

Speed up the Reorganization and Adjustment of Hollow Villages, Help Implement the Rural Revitalization Strategy

Zhimeng Zhu^{1, a}, Libing Tang^{2, b}, Chang'e Zhao^{3, c}, Yan-xia Liu^{4, d}

^ae-mail: homeneau@163.com, ^be-mail: tanglibing592@126.com, ^ce-mail: azcejy@163.com, ^de-mail: liuyanxia_2001@163.com

¹ Heilongjiang Academy of Agricultural Sciences; Northeast Agricultural University, Harbin, PR China

² School of Economics and Management, Heilongjiang Bayi Agricultural University, Daqing, PR China

³ School of Economics and Management, Northeast Agricultural University, Harbin, PR China

⁴ Institute of Remote Sensing and Information, Heilongjiang Academy of Agricultural Sciences, Harbin, PR China

Abstract: The root cause of rural hollowing is the hollowing of rural industries and the inability to retain all kinds of talents and young labor. The key to rural revitalization is to concentrate resources, strengthen guarantees, and implement specific policies. The rural population density in our province is low, and the distribution of villages is relatively scattered, making it impossible to share factor resources. It is difficult for production factors such as capital, land, technology, and labor to achieve economies of scale, leading to the failure of rural industries to thrive. By constructing an evaluation index system for the hollowing of rural industries, this paper uses principal component analysis to comprehensively evaluate the expansion of rural industries, diversified industrial structure, and industrial upgrading and transformation in Heilongjiang Province, finds the main factors affecting rural hollowing. The countermeasures and suggestions for the reorganization and adjustment of villages are related to the development of rural revitalization and agricultural and rural modernization in Heilongjiang Province. Effectively cracking the hollowing out of the countryside is related to rural revitalization and agricultural and rural modernization. Speeding up the reorganization and adjustment of hollow villages is conducive to focusing on core production factors, improving resource utilization, developing rural industries, integrating rural resources, promoting rural infrastructure construction, and assisting the implementation of rural revitalization strategies.

Keywords: rural hollowing; hollow village; reorganization and adjustment; rural revitalization

1 Introduction

Implementing the rural revitalization strategy is a significant decision and deployment made by the 19th National Congress of the Communist Party of China. At the historical juncture of marching towards the second centenary goal, consolidating and expanding poverty alleviation results, comprehensively promoting rural revitalization. Accelerating the modernization of

agriculture and rural areas is a significant issue related to the overall situation that requires the whole party to attach great importance to ^[1]. It is also a fundamental measure for Heilongjiang Province to implement the spirit of General Secretary Jinping's inspection of Heilongjiang's important speech and instructions, accelerate the leap from a central agricultural province to a solid agricultural province, and strive to be the vanguard of agricultural modernization.

Farming is the state of the country. The 2021 Central Rural Work Conference emphasized that the depth, breadth, and difficulty of the rural revitalization strategy are no less than that of poverty alleviation. It is necessary to strengthen the top-level design, use more effective measures and gather more powerful forces to promote rural areas ^[2]. The key to revitalization is to concentrate resources, strengthen guarantees, and implement specific policies. The hollowing out of rural industries has led to the hollowing out of rural areas. The outflow of the rural population in our province is severe. The outflow population in most villages has reached more than 50% of the registered population, and some even reached 70% or 80%. The proportion of the resident population has been dramatically reduced, and the population density is low. Moreover, the distribution of villages is relatively scattered, resulting in the inability to share factor resources. It is difficult for production factors such as capital, land, and technology to achieve scale benefits. At the same time, the over-scattering of villages also causes an increase in the cost of governance of rural human settlements. The hollowing out of rural areas makes a large number of factor resources are in an idle state, such as abandonment of land, rural houses, and homesteads. This manifests a material form in social and economic development and a sign of the spatial form of rural internal recession and extensive external development. Therefore, whether from the perspective of the intensive use of rural land or the rationality of the government's public product supply, take the opportunity of the relocation and adjustment of hollow villages to implement precise measures to improve the province's core production factors to support rural revitalization. Weaknesses in the "agriculture" field and ensuring the realization of an all-around well-off society on schedule play an essential role in promoting.

