

Study on the Level of Common Prosperity and its Evolution

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Abstract

Common prosperity is the essential requirement of socialism with Chinese characteristics, and the only way and key goal for realizing Chinese-style modernization. Promoting common prosperity is an inevitable trend under the leadership of our Party after completing the building of a moderately prosperous society in all respects. In this process, we need to make the pie bigger, divide the pie well, actively address the gap between different regions, urban and rural areas, and income gaps, make solid progress in common prosperity, resolutely prevent polarization, and ensure that the fruits of modernization are shared by all the people. Referring to the modernization requirements of the party's 20th report, the scientific connotation of common prosperity and a large number of literature, this paper constructs an indicator system of common prosperity based on the three basic dimensions of development, sharing and sustainability, and analyzes the realization level of common prosperity. In this paper, China's provincial panel data from 2002 to 2021 is selected to build an indicator system of provincial common prosperity. The missing value data is processed by linear interpolation method in data processing, and the improved efficacy coefficient method is used to outline the data. The effect is good and effectively distinguishes the relative differences of indicators among provinces. In the calculation of indicator weights, the objective entropy method is used to avoid the bias caused by human factors. Select the linear weighting method when establishing the provincial common prosperity indicator and the sub-indicator, and make statistical analysis and visual display of the measurement results in time and space from the whole country, regions and various provinces. Later, the barrier degree model was used to calculate the barrier degree of each evaluation indicator in the comprehensive evaluation, and the key factors restricting the further development of the level of common prosperity in all provinces were found. The conclusion of this paper is as follows: 1) The level of national common prosperity indicator shows a good and fluctuation trend in the time dimension. 2) The level of the national sharing indicator and the sustainability indicator show a trend of volatility. 3) There are regional differences in the provincial common prosperity indicator level. 4) There are regional differences in the provincial common prosperity sub-indicator. 5) The main barriers to the common prosperity indicator are per capita disposable income, the urban registered unemployment rate, the coverage rate of community service agencies, and GDP growth. And give relevant suggestions: 1) Focus on improving the level of sharing indicator and sustainability indicator. 2) Improve the local economic strength and narrow the gap of regional economic development level between regions. 3) Coordinate and comprehensive development, and narrow the regional differences in infrastructure and public services in rural areas. 4) Focus on strengthening investment in education and health care security.

Keywords

Provincial Common Prosperity Level; Barrier Degree Model; Efficacy Coefficient Method; Spatial and Temporal Evolution.

1. Introduction

1.1. Research Background

Common prosperity is the ultimate living standard of adequate food and clothing through hard work and mutual help, that is, the general prosperity on the basis of the elimination of polarization and poverty. It is one of the important contents of Deng Xiaoping's theory of building socialism with Chinese characteristics. China has a large number of people and a wide range of people. Common prosperity is not prosperity at the same time, but some people and some regions get rich first, help them get rich first, and gradually achieve common prosperity. Common prosperity is the essential regulation and goal of socialism, as well as the fundamental principle of Chinese socialism.

In recent years, the concept of common prosperity against the background of the great rejuvenation of the Chinese nation has been continuously developed, enriched and improved, which has become the essence and goal of socialism, and is one of the features of the theory of socialism with Chinese characteristics. Common prosperity is an important part of the people's needs for a better life. As the goal of a national development stage, common prosperity promotes the development of common prosperity by stages by improving the high-quality economic development and the development of social productivity. The concept of common prosperity was first produced in the field of economics. The thought of common prosperity put forward in the Communist Manifesto published by Marx in 1848 included two elements: "fair distribution", "eliminating the distribution gap" and the premise of highly developed productive forces. The party's 20th report in 2022 calls for common prosperity as one of the five features and essential requirements of Chinese-style modernization, and for the gradual realization of common prosperity for all the people, which is a step of substantive progress towards the goal of promoting common prosperity for all the people by 2035. General Secretary Xi Jinping also stressed in the Party's 20th Congress that "common prosperity is the essential requirement of socialism and the common aspiration of the people. We promote economic and social development, in the final analysis, is to achieve common prosperity for all." Nowadays, common prosperity with Chinese national conditions and socialism with characteristics is becoming the most important pigment to improve the picture of Chinese modernization, promoting China's economic society and people's life towards a new era of high-quality development, multi-faceted popularization and reasonable distribution.

