

ANALYSIS OF THE GREY CORRELATION BETWEEN SOCIAL WELFARE AND TERTIARY INDUSTRY STRUCTURE

WANG XIAOYANG¹, LI HONGBO¹ AND DONG-JOO KIM^{2*}

Abstract: In recent years, with the development of economy, China has been actively promoting economic structural reform and industrial upgrading to enhance people's living standards and their well-being. It is necessary to explore the internal relationship between industrial development level and social welfare level and find the way to improve the industrial structure based on the improvement of the welfare level. **Methods/Statistical Analysis:** This study collected the data from 2013 to 2018 for the analysis based on factor analysis and grey correlation theory. **Findings:** From 2013 to 2018, the social welfare index in China showed an upward trend, indicating that people's welfare level was rising every year. The correlation between the tertiary industry (service industry) and the welfare level has reached an average value, with an index of 0.78, indicating that the tertiary industry has a close relationship with social welfare and the adjustment of the tertiary industry structure need to take account of the social welfare level. **Improvements:** This study attempts to establish a system of indicators to evaluate the level of social welfare. Furthermore, the empirical analysis is made respectively on the correlation degree between social welfare indices and the tertiary industry, and the correlation degree between the tertiary industry and other industries. Based on the empirical analysis, the suggestions are put forward from the perspectives of there form of service industry, the adjustment of industrial structure, the training of industrial talents and the application of information technology for purpose of improving the level of national welfare and optimizing the tertiary industry structure.

Keywords: tertiary industry; social welfare; grey correlation

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INTRODUCTION

China's economy has rapidly grown since 1978. At first, it is believed that rapid economic development can maximize the people's social welfare and improve the people's living standards. With the development of society, people have gradually realized that income or GDP cannot fully measure the level of welfare (Sun, 2019). Pigou (2013) introduced the concept of welfare into economics, thinking that welfare is a commodity or service that brings people psychological satisfaction. The indirect measurement of money is the basic theory of welfare economics.

1. Department of Social Economy and Management, Graduate School, Woosuk University, Wanju-gun 55338, Korea;

2. Department of Rehabilitation Studies, Woosuk University, Wanju-gun 55338, Korea; ju7055@woosuk.ac.kr

* Correspondence: ju7055@woosuk.ac.kr

Based on the welfare theory of “feasible ability” proposed by Sen (1977), it is pointed that social welfare is a reflection of people’s continuous expansion of their choices and continuous improvement of their own capabilities. Therefore, not only achievements at the economic level, but also achievements at other levels of society, such as knowledge and skills, social security, health and longevity, democratic freedom, etc., also reflect different levels of ability. The collection of these abilities together constitutes social welfare. Japanese scholar Ichiban Kuse Yasuko explained that social welfare generally refers to various social methods and policies to solve problems related to ‘welfare’. Wang (2014) believes that social welfare can be divided into a broad sense and a narrow sense. The broad sense of social welfare is all measures to improve the material and cultural life of members of society, and is a good state of life for members of society. Social welfare in the narrow sense basically refers to welfare social support provided by needy groups, including material support and service support. Yao (2018) proposed that welfare is a beautiful state of mankind, and improving the level of human welfare is the core theme of social development. Welfare is an academic concept and the core of social policy practice. Scholars have put forward different views on related factors affecting social welfare. Economist R. Easterlin (1973) pointed out that there is no positive correlation between wealth and welfare, and the increase in wealth does not necessarily increase the happiness index. Ecologist Max-Neef (1995) believed that economic growth will cause environmental degradation, resulting in a decline in the welfare index. Stiglitz (2009) emphasized that GDP-type indicators are no longer suitable for measuring the level of social welfare in a community. In order to fully measure the level of social welfare, social welfare must be regarded as a multidimensional concept. Wang (2016) studied China’s industrial economic development from the perspective of welfare. The adjustment and upgrading of the industrial structure cannot simply aim at the growth of GDP, but should be linked to the improvement of people’s livelihood and green development. The adjustment and upgrading of industrial structure should not be based solely on GDP contribution, but more importantly based on the contribution of national welfare (salary welfare, public taxation welfare, environmental welfare).

The term industry has different interpretations in different occasions and different language environments. In the theory of history and politics, it mainly refers to industry. In traditional social economics, it mainly refers to the material production sector of the economy and society. Fisher (1935) proposed the concept of “tertiary industry” and pointed out that the tertiary industry mainly includes a series of service activities such as transportation, trade, leisure, education, and artistic creation. Clark (1951) conducted an in-depth study on the division of three industries, and referred to the tertiary industry as a “service industry”. The division of industries in China is: the primary industry of agriculture, the secondary industry focusing on manufacturers and the tertiary industry divided into two parts: circulation and service.

