

Study on Human Capital Structure Assessment and Relative Poverty Governance

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Abstract. China has completed the target task of fully eradicating poverty among the absolute rural poor under the current standards on schedule, and the milestone victory in poverty alleviation means that the focus of poverty alleviation will shift from helping absolute poverty in the past to targeting relative poverty. Human capital is always a fundamental intrinsic factor in alleviating the problem of relative poverty. This paper completes action on the usual policy of shifting the focus of China's poverty alleviation strategy to comparative poverty management, and explores how the optimization of human capital structure affects the alleviation of comparative poverty, and what is its intrinsic influence logic? Using spatial vector theory and coupled synergy model, we construct a model to assess the level of human capital structure from the perspectives of both advanced human capital and high-low skill complementarity, and conduct regression analysis to examine the total effect of human capital structure optimization on relative poverty, and use methods such as mediating effect model to explore its intrinsic influence mechanism in depth, and conduct robustness test to conclude that human capital structure optimization has a positive effect on the alleviation of relative poverty. The results show that the optimization of human capital structure has a positive effect on the alleviation of virtual poverty. This study provides policy suggestions and paths to reduce relative poverty through optimizing human capital structure in the post-poverty era.

Keywords: High and Low Skill Complementarity, Human Capital Advanced, Human Capital Structural Optimization, Intermediation Effect, Relative Poverty.

1. Introduction

The report of the twentieth session proposed that "realizing common prosperity for all people" is the essential requirement of Chinese modernization, and that we should "solidly promote common prosperity". At present, China has made the great achievement of eliminating absolute poverty, but there is still a long way to go to achieve common prosperity for the whole people, and alleviating relative poverty is a key part of promoting common prosperity for the whole people.

Human capital is an inherent key factor in alleviating relative poverty. On the one hand, compared with other dependent accumulation factors of production, human capital is an indispensable production input factor for obtaining output, and it is more capable of innovating to generate more driving factors for economic growth, which is an inexhaustible driving force for promoting sustained economic growth (Chen Zhiguo, 2017) [1], and sustained economic growth and coordinated development can accumulate a large amount of social wealth, which is a prerequisite for alleviating the relative poverty problem. On the other hand, since the difference in the level of human capital largely leads to the difference in the level of regional economic development, in order to be able to balance the level of regional economic development, narrow the gap in economic development, and govern relative poverty, human capital construction should be taken as a breakthrough in the governance of relative poverty.

However, most of the existing studies focus on the relationship between human capital stock and relative poverty, and less explore the inner relationship between human capital structure optimization and relative poverty management; at the same time, the studies on human capital structure optimization also focus on its advanced aspects, and the studies on skill complementarity in human capital structure are rare, while according to the theory of heterogeneous labor location selection, skill complementarity exists between high-and low-skilled labor According to the theory of heterogeneous

labor location selection, there is skill complementarity between high-and low-skilled labor (Ouyang Jing, 2021) [2], and this skill complementarity still has a significant positive effect on poverty reduction. And fewer scholars have studied the comparative poverty problem of the role of human capital structure through the mediating mechanism of influencing industrial structure upgrading. This paper attempts to systematically and scientifically assess and measure the human capital structure of each province in China in terms of both the advanced human capital structure and the complementarity of high and low skills, so as to empirically analyze the effect of human capital structure optimization on the governance of relative poverty, and further investigate the transmission mechanism of its effect by using the mediating model of industrial structure upgrading, with the aim of providing a basis for the path of "optimizing human capital structure to help alleviate relative poverty". The aim is to make sure a more diversified research direction and a more multidimensional governance perspective for the path of "alleviating relative poverty through optimizing human capital structure".

2. Literature

2.1. Study on the factors of relative poverty reduction

At the micro level, a study by Zhou Li and Shao Junjie (2020) using Probit and Mlogit models analyzed from both subjective and objective criteria showed that non-farm employment is beneficial in reducing the probability of objective or subjective relative poverty occurrence among rural residents [3].

At the macro level, Huang Wei (2019) showed that the "tilted insurance poverty alleviation policy", which is centered on appropriate financial subsidies for individual contributions, lowering the starting line, relaxing the cap line, and increasing the reimbursement ratio, can significantly stimulate the demand for health insurance among poor households, and has a significant positive impact on their income and expenditure and other welfare, thus playing a positive [4]. The study by Luo Biliang et al. (2021) shows that empowerment, empowerment and inclusion can alleviate farmers' relative poverty and thus enhance their well-being [5].