1.2. Literature Review

In order to explore the development status of China's common prosperity and explore the realization degree of common prosperity from different space and time perspectives, many scholars try to design a relatively perfect evaluation system for China's common prosperity, so as to measure the common prosperity indicator and put forward targeted reference suggestions. However, after reading a number of relevant documents, it is found that the current domestic evaluation system of common prosperity has not yet formed a unified and widely recognized reference standard, and scholars from all sides express their opinions, and the evaluation system presents many and miscellaneous forms.

Li Ruisong et al. (2023) used the principal component analysis method to evaluate the common prosperity level of all provinces from five aspects: economic development, social development, income and consumption, cultural development and ecological environment[1]; Liu Yi et al. (2023) to build an evaluation indicator system of digital economy enabling common prosperity from the dimensions of social welfare, security and development[2]; Wang Jun et al. (2023) constructed an indicator system for the development level of common prosperity from the three dimensions of overall prosperity level, shared development degree and system guarantee[3]; Guo Tao et al. (2022) used the TOPSIS comprehensive evaluation method to

evaluate the common prosperity of the eight ethnic provinces and regions from the two dimensions of "prosperity" and "unity"[4]; Zhang Li et al. (2022) Based on the composite system model, established an evaluation system for the common prosperity of 23 cities and provinces and cities around the four elements of regional economic development, residents' income level and life, urban public service, and comprehensive social development[5]; Zhang Hailiang (2022) constructs the evaluation indicator system of common prosperity from the three dimensions of prosperity, sharing degree and sustainability, and uses the method of the entropy weight method to determine the weight of each indicator in the system[6].

To sum up, China has not yet formed a relatively unified and perfect evaluation system for the construction and development of common prosperity, and the quantitative research on common prosperity is not rich. However, these studies have accumulated rich experience for the evaluation and prediction of common prosperity, and played a positive role in the study of common prosperity.

This paper will take the realization degree of common prosperity and its influencing factors as the theme, explore the current development situation of common prosperity from multiple dimensions, and conduct the differentiation analysis of different regions from the perspective of key obstacle factors, in order to improve the current evaluation system of common prosperity in China.

2. Data and Models

2.1. Data Sources

In order to ensure the scientific and reliability of the data, this paper selects the panel data of the indicators of 31 provinces and autonomous regions from 2002 to 2021 in 20 years. The data are from the National Bureau of Statistics, EPS global statistical database, China Statistical Yearbook and the provincial statistical yearbooks published by local district government agencies. Some indicator data are missing in an acceptable degree, so the linear interpolation method has a good effect.

2.2. Establishment of Indicator System

After reading a lot of literature[7][8][9][10]To understand the connotation of common prosperity and refer to the indicator system of the evaluation method of common prosperity, this paper selects development, sharing and sustainability as the first level indicators. As an indicator system, China's common prosperity indicator should naturally be composed of multiple indicator levels.

(1) Wealth is the premise of achieving common prosperity. The object of common prosperity is all members of society, and common prosperity requires the convergence of development achievements among groups. Urban and rural areas and regions are the basic units of the society, and are the focus of the construction of common prosperity. They have complexity and diversity. The indicator system measures both the groups and the degree of common prosperity between regions. Therefore, the developmental first-level indicators should be composed of three second-level indicators: prosperity, group unity and regional unity.

(2) As the four basic connotations of shared development, sharing by all, joint construction and gradual sharing, it has naturally become the four two-level indicators under the first-level indicators of sharing.

