction of "network" structure formed by the construction of smart city will strengthen the industrial connection between urban and rural areas, complement the functions of urban and rural areas, and then realize the transformation and upgrading of kinetic energy, and finally realize the integrated development of urban and rural areas with “the countryside has characteristics, the city has vitality, there are differences between urban and rural development, but there is no difference in public services”.

References

[1]Xinhua News Agency .Opinions of the State Council of the Central Committee of the Communist Party of China on the implementation of the strategy of Rural Revitalization [N].2018-01-02.

[2]Xinhua News Agency . Opinions of the State Council of the Central Committee of the Communist Party of China on Adhering to the Priority of Agricultural and Rural Development and Improving the Work of "Agriculture, Countryside and Farmers" [N].2019-01-03.

[3]Office of the Weifang Municipal Party Committee of the Communist Party of China. Speech by Comrade Liu Jiayi at the deliberations of Weifang Delegation at the Second Session of the Thirteenth National People's Congress of the Province[N]. February 20, 2019.

[4]Office of the Weifang Municipal Party Committee of the Communist Party of China. Speeches by Comrades Hui xin'an and Tian Qingying at the Urban Rural Work Conference,2019-01-27.

[5]Office of Shouguang Municipal Committee of the Communist Party of China. Speech by Comrade Lin Hongyu at the Third-level Cadre Conference of the whole city [N]. 2019-02-13.

[6] Office of Shouguang Municipal People's Government. Evaluation Report on Rural Revitalization in Shouguang [EB/OL]. December 31, 2018.

[7] Liu Zhonghui, Liu Lizhen. The impact of social capital of industrial clusters on technology introduction, diffusion and innovation - Take Shouguang vegetable industry cluster as an example [J]. Economic issues, 2009 (04): 47-49.

[8] Han Zhen, Xu Bingtao. Vegetable Revolution in the Gradual Upgrading of Science and Technology [N]. Qilu Evening News, 30 April 2008.

[9] Research Group of Fujian Academy of Social Sciences. Drawing on and promoting the “Jinjiang Experience” to comprehensively improve the level of county economic development [J]. Fujian Forum (Humanities and Social Sciences Edition), 2011 (6): 130-135.

[10]Zeng Fenyu. Research on the Evolution Track of Southern Jiangsu Model and Wenzhou Model in the Yangtze River Delta Region[J].Journal of Hunan University of Science and Technology(Social Science Edition),2011(6):108-113.

[11] Li Xingshan. The Transformation and Upgrading of "Wenzhou Model" and "Southern Jiangsu Model" [J]. Theoretical Study, 2012(7): 42-43.

[12] Zeng Gang, Shang Yongmin, Si Yuefang. The Convergence Evolution of China's Regional Economic Development---Taking 16 Typical Models in China as an Example[J].Geographical Research,2015(11):2005-2020.

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Institution Evolution, Government Role and the Development of the Private Economy: Based on Nonlinear Panel Threshold Model Regression

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Abstract: Institution evolution is an important factor to promote the development of private economy. Based on the China's provincial panel data (2002 - 2016), the panel data threshold model was constructed with the government role as the threshold variable to test the nonlinear relationship between institution evolution and the development of private economy in China. According to the result, there is a double threshold effect between institution evolution and the development of private economy. With the expansion of the government role, the positive impact of institution evolution on the development of private economy is gradually weakened. The government role is an important factor between institution evolution and the development of private economy in China. According to the above findings, actively responding to the new demands of private economy on the institution environment and adjusting the government role is the key point to promote the development of private economy. It is necessary to promote "system set" reform and enhance the synergistic effect between the institution and the government. Therefore, the institution evolution power of development of private economy would be stimulated to promote the development of private economy sustainably.

Key words: Private Economy; Institution Evolution; Government Role; Panel Threshold Model

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1.Introduction

Currently, the development of private economy problem has been highly valued. On November 1, 2018, Chairman Xi Jinping convened Forum on Private Enterprises, repeatedly emphasized the important role and status of the private economy, expounded the difficulties and problems in the development of private economy. He expressed firm determination to help private enterprises to solve the practical difficulties and create better conditions. The spirit of Chairman Xi Jinping's important speech will undoubtedly be translated into a huge practical productivity to push the private economy into the new stage of development. People in all walks of life have carried out full discussions on relevant themes such as solving the difficulties in the development of private economy and promoting the development of private economy.