2.2. A study related to the advanced structure of human capital

Existing studies have focused on two main areas:

One is the study of the relationship between advanced human capital structure and economic growth. Liu Zhiyong (2018) were the first to define and measure the advanced human capital structure, and showed through empirical analysis that the advanced human capital structure has a facilitating effect on economic growth, and analyzed the heterogeneity of the advanced human capital structure in the east, middle and west [6]. Cheng Rui et al. (2019) empirically tested that advanced human capital structure promotes economic growth by promoting innovative industrial structure and accelerating urbanization through inter-provincial panel data from 1996-2015 [7].

Second, the relationship between the progressive human capital structure and industrial structure was investigated. A study by Dai Kui-chao et al. (2020) using panel data of prefecture-level cities in China from 2005-2016 found that structural advancement of human capital achieves structural upgrading of the service industry by improving labor efficiency and promoting technological innovation in the service industry [8]. Li Min et al. (2020), based on 30 provincial-level panel data in China from 2001-2018, found that at the national level human capital structural advancement significantly promotes industrial structural upgrading, but the impact effects differ in three regions in the east and west [9]. An empirical test by Pan, Sunan and Li. Bei (2020) Wei using time series data from 1995-2018 shows that the innovative human capital structure can consistently promote industrial structure upgrading [10].

2.3. A study related to the complementarity of high and low skills

The heterogeneity of labor force is especially manifested in the heterogeneity of labor force skill levels. Different labor force individuals have different skill levels, and their cooperation will greatly reduce production costs and achieve incremental returns to scale. High- and low-skilled human capital are complementary, and their complementary levels increase with the size of the city, and high-skilled human capital is the engine of the city, which can increase urban population and wages, and the growth of high-skilled labor will increase the demand for low-skilled labor. (Liang & Lu, 2017; Weiping Wu, 2020) [11, 12]. In fact, high-skilled labor and low-skilled labor show a mutual enhancement and mutually reinforcing effect to some extent (Zhu Jiguang, 2021) [13], and increasing low-skilled human capital in cities with large economies and promoting better complementarity between high- and low-skilled human capital can help raise the overall urban wage level (Du Qunyang and Yu Hangdong, 2018) [14].

2.4. Study on the relationship between human capital and relative poverty

In terms of research on the impact of human capital on relative poverty, the existing literature mainly examines its alleviating effect on relative poverty from the perspective of human capital stock and multidimensional human capital stock.

In terms of human capital stock. Scholars have focused on the impact of human capital factors such as basic education, work experience, and vocational education on poverty, and concluded that basic education is the core human capital factor that affects farmers' poverty (Wang Harbour et al., 2009; Zhang Yuan et al., 2012) [15, 16]. Guan, Aiping and Li, Jingyi (2017) argued that family human capital and social capital have a significant negative impact on farm household poverty, and that increasing human and social capital accumulation is beneficial to reduce the chance of becoming a poor household [17].

In terms of multidimensional human capital stock. Yao, Yi, and Dynasty (2010) used microsurvey data from CGSS to conduct an empirical analysis showing that all three forms of human capital - education, skills training, and health status - have significant mitigating effects on the relative poverty of Chinese urban households [18].

3. Research proposal

Drawing on Liu Zhiyong [6], this paper defines advanced human capital structure as: the process of a country or region gradually increasing the proportion of advanced human capital by adjusting and optimizing the human capital structure to continuously meet the demand for high quality human capital for economic and social development. The advanced human capital structure provides talent and intellectual support for economic development, which mainly promotes the transformation and upgrading of primary and secondary industries from the technological upgrading and structural upgrading, and links whether the advanced human capital with the education level, which in turn is associated with the education expenditure.

Drawing on Huang Xiang [19], this paper defines skill complementarity as the complementarity of skills among labor forces employed in the same region. The heterogeneity of the labor force is especially manifested in the heterogeneity of labor force skill levels; different labor force people have different skill levels, and their cooperation will greatly reduce production costs and achieve incremental returns to scale. The skill complementarity between high-level human capital and low-level human capital mainly promotes the meaningful development of the tertiary industry in two aspects: strength in numbers and efficiency improvement.