The tertiary industry occupies a vital part in China’s economic development.

Accelerating the development of the tertiary industry is conducive to absorbing labor, expanding the scale of employment, accelerating the development of the transportation industry, and promoting the level of consumption, and conducive to improving people's living standards, social welfare, and promoting rapid economic development. Many Chinese scholars have conducted research on the relevance of social welfare and the tertiary industry. Wei (2016) believes that the development of social welfare has promoted the development of the tertiary industry, attracted a large number of unemployed people in the primary and secondary industries, and reduced the unemployment pressure in the society. Mu and Ding (2011) believe that through the analysis of welfare effects, it is found that the increase of industrial welfare with the tertiary industry as the main body is the best way to improve the social welfare, and the upgrading of the industrial structure based on the welfare indices is the scientific goal of economic development. Li and Wang (1992) believes that social welfare policies have also promoted the development of the tertiary industry. The development of tertiary industries involving medical care, elderly care, and vocational training serves social welfare services and promote the transfer of labor from the primary and secondary industries to the tertiary industry by providing convenient material conditions for improving the material and cultural level of society.

With the development of the economy, Chinese scholars continue to study the integration of the tertiary industry and social welfare. Long, Wang and Gao (2017) studied the performance of urban ecological welfare based on the EDA model, and pointed out that accelerating the transformation of the industrial structure will help reduce the proportion of the secondary industry and increase the proportion of the tertiary industry which will be able to improve the performance of urban ecological welfare. Dai and Tian (2015) believe that the hidden benefits generated by the development of the tertiary industry are not only the proportion of a region's industrial structure in the local total output value, but also reflect people's social welfare, such as medical and health status, income and consumption level, human living environment level, etc. Mu and Ding (2011) used an industry per capita labor income and labor income share as basic indicators to construct a model of the initial distribution welfare coefficient at the industrial level. Through the calculation of the model and the analysis of welfare effects, it is found that the higher the industrial level, the more reasonable the industrial structure, and the higher the level of industrial welfare, the faster the growth of the relative social welfare level. At this stage, China's high-level tertiary industry's welfare coefficient is temporarily lower than that of the secondary industry, and the unreasonable industrial structure has led to a slow rise in relative social welfare. Through the analysis of welfare effects, it is found that the increase of industrial welfare with the tertiary industry as the main body is the best way to improve the total welfare of society (Mu & Ding, 2011). Therefore, exploring the level of integration of the tertiary industry and social welfare is of great significance for improving social

welfare and economic development.

In the grey theory system, grey level correlation analysis is a commonly used tool. It not only has a clear analysis process, but also is easy to implement. There are no strict restrictions on the length of the data sequence and the amount of data. For those data sequences are difficult to see the correlation on the surface, the analysis of grey-level correlation can use them as a system and generalize each phenomenon into a variable, and incorporate their corresponding data into the grey-level correlation analysis framework, so as to dig out the relationship between them and form the judgment of the inherent relationship between various phenomena (Liu & Xiang, 2021). The grey correlation theory is widely used in various fields. In recent years, scholars have begun to use grey correlation theory to study the correlation between regional economy and logistics industry, economy and pension industry, information industry and pension industry, economy and environment (Cui, Zhang, Wang & Wang, 2021; Wang & Han, 2018; Gao, Chen, Hu & Li, 2020; Fang, 2020). Previous researches mainly focused on the relationship between economy and industry, economy and pension, economy and environment. Grey correlation theory is rarely used to study the relationship between social welfare and industry. Therefore, it is urgent to study the status quo of the relationship between social welfare and the tertiary industry to find a path of promoting the adjustment of the industrial structure.