The development of private economy is facing two major difficulties: first, institutional barriers such as finance, taxation and market access; Second, the implementation of government policies is not

in place and the effect is not clear, which are also important factors affecting the development of private economy.

Scholars have long had a consensus on the impact of institutional evolution on the development of private economy, and the academic circle affirmed the positive impact of institution evolution on the development of private economy. However, as the provider of compulsory institutional evolution, government role is bound to be an important factor affecting the relationship between institutional evolution and the development of private economy. Therefore, an important research question is whether the positive impact of institution evolution on the development of private economy will be affected by the role of the government. Is there a threshold effect between the development of private economy and institution evolution? As a result, the relationship between institution evolution and the development of private economy is different at different levels of government role. The main purpose of this paper is to try to answer this question.

In the study of the relationship between institution evolution, the government role and the development of private economy, the academic circle has launched a multi-perspective discussion. In theoretical research, Shi Jinchuan (2004) demonstrated the mechanism of government action in the process of institution evolution promoting the development of private economy^{[1]27-33}; The development process of private economy is that the government keeps increasing system supply, and the expansion of system supply triggers the leapfrog development of private economy (Cai Xiaoshan, 2011)^{[2]111-113}. The development of private economy and regional institution evolution in China are progressing through continuous innovation (Wang Zhikai, 2007)^{[3]99-109}. Scientific and rational institution innovation provides institutional dividends for the development and expansion of private economy (Wang Haibing, 2018)^{[4]3-14}. All the above scholars affirmed the important influence of institutional evolution on the development of private economy in China. However, although the system environment of private economy in China are improved greatly, but with our country economic society into a new transition period, the lack of institutional environment is still the biggest dilemma of the development of private economy (Chen Xuehua,2003)^{[5]69-72}. Private economy is in urgent need to break through "the system bottleneck" stage. The government macro system, such as business access system, financing system are especially prominent in the development of private enterprises (Yang Guihong, 2006)^{[6]144-147}. There is no denying the fact that local governments are one of the important main bodies of institution evolution. Compulsory institutional evolution dominated by the government greatly promoted the development of private economy (Chen Guoquan, 2004)^{[7]83-87}. However, the local government has the pursuit of economic growth and maximization their own interests, which hindered the development of private economy. The development of private economy and institution evolution move onwards with the continuous adjustment of the government policy. Therefore, the local government behaviors hold dominant position in the process of institution evolution to accelerate the development of private economy. The development of private economy in China is completely under the guidance of government policies (Zheng Xiumin, 2009)^{[8]22-27}. Local governments play an important role in the development of private economy (Acemoglu,2015)^{[9]1038-1086}. The optimization of their behaviors can improve institutional performance (Geng Chengxuan, 2013)^{[10]65-68}. In order to promote the sustainable and healthy development of private economy, government policy support should adapt to the institutional demand of private economy and effectively dissolve the institutional obstacles hindering the development of private economy.

There is relatively rare empirical study about relationship of institution evolution, government role and the development of private economy. Deng Hongtu (2004) constructed the mathematical model of

the government and the enterprise, pointing out that the local government ideology preference play a key role in the evolution of the private economy, local government policy can affect the private enterprise's expectations of future ^[11] 130-140; Yang Tianyu (2003) constructed a government objective function. Affected by economic growth, reduction of unemployment, pursuit of utility maximization and other goals, the government in transition will generate a series of institutional barriers that hinder the development of private economy ^[12]29-33. Cheng Junjie (2016) made an empirical research to found institution evolution and entrepreneurship have significant influences on the development of private economy, and institution evolution has significant positive effect on entrepreneurship ^[13]39-54.