Drawing on Amartya Sen's (2001) [20] study, this paper defines the relative poverty sector from the comparative perspective of the reference system as a situation in which individuals' desires in certain areas such as income, comfortable occupation, or rights are less satisfied compared to other members of society. Compared with utter poverty, relative poverty is characterised by a large population base, both urban and rural areas, and high risk of poverty, and faces many difficulties in

terms of sustainable income generation and endogenous power. The upgrading of industrial structure mainly refers to the progress of industries from lower to higher forms, and the gradual transfer of the center of gravity from primary and secondary industries to tertiary industries. The role of industrial structure upgrading in serving to alleviate the problem of relative poverty is mainly reflected in the three major aspects of growth effect, employment effect and urbanization effect.

Through the above theoretical sorting, we can clarify the following basic logical mechanism, as in Figure 1:

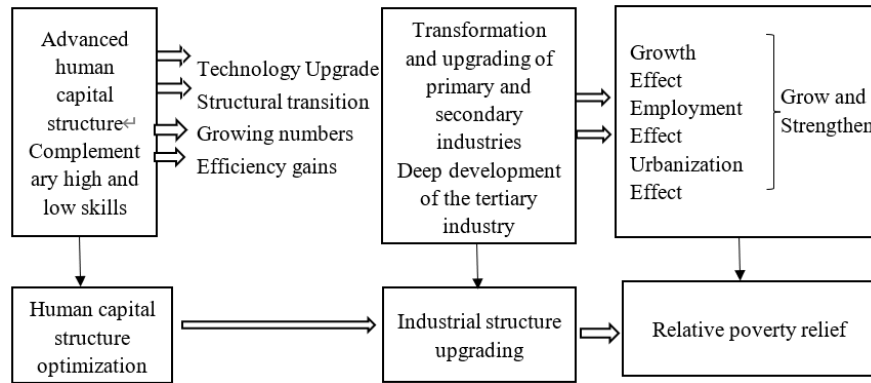


Figure 1. Basic logic mechanism diagram

3.1. Index Measurement

(1) Index of advanced human capital structure

In this paper, we use the spatial vector theory of Liu [6] to measure the advanced human capital structure (HSTRUC, human capital structure). The vector angle approach can take into account the influence of the relative change of each level of human capital on the advanced level of human capital structure, and can portray the advanced level of human capital structure from an overall perspective. The specific measurement steps are as follows:

In the first step, human capital is divided into five categories according to the level of education: illiterate and semi-literate, elementary school, junior high school, senior high school (including secondary school), and college and above (specialist, undergraduate, and graduate), and the proportion of each category of human capital is taken as a component of the spatial vector in turn, thus forming a set of 5-dimensional human capital spatial vectors $X_0 = (x_0, 1, x_0, 2, x_0, 3, x_0, 4, x_0, 5)$.

In the second step, the set of basic unit vectors $X_1 = (1, 0, 0, 0, 0)$, $X_2 = (0, 1, 0, 0, 0)$, $X_3 = (0, 0, 1, 0, 0)$, $X_4 = (0, 0, 0, 1, 0)$, $X_5 = (0, 0, 0, 0, 1)$ are chosen as the base vectors, and the angle θ_j between the human capital space vector X_0 and them is calculated in turn $\theta_j (j=1, \dots, 5)$:

$$\theta_j = \arccos \left(\frac{\sum_{i=1}^5 (x_{j,i} \cdot x_{0,i})}{(\sum_{i=1}^5 x_{j,i}^2)^{1/2} \cdot (\sum_{i=1}^5 x_{0,i}^2)^{1/2}} \right) \quad (1)$$

In formula (1), $x_{j,i}$ denotes the i -th component of the basic unit vector set $X_j (j=1, \dots, 5)$, $x_{0,i}$ denotes the i -th component of the vector X_0 .

In the third step, the weights of the pinch angle θ_j are determined and the index of advanced human capital structure is calculated.

$$HSTRUC = \sum_{i=1}^5 (W_j \cdot \theta_j), \quad W_j \text{ is the weight of } \theta_j \quad (2)$$

According to equation (1), combined with the monotonously decreasing nature of the inverse cosine function, it is known that in the process of human capital structure change characterized by the evolution of low-level human capital to high-level human capital, if the proportion of less educated human capital falls relatively faster and the proportion of more educated human capital rises relatively faster, the larger the weighted summation HSTRUC is, the higher the level of high-level human capital structure is.