SELECTION OF COMPREHENSIVE INDICATORS OF SOCIAL WELFARE

The economist Sen calculated the happiness index for social and economic development, namely the Sen index: $S=R(1-G)$ means per capita real income \times (1-Gini coefficient), where S means social welfare, R means per capita real income and G represents the Gini coefficient (Yang, 2009). This indicator measures economic welfare. It emphasizes that a single economic welfare measures social welfare, which has greater limitations and does not take into account the impact of education, environment, medical care and other factors on national welfare (Liu, 2018). The American Social Health Association put forward the ASHA index, $ASHA \text{ index} = (\text{employment rate} \times \text{literacy rate} \times \text{average life expectancy index} \times \text{per capita GDP growth rate}) / (\text{population birth rate} \times \text{infant mortality rate})$, this index involves employment rate, per capita many indicators such as GDP growth rate and birth rate are used to measure social welfare (Liu, 2018). Chinese scholars conduct a further study on the calculation of social welfare indicators. Yang and Song (2012) measure social welfare indicators based on six aspects including income, health, education, and the environment; Liu, Guo and Jian (2008) measure social welfare indicators based on nine major factors including per capita GDP growth rate, environmental pollution, employment rate, and literacy rate; He, Cheng and Wan (2018) on the basis of research by Liu (2008) and other scholars, the social welfare indicators were calculated based on 14 items including per capita GDP growth rate, resident consumption expenditure, education, total health expenditure, medical treatment and social security.

The above-mentioned research on welfare indicators has gradually changed from single economic welfare to non-economic welfare. The indicators of welfare have been expanded from purely economic indicators to the impact of multiple factors on social welfare indicators such as medical care, employment rate, education, environment, and income distribution. Therefore, this article combines the research results of the above-mentioned scholars to estimate China's social welfare level based on the current research based on 6 indicators in five aspects: economy, population, education, health care, and environment. The selected evaluation indicators are: GDP growth rate per capita (X1), population birth rate (X2), literacyrate (X3), number of health technicians (X4), number of beds in health institutions (X5), urban green space and garden area (X6).

Source of the data

In view of the availability of data, this paper takes 2013 to 2018 as the research period, and the data are drawn from 2013 to 2018.

Data processing

SPSS 25.0 software is used to analyze the factors. Firstly, the reverse factors are positively processed. Secondly, in order to avoid the difference of dimension of different variables, the data are standardized. Finally, the index coefficient matrix is established for the converted data. (Table 1)

Procedure for the implementation

After the reverse factor is positive, the data are standardized to eliminate the influence of the dimension of the original variable.

$$U_{ij} = \frac{X_{ij} - X_{j\min}}{X_{j\max} - X_{j\min}} + 0.01 \quad (i = 1, 2, 3 \dots m; j = 1, 2, 3 \dots n)$$

The initial eigenvalue, contribution rate, rotation factor load matrix and factor score coefficient matrix are calculated by factor analysis.

Table 1 Correlation coefficient matrix

Indicators	X1	X2	X3	X4	X5
X2	0.169				
X3	0.251	0.078			
X4	-0.904	0.028	0.131		
X5	-0.91	0.054	0.085	0.997	
X6	-0.916	0.051	0.059	0.995	0.999

Table 2 Eigenvalue and variance contribution rate of correlation matrix

Composition	Cumulative%			Extraction squared load			Rotation squared load		
	Total	Variance %	Cumulative %	Cumulative %	Variance %	Cumulative %	Total	Variance %	Cumulative %
1	3.863	64.385	64.385	64.381	64.385	64.385	3.863	64.381	64.381
2	1.190	19.841	84.226	84.226	19.841	84.226	1.191	19.845	84.226
3	.929	15.478	99.704						
4	.017	.283	99.988						
5	.000	.007	99.994						
6	.000	.006	100.000						

Table 1 shows that the correlation between data is high, such as the correlation between X1 and X4, X5, X6 is as high as 0.904, 0.91, 0.916. The eigenvalues of the first two factors in Table 2 are greater than 1, and the cumulative contribution rate is 84.226 indicating that the first two factors are sufficient to express the social welfare information provided by the original indicators. Therefore, the first two factors are extracted for orthogonal rotation load matrix and component score matrix. (Table 3)

Table 3 Factor load matrix before and after orthogonal rotation

	Composition matrix a before rotation		Composition matrix an of rotational composition matrix	
	1	2	1	2
X6	.996		.996	
X5	.995		.995	
X4	.992	.113	.993	.104
X1	-.948	.299	-.945	.307
X3		.804		.803
X2		.655		.655

Table 3 shows that the component matrix is derived from principal component analysis and useful information can be obtained from the original data. The size of the coefficients in each factor is analyzed to classify them. The first common factor has a large absolute value of 0.996, 0.995, 0.992, 0.948 on the X4, X5, X6, X1, which reflects economy, medical care, health, quality of life, environment, and so on. Therefore, the first common factor F1 is defined as the living standard factor. The second common factor has a large load absolute value of 0.804 and 0.655 in X3, X2, which reflects the situation of population and education. The second common factor F2 can be defined as human capital factor.