Throughout the existing literature, the academic circle has recognized the important influence of institution evolution and the government role on the development of private economy, and most of them are independent studies on the role of institution, government and the development of private economy, ignoring the influence of government on the development of institution evolution and private economy. In terms of research methods, some scholars use the traditional linear analysis method, and few literatures use the nonlinear characteristics. However, due to the different levels of government role, the direction and degree of institution evolution in the development of private economy may be different. Therefore, based on the China's provincial panel data (2002 - 2016), the static panel data threshold model was constructed with the government role as the threshold variable to test the nonlinear relationship between institution evolution and the development of private economy in China.

2. Model

2.1 panel threshold regression model setting

For the analysis of the impact on the development of private economy, considering the different levels of government role which bring about different influences on the development of private economy. Namely there is a threshold effect between the private economy and the government role. This paper uses threshold analysis method from the Hansen (1999) ^[14]345-368, the panel data threshold model was constructed with the government role as the threshold variable. The specific form of the model is as follows:

$$PE_{it} = \begin{cases} \mu_{it} + \beta_1' INS_{it} + \varepsilon_{it}, & POL_{it} \leq \gamma \\ \mu_{it} + \beta_2' INS_{it} + \varepsilon_{it}, & POL_{it} > \gamma \end{cases} \quad (1)$$

The meaning of this model is that when the government role is less than or equal to the threshold value γ , the impact coefficient of institution evolution on private economy is β_1' . When the government role is greater than the threshold value γ , the impact coefficient of institution evolution on private economy becomes β_2' , which can be increased or decreased. In the model, PE_{it} represents the scale of private economy, POL_{it} represents the role of the government, INS_{it} represents institution evolution, and ε_{it} represents other variables affecting private economy. The subscript "it" represents the data of the year "t" in the province "i".

Equation (1) is the panel threshold model with a single threshold value. If there is a double threshold, the model is extended to:

$$PE_{it} = \begin{cases} \mu_{it} + \beta_1' INS_{it} + \varepsilon_{it}, & POL_{it} \leq \gamma_1 \\ \mu_{it} + \beta_2' INS_{it} + \varepsilon_{it}, & \gamma_1 < POL_{it} \leq \gamma_2 \\ \mu_{it} + \beta_3' INS_{it} + \varepsilon_{it}, & POL_{it} > \gamma_2 \end{cases}$$

(2)

As can be seen from equation (2), if there are two threshold values γ_1 and γ_2 , the impact effect of institution evolution on private economy can be divided into three intervals, corresponding to three impact coefficients, β_1' , β_2' and β_3' .

2.2 variable selection and data description

The panel data of 30 provinces, municipalities and autonomous regions in mainland China (except Tibet Autonomous region) from 2002 to 2016 were selected in this paper due to the high quality of system and homogeneity of government policies in the same province, as well as the easy availability and high reliability of data at the provincial level. The data selected in this paper are from China statistical yearbook of each year, statistical yearbooks and statistical communiques of provinces (cities and districts). The data cover 30 provinces in mainland China from 2002 to 2016, with a total of 450 sample observations. Among them, Tibet is not included due to the lack of a large number of data. Variables are selected as follows:

2.2.1. Explained variable: private economic development (PE). The proportion of private economic added value in GDP of each province (city and district) is selected to represent it.

2.2.2 Explanatory variable: institution evolution (INS). This paper mainly examines the economic operation system closely related to the development of private economy. The Chinese marketization index published by Fan Gang et al. has constructed an evaluation system covering five aspects and 25 indexes, which can better reflect the marketization degree of China and is widely used as the proxy variable of economic operation system in empirical research. The data of marketization index in this paper are from 《NERI INDEX of Marketization of China's Provinces 2011 Report》^{[15]3-8} and 《Marketization Index of China's Provinces: NERI REPORT 2016》^{[16]1-6}. Since the statistical caliber of the marketization index data published in the two reports is not consistent, this paper uses the data reported in the two reports as the basis and obtains comparable marketization index data by calculating the growth rate in different years and regions.

2.2.3. Threshold variable: government role (POL), which is often realized through policy design, is adopted as the variable to investigate the government action. With reference to the practices of Han Yonghui et al. (2017)^{[17]33-48}, this paper selects the number of local policies and regulations related to the development of private economy to study and explain. According to the Chinese laws and regulations database, China issued a total of 310 policies and regulations related to the development of private economy from 2002 to 2016, among which Sichuan Province, Jiangsu Pprovince, Anhui province and Guangdong Province are the most frequent policy areas. During this period, China issued a total of 172 policies and regulations related to the development of private enterprises, among which Zhejiang, Henan, Fujian and Guangdong provinces are the most frequent policy areas.