2 The current situation and comprehensive evaluation of the hollowing out of rural industries in Heilongjiang

2.1 Index system construction

The hollowing out of rural industries is common in various cities in Heilongjiang. Based on the principles of establishing an industrial development evaluation index system, this article selects 13 indicators to construct Heilongjiang Province from three aspects: the number of rural market entities, the proportion of rural industrial structure, and the development of new rural industries. The evaluation index system for the development level of rural industries (the specific index system is shown in Table 1) comprehensively evaluates 13 cities in Heilongjiang Province.

Table 1: Evaluation Index System of Heilongjiang Rural Industrial Development Level

First level indicator	Secondary indicators	Secondary indicators	Unit
Degree of hollowing out of rural industries	Rural market entities	X_1 : Township enterprise	Individual
		X_2 : Township Industrial Enterprise	Individual

	X_3 : Commodity market	Individual
	X_4 : Large-scale agricultural operators	Individual
	X_5 : Number of agricultural business units	Individual
	X_6 : Number of rural agricultural business units	Individual
Rural industrial structure	X_7 : Proportion of large-scale agricultural business households engaged in non-agricultural industry	%
	X_8 : Proportion of employees engaged in non-agricultural industries	%
New Rural Industry	X_9 : Proportion of agricultural products sold through e-commerce	%
	X_{10} : Proportion of developing new business activities	%
	X_{11} : Proportion of villages with general stores or supermarkets over 50 square meters	%
	X_{12} : Proportion of villages with tourism reception services	%
	X_{13} : Proportion of villages with licensed restaurants	%

2.2 Data source

Relying on the third national agricultural census data of Heilongjiang Province and the field survey data of the research team, the principal component analysis method is used to comprehensively evaluate the hollowing status of rural industries in Heilongjiang Province, and provide a scientific basis for exploring and cracking the hollowing of rural industries in Heilongjiang.

2.3 Measurement process based on principal component analysis method

1) Standardization of index values

Indicators can be divided into two types: one is an indicator with a positive effect, the larger the value of this type of indicator, the better the performance of the rural industry reflected; the other is an indicator with a negative effect, and the value of this type of indicator is the smaller the value, the more beneficial it is to the development of rural industries. In order to prevent the calculation results from being affected by the different dimensions of the variables and make the data comparable, the original data must be non-dimensionalized. In this study, the threshold method will be used to non-dimensionalize the original data. The formula is:

$$x_i^* = \frac{x_i - \min x_i}{\max x_i - \min x_i}, \text{ When } x_i \text{ is a positive indicator.} \quad (1)$$

$$x_i^* = \frac{\min x_i - x_i}{\max x_i - \min x_i}, \text{ When } x_i \text{ is a negative index.} \quad (2)$$

Where x_i is the original data of the i index: $\max x_i$ is the maximum minimum value of the i index: $\min x_i$ is the maximum value of the i index,

The matrix after indexing the raw data of the indicator is:

$$X^* = \begin{bmatrix} x_{11} & x_{12} & \cdots & x_{1p} \\ x_{21} & x_{22} & \cdots & x_{2p} \\ \cdots & \cdots & \cdots & \cdots \\ x_{n1} & x_{n2} & \cdots & x_{np} \end{bmatrix}$$

2) Calculate the sample correlation coefficient matrix

The correlation coefficient matrix R is calculated from the standardized data of X , and formula is:

$$R = \begin{bmatrix} r_{11} & r_{12} & \cdots & r_{1p} \\ r_{21} & r_{22} & \cdots & r_{2p} \\ \cdots & \cdots & \cdots & \cdots \\ r_{n1} & r_{n2} & \cdots & r_{np} \end{bmatrix}$$

$$\text{In } r_{ij} = \frac{\sum_{k=1}^p (x_{ik} - \bar{x}_i)(x_{jk} - \bar{x}_j)}{\sqrt{\sum_{k=1}^p (x_{ik} - \bar{x}_i)^2 \sum_{k=1}^p (x_{jk} - \bar{x}_j)^2}} . \quad (3)$$

3) Calculate the eigenform and eigenvector of R

Solve the characteristic equation $|\lambda I - R| = 0$, find the characteristic formula λ_i ($i = 1, 2, 3, \dots, p$), which will be sorted by size, even if $\lambda_1 \geq \lambda_2 \geq \dots \geq \lambda_p \geq 0$.