Table 4 Composition score coefficient matrix

	Composition	
	1	2
X1	-.243	.253
X2	.002	.550
X3	.009	.675
X4	.258	.092
X5	.258	.077
X6	.258	.060

From the factor score coefficient matrix in Table 4, the score expression of the social welfare common factor can be obtained. The expressions F1 and F2 are as follows:

$$F1 = -0.243X1 + 0.002X2 + 0.009X3 + 0.258X4 + 0.258X5 + 0.258X6$$

$$F2 = 0.253X1 + 0.550X2 + 0.675X3 + 0.092X4 + 0.077X5 + 0.060X6$$

The factor scores of living standard factor and human capital factor can be obtained by bringing the standardized data indicators of social welfare into the above formula. The comprehensive factor score of social welfare F can be calculated by F1 and F2, and the specific expression is as follows (Table 5):

$$F = \frac{0.6438}{0.8423} \times F1 + \frac{0.1984}{0.8423} \times F2$$

Table 5 Score Table for Factor F1 and Factor F2, 2013-2018

	F1 of living standards	F2 of human capital	F of comprehensive score
2013	0.093755	1.221051	0.359273
2014	0.207965	1.010351	0.396939
2015	0.328311	0.529463	0.375653
2016	0.43836	0.850174	0.535309
2017	0.539135	1.058804	0.661476
2018	0.655373	0.778208	0.684229

Table 5 shows that the level of comprehensive social welfare in 2013-2018 is on the rise, and the standard of living of Chinese people is constantly improving. Living standard factors include economic development, population, resource utilization, medical and health indicators. The slow growth rate shows that there is still room for improvement in the level of social welfare. The tertiary industry, as an important part of economic development, promotes the economic development of our country, the improvement of population quality, and the sustainable utilization

of resources. The development of medical and health care has a promoting role. The increasing of human capital factor index has a great contribution rate to the improvement of social welfare level. China has a large population, and solving employment pressure plays an important role in improving the level of social welfare. The purpose of the development of the tertiary industry is to solve the unemployment of the first and second industries and to increase the employment rate of the people. The continuous increase of the employment rate and income level can effectively improve social welfare (Zhang & Jia, 2014).

EMPIRICAL ANALYSIS ON THE INTEGRATION OF TERTIARY INDUSTRY AND SOCIAL WELFARE AND RELATED INDUSTRIES

Selection of measurement models

The concept of industrial integration is developing rapidly in China. Scholars have conducted research on industrial integration in different fields. Industrial integration can not only promote economic growth, but also solve various social problems and improve social welfare. Chen, Wang, Sun and Gao (2014) conducted research on the integration of cultural industry and software industry, with the purpose of promoting the mutual assistance and win-win of cultural industry and software industry; Chen and Feng (2020) was a comprehensive evaluation study on the development of rural tertiary industry integration; Cao (2019) proposed the integration with Internet and the care service for the elderly can be used to solve elderly care problems in China; An and Wu (2020) have conducted research on the level of integration of local Internet industry and elderly care industry. However, there are practical difficulties in measuring industrial integration. At present, there is no unified measurement system in the academic circle. The commonly used methods can be summarized into three aspects.

The first is the grey correlation analysis method, which is to investigate and study the system with incomplete information. The unknown information is studied and calculated through the known information to achieve the purpose of understanding the entire system. Chinese scholars used the grey correlation analysis to analyze the relationship between the Internet industry and the elderly care service industry, and put forward solutions to the existing difficulties, as well as suggestions on promoting the integration of the Internet and elderly care services (Cao, 2019; An & Wu, 2020).

The second is to use the Herfindahl coefficient, which is a commonly used index to measure the degree of industrial agglomeration and can also be used in the calculation of industrial integration. The smaller the value tells the better the technology integration. Chen, Wang, Sun and Gao (2014) used the Herfindahl coefficient to measure and analyze the degree of integration between the cultural industry and the software industry, and put forward a model of culture first, technology leading, and mutual benefit.

The third is to use the entropy method and the TOPSIS method. The method first uses the entropy method to determine the weight of the index, and then uses the TOPSIS method to calculate the distance ranking to the ideal point. Chen and Feng (2020) used the entropy method and the TOPSIS method to observe the integration development index of the primary, secondary and tertiary industries in rural areas, and conducted an empirical analysis of the primary, secondary and tertiary industries in the rural areas and provided policy recommendations.

Based on the research of the above scholars, it can be seen that the grey correlation analysis method does not require high data, and the content of the research is a system with incomplete information. This article mainly studies the degree of relevance between the tertiary industry and social welfare and other industries. The relevant research materials are limited and the data is limited, so it is difficult to use other methods for comprehensive analysis. The grey correlation analysis method has advantages in research. The main purpose of grey correlation analysis is to determine the correlation coefficient between the reference sequence and the comparison sequence, and observe the relationship between the correlation coefficients (Liang & Ma, 2017). Therefore, the grey correlation analysis is used to measure the integration level of the tertiary industry and social welfare index and other related industries for obtaining scientific, objective and effective evaluation results.

