

An Empirical Study on Coordination Degree Between Land Urbanization and Population Urbanization in Qinghai Province Based on High-quality Development

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ABSTRACT

It is an important strategy to realize the coordinated development of land urbanization and population urbanization in Qinghai Province. Based on the analysis of the coordinated development of land urbanization and population urbanization in Qinghai Province and two cities in the province, this paper determines the evaluation index system from the evaluation level of population and land by building a model and using entropy method, and reveals that land urbanization in Qinghai Province lags behind population urbanization, and it is urgent to realize the coordinated development of the two.

Keywords: *land urbanization, population urbanization, coordination degree, entropy method*

1. PREFACE

Under the strategic background that urbanization development will shift to scale expansion and quality improvement, the situation that population urbanization lags behind land urbanization is particularly prominent.^[1]In this regard, the government comprehensively implements the rural revitalization strategy, promotes regional coordinated development and new urbanization at a higher level, and builds a high-quality development of land spatial layout and support system.^[2]Qinghai Province is also in a critical period of accelerating the development of new urbanization.^[3]Its economic development has an important impact on the whole western region.^[4]

2. BASIC SURVEY OF LAND URBANIZATION AND POPULATION URBANIZATION IN QINGHAI PROVINCE

2.1 The status quo of population urbanization and land urbanization in Qinghai province

2.1.1 population urbanization in Qinghai province

In recent years, the urbanization level of Qinghai Province has gradually improved, and the urbanization pattern has basically taken shape. By the end of 2019, the province's resident population had been rising continuously, increasing by 45,900 compared with the previous year, of which the urban population accounted for 55.55% and the minority population accounted for 47.71%. According to the statistical yearbook of Qinghai Province, 1949-1955 was the initial stage of urbanization, and the urbanization rate at the end of the stage was 7%; From 1956 to 1977, it was an unconventional development stage of urbanization, the urbanization rate increased by 108.57%. From 1978 to 2000, it was a rapid development stage of urbanization, and the urbanization rate increased by 138.15%. 2000-2019 is the accelerated development stage of urbanization, and the urbanization

rate growth rate is 59.62%. Since the implementation of the western development strategy in Qinghai Province, the population industrial structure has been continuously optimized. From 2000 to 2019, the number of employees in the primary industry in Qinghai Province generally showed a downward trend, while the number of employees in the secondary and tertiary industries increased dynamically year by year. In 2019, the regional GDP of the whole province increased by 1.5% over the previous year. The proportion of industrial employment structure changed from 44.3: 20.6: 35.1 in 2007 to 52.7: 33.67: 77.23 in 2019. According to the S-curve theory, the urbanization level of Qinghai Province is generally in the middle stage of urbanization.

2.1.2 land urbanization in Qinghai province

The utilization and distribution of urban land resources in Qinghai Province is unbalanced internally, and the scale distribution of urban land is unbalanced, which is manifested by the great difference in construction between cities, prefectures and built-up areas. The unreasonable land use structure is mainly manifested in the low green coverage rate of built-up areas in Qinghai Province and the imbalance of per capita urban road area. From 2016 to 2019, the green coverage rate of built-up areas in Qinghai Province is generally rising, but the rising speed is slow.

2.2 Land Urbanization and Population Urbanization in Qinghai Province

2.2.1 distribution of urban areas

Due to the differences in the natural geographical environment, natural resource endowments and economic and social development in different regions of the province, the urbanization level of different regions is quite different, and the difference in the number and distribution of urban population is significant. From the perspective of urban area layout, as of 2019, there are 2 cities above prefecture level and 4 county-level cities in the province, with a total of 406 townships. Xining City, Haidong City and Haixi Prefecture accounted for more than half of the total number of townships in the province.

2.2.2 urban population distribution

By 2019, the urban population of Qinghai Province increased by 0.76% compared with the previous year, among which Xining increased by 15.11%, Haidong increased by 13,000, Haixi increased by 0.4%, Hainan increased by 0.17 million, Haibei increased by 0.06 million, Huangnan increased by 1.23%, and Yushu increased by 0.59 million. Among them, the urban population of Xining City, Haidong Prefecture and Haixi Prefecture accounted for 80.8% of the province's urban population. [5] It can be seen from Figure 3.6 that since

2000, the urbanization level of Qinghai Province has steadily increased, the proportion of built-up areas has increased year by year, and the green coverage rate of built-up areas has been continuously improved. Under the influence of the policy of withdrawing land and setting up a city in Haidong City in 2013, except Xining and Haixi, the built-up area first exceeded 45 square kilometers in other cities.