2.2.4. Control variables: innovation ability (INNO) is measured by the amount of R&D expenditure; Resource endowment (RES) is represented by coal and oil reserves per unit land area; Infrastructure levels (INFRA) are measured by the number of miles of railways and roads per unit of land area; The opening level is expressed in terms of the proportion of total imports and exports to GDP, that is, the degree of dependence on foreign trade. Educational attainment (EDU) is measured by

the average number of students at institutions of higher learning per 100,000 people. In order to avoid the interference of multicollinearity, the selected control variables have little relationship with each other.

2.3 descriptive statistics of relevant variables

Table 1: Descriptive Statistics of Variables (2002-2016)

Variable	Symbol	observation	mean	The standard deviation	The maximum value	The minimum value	skewness	kurtosis
Institution evolution	INS	450	7.69	2.65	15.67	2.45	0.64	0.06
Government role	POL	450	0.987	0.0876	13	0	2.759	9.234
Private economic development	PE	450	0.45	0.13	0.96	0.07	-0.06	0.48
Control variables	INNO	450	233.65	324.39	2035.10	1.2	2.67	7.84
	RES	450	45879.09	111669.4	677415.44	0	4.74	22.36
	INFRA	450	74.95	47.41	217.67	3.48	0.55	-0.35
	OPEN	450	0.32	0.39	1.72	0.03	1.95	2.91
	EDU	450	2166.15	1092.63	7068.00	563.00	1.76	4.37

In order to accurately analyze the relationship between institution evolution and the development of private economy, this paper adopts the locally weighted scatter plot correction averaging method (LOWESS) for curve fitting (Figure 1), and finds that there may be a non-linear relationship between institution evolution and the development of private economy. Figure 1 shows that the slope (influence coefficient) of the curve keeps decreasing, that is, the influence of institution evolution on the development of private economy keeps decreasing, which is consistent with the test results in the following paper.

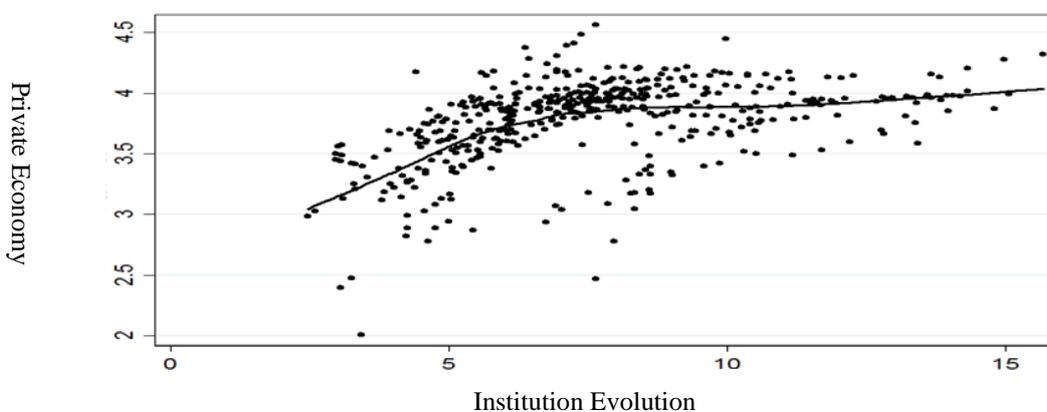


Figure 1 :Linear Fitting of institution evolution and private economy

3. Estimation

3.1 endogeneity test of threshold variables

According to the study of Caner and Hansen (2004)^{[18]813-843}, threshold variables should be exogenous variables, so the endogeneity test of threshold variables should be conducted before estimating panel threshold model. Using Stata12.0 software, the test results are shown in table 2:

Table 2: Endogeneity Test of Threshold Variables

pe	Coef.	Robust	Z	P> Z	[95% Conf.Interval]	
		Std.Err.				
pol	2.943	0.885	3.32	0.001	1.208	4.679
_cons	43.842	1.178	37.16	0.000	41.530	46.155

Table 2 shows that P=0.001, the endogeneity test results of the threshold variable are significant at 99% confidence level, that is, the threshold variable passes the endogeneity test and is strictly exogenous from the explained variable.