Empirical analysis

Selection of indicators

This paper takes 2013-2018 as the sample, the data drawn from the Statistical Yearbook of China. As a reference of sequence (Y), the added value of tertiary industry structure is the original data, social welfare index (X1), the number of employees in the primary industry (X2), the number of employees in the secondary industry (X3), agriculture, forestry, animal husbandry and fishery (X4), manufacturing (X5), energy production (X6), information technology (X7), education (X8), health and social work (X9), as control data, which are shown in Table (6).

Table 6 Grey correlation coefficient between tertiary industry and social welfare and related data

Data	2013	2014	2015	2016	2017	2018
Y	277959.3	308058.6	346149.7	383365	427031.5	469574.6
X1	0.359273	0.396939	0.375653	0.535309	0.661476	0.684229
X2	24171	22790	21919	21496	20944	20258
X3	23170	23099	22693	22350	21824	21390
X4	56973.6	60165.7	62911.8	65975.7	64660	61558.7
X5	181867.8	195620.3	199436	209508.9	233876.5	255937.2
X6	15002.2	14819	16289.8	17382.7	19862.7	22559.8
X7	13729.7	15939.6	17516.8	20124.1	23808.9	28733.5
X8	18951.4	21159.9	24370.5	26964.9	30208.4	34001.4
X9	11034.4	12734	14765.4	16766.8	18548.8	20652.6

Dimensionless processing of data

Because the criteria and significance of each factor are different, in order to make each factor comparable, the original data need to be dimensionless. The formula is as follows:

$$Y' (t_i) = \frac{Y_i(t_i)}{Y_i(t_1)}$$

Of which $Y' (t_i)$ as a result of dimensionless processing, $Y_i(t_1)$ is (i) series first group indicators. (Table 7)

Table 7 Non-dimensional processing data

Data	2013	2014	2015	2016	2017	2018
Y	1	1.108287	1.245325	1.379213	1.536309	1.689365
X1	1	1.104839	1.045592	1.489978	1.841151	1.904482
X2	1	0.942865	0.90683	0.88933	0.866493	0.838112
X3	1	0.996936	0.979413	0.964609	0.941908	0.923177
X4	1	1.056028	1.104227	1.158005	1.134912	1.080478
X5	1	1.075618	1.096599	1.151985	1.28597	1.407271
X6	1	0.987788	1.085827	1.158677	1.323986	1.503766
X7	1	1.160958	1.275833	1.465735	1.734117	2.092799
X8	1	1.116535	1.285947	1.422845	1.593993	1.794137
X9	1	1.154027	1.338124	1.519503	1.680998	1.871656

Calculation of absolute value of extreme difference

The absolute value of the grade difference of each sequence is calculated, and the absolute value of the difference between the reference sequence index Y (t) and the comparison sequence Xi (t) is dimensionless processed. The formula is as follows:

$$\Delta_i(t_i) = |Y(t) - X_i(t)|, \text{ the results are shown in Table 8.}$$

Table 8 Absolute value of the difference between sequences

Data	2013	2014	2015	2016	2017	2018
X1(t)	0	0.003447	0.199733	0.11077	0.30484	0.21512
X2(t)	0	0.165421	0.338495	0.489883	0.669817	0.851253
X3(t)	0	0.111351	0.265912	0.414603	0.594402	0.766188
X4(t)	0	0.052259	0.141098	0.221208	0.401398	0.608887
X5(t)	0	0.032669	0.148726	0.227228	0.25034	0.282094
X6(t)	0	0.120498	0.159498	0.220536	0.212324	0.185598
X7(t)	0	0.05267	0.03051	0.08652	0.19781	0.40343
X8(t)	0	0.00825	0.04062	0.04363	0.05768	0.10477
X9(t)	0	0.04574	0.0928	0.14029	0.14469	0.18229

Select the maximum and minimum values of each row from each sequence absolute value, Table 8 $\Delta_{max} = 0.851253$, $\Delta_{min} = 0$.