(4) Sustainability refers to a process or state that can be maintained for a long time. High-quality development is the theme of China's economic and social development. Finance provides a guarantee for high-quality development and building common prosperity. Strengthening and innovating social governance can reduce social costs and help reduce and reduce social conflicts and crises. Comprehensive ecological reflection includes water

environment, atmospheric environment, soil environment, energy consumption and other aspects, which is the environmental guarantee for the sustainable development of the region. We measure the first-level indicators of sustainability from the four second-level indicators of high-quality development, finance, consolidation and ecology.

Table 1. indicator system table

Level 1 indicators	Secondary indicators	Level 3 indicators	Indicator direction
expansibility	Rich degree	X1 per capita disposable income in per capita GDP proportion	+
	Group common degree	X2 Several times difference of the minimum living allowance for urban and rural residents (urban / township)	-
		X3 Urban-rural income gap tyel indicator	-
		X4 per capita disposable income	+
	Regional commonality	X5 income difference between urban and rural residents (urban / township)	-
		X6 for the proportion of the urban population	+
Shared sex	Shared by the people	X7 disposable income ratio of urban and rural residents (township / urban)	-
		X8 consumption expenditure ratio of urban and rural residents (township / city)	-
	Comprehensive sharing	X9 The registered urban unemployment rate	-
		X10 urban workers' basic medical insurance year-end participation rate	+
		X11 the proportion of education fiscal expenditure in GDP	+
		X12 has health technicians per 10,000 people	+
		X13 park green area per capita	+
		X14 household garbage pollution-free treatment rate	+
		X15 has public libraries per person	+
	Co-construction and sharing	The X16 Internet penetration rate	+
		X17 is the proportion of employment in the total population	+
		The X18 workers' remuneration accounts for the share of GDP	+
	Progressive sharing	X19 town Engel coefficient	-
		X20 town Gini coefficient	-
		The X21 rural Engel coefficient	-
X22 Rural Gini coefficient		-	
sustainability	High-quality development	X23 GDP Growth rate	+
		Share of X24 R & D expenditure in GDP	+
		X25 the proportion of local fiscal expenditure on science and technology	+
		X26 domestic invention patent application authorization number	+
	finance	X27 per capita fiscal revenue	+
		X28 tax revenue ratio	+
	administer	X29 Total number of traffic accidents occurred	-
		The X30 ratio is the proportion of social donations in GDP	+
		X31 coverage of community service agencies	+
	organism's habits	X32 energy consumption per unit of GDP	-
		X33 forest coverage rate	+
		X34 harmless treatment capacity of domestic garbage	+

Each second-level indicator will be composed of several three-level indicators. The selection of three-level indicators should support the theoretical connotation of the second-level indicators to the one hand, and on the other hand, it should have data availability, especially to ensure the research needs and data quality in the time series dimension and regional section dimension.

According to the above principles, this paper sets a different number of three-level indicators under each developmental, shared and sustainable secondary indicators, with a total of 34 three-level indicators. It should be pointed out that there is a direct master-slave relationship between the three second-level indicators of universal sharing, joint construction and sharing, and gradual sharing and the three-level indicators, while there is still an implicit level between the second-level indicators of comprehensive sharing and the 15 three-level indicators. According to the connotation of comprehensive sharing, comprehensive sharing should include economy, politics, culture, society and ecology. Therefore, when selecting the three-level indicators of comprehensive sharing, we also choose from these five aspects. As shown in Table 1.

3. Establishment of Provincial Common Prosperity Level Indicator

3.1. Provincial Common Prosperity Level Measurement Methods

This paper takes 31 provincial administrative regions in China to measure the level of common prosperity of all provinces in China. To calculate the common wealth indicator first, it is necessary to unmeasure each indicator, use the entropy method to get the weight of each indicator, and then weight it according to the linear weighting method. The specific calculation steps of the provincial common wealth indicator are as follows:

Step 1: the indicator is dimensionless treatment. According to the improved efficacy coefficient method, all second-and third-level indicators are exponto the range of 40-100 to effectively distinguish the relative gap between provinces. The exponential methods of positive and inverse indicators are formula (1) and formula (2) respectively.

$$X_{ij} = 40 + 60 * \frac{X_{ij} - X_{ijmin}}{X_{ijmax} - X_{ijmin}} \quad (1)$$

$$X_{ij} = 40 + 60 * \frac{X_{ijmin} - X_{ij}}{X_{ijmax} - X_{ijmin}} \quad (2)$$

Where: i is the respective indicator, j is the respective province, x_{ij} is the real data of i indicator j province, the x_{ijmin} and x_{ijmax} , respectively, are the the minimum and maximum values of x_{ij} , and X_{ij} is the standardized data of i indicator j province.