Then, obtain the eigenvectors α_i ($i = 1, 2, 3, \dots, p$) corresponding to the characteristic formula λ_i respectively, where $\|\alpha_i\| = 1$, that is, $\sum_{j=1}^p a_{ij}^2 = 1$, where a_{ij}^2 represents the j th component of the vector α_i .

4) Calculate the contribution rate of the principal component and the cumulative contribution rate

Contribution rate of principal component z_i :

$$g_i = \frac{\lambda_i}{\sum_{k=1}^p \lambda_k} (i = 1, 2, 3, \dots, p) \quad (4)$$

Cumulative contribution rate:

$$G_m = \frac{\sum_{k=1}^m \lambda_k}{\sum_{k=1}^p \lambda_k} (m = 1, 2, 3, \dots, p) \quad (5)$$

5) Select the principal component

The greater the value of the contribution rate of the principal component, the stronger the generalization ability of the principal component for each index. Generally, the first and the first eigenvalues corresponding to the eigenvalues $\lambda_1, \lambda_2, \dots, \lambda_k$ whose cumulative contribution rate reaches 85% or more are extracted. Two, ..., the k -th component. And it is required that the characteristic root of the extracted principal component is greater than or equal to 1. When the characteristic root is less than 1, it can no longer be selected as the principal component, because the interpretation power of the principal component is not as strong as when the original variable is directly used.

2.4 Comprehensive evaluation and analysis of the hollowing out of rural industries in Heilongjiang cities and counties

According to the principle of principal component analysis method, if the coefficient of the principal component factor in a certain area is positive, it means that the development level of

the factor is above the average level of the province's rural areas. The higher the coefficient, the better the development level of the factor in the province. For example, the development of rural industries in Harbin is better; on the contrary, a negative coefficient means that it is lower than the average line of rural development in the province. The lower the coefficient, the worse the relative development level. For example, the development of rural industries in Hegang City is poor. Based on this, we analyze the coefficients and related rankings of the four aspects of industrial scale expansion, diversified industrial structure, industrial upgrading and transformation, and comprehensive evaluation in the cities and counties of Heilongjiang Province.

Table 2: Comprehensive evaluation of the development of rural industries in prefecture-level cities in Heilongjiang Province

Area	Scale up		Multiple structure		Upgrade and transformation		Overview	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Harbin City	7.61	1	0.60	2	0.53	2	4.45	1
Qiqihar City	3.52	2	-0.26	8	-0.46	10	1.79	2
Suihua City	3.23	3	-0.05	6	-0.50	11	1.69	3
Mudanjiang City	1.65	4	0.11	3	0.05	4	0.95	4
Daqing City	0.86	6	-0.33	9	0.71	1	0.46	5
Jiamusi City	1.13	5	-0.48	13	-0.59	12	0.39	6
Heihe City	0.83	7	-0.05	5	-1.04	13	0.30	7
Yichun City	0.30	9	-0.05	4	-0.08	6	0.14	8
Jixi City	0.43	8	-0.38	12	-0.15	7	0.10	9
Daxinganling area	-0.11	13	0.60	1	-0.39	9	0.07	10
Shuangyashan City	0.25	10	-0.34	10	0.16	3	0.05	11
Qitaihe City	-0.02	11	-0.38	11	-0.08	5	-0.14	12
Hegang City	-0.11	12	-0.25	7	-0.30	8	-0.18	13

Note: The score value retains 2 small-endian digits

3 Specific measures for speeding up the withdrawal and merging of Hollow Village

3.1 Speed up the relocation and adjustment of hollow villages to promote the integration and effective use of rural resources