Calculation of correlation coefficient and correlation degree

The formula of for correlation coefficient $r_i(t_i)$ is listed as follows:

$$r_i(t_i) = (\min \Delta + \rho \Delta_{max}) / (\Delta_i(t_i) + \rho \Delta_{max})$$

Among them, the value range of ρ is between 0 and 1, and the general value is 0.5. According to the correlation coefficient, the correlation degree is calculated, and the expression of the correlation degree is:

$$r_i = \frac{1}{n} \sum_i R_i(t)$$

As the higher the correlation degree between 0 and 1, the higher the correlation degree between the comparison sequence and the reference sequence, and the result is shown in Table 9.

Table 9 Indices of tertiary industry and social welfare and grey correlation coefficient of related industries

X 1	X 2	X 3	X 4	X 5	X 6	X 7	X 8	X 9
0.78	0.60	0.61	0.70	0.76	0.75	0.80	0.91	0.82

Correlation ranking and analysis

According to the results of the relevance in Table 9, the grey correlation of the tertiary industry and social welfare index and related data are arranged from large to small $X_8 > X_9 > X_7 > X_5 > X_1 > X_6 > X_4 > X_3 > X_2$, in which the greater the grey correlation degree is, the better the fusion degree. It can be seen that the grey correlation degree between the tertiary industry and the social welfare index and related data in descending order is: education, health and social work, information technology, manufacturing, social welfare index, energy output, agriculture, forestry, animal husbandry and fishery, the number of employees in the secondary industry, the number of employees in the primary industry, and have a mean value of 0.75. This shows that the correlation between social welfare and the tertiary industry is 0.78, and reaches the average value. This shows that China's tertiary industry and social welfare is closely related. To improve the level of national social welfare, we must improve the level of tertiary industry structure for scientific goals of economic development.

GREY CORRELATION ANALYSIS OF TERTIARY INDUSTRY AND SOCIAL WELFARE AND RELATED DATA

Through the above-mentioned grey correlation analysis method, the correlation degree between the tertiary industry and the social welfare level is calculated to be 0.78. It reaches the average value of the correlation degree and shows a close correlation as a whole. The development of the tertiary industry is the current global development trend, but the rapid development of China's tertiary industry will inevitably have a negative impact on economic growth. The country as a whole is the main body of interest, and the industry structure should be adjusted reasonably according to the unique location advantages of the region. When the tertiary industry is developed, we should not blindly increase the proportion of the tertiary industry for the purpose of supporting the tertiary industry at all levels, and we should understand the internal driving force for the development of the tertiary industry in the region (Liu & Li, 2019). The level of the tertiary industry can reflect the level of welfare in this society (Fu, 2005). Since the level of national welfare is in its infancy, the reasonable adjustments to tertiary industry institutions have a certain effect on the improvement of the level of welfare. The grey correlation between the tertiary industry and agriculture, forestry, animal husbandry and fishery, manufacturing, and energy output are 0.70, 0.76, and 0.75, showing a high degree of correlation. Agriculture, forestry, animal husbandry, fishery, manufacturing, and energy production belong to the primary industry and the secondary industry respectively, which shows that the tertiary industry is closely related to the primary and secondary industries. The development of the tertiary industry is inseparable from the support of the primary and secondary industries. Zhang, Yan and Huang (2019) found that the growth of the secondary industry is conducive to maintaining

rapid economic development. If the proportion of the secondary industry declines rapidly, it is likely to have a negative impact on China's medium and long-term economic development. The rapid development of China's service industry is very likely to inhibit the development of the secondary industry and adversely affect China's economic growth. Therefore, when improving the development level of the tertiary industry, the main goal should not be to greatly reduce the proportion of the primary and secondary industries. It is necessary to achieve a high level of evolution in industrial structure with new ideas, new technologies, and new ideas, and cultivate China's future economic growth. The correlation between the number of employees in the tertiary industry and the primary industry, and the number of employees in the secondary industry is 0.60 and 0.61, respectively. Although the correlation degree is low, there is a close relationship between the tertiary industry and the employees in the primary industry and the secondary industry. This shows that the improvement of the development level of the tertiary industry can have an impact on the number of employees in the primary and secondary industries. Kuanets (1957) has an impact on the economy. The relationship between the growth rate and the industrial labor rate ratio is analyzed. With the change of the economic development stage, the labor force will shift to industries with high productivity. With the increase of labor productivity, labor will shift from agriculture to industry and then to service industry (Zhang, Yan & Huang, 2019). British economist Fisher (1935), along with economic growth, the number of laborers employed in agriculture (that is, the primary industry) relative to manufacturing will tend to decline, and then the number of labor employed in manufacturing relative to service industries will also tend to decline, that is to say in the process of increasing national income and economic development, the distribution of labor will gradually shift from the primary industry to the secondary industry and then to the tertiary industry. To a certain extent, the tertiary industry has absorbed a large amount of labor, which has increased more employment opportunities for the people, and at the same time has the effect of stabilizing employment to a certain extent. However, China's industrial structure is evolving at a faster rate than the employment structure and the level of economic development, which has made it more difficult to transform and upgrade China's industrial structure. The correlations between the tertiary industry and information technology, health and social work, education, are 0.80, 0.82, and 0.91, respectively, and the correlation is the closest. Information technology, health, and social work, education is closely related to the basic livelihood of citizens. The Increase of spending on information technology, science, education, culture, and health services ensures sufficient financial funds. Science and technology education is the foundation of social development and the driving force for promoting economic growth and improving the overall welfare of society. Measures should be taken to increase investment in the medical service industry, reduce the cost of medical treatment for the people, and increase the cost of medical insurance to protect the physical and mental health of the people.