Step 2: determine the indicator weight. The entropy weight method is used to determine the weight of each hierarchical indicator according to the data, that is, on the basis of data standardization, the information entropy value of the indicator is calculated by the entropy weight method, and the weight value is obtained. The relevant calculation formula is as follows:

$$E_{ij} = - \sum P(X_{ij}) \log(2, P(X_{ij})) \quad (3)$$

$$W_{ij} = \frac{1 - E_{ij}}{k - \sum E_{ij}} \tag{4}$$

Step 3: calculate the common wealth indicator. In this paper, the common wealth indicator (Common Prosperity , CP), see formula (5).

$$CP_j = \sum_{i=1}^{n=34} (X_{ij} \times w_{ij}) \tag{5}$$

3.2. Provincial Common Prosperity Level Indicator

1) The evolving trend of common prosperity in China

The data of 34 common prosperity indicators (three-level indicators) of 31 provinces and regions from 2002 to 2021 were linearly weighted to obtain the development indicator level, sharing indicator level, sustainability indicator level and common prosperity indicator of each province and region from 2002 to 2021. The level of national common wealth indicator is calculated with the average of the indicator of each province and visualized. The results are as follows:

Table 2. National average common wealth level and one-dimensional indicator scores

a particular year	Common Rich indicator	Developmental indicator	Sharing indicator	Sustainability indicator
2002	55.23	55.30	65.65	50.34
2003	50.53	55.70	58.47	46.09
2004	50.53	56.62	58.84	45.22
2005	52.26	58.61	59.93	46.13
2006	51.93	59.51	58.51	46.31
2007	55.44	60.38	64.49	48.35
2008	56.11	62.40	61.26	50.73
2009	52.81	63.35	57.22	46.54
2010	54.60	63.91	58.84	47.90
2011	53.06	64.49	58.72	46.23
2012	52.99	65.11	58.39	46.34
2013	53.85	65.98	58.20	47.80
2014	55.12	67.06	59.59	48.56
2015	54.06	68.69	59.20	46.78
2016	52.51	68.91	57.82	45.57
2017	52.28	68.99	60.03	46.12
2018	50.73	69.09	61.07	44.17
2019	51.06	70.22	60.77	45.42
2020	50.04	71.37	61.13	43.70
2021	50.88	72.45	61.95	44.39