(2) High and low skill complementarity index indicators

In this paper, Wu Weiping [12] proposed to use a coupling model to measure the high-low skill complementarity index. The complementary or substitution relationship between high- and low-skilled workers is a coupled system with endogenous nature, which is an organism of mutual influence and intertwined linkage. With the concept and principle of "coupling" in physics, the degree of complementarity is analyzed by the skill complementarity index (SCI). The specific formula for the calculation of the skill complementarity index is:

$$\begin{cases} SCI_{i,t} = \sqrt{C_{i,t} \times T_{i,t}} \\ C_{i,t} = \sqrt{\frac{skill_{i,t} \times unskill_{i,t}}{skill_{i,t} + unskill_{i,t}}} \\ T_{i,t} = \alpha \times skill_{i,t} + \beta \times unskill_{i,t} \end{cases} \quad (3)$$

Where SCI is the labor skill complementarity index, and the higher the index, the higher the level of labor skill complementarity; *i* denotes city and *t* denotes time; skill and unskilled denote the proportion of the number of high-skilled workers and low-skilled workers, respectively; *C* is the degree of coupling between high-skilled and low-skilled workers; *T* is the comprehensive coordination index of the two types of workers, reflecting the contribution of high-skilled and low-skilled workers' *T* is the comprehensive coordination index of the two types of workers, reflecting the contribution of the overall development level of high- and low-skilled workers to the skill complementarity index; α and β represent the contribution rate of high-skilled workers and low-skilled workers, respectively, and $\alpha + \beta = 1$. This paper draws on research ideas of Du Qunyang and Yu Hangdong [14] and the values of α and β parameters as 0.6 and 0.4, respectively.

(3) Relative poverty incidence

In this paper, we propose to use the income proportional method [21] to draw the relative poverty line. The Organization for Economic Cooperation and Development (OECD) conducted a large-scale survey of member countries in the context of economic globalization and proposed to use 50% of the median income of the population as the poverty criterion to identify relative poverty and set the criteria for livelihood assistance.

The first step is to draw a relative poverty line.

Relative Poverty Line = Median income of the local population $\times$ 50%

The second step is to measure the incidence of relative poverty.

$$\text{Relative poverty incidence} = \frac{\text{Number of people with incomes below the relative poverty line}}{\text{Total population}} \quad (4)$$

3.2. Selection of explanatory variables, core explanatory variables and related variables

Table 1. Selection of relevant variables

Variable Type	Variable Name	Symbol	Measurement
Explained variables	Relative poverty incidence	RP	(Number of people with incomes below the relative poverty line)/(Total population)
Core explanatory variables	Human capital structure optimization	OHS	$c_1 HSTRUC + c_2 SCI$
Intermediate variables	Industrial structure upgrading	IND	$\sum_{i=1}^3 STRUCTURE_i \times i$ $STRUCTURE_i$ denotes the share of employed population in the <i>i</i> th industry
Control variables	Government Education Spending	EDU	

3.3. Data sources

This paper takes the panel data of 31 provinces in China from 2011 to 2020 as the research object, and the relevant data are obtained from the National Bureau of Statistics and provincial statistical bureaus, including the China Statistical Yearbook, the China Census Yearbook, and the Statistical Bulletin of National Economic and Social Development in previous years.

3.4. Empirical analysis

(1) Construction of the empirical model

With reference to the existing research paradigm, the following benchmark model is constructed to examine the aggregate effect of the optimization of human capital structure on relative poverty:

$$RP = c \cdot OHS_{i,t} + CONTROL_{j,i,t} + \lambda_i + \tau_t + \varepsilon_{i,t}$$

$$= c_1 HSTRUC_{i,t} + c_2 SCI_{i,t} + CONTROL_{j,i,t} + \lambda_i + \tau_t + \varepsilon_{i,t} \quad (5)$$

Where the explanatory variable RP denotes the relative poverty incidence; the core explanatory variable OHS denotes the human capital structure optimization index, including the human capital structure advanced index HSTRUC and the high-low skill complementarity index SCI; CONTROL denotes the relevant control variable, i.e., per capita education expenditure; λ and τ denote the area effect and time effect, respectively; ε denotes the random disturbance term; i denotes the area; t denotes time.