3.2 panel threshold regression model estimation

Using Stata12.0 software for regression, the threshold effect test results obtained by sampling 500 times with bootstrap are shown in Table 3. Here, the model is estimated in the setting of no threshold, one threshold and two thresholds. Among them, the single threshold and double threshold of the government effect of the threshold variable are significant at the significance level of 5%, and the corresponding sampling values are 0.031 and 0.042 respectively, while the triple threshold effect is not significant at the significance level of 10%, and the Value P is 0.320. Therefore, the model of institution evolution affecting the development of private economy with government role as the threshold variable will be analyzed based on the dual threshold model.

Table 3: Threshold Effect Test Results of Government Role

The number of threshold	The F value	The P value	The critical value		
			1%	5%	10%
A single threshold	5.479**	0.031	7.463	4.092	3.054
Double threshold	4.501**	0.042	6.852	3.584	2.591
Triple threshold	1.208	0.320	7.451	4.238	3.060

Note: ***, **, * means significant at the significance level of 1%, 5% and 10% respectively.

Table 4 shows the government role threshold estimates and 99% confidence interval, because the two threshold estimation is when the likelihood ratio test statistics is equal to zero value, we can obtain the dual threshold estimates are 0.050 and 3.015 respectively, and government role level can be divided into three intervals, the corresponding threshold regression equation can be represented as follow:

$$PE_{it} = \begin{cases} \mu_{it} + \beta_1'INS_{it} + \varepsilon_{it}, POL_{it} \leq 0.050 \\ \mu_{it} + \beta_2'INS_{it} + \varepsilon_{it}, 0.050 < POL_{it} \leq 3.015 \\ \mu_{it} + \beta_3'INS_{it} + \varepsilon_{it}, POL_{it} \geq 3.015 \end{cases}$$

(3)

Table 4: Confidence Interval of Threshold Effect Estimation of Government Role

Threshold	Threshold estimate	99% confidence interval
r_1	0.050	[0.00,10.00]
r_2	3.015	[0.553,10.00]

After the threshold effect test results confirm the existence of double thresholds for the government role, this paper uses the panel threshold estimation method to analyze the nonlinear impact of institution evolution on the development of private economy. The empirical results are shown in Table 5:

Table 5: Panel Threshold Estimation Results

Explanatory variables	Estimated coefficient	Explanatory variables	Estimated coefficient
Ins_1	2.433*** (5.372)	EDU	0.011*** (7.883)
Ins_2	2.153*** (4.751)	OPEN	-0.141 (-3.765)
Ins_3	1.717*** (3.603)	INNO	0.004* (1.867)
INFRA	0.062*** (2.789)	POL	0.837*** (2.973)

Note: ***, **, * means significant at the significance level of 1%, 5% and 10% respectively; This is the t value.

From the threshold estimation results of the government role, the institution evolution and the development of private economy show a positive correlation, with the expansion of the government role, the positive impact gradually weakened. Specifically, when the level of government role in a region is less than the first threshold value of 0.050, the regression coefficient of institution evolution on the development of private economy is 2.433, which is significant at the statistical level of 1%. It indicates that within this range, for everyone percentage point increase in the level of government role, the positive impact of institution evolution on the development of private economy increases by 2.433 percentage points. When the level of government role exceeds 0.050 and less than 3.015, the regression coefficient drops to 2.153, which is significant at the statistical level of 1%. When the level of government role is greater than 3.015, the regression coefficient continues to decline to 1.717, which is significant at the statistical level of 1%. At this time, everyone percentage point increase in the level of government role will lead to an increase of 1.717 percentage points in the positive impact of institution evolution on the development of private economy.