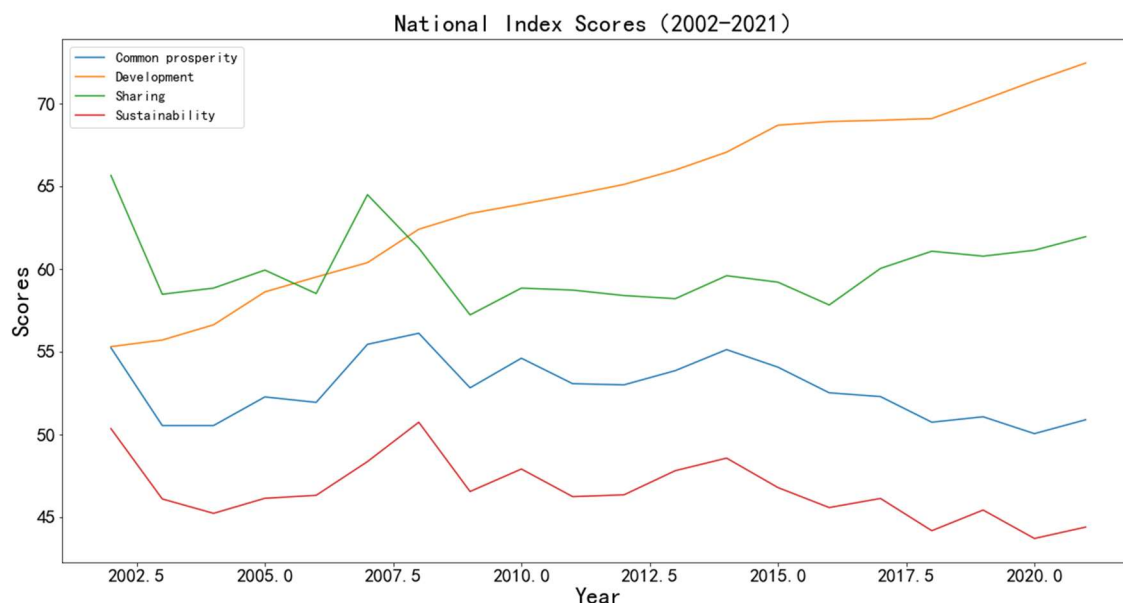


Figure 1. The development trend of each national indicator level from 2002 to 2021

According to Table 2 and Figure 1, the scores of the National Common Wealth indicator from 2002 to 2021 fluctuated between [50,60]. It is clear that since the 18th National Congress of the Communist Party of China, the state has given greater priority to gradually achieving common prosperity for all the people, so that the fruits of development will be shared by all the people in a more equitable way. However, if the common prosperity indicator is unstable and slow, there is great room for improvement in the level of common prosperity, and it is urgent to further improve the top-level design and supporting policies of common prosperity. From each sub-dimension, the national development degree indicator rose from 55.30 in 2002 to 72.45 in 2021, with an average annual growth rate of 1.55%. It can be seen that there is a large space for development improvement, and it is urgent to promote high-quality development as a solid foundation for common prosperity. The sharing indicator shows an upward trend, but the growth rate is relatively low, so it can be seen that narrowing the development gap between urban and rural areas and between regions is an arduous task in the process of promoting common prosperity. The sustainability indicator shows a downward trend of shock, which shows that it is difficult to improve the level of sustainable development.

2) The horizontal layout characteristics of provincial common prosperity

Table 3 lists the scores and rankings of common prosperity among the four major regions and provinces in 2003,2010 and 2021. By Excel tool, the rank of common wealth was divided into ABCD four gradients according to the quantile classification, with A being the higher level, B being the middle and upper level, C as the middle and lower level, and D as the lower level. The level of common prosperity in the four major regions of China shows a fluctuating trend. In 2021, the average value of common prosperity in the eastern, northeastern, central and western regions is 50.80,51.56,50.13 and 50.51 respectively. The level of common prosperity presents a gradually decreasing spatial layout in northeast, eastern, western and central China. From 2002 to 2021, the difference coefficient of the level of common prosperity in all regions shows a downward trend, which means that the gap of common prosperity within all regions is gradually narrowing.

From the classification results, in 2021, the proportion of the higher-level provinces in common prosperity in the eastern region is the largest, with 30% of the eastern provinces in this gradient, with Beijing, Tianjin and Hebei as the leading benchmarks; most of the provinces in the lower

level of common prosperity are located in the central region, and more than half of the provinces in the western regions are in this gradient.