(2) Analysis of empirical results

First, the results of the benchmark regression are interpreted. The estimated coefficients of the human capital structure optimization index C can be used to initially determine the direction of the impact of human capital structure optimization on alleviating the relative poverty problem, and the degree of impact. Further, by analyzing the estimated coefficients c_1 and c_2 of the advanced human capital structure coefficient and the high-low skill complementarity index, we can also determine the different impacts of the two different directions of human capital structure optimization on the alleviation of comparative poverty. Second, the robustness of the benchmark regression is tested. To further verify the robustness of the baseline regression results, on the one hand, this paper will also use robust regression model for robust regression. On the other hand, this paper will also take into account the actual situation in China and delineate the relative poverty line from low, medium, and high standard lines (Ying Li et al., 2021) [21] to verify whether the human capital structure has a positive effect on alleviating the relative poverty problem under different standard delineations in order to enhance the reliability and scientific validity of the conclusions to a greater extent. As showing in Table 2 below:

Table 2. Relative poverty lines under different criteria

Method Definition	Base selection	Standard Line	Relative Poverty Line
Income proportional method	One line for the whole country	40% median income	(low standard)
		50% median income	(Medium standard)
		60% median income	(high standard)

3.5. Mediation analysis

(1) Construction of the mediating model

In order to test whether the intermediary mechanism of industrial structure upgrading exists, the following intermediary effect model is constructed by referring to the intermediary effect test of Baron & Kenny [22], using a three-step regression method:

$$RP_{i,t} = c \cdot OHS_{i,t} + CONTROL_{j,i,t} + \lambda_i + \tau_t + \varepsilon_{i,t} \quad (6)$$

$$IND_{i,t} = a \cdot OHS_{i,t} + CONTROL_{j,i,t} + \lambda_i + \tau_t + \varepsilon_{i,t} \quad (7)$$

$$RP_{i,t} = c' \cdot OHS_{i,t} + b \cdot IND_{i,t} + CONTROL_{j,i,t} + \lambda_i + \tau_t + \varepsilon_{i,t} \quad (8)$$

Where the explanatory variable RP denotes relative poverty incidence; the core explanatory variable OHS denotes human capital structure optimization index; the mediating variable IND denotes industrial structure upgrading index; CONTROL denotes the relevant control variable, i.e., government education expenditure; λ and τ denote area effect and time effect, respectively; ε denotes random disturbance term; i denotes area; and t denotes time.

As in Figure 2, combined with the diagram of the mediator model, Eq. a denotes the coefficient of effect of structural optimization of human capital on industrial structure upgrading, other things being equal; b denotes the coefficient of effect of industrial structure upgrading on relative poverty alleviation, other things being equal; c denotes the total effect of structural optimization of human capital on relative poverty alleviation when considering the mediator variable, i.e., industrial structure upgrading; c' denotes the coefficient of effect of controlling for the mediator variable i.e., the direct effect of structural optimization of human capital on alleviating relative poverty when industrial structure is upgraded.