3. AN EMPIRICAL ANALYSIS OF THE COORDINATION DEGREE BETWEEN LAND URBANIZATION AND POPULATION URBANIZATION IN QINGHAI PROVINCE

3.1 Build an evaluation index system

There are 2 target layers and 15 index layers in this index system, as shown in Table 1:

Table 1. Index System

Target layer	Factor evaluation layer	Index layer	weight	
Population urbanization	industrial structure	Proportion of secondary and tertiary production to GDP	P1	
		Proportion of urban population	P2	
	Employment situation of workers	Proportion of employed population in secondary and tertiary industries	P3	
		registered urban unemployment rate	P4	
		Number of college students per 10,000 people	P5	
	Land urbanization	population quality	Engel coefficient of urban residents	P6
			urban per capita disposable income	P7
quality of life		Number of health technicians per ten thousand people	P8	
Land scale	Land scale	Total retail sales of urban social consumer goods Built-up area	P9	
		Built-up area	L1	
		Per capita park green area	L2	

Land use structure	Green coverage rate of built-up area	L3
	Urban road area per capita	L4
Land input level	Average local financial input	L5
Land output level	Average local fiscal revenue	L6

3.2 Overall Evaluation of Coordinated Development of Land Urbanization and Population Urbanization in Qinghai Province

There are mainly the following steps:

(1)Standardized data processing: Because the actual index values are different in dimensions, in order to eliminate the influence of different dimensions on the evaluation results, it is necessary to standardize each index data.

(2) Determine the information entropy value:

$$e_j = -k \sum_{i=1}^m P_{ij} \ln P_{ij} \quad (1)$$

(3)Calculate the weight of each index

$$P_j = \frac{d_j}{\sum_{j=1}^m d_j} \quad (2)$$

(4)Calculation of land urbanization index and population urbanization index.

$$P(a) = \sum_{i=1}^m P_i X_i^{t^{\alpha}}$$

$$L(b) = \sum_{i=1}^m L_i Y_i^{t^{\beta}} \quad (3)$$

(5)Calculate the degree of development and coordination

$$T = \alpha P(a) + \beta L(b) \quad (4)$$

(6)Calculate the degree of coordinated development

3.3 Main conclusions

Through the above calculation steps, taking Qinghai Province as an example, the specific results are shown in Figure 1:

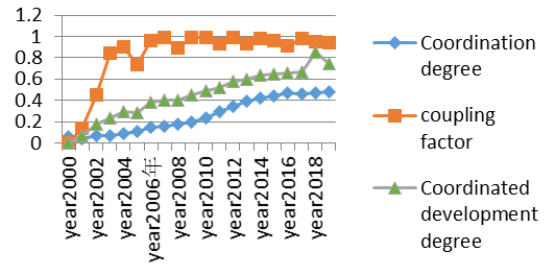


Figure 1 Change curve of Qinghai Province from 2000 to 2019

As shown in the figure, from 2000 to 2019, the values of L(b) and P(a) in Qinghai Province showed a dynamic upward trend, and the coordinated development degree of land urbanization and population urbanization in this period also gradually increased. Among them, from 2000 to 2012, the coordinated development level of population urbanization and land urbanization was very low, which was in a state of imbalance (2000-2005) and transition (2006-2012). During this period, the land urbanization index was lower than the population urbanization index, and the development degree T was always below 0.4 (0.06-0.34). The overall development level of urbanization in Qinghai Province was in a backward stage and coordinated development since 2013, the coordinated development level of population urbanization and land urbanization has been greatly improved, from 0.00 in 2000 to 0.69 in 2019. Across the coordination interval, the subtype of coordinated development belongs to the primary coordinated development category.

To sum up, through determining the evaluation index system of urbanization coordination in Qinghai Province from 2000 to 2019, the empirical analysis shows that both L(b) and P(a) in Qinghai Province are in a dynamic upward trend from 2000 to 2019, and the coordinated development degree D of population urbanization and land urbanization is steadily increasing. Among them, the degree of coordinated development in 2000-2005 was very low, which was in disorder (2000-2005) and transitional state (2006-2012), which was due to the fact that L(b) was obviously lower than P(a) and T was always below 0.4 (0.06-0.34), which further led to the low level of coordinated development. Since 2015, the coordinated development level of population urbanization and land urbanization has been improved from 0.00 in 2000 to 0.69 in 2019.

4. CONCLUSION

There are regional spatial differences in the level of urban development in Qinghai Province, the government can adjust the industrial structure, make the industrial structure progress towards the two goals of rationalization and upgrading, and give prominence to the development of modern service industry. Secondly, it is necessary to highlight the characteristics of cities, strengthen the leading role of central cities in regional economy, and

strengthen the leading role of central cities in regional economy, so as to drive the development of other cities in the radiation area.

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AUTHORS' CONTRIBUTIONS

In recent years, scholars at home and abroad have put forward different opinions on urbanization, but there are few researches on urbanization development in Qinghai Province, especially on the coordinated development of land urbanization and population urbanization, and the suggestions put forward are not concrete enough. Therefore, this paper quantitatively calculates the coordinated development degree of land urbanization and population urbanization in Qinghai Province from 2000 to 2019, and determines the development stage of land urbanization and population urbanization in the whole region of Qinghai Province; On the basis of empirical research using entropy method, the degree of each factor affecting the coordinated development of land urbanization and population urbanization is determined, and corresponding policy suggestions can be put forward.

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