Table 3. scores of common prosperity level among provinces in 2003,2010 and 2021

area	province	2003	2010	2021	2003-2010-2021 ranking change	Grade of affiliation (2021)
east	Beijing	56.69	57.48	53.26	1-6-2	A
	Tianjin	55.41	58.07	53.88	3-4-1	A
	Hebei	55.80	58.08	53.11	2-3-3	A
	Shanghai	51.89	55.93	51.37	10-9-15	B
	Jiangsu	46.73	54.29	50.36	31-18-19	C
	Zhejiang	47.39	54.77	50.49	28-15-17	C
	Fujian	47.16	51.76	48.41	29-28-29	D
	Shandong	48.08	51.20	47.65	25-30-31	D
	Guangdong	51.91	52.31	50.32	9-25-20	C
	Hainan	52.33	54.43	52.39	7-17-9	B
	mean	50.95	54.69	50.80		
	coefficient of variation	3.03	2.73	2.00		
northeast	Liaoning	50.76	58.56	52.69	16-1-8	A
	Jilin	50.82	57.49	51.55	15-5-14	B
	Heilongjiang	51.03	55.55	50.46	13-10-18	C
	mean	50.87	57.20	51.56		
		coefficient of variation	0.15	1.53	1.12	
central section	Shanxi	55.00	58.26	53.10	4-2-4	A
	Anhui	47.52	53.92	48.05	27-19-30	D
	Jiangxi	48.26	51.64	48.60	23-29-28	D
	Henan	48.21	50.56	48.66	24-31-27	D
	Hubei	49.22	51.80	48.74	20-27-26	D
	Hunan	50.97	52.00	48.86	14-26-25	D
	mean	49.69	54.35	50.13		
	coefficient of variation	2.36	2.77	1.87		
west	Nei Monggol	52.36	57.46	52.98	5-7-6	A
	Guangxi	52.33	52.84	51.82	6-22-13	B
	Chongqing	52.15	55.48	52.88	8-11-7	A
	Sichuan	51.62	56.22	53.01	11-8-5	A
	Guizhou	51.52	55.00	52.02	12-14-12	B
	Yunnan	50.01	55.07	52.19	17-13-10	B
	Xizang	49.39	54.67	52.08	18-16-11	B
	Shaanxi	48.80	55.28	50.52	22-12-16	C
	Gansu	49.11	53.67	49.71	21-20-21	C
	Qinghai	49.27	53.18	49.58	19-21-22	C
	Ningxia	47.05	52.66	49.38	30-24-23	C
	Xinjiang	47.53	52.83	49.01	26-23-24	D
	mean	49.76	54.1	50.51		
	coefficient of variation	1.91	2.06	1.69		

Note: Due to space limitations, the specific scores of other intermediate years will not be listed in detail

3.3. Visualization of Common Prosperity

1) Visualization of provincial and regional common prosperity

In order to have a deep understanding of the spatial and temporal characteristics of provincial common prosperity, this paper uses the pyechart module of Python in 2002,2010 and 2021 and visualized the thermal map, as shown in the figure:



Figure 2. Provincial common prosperity level visualization in 2003,2010 and 2021

The closer the color is to red indicates the higher the level of common wealth in the region, while the closer the color is to blue indicates the lower level of common wealth in the region, and the areas not included in the sample are shown in white. It can be seen that no matter which year, the level of common prosperity in the western and central China is weak, while the level of common prosperity in the eastern region and the northeast provinces is high.

2) Visualization of provincial classification indicators

Similarly, for the first-level indicator, the thermal maps of 2003,2010 and 2021 are drawn, as shown in Figure 3,4 and 5:



Figure 3. Visualization of provincial developmental level in 2003,2010 and 2021



Figure 4. Visualization of provincial sharing levels in 2003,2010 and 2021



Figure 5. visualization of sustainability levels in 2003,2010,2021

It is not difficult to find from the figure above that the development levels of different indicators in different regions in different historical times, among which the development level and sharing level show a fluctuating trend, and the sustainability level shows a fluctuating downward trend.

From the perspective of region, the level of regional development is high in the eastern and coastal cities, while low in the western and remote areas; most of the level of sharing is high in the western and eastern regions, and the level of sharing in the central cities is generally low; while the level of sustainable development is high in the northeast and western regions, while the level of coastal cities and remote cities is low. On the whole, the sub-indicator level of various common prosperity presents space-time differences.