RECOMMENDATIONS

First of all, there is a close relationship between social welfare and the tertiary industry. The improvement of the tertiary industry structure can promote the sound development of the economy and increase the national happiness. Secondly, there is a phenomenon of uneven development in China's industrial structure. When developing the tertiary industry, it is necessary to continuously adjust the proportion of the primary and secondary industries in accordance with the objective laws of economic development. The adjustment of the industrial structure in different periods has a significant impact on economic development to a different role. Again, the tertiary industry can absorb more employees, but the lack of high-quality human resources, it is necessary to strengthen the level of national quality; finally, and the development of information technology. In order to improve the structural adjustment of the tertiary industry and promote the increase of social welfare, four suggestions are put forward.

(1) Promoting the modernization and marketization of the service industry

The tertiary industry has the characteristics of low resource consumption and low environmental pollution. It is the main driving force to invigorate the market and stimulate economic growth. The level of development of the tertiary industry has become an important indicator of the quality of regional economic development, so it is necessary to vigorously develop service industries such as information, e-commerce, technology, finance, insurance, tourism, and retail (Yu, 2020).

First, to promote the development of the wholesale and retail industry, transactions can be conducted from the Internet or e-commerce to meet the needs of citizens for commodities. Mobilizing the enthusiasm of the industry plays an important role in the development of the accommodation and catering industry. A unified, open, and orderly competitive market competition system is established to strengthen the supervision of the entire market, and severely crack down on behaviors that violate the food safety law and harm consumers rights and interests. Products with international competitiveness should be encouraged to develop.

Second, the promotion of the development of financial industry is necessary to appropriately expand its scale to match the economics of other industries in the region. Strengthen the supervision of the financial industry. When considering the relationship between financial development and social welfare, in addition to considering scale and efficiency, the following three points should also be emphasized: one is policy stability; the other is to improve the relevant legal system and strengthen the financial risk control; the third is to find effective solutions to different problems in the financial market, in different fields, and to promote welfare.

Once again, since the 1880s, the world economy has begun to transform to

a service economy, and logistics has made important contributions to economic development (Zhang & Xie, 2016). By expanding investment in China's domestic logistics industry, China's domestic savings can be balanced, relying on the expansion of employment levels and residents' consumption capacity, to achieve a dual increase in investment and consumption, thereby reducing the upward pressure on savings, and ultimately achieving a virtuous cycle of the national economy (National Information Center macro policy trends group, 2013). Transportation, warehousing and postal industries occupy an important position in economic development, providing support for social service security and also a key factor in the transformation of manufacturing. Transportation, warehousing and postal industries have made important contributions to the improvement of social welfare.

(2) Adjusting the industrial structure to promote the coordinated development of the industry

From the perspective of industrial structure, in 2017, China's primary industry accounted for 7.90% of GDP, the secondary industry accounted for 40.50%, and the tertiary industry accounted for 51.60% (Zhang, Yan & Huang, 2019). The development of the tertiary industry is a global development trend, and China cannot blindly control the proportion of the primary and secondary industries. China's tertiary industry has developed too fast. The added value of the tertiary industry accounts for 51.6% of GDP. It can be seen that it is in the late stage of industrialization. The structural adjustment of the primary and secondary industries must conform to the trend of economic development and start with scientific concepts and advanced technologies. The primary, secondary and tertiary industries must continue to integrate and promote each other to promote economic development. The development of modern agricultural technology, agricultural mechanization, and intelligence can integrate the technologies of the secondary and tertiary industries to improve the level of products and services. The secondary industry has transformed from a labor-intensive and resource-intensive processing and manufacturing industry to a manufacturing industry that relies on precision, cutting-edge, high-tech and information technology.