According to the estimation results of control variables, regional innovation ability has a significant positive effect on the development of private economy. Investment in scientific and

technological research and development contributes to the improvement of innovation ability, which is crucial to the development of private economy. Infrastructure plays a significant positive role in the development of private economy, which has been proved by domestic and foreign scholars from both theoretical and empirical levels. As a production factor, infrastructure construction directly promotes the development of private economy, and indirectly promotes the development of private economy by reducing transaction costs. The education level has a significant positive impact on the development of private economy. The higher the education level is, the stronger the innovation ability is, thus promoting the development of private economy. In addition, the opening level is not significant, the relationship between the development of private economy and the regional opening level can't be sure. A possible explanation is that different types of private enterprises will differ dependent for factors^[19]₉₀₋₉₉, whether export-oriented economy to promote private economic development or inhibition is strongly associated with the type of private enterprises.

3.3 robustness analysis

Referring to the practice of Huang and Lin (2009)^[20]₄₃₉₋₄₆₆, this paper conducts robust analysis on the nonlinear relationship between institution evolution and the development of private economy by adding control variable (RES). The results in Table 7 show that: after adding the control variable (RES), the influence coefficient of each explanatory variable between institution evolution and the development of private economy is basically unchanged, which indicates that the nonlinear relationship between institution evolution and private economy development based on panel data threshold model is basically robust.

Table 7: Robustness Test of Panel Threshold Model

Explanatory variables	Estimated coefficient	Explanatory variables	Estimated coefficient
Ins_1	2.431*** (5.348)	OPEN	-0.141*** (-3.751)
Ins_2	2.151*** (4.728)	RES	-0.000 (-0.040)
Ins_3	1.726*** (3.588)	INNO	0.004*** (-1.844)
INFRA	0.062*** (-2.795)	POL	0.837*** (2.974)
EDU	0.010*** (7.628)		

Note: *, **, * means significant at the significance level of 1%, 5% and 10% respectively; This is the t value.**

3.4. result analysis

According to the above empirical analysis results, there is a nonlinear dual threshold effect between institution evolution and private economic development in China, which is 0.050 and 3.015 respectively. When the level of government role is lower than 0.050, the impact coefficient of institution evolution on the development of private economy is relatively high (2.433). With the

improvement of the level of government role until it crosses the second threshold value (3.015), the impact coefficient of institution evolution on the development of private economy gradually decreases to (1.717). This shows that when the government role is lower than the threshold, the institution evolution has a stronger positive impact on the development of private economy. When the government plays a higher role than the threshold, the positive effect of institution evolution on the development of private economy is weak. As for the positive effect of institution evolution on the development of private economy, there is no doubt. American economist North put forward "Institutional Determinism", and regarded institution as the fundamental source of economic growth. The result of economic growth is triggered by institution evolution.

From the perspective of institutional economics, the development history of private economy in China is a history of institution evolution, and the efficient institution evolution is the source power of the development of private economy. The government role in the development of private economy is mainly reflected in the policy support of provincial and municipal governments, which involves market access, financing, finance, taxation, legal protection and other aspects. Since 2002 (that is, the cutoff point of empirical research in this paper), the private economy in our country has entered the phase of consolidating and deepening development, the local government launched a number of policies and regulations. Continuous optimization of the policy environment provides the institution guarantee for private economy development. It should strengthen the positive impact on the institution evolution on the private economy. However, the empirical results of this paper show that with the expansion of government role, the positive impact of institution evolution on private economy weakens.

This can be explained by the adaptability of the policy supply for the demand of private economic development, with the rapid development of private economy in our country, the demand for policy of public goods is increasing. However, there is the lag of government function transition and the transformation of government functions lags behind. The relevant supporting policy measures are not accurate enough. Hard policy unfair phenomenon, such as "Glass door", "Revolving door" and "Spring door" influence the effects of policy implementation, and thus the positive impact of the institution evolution based on the degree of marketization on the private economy has been reduced (Jia Hongying, 2006)¹⁰⁴⁻¹⁰⁶ [21]. All the time, although the government has issued a number of policies aimed at promoting the development of private economy, the results have been very limited. Because the policy objectives ignore the real needs of private economy, leading to the lack of conscious action of private economy micro-subjects. During the study period of this paper, the policies and measures adopted by the national and local governments at all levels in 2005 to promote the development of private economy in order to expand domestic demand did not improve the financing system environment of private economy, but increased the operating costs and risks of private enterprises. In order to promote the development of private economy continuously, it is necessary to break the original policies and measures that are not compatible with each other, and to form an intermittent equilibrium between the policy supply and the institutional demand of private economy development.