4. Analysis of Influencing Factors

4.1. Introduction to Obstacle Model

The obstacle degree model can measure the obstacle degree of each evaluation indicator in the indicator system. By introducing this model, the core obstacle factors restricting the development of the common prosperity of all provinces are further found out on the basis of measuring the level of the common prosperity of all provinces. The model calculation formula (6) is as follows:

$$A_{ij} = \frac{B_{ij} \times W_{ijmin}}{B_{ij} \times W_{ij}} * 100\% \tag{6}$$

Where: $B_{ij} = 1 - X_{ij}$, X_{ij} is the standardized value, W_{ij} is the weight of the first hierarchical indicator, and A_{ij} is the obstacle of the single indicator to common indicator.

4.2. Analysis of Obstacle Factors

According to the formula, through the SPSS software, the obstacles corresponding to the three-level indicator system in 2021 are calculated, and the obstacle degree of the three-level indicator of each region is calculated as the average value of the indicator barrier degree of each province. In order to reflect the key problems facing the development of common prosperity, the top 3,8 and 6 main factors were selected in the developmental, shared and sustainable subsystems, respectively (see table).

At the developmental level, the material prosperity indicators reflecting economic development and per capita income, per capita disposable income, the income difference between urban and rural residents and the proportion of per capita disposable income in per capita GDP are the main obstacle factors, and these three indicators simultaneously restrict the common prosperity development of the four regions.

Table 4. Major barriers to the development of common prosperity in the four regions in 2021

Disorder factors	rankin g	east		northeast		central section		west	
		order numbe r	Disorde r degree (%)	order numbe r	Disorde r degree (%)	order numbe r	Disorde r degree (%)	order numbe r	Disorde r degree (%)
Hair open up nature	1	X ₄	32.36	X ₄	29.51	X ₄	29.56	X ₄	28.87
	2	X ₅	32.12	X ₅	29.29	X ₅	29.35	X ₅	28.66
	3	X ₁	2.49	X ₁	2.90	X ₁	3.09	X ₁	3.01
respect enjoy nature	1	X ₉	3.83	X ₉	5.54	X ₉	5.15	X ₉	5.53
	2	X ₈	3.01	X ₈	4.33	X ₈	4.23	X ₈	4.11
	3	X ₂₀	2.50	X ₂₀	2.80	X ₂₀	3.18	X ₂₀	3.02
	4	X ₁₂	1.72	X ₁₀	2.45	X ₁₂	1.41	X ₁₀	2.27
	5	X ₁₀	1.14	X ₁₂	2.35	X ₁₀	1.36	X ₁₂	1.91
	6	X ₁₃	0.99	X ₁₁	1.11	X ₁₈	0.82	X ₁₁	1.15
	7	X ₁₉	0.80	X ₁₈	0.95	X ₇	0.81	X ₁₉	1.05
	8	X ₁₈	0.62	X ₁₉	0.88	X ₁₃	0.78	X ₁₃	0.95
approve hold continuous nature	1	X ₂₄	3.93	X ₂₄	3.43	X ₂₄	3.50	X ₃₁	3.15
	2	X ₃₁	1.97	X ₃₁	3.06	X ₃₁	3.09	X ₂₄	2.93
	3	X ₂₃	1.82	X ₂₃	1.78	X ₂₅	2.56	X ₂₅	2.29
	4	X ₂₅	1.48	X ₂₅	1.75	X ₂₃	2.10	X ₂₃	1.80
	5	X ₂₇	1.42	X ₂₇	1.36	X ₂₇	1.68	X ₂₇	1.11
	6	X ₃₄	1.01	X ₂₈	0.86	X ₃₄	0.94	X ₃₄	0.85

At the level of sharing, the common obstacles restricting the four regions are the registered urban unemployment rate, the consumption expenditure ratio of urban and rural residents, the urban Gini coefficient, the participation rate of health technicians per 10,000 people, and the year-end participation rate of basic medical insurance for urban workers. Except for the northeast region, There are also obstacles to per capita park green area in the eastern, western and central regions, Need to further strengthen the construction of the park green belt, To create a more ecologically livable city for people; Except for the western region, The eastern, northeastern and central regions have relatively high barriers to GDP share, Raise the remuneration of workers, It is crucial to improve the normal wage growth mechanism; Except for the central region, The urban Engel coefficient of the other three regions is also among the main obstacles, Engel's coefficient decreases with the improvement of household income and living standards, This shows that we need to pay more attention to the high-quality development in the field of people's livelihood; For the northeast and western regions, The proportion of education spending to GDP is the main obstacle, Reflecting the proportion of education financial expenditure is an important indicator affecting common prosperity.