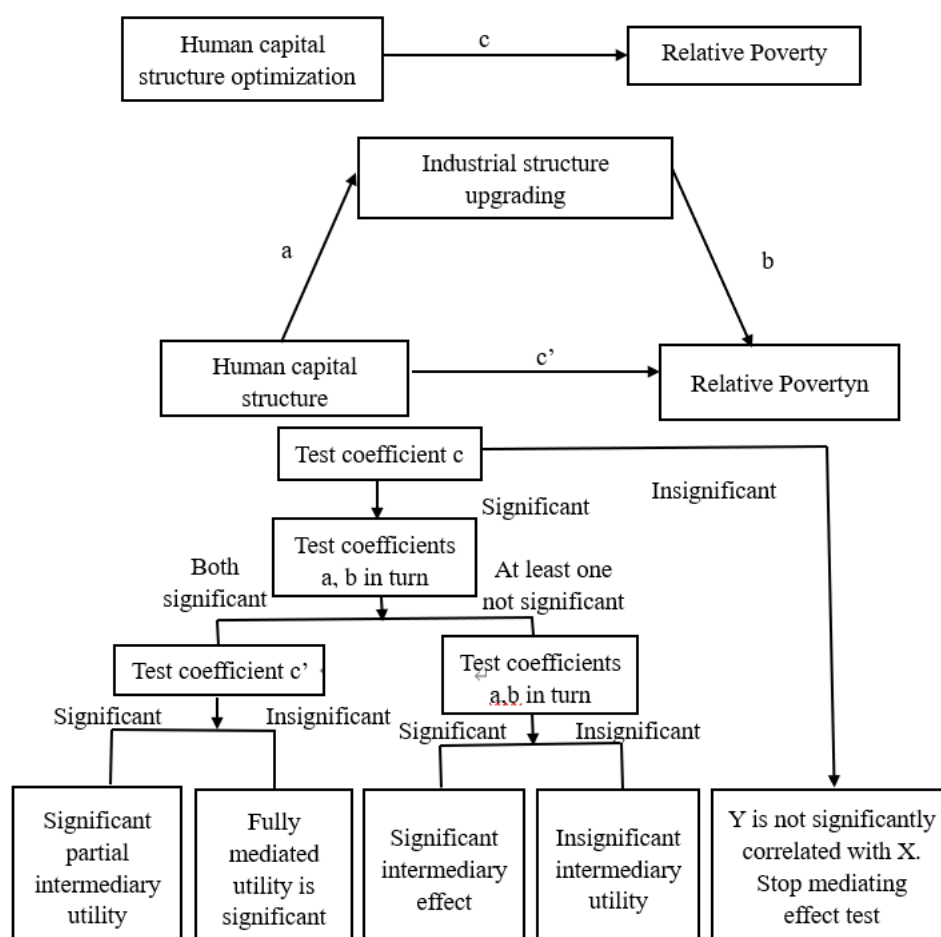


Figure 2. Intermediation effect model and analysis flow chart

(2) Analysis of the mediating effect

In order to investigate the inherent relationship among the three variables of human capital structure optimization, industrial structure upgrading and relative poverty, and to further verify the existence of the intermediary transmission path of "human capital structure optimization → industrial structure upgrading → relative poverty alleviation", this paper intends to draw on the research method

of MacKinnon and Warsi Dwyer, as shown in Figure 2, to analyze the mediating effects according to the above logic flow:

(3) Interpretation of results mechanism

From the above data processing and analysis, the following mediating effect reporting table can be derived, as shown in Table 3:

Table 3. Intermediary Effect Reporting Form

Effect	Total effect	Direct effect	Indirect effect
Calculation	c	c'	ab
Percentage		$\frac{c'}{c}$	$\frac{ab}{c}$

First, the intermediation mechanism is initially verified. By analyzing the significant coefficients a, b, c, and c', we can verify the existence of the intermediary transmission path of "optimization of human capital structure → upgrading of industrial structure → alleviation of relative poverty" and explore the internal mechanism of the effect of optimization of human capital structure on relative poverty.

Secondly, we analyze and interpret the various effects. By analyzing the precise effects, indirect effects and their respective percentages, we can measure the degree of influence of industrial structure upgrading in the process of human capital structure optimization to help alleviate relative poverty.

4. Main Conclusions and Recommendations

After the relevant empirical analysis and research, it is concluded that the advanced human capital structure and the complementary high and low skills promote the optimization of human capital structure, and the optimization of human capital structure alleviates relative poverty through the mediating effect of industrial structure upgrading, i.e., the optimization of human capital structure has a positive effect on the alleviation of relative poverty. In general, policy formulation should focus on the impact of human capital structure on alleviating relative poverty and its inherent mediating mechanism of industrial upgrading. Specifically, on the one hand, for regions with a shortage of high-level human capital, emphasis should be placed on developing education to improve the local human capital level; on the other hand, for regions with a surplus of high-level human capital but insufficient complementarity between high- and low-skilled workers, the incisiveness of cities should be enhanced, such as relaxing the restrictions on the settlement of low-skilled workers and enhancing the complementarity and collaboration between high- and low-skilled workers. In this way, we suggest directions to optimize the local human capital structure for the specific conditions of different regions, and thus help alleviate the problem of relative poverty.