Hollow village governance is an essential link in the implementation of the rural revitalization strategy. Promoting the governance of Hollow Village has also become the focus of the academic circles and government departments. Through investigations inside and outside the

province, it is found that the "hollowing of the countryside" is inevitable in urbanization ^[3], especially the hollowing of the northern countryside has become an irreversible fact. In recent years, local government departments have realized the integration of resources of all parties and promoted the revitalization of villages by speeding up the removal of villages and the adjustment of the size of administrative villages. For example, Fuyu County vigorously promoted the renovation of Hollow Village and carried out the overall demolition of Hollow Village and the relocation of villages. The current demolition rate has reached more than 90%, extensively promoting the intensive use of land and improving the rural living environment. The Heilongjiang Provincial Department of Housing and Urban-Rural Development has already proposed in the "Outline of the Heilongjiang Province Removal of Villages and Villages Planning" that 24,000 towns and villages will be removed step by step by 2025, and the size of the relocation will reach about 2/3. Therefore, the steady and orderly promotion of the relocation and adjustment of hollow villages according to different village conditions has become an urgent problem to be solved. The specific countermeasures are as follows:

The first is the rational planning of the type of village removal and living together. Different countermeasures can be adopted according to the distance between existing hollow villages and towns. Suburban hollow villages choose the mode of withdrawing villages and entering cities. In contrast, hollow villages far away from towns can choose to merge villages according to the principles of similar geography, similar folk customs, and the same industry. To further improve the ability of the region is to gather production factors. The second is to clarify the way to move villages and live together: Firstly, we should increase publicity and guidance to increase villagers' understanding and recognition of relocating villages and living together. Secondly, relocating villages and living together should be organically combined with adjusting the regional industrial layout, focusing on land transfer, non-agricultural employment, and the cultivation of new occupational agriculture. "Industry + community" and improving the quality of life of rural residents, systematic planning and scientific design of the form of relocation and living together to ensure that farmers benefit. Finally, optimize the allocation of resources. Promote the effective use of idle assets and collective assets in the original hollow village. Consider using village collective idle assets to auction, sublease, or cooperative development to revitalize resources further to offset village-level debts and increase village-level "hematopoiesis" functions. Thirdly, improve the policy guarantee mechanism for removing villages and living together. On the one hand, we should establish a leadership work mechanism. A responsibility implementation mechanism with county-level leading cadres and cadres in the village should be considered to promote the smooth development of the co-existence of villages and villages in Hollow Village. The follow-up guidance for the cohabitation of the villages in the hollow villages can be combined. A particular industry support fund can be set up to focus on the rural revitalization industry projects in the newly merged villages. For example, Zhejiang Jinhua issued the "Several Opinions on Promoting the Follow-up and Integration of Administrative Village Scale. Adjustment and Promoting the Construction of Villages". It has made precise requirements for the construction, development orientation, and operating mechanism of new villages built with villages.

3.2 Focus on core production factors to help implement the rural revitalization strategy

First of all, it is necessary to revitalize rural land resources as an effective way to solve the insufficient investment in rural revitalization. As the core resource for rural revitalization, the

land is the most basic production factor in the current rural areas. Much practice shows that the key to revitalizing rural land resources lies in deepening the reform of the rural land system. For example, coastal provinces such as Zhejiang and Jiangsu are actively exploring innovative ways of land transfer through land share cooperation, seasonal land transfer, and contiguous land transfer and development. Hebei Province expands the "three-rights separation" to allow farmers to honestly "sit on the land to collect money". In the field of application, we will carry out pilot projects for the reform. the "three-rights separation" of rural contracted land and homesteads guides new business entities in various regions to carry out large-scale operations. It promotes the development of innovative and entrepreneurial groups returning to the countryside to develop new rural industries and new business formats. Most provinces have successively started. The pilot experience and demonstration promotion of land right confirmation, land trusteeship, and contracted land management suitable mortgage loans have been carried out. These are useful references for our province to improve land policies and guide land production factors to release development dividends in the future continuously.