In recent years, the Chinese government has continuously promoted the integrated development of primary, secondary and tertiary industries in rural China. The integrated development of rural primary, secondary and tertiary industries is an important way for the optimization and upgrading of agricultural industrial structure, the progress of rural economy, and the increase of farmers' income. In 2018, the No. 1 document of the Central Committee of China put forward the implementation of the rural revitalization strategy, and the promotion of the integrated development of rural primary, secondary and tertiary industries is an important content. In June 2018, the Ministry of Agriculture and Rural Affairs issued the "Notice on the Implementation of the Promotion Action for the

Integrated Development of Primary, Secondary and Tertiary Industries”, to ensure the integration of rural tertiary industries, and actively promote rural economic development. The integrated development of primary, secondary and tertiary industries in rural areas is based on rural revitalization, based on the agricultural industry, and the technology, experience, talent, and capital of the secondary and tertiary industries as the media to extend the agricultural industry chain and value chain, etc. As a way to realize the integration of agricultural production and marketing and the formation, the development of new industries can integrate agriculture, industry and commerce (Liu & Li, 2019). Therefore, the adjustment and integration of the primary, secondary, and tertiary industries will release the vitality for economic development.

(3) Training of the talents

With the adjustment of the industrial structure, the number of labors has been unable to meet the needs of social and economic development, the national scientific and cultural quality is low, the overall knowledge structure of the labor force is low, and the overall situation of talents does not meet the requirements of international competition and industrial organization adjustments (Fu, 2005). In order to change this kind of unfavorable factors, it is necessary to train high-tech talents, senior management talents, and high-quality technical workers. The improvement of labor quality can improve the ability of technological innovation. It is necessary to pay attention to the accumulation of human capital and the importance and the training of talents, and increase investment in research and development and scientific research. The scientific and cultural level and quality services of residents are related to people’s livelihood, and are an important driving force to meet the improvement of the quality of life of individuals and families and the country’s own development.

Education has advantages in social welfare and security in that it constitutes the core competitiveness of people’s livelihood development and promotes the development of social security. Furthermore, it can increase the income of ordinary workers, spending power, and improve the level of social welfare in terms of income, consumption, health, and living environment.

(4) Improving of the sense of happiness by information technology

Information technology occupies an important position in the development of the tertiary industry, and plays different roles in pension, medical care, living environment and so on. The promotion of information technology for elderly care services is one of the seven basic elements of the social elderly service system. The realization of hierarchical elderly care services requires the development and popularization of elderly information technology as a guarantee and support (Li, 2016). It is necessary to strengthen the guarantee of basic old-age care and basic medical care, and advocate the “Internet +” model, such as the “Internet + old-

age care” and “Internet + medical care” models. Smart elderly care refers to the use of a new generation of information technology products (Internet of Things, cloud computing, big data, smart hardware, etc.) to achieve effective docking and optimal allocation of resources for individuals, families, communities, institutions and healthy elderly care, and promote the healthy elderly care service industry.

The intelligent upgrade of health and elderly care services has improved the quality and efficiency of health care services (Huang & Zhang, 2020) and provides convenient and fast services to enhance the happiness of the people.

Information technology in the medical field “Internet + nursing service” mainly refers to the use of registered nurses of the institution in medical institutions to use the Internet, Internet of Things, cloud computing, big data and other new-generation information technologies to “online application, offline service”.It mainly provides nursing services, nursing guidance, and health consultations for discharged patients, people suffering from diseases and people with limited mobility (Huang et al.,2020).

Information technology has brought about earth-shaking changes in people’s living environment. Educational informatization with the ultimate goal of realizing informatized education has brought opportunities for change in the field of higher education in the past ten years. There have been more and more opportunities. Teachers and students begin to use information technology to teach and learn. The emerging teaching methods that take students as the main body, such as blended learning, online learning, independent learning, inquiry learning, and collaborative learning, have received increasing attention (Huang, Zeng & Zheng, 2010).

CONCLUSIONS

Through the research of grey correlation analysis method, it is found that the correlation degree between social welfare index and tertiary industry reaches the average value but it is a little low, and China’s industrial structure is still undergoing continuous adjustment. The suitability of technological progress affects the essence of industrial restructuring is the flow of production factors among industries. And to achieve reconfiguration, promoting the modernization and marketization of the service industry is conducive to the internal adjustment of the industrial structure, the introduction of talents and the adjustment of the human resources structure, and more employment opportunities. Therefore, to achieve the deep integration of the welfare index and the tertiary industry, we must start with the optimization of the tertiary industry and the integrated development of the primary, secondary and tertiary industries.

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