References

- [1] Chen Zhiguo, Yang Shengbo, Du Jinhua, Li Chengyou. Study of the effect of rural human capital structure on agricultural economic growth [J]. Journal of Hebei University of Geosciences, 2017, 40(05): 79-84.
- [2] Ou Xiaojing, Li Hong. Heterogeneous labor concentration and industrial structure Upgrading-an empirical study based on panel data of prefecture-level cities in China [J]. Urban Issues, 2021(04): 74-86non-farm employment and alleviation of relative poverty - a two-dimensional perspective based on subjective and objective criteria [j]. Journal of Nanjing Agricultural University (Social Science Edition), 2020(4): 121-132.
- [3] Huang Wei. Insurance policy and Chinese poverty reduction: Experience, dilemma and path optimization [J]. Management World, 2019(1): 135-150.
- [4] Luo Biliang, Hong Weijie, Geng Pengpeng, Zheng Wolin. Empowerment, empowerment, and inclusion: Enhancing farmers' happiness in relative poverty Governance [J]. Management World, 2021(10): 166-181.

- [5] Liu ZY, Li HZ, Hu CH, Li CH. Advanced human capital structure and economic growth---also on the formation and reduction of the gap between the East, middle and west regions [J]. *Economic Research*, 2018(3): 50-62.
- [6] Cheng Rui, Ma Lili, Chen Xuan. The evolution of human capital structure and economic growth in China—Empirical Evidence from the Inter-provincial level [J]. *Business Research*, 2019(1): 60-70.
- [7] Dai, Kui-Chao, Li, Xiaoli, Luo, and Luo, Shuxuan. Advanced human capital structure, factor market development and structural upgrading of service industry [J]. *Finance and Trade Research*, 2020(10): 129-146.
- [8] Li Min, Sun Jiajia, Zhang Tingting. Research on the impact of advanced human capital structure on industrial structure upgrading---based on provincial panel data in China [J]. *Industrial Technology Economics*, 2020(8): 72-77.
- [9] Pan, Sunan, Li, Beiwei. Advanced human capital structure, industrial upgrading and sustainable economic development in China [J]. *Industrial Technology Economics*, 2020(10): 100-106.
- [10] Wenquan Lianga, Ming Lu. Growth led by human capital in big cities: Exploring complementarities and spatial agglomeration of the workforce with various skills [j]. *China Economic Review*, 2017.
- [11] Wu Weiping. A study of micro mechanisms of skill complementarity in urban workforce: a division of labor-based perspective [J]. *Social Science*, 2020(2): 74-84.
- [12] Zhu Jiguang. Spatio-temporal effects of labor skill complementarity and its influence on urban wages [J]. *Economic Economics*, 2021, 38(6): 13-20.
- [13] Du Qunyang, Yu Hangdong. Skill complementarity, income level and population urbanization of China's urban labor force from 2003 to 2015 [J]. *Geoscience*, 2019, 39(4): 525-532.
- [14] Wang Harbour, Huang Shaoan, Li Qin, Luo Fengjin. The impact of vocational skills training in rural residents' non-farm income [J]. *Economic Research*, 2009(9): 128-139.
- [15] Zhang Yuan, Xu Qing, Wu Jingjing. Industrialization in a country with a large agricultural population: China's experience in reducing rural poverty [J]. *Economic Research*, 2012(11): 76-87.
- [16] Guan Aiping, Li Jingyi. Human capital, social capital and farm poverty--an empirical analysis built on poor villages in Gansu Province [J]. *Education and Economy*, 2017(1): 66-74.
- [17] Yao Yi, Dynasty Ming. Interpreting the mechanism of urban poverty in China founded on the perspective of economic growth, human capital and social capital [J]. *Journal of Financial and Trade Studies*, 2010(10): 106-113.
- [18] Huang Xiang, Ao Rongjun. Labor migration and regional concentration of human capital based on skill complementarity, *Economic Geography*, 2009(03), 457-459.
- [19] Amartya Sen. *Poverty and famine* [M]. Beijing: The Commercial Press, 2001.
- [20] LI Ying, 2021, Standard setting, scale measurement and international comparison of relative poverty, *Development Studies* 38(05), 61-69.
- [21] BARON M, KENNY D. The moderator-mediator variable distinction in social psychological research: conceptual, strategic and statistical consideration [J]. *Journal of Personality and Social Psychology*, 1986, 51 (6): 1173-1182. MacKinnon D P, Warsi Dwyer J H. A Simulation Study of Mediated Effect measures [J]. *Multivariate Behavioral Research*, 1995, 30 (1): 41~62.