At the sustainability level, the common prosperity of obstacle factors is mainly R & D spending the proportion of GDP, community service coverage, GDP growth, local fiscal science and technology spending, per capita revenue, reflects the key problem restricting the development of our common prosperity is manpower scale of science and technology, R & D r & d strength, public service supply capacity, science and technology investment scale, macro and micro economic distribution mechanism. In addition to the above common problems, the proportion

of tax revenue is also a relatively important obstacle factor for northeast China. It is necessary to strengthen economic accounting, improve economic benefits, deepen tax reform, and improve the tax system. In the eastern, central and western regions, there is still the obstacle of harmless treatment of household garbage, which is necessary to solve the problem of weak harmless treatment capacity.

5. Conclusions and Recommendations

5.1. Conclusion

1) The level of the national common prosperity indicator shows a good and fluctuating trend in the time dimension.

After sorting and visualizing the data of the national average common prosperity level from 2002 to 2021, the score of the common prosperity indicator is between [50,60], and the level of common prosperity is good every year; the score curve of the common prosperity indicator fluctuates near the average, that is, the development of the national level of common prosperity is unstable and the improvement is slow.

2) The national sharing indicator level and the sustainability indicator level showed a fluctuating trend

The analysis of the score data of the national sub-indicator shows an upward trend of volatility, but the growth rate is low; the sustainability indicator shows a downward trend of volatility.

3) There are regional differences in the indicator level of provincial common prosperity

The scores and rankings of common prosperity in 2003,2010 and 2021 were studied by regions and provinces, and the scores of common prosperity in 2021 were classified by quantiles. Common prosperity level shows the spatial layout of declining northeast, east, western and central regions; the higher level cities appear in the eastern and western regions, and the lower level cities in the central regions, and more than half of the provinces are in this gradient.

4) There are regional differences in the provincial common prosperity subindicator

Taking the visualization of provincial sub-indicators in 2021 as an example, it can be seen from the map that the level of eastern and coastal cities is high; the sharing indicator level of central cities is generally low; and the level of sustainability indicator is high in the northeast and western regions. On the whole, the sub-indicator level of various common prosperity presents space-time differences.

5) Main factors affecting the level of the common wealth indicator

According to the barrier model, in the developmental level, per capita disposable income and income difference between urban and rural residents are the main obstacle factors, the registered unemployment rate, the health technicians per 10,000 people and the basic medical insurance for urban workers are the main obstacle factors. At the level of sustainability, the main barriers to common prosperity are the coverage of community service institutions, GDP growth, the proportion of local fiscal expenditure on science and technology, and per capita fiscal revenue.

5.2. Recommendation

1) We will focus on improving the level of sharing indicator and sustainable development

2) Improve the local economic strength and narrow the gap between regional economic development level. Local urban and rural areas first get rich in the east and then rich, to achieve balanced development of regional economy and create a solid material foundation for common prosperity.

3) Coordinate and comprehensive development, and narrow the regional differences in infrastructure and public services in rural areas. The country should continue to increase the

tilt of investment in rural infrastructure in the western region, focusing on the investment in the western region and relatively economically underdeveloped areas. To improve the capacity of regional public services (including basic medical care, health technicians, libraries, parks, etc.).

4) Focus on strengthening investment in education and health care security. In terms of education, we should reduce the ratio of teachers to students, increase the average financial expenditure of students, reduce the education investment risk of low-income people, and cut off the root causes of intergenerational poverty, so as to prevent the return to poverty and long-term poverty. In terms of health and medical treatment, medical and health service measures should be improved to provide health care convenience for rural residents; reduce their development vulnerability and prevent poverty and return to poverty due to illness.

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