4. Conclusions and Suggestions

The main conclusions of this paper are as follows: there is a double threshold effect between institution evolution and the development of private economy, and the threshold value of government role is 0.050 and 3.015 respectively. When the government role is lower than the threshold, the institution evolution has a strong positive impact on private economy. With the expansion of the government role, the institution evolution has a weaker positive impact on private economy. The above conclusion indicates that the government role is an important factor between institution evolution and

the development of private economy in China. This means that in the process of institution evolution promoting the development of private economy, the appropriate adjustment of the level of the government role should be fully considered.

Based on the above findings, the following suggestions are proposed: firstly, actively respond to the new demands of private economy on the institution environment, and adjust the government role. Faced with the changes in the international economic environment and its adverse impacts on the economy and market expectation in China, the private economy has a stronger demand for the reform of the institutional environment, which is mainly manifested in effective policy support for financing mechanism, market access mechanism, property rights protection system and other aspects.

Since August 2018, the national government has continued to focus on the development of private economy, making great efforts to remove institutional obstacles to the development of private economy in many ways, such as fiscal, tax, financial, approval and other aspects. To break the institutional barriers restricting the development of private economy, the government should play a better role in promoting institutional innovation to promote the development of private economy according to the operational characteristics of private enterprises.

For example, the difficulty and high cost of financing have always been the bottleneck of funds restricting the development of private economy. The government should actively support the innovation of financing system and set up innovative financial products such as bond financing support tools for private enterprises. It is necessary to relax financial market access, encourage the development of private banks and other financial institutions and guide commercial banks to increase financial innovation. Credit management system, risk control system and risk compensation system should be established to accord with the characteristics of private enterprises^{[22]5-14}. It is also necessary to accelerate the establishment of specialized private enterprise policy banks, build financial service mechanisms within the private economic system, and enhance private enterprises' sense of policy acquisition.

Secondly, it is necessary to promote "system set" reform and enhance the synergistic effect between the institution and the government. Therefore, the institution evolution power of development of private economy would be stimulated to promote the development of private economy sustainably. Actively promote "system set" reform which is conducive to the development of private economy, mainly includes the financial system, tax system, property rights system, market access system and the system of administrative examination and approval.

Institutional advantages should be combined with the private economy development to promote the development of private economy to a new level from the inside mechanism. It is particularly important to improve the supporting measures of government policies, the way of policy implementation and escort the "system set". It is necessary to play the synergistic effect of institution and government, and then stimulate the institution evolution power of the sustainable development of private economy.

In the reform of deepening the financial system, local governments should play a leading and supporting role in setting up special funds for the development of private enterprises and strengthening financing guarantee funds, so as to ease the difficulty and high cost of financing for private enterprises. In the reform of strengthening the tax system, the government should improve the accuracy of fiscal and tax policy support, and effectively reduce the tax burden of private enterprises; In the reform of improving taxation system, the government should strengthen law enforcement and reduce the burden of taxes and fees practically. In the reform of perfecting the system of property right protection, the

government should strengthen law enforcement, raise the cost of breaking the law and protect the innovation achievements of private enterprises to create a good environment. In the reform of market access system, adhere to the principle of "Entry is not prohibited by law", and create an open order of institutionalized rights and a market competition environment of non-interpersonal relationship^[23]8-16. In the reform of simplifying the administrative approval system, a third-party evaluation mechanism for the reform of the administrative examination and approval system should be established to reduce the obstacles to the development of private economy.

It is a systematic project to promote "system set" reform, which involves a large number of institutional bodies. It is need the coordination and cooperation of local governments, financial institutions, tax authorities, enterprises and other entities to form a joint force to break the institutional bottleneck of the development of the private economy.