Secondly, it is necessary to improve the mechanism of returning the rural population to the village as the key to solving the workforce shortage for rural revitalization. The hollowing out of the industry has made it difficult for farmers' production potential to reach their due level, resulting in idle rural labor and the inability to increase and accumulate rural capital ^[4]. The rural population is the mainstay of rural revitalization, which affects all production factors and should be built. The rural population returning to the village mechanism of "introducing and returning from the outside" is used to attract the rural population to return. Specifically: the first is to develop characteristic industries that enrich the people in rural areas, expand rural employment space and increase farmers' income channels, and reduce the proportion of farmers' outflow. The second is to start with modern agricultural technology, new agricultural management methods, and the inheritance of black soil culture to cultivate new occupations New-type professional farmers with deep skills and local feelings will activate the stock of rural labor. Third, preferential policies are used to attract various types of talents to return to rural areas for entrepreneurship and innovation and coordinate the management of agricultural science and technology talents, agricultural innovation and entrepreneurial talents, rural professionals, and rural native talents, New-type professional farmers, and other five rural talent teams to improve the level of rural human capital; fourth, based on infrastructure construction, improve the quality of rural public services, so that local urban and rural residents enjoy the same treatment and welfare, and create a good Retention environment.

3.3 Weaknesses in benchmarking issues to ensure a comprehensive well-off society as scheduled

2020 is the final year for building a well-off society in all respects and a pivotal year for implementing the rural revitalization strategy. For this reason, the 2019 Central Rural Work Conference made a systematic deployment on how to make up for the shortcomings in the well-off "three rural" areas. It is clearly stated that it is necessary to increase rural infrastructure construction, improve the level of rural water supply, solidly do an excellent job in improving rural human settlements, improve the quality of rural education. Strengthen rural primary medical and health services, strengthen rural social security, improve rural public cultural services, and governance Eight critical tasks include outstanding problems in the rural ecological environment. By the mission-oriented requirements, our province should combine

the province's conditions and efforts to prioritize the allocation of element resources to the "agriculture, rural areas and farmers" shortcomings. The relevant provincial departments, prefectures, and cities must issue specific guidance and cohesive policies to ensure that the ideas and actions are in place. Benchmarking and implementation are effective.

In addition, it is necessary to pay attention to the differences in the development of different rural areas, clarify the functions, positioning of different types of rural areas for ration guide and grasp the development trend of rural revitalization. Then pay attention to the characteristics of rural agriculture development becoming more and more specialized and new, and accurately find an Entry point for countermeasures. Take Daqing's implementation of the rural revitalization strategy as an example. Daqing's villages are dominated by suburban villages, with obvious ecological advantages and the regional characteristics and resource endowment characteristics for the development of suburban agriculture. Therefore, the overall requirements of the "Twenty words" policy put forward around the national rural revitalization strategy: First, in terms of industrial prosperity, the primary purpose of the deep integration of urban and rural primary, secondary and tertiary industries should be the main purpose of accelerating the structural reform of the agricultural supply side; second, ecologically appropriate In terms of housing, the development concept of "green water and green mountains are golden mountains and silver mountains" should be deeply planted ^[5], and the improvement of rural human settlements and the construction of beautiful villages should be strengthened; The core values are the guidance to develop the rural cultural industry; fourth, in terms of effective governance, grassroots democracy and the rule of law should be strengthened, villagers' self-government practices should be deepened, and a modern rural social governance system that integrates the party committee, government, society, the public, and the rule of law should be improved; Fifth, in terms of living affluent, we should strengthen policy support and market guidance, continue to promote comprehensive poverty alleviation measures such as industry, employment, finance, and health, win the battle against poverty, and allow farmers to share more of the benefits of the modern economic system.

4 Conclusion

The root cause of rural hollowing is the hollowing of rural industries. Through principal component analysis to measure the development level of rural industries in various cities in Heilongjiang Province, it can be seen that the scale of rural industries has expanded, the structure of rural industries is diversified, and the development of new rural industries and new formats is Among the main contributing factors supporting the development of rural industries in Heilongjiang, the scale of rural industries has contributed the most. To effectively solve the problem of the hollowing out of rural industries, it is necessary to accelerate the reorganization and adjustment of hollow villages, optimize and integrate land, capital, and talents and other factors, vigorously develop rural industries, expand the scale of rural industries, and consolidate the effective connection between the results of poverty alleviation and rural revitalization, and help Heilongjiang. The province's villages were revitalized in an all-round way.

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