References

- [1]Shi Jinchuan, Qian Tao, 2004.The government role in the Development of Regional Economy — A Historical Investigation of Taizhou, Zhejiang Province from the Perspective of Market Enhancement Theory.Comparative Economic & Social Systems (3) : 27-33.
- [2]Cai Xiaoshan, 2011.Institution Evolution, Government Behavior and the Development of Private Economy in the Pearl River Delta. Modern Management Science (1) : 111-113.
- [3]Wang Zhikai, 2007.The Private Sector and China. s Institutional Transition: Case Studies in Zhejiang and Jiangsu. Journal of Zhejiang University (Humanities and Social Sciences) 3, 99-109.
- [4]Wang Haibing, Yang Huixin, 2018.Reform and Development of Private Economy in China from 1978 to 2017:Retrospects and Prospects. Research on Economics and Management 39(4): 3-14.
- [5]Chen Xuehua, 2003. On the Demand of Institution Evolution to develop private economy in China. Academic Research (7) : 69-72.
- [6]Yang Guihong, Li Linbo, 2006.On External Institutional Obstacles, Internal Institutional Innovation and Private Enterprise Development in the Transition Period. Inquiry Into Economic Issues (8) : 144-147.
- [7]Chen Guoquan, Ma Xiaoli, 2004.Institutional Innovation of the Local Government and the Development of Private Economy—The Institution Track and Analysis of Wenzhou. Chinese Public Administration (6) : 83-87.
- [8]Zheng Xiumin, Xu Xiaoming, 2009. Policy Guidance or Self-development? - Exploration on Development motive force of the Private Economy in Sixty years of New China. Social Science Front (9) : 22-27.
- [9]Acemoglu, Egorov, Sonin, 2015. Political Economy in a Changing World. Journal of Political Economy (5) :1038 -1086.
- [10]Geng Chengxuan, 2013.Optimization and Innovation of Government Behavior in the Evolution of Private Economy System. Chinese Public Administration 2013 (5) : 65-68.
- [11]Deng Hongtu, 2004.Institutional Evolution in Transitional China in terms of Private Enterprise. Social Sciences in China 2004 (5) : 130-140.
- [12]Yang Tianyu, 2003.Research on Institutional Barriers to the Development of China's Private Economy. Reform (6) : 29-33.
- [13]Cheng Junjie, 2016.Institution Evolution, Entrepreneurship and the Development of Private Economy. Economic Management 38 (8) : 39-54.

- [14]Hansen, B, 1999.Threshold Effects in Non-Dynamic Panels: Estimation, Testing, and Inference. *Journal of Econometrics*93(2):345-368.
- [15]Fan Gang ,Wang Xiaolu, Zhu Hengpeng, 2011.NERI INDEX of Marketization of China's Provinces 2011 Report. Economic Science Press, Beijing, 3-8.
- [16]Wang Xiaolu, Fan Gang, Yu Jingwen, 2017.Marketization Index of China's Provinces: NERI REPORT 2016.Social Sciences Academic Press, Beijing, 1-6.
- [17]Han Yonghui, Huang Liangxiong, Wang Xianbin, 2017.Do Industrial Policies Promote Industrial Structure Upgrading? Theory and Evidence from China's Development-oriented Local Government. *Economic Research Journal* (8) : 33-48
- [18]Caner M.and B.E.Hansen, 2004.Instrumental Variable Estimation of a Threshold Mode. *Econometric Theory*20(5):813-843.
- [19]Zhang Weiyong, Sheng Bin, 2004.On Entrepreneurs: the King of Economic Growth. SDX Joint Publishing Company,Shanghai, 90-99.
- [20]Huang H.C.and S.C.Lin, 2009.Non-linear Finance-growth Nexus:A Threshold with Instrumental Variable Approach.*Economics of Transition*17 (3) : 439-466.
- [21]Jia Hongying, Hu Xianzhi, 2006.Make Innovations in Local Government Management and Promote the Development of the Private Economy. *Chinese Public Administration* (7) : 104-106.
- [22]Liu Xianwei, Wen Fengang, 2018.Difficulties and Strategies of Promoting the High-quality Development of Private Economy in the New Era. *Reform* (9) : 5-14.
- [23]Guo Jingsheng, 2019.High Quality Development of Private Economy: Value, Follow, Opportunity and Path. *On Economic Problems* (3) : 8-16.