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Влияние образования на экономическое развитие страны

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РЕЗЮМЕ. Целью статьи является рассмотрение истории вопроса влияния образования на экономическое развитие страны. **Методы.** Анализ научной литературы, обобщение, наблюдение. **Результат.** Образование является не только важным символом человеческой цивилизации и прогресса, но и движущей силой социального и экономического развития. С наступлением эры цифровизации будущее человечества и процветание общества зависят от образования. Авторы обращают внимание на взаимосвязь образовательной структуры и экономического развития страны. В качестве примера рассматривается взаимосвязь между процессом модернизации образования в Китае и экономикой этой страны. Экономический рост связан с уровнем образования и внедрением информационных технологий в образовательный процесс таких, как: большие данные, облачные технологии, искусственный интеллект и т. д. **Вывод.** Авторы приходят к выводу, что модернизация образования имеет практическое значение для экономического развития страны.

Ключевые слова: высшее образование, модернизация, экономический рост, человеческий капитал, возможности, результаты образования

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Impact of Education on the Economic Development of Country

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ABSTRACT. The aim of the article is to analyze the impact of education on the economic development of the country. **Methods.** Analysis of scientific literature, generalization, observation. **Results.** Education is not only an important symbol of human civilization and progress, but also an important driving force of social and economic development. Future of mankind and prosperity of society depend on education within the advent of the era of digitalization. Authors pay attention to the relationship between educational structure and economic development of the country. The relationship between the process of modernization of education in China and the country's economy is considered as an example. Economic growth is associated with the level of education and the introduction of information technologies into the educational process such as big data, cloud-computing, artificial intelligence, etc. **Conclusions.** The authors conclude that modernization of education promotes practical significance for economic development.

Keywords: higher education, modernization, economic growth, human capital, opportunity, education outcome.

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Introduction

The most basic factor of is human being and the improvement of human being's quality depends on education for industrial upgrading and economic growth. Education is the driving force and fulcrum of economic growth and industrial upgrading from this point of view [1-5]. Education system is a subsystem of social system. It must be inextricably linked with the social industrial structure. Relationship between education and industry is also developing and changing with the development of social economy. Education has a more and more active impact on the industrial structure and plays a more and more important role in modern economic society. Education has increasingly become a key factor to promote and restrict industrial upgrading. This study puts forward some suggestions on the role of education in promoting China's industrial structure analyzing the interactive relationship between education and industrial structure [6; 9; 11; 13].

The aim of the article is to analyze the impact of education on the economic development of the country.

This study probes into the role of national education in the upgrading of China's industrial structure from the perspective of the New Structural Economics (NSE). A key point of NSE is that an optimal industrial structure exists at each developmental stage, matching the factor endowment structure, such as natural resources, labor, and capital (both physical and human); and as the economy develops and the factor endowment structure changes, the optimal industrial structure evolves correspondingly. However, a flexible and smooth industrial structure upgrading process requires simultaneous improvements in soft infrastructure, including financial, and legal institutions, industrial policies and national education. From the perspective of NSE, the national educational structure is endogenous in industrial structure and also can react on it, thus promoting China's industrial upgrading and economic growth. There is the positive correlation between the years of schooling and economic growth (GDP per capita) in several countries. NSE also indicates that Long-term sustainable and inclusive economic growth is a process of structural transformation with continuous technological innovation and industrial structure upgrading [7; 12; 14].

Methods

Analysis of scientific literature, generalization, observation.

Results and discussion

1. Education is an important way of improvement of labor force

According to Cobb-Douglas production function, $Y = AK^a N^{1-a}$, through calculus, it can get, $\frac{\Delta Y}{Y} = \frac{\Delta A}{A} + a \frac{\Delta K}{K} + (1-a) \frac{\Delta N}{N}$, where Y is the aggregate output, A is the total factor productivity, K is the capital and N is the labor force. That means the aggregate output growth can be affected by total factor productivity growth, capital growth and labor growth. Education can affect the transformation and upgrading of industrial structure through the factor of labor force (N). The education structure directly determines the labor structure, labor quality and the labor's knowledge level that can be obtained by the industry. Scientific and reasonable distribution of labor force will improve the upgrading speed and level of industrial structure. In this regard, the cultivation of talents in higher education provides core competitiveness for industrial structure upgrading and economic growth. Only by continuously cultivating high-level talents, developing and accumulating human resources, we can promote the transformation of industrial structure to high-end service industries and technology intensive industries. The improvement of the comprehensive quality of workers brought about by higher education will increase the labor cost of enterprises, so as to promote the transformation and upgrading of labor-intensive industry by adopting advanced technology and optimizing management processes. The improvement of the quality of higher education will upgrade the consumption demand of workers, which will force the transformation of the existing industrial structure to a more high-end industrial structure with more technology intensive industries and an increase in the proportion of high-end service industries.

2. Education is the key factor of scientific and technological innovation

In function $\frac{\Delta Y}{Y} = \frac{\Delta A}{A} + a \frac{\Delta K}{K} + (1-a) \frac{\Delta N}{N}$, A is the total factor productivity, which mainly refers to scientific and technological innovation. Education can promote economic growth, thus conduce to industrial upgrading through the factor total factor productivity (A). Science and technology is the source of industry development. "Science" is a theoretical system to understand the knowledge of the world system. "Technology" is the process of applying scientific knowledge to practice. Sci-

ence and technology have improved the labor productivity in the field of social production and enhanced the power of human beings to transform nature and promote social development and progress. Education is an important means of reproduction of scientific knowledge. It can promote the institutionalization of science and technology. It can also be helpful to scientific and technological research. Technological diffusion and technological transfer, the development of higher education promotes the optimization and upgrading of industrial structure with the help of three paths of technological innovation.

3. Education structure and industrial structure should match with each other

Through above analysis, either via labor force or total factor productivity in Cobb-Douglas production function, education can promote the accumulation of endowment factor: human capital, hence conduce to industrial upgrading.

Different from the traditional view that education for workers is consumption expenditure, the theory of human capital holds that investment in education, like the construction of material capital, is also an investment. Therefore, a country's economic growth is not only related to capital accumulation, but also to human capital, that is, the education level of workers. L. Prichett challenged the theory of human capital in full swing [8]. The national education investment of many developing countries has little effect, and the change of human capital can hardly explain the difference of transnational economic growth. In the past few decades, the national education in various regions of the world, especially in the low-income sub Saharan Africa, has improved, but the income level has not been significantly improved. A. Seshadri and R. E. Manuelli, believe that for economic growth, the amount of education is not important, but the quality of education on the explanation of this phenomenon. They found that considering the quality of national education, human capital is more important in terms of cross-border income gap [10]. Different from the idea of emphasizing the quality of national education, it is more convincing to emphasize the suitability of national education structure and industrial structure degree. Pri-

mary education and secondary education are more suitable for training imitators, while higher education is more inclined to cultivate innovators. Appropriate national education structure has an important impact on industrial upgrading.

Conclusion

In a word, the root of the debate on the role of national education in economic development lies in the neglect of the demand of industrial structure for educational structure. The factor endowment structure of an economy in a certain development stage determines its optimal industrial structure, and different industrial structures have different demands on education structure. Therefore, each optimal education structure supply system needs to match with the corresponding industrial structure, so as to effectively realize the function of education, obtain the highest return on human capital investment, promote economic development and promote the employment of workers. If the educational structure and industrial structure do not achieve the optimal match, then the return rate of human capital will not reach the maximum. it will lead to structural unemployment. Structural unemployment refers to the unemployment caused by the inconsistency of labor supply and demand structure. On the one hand, if a country only pays attention to the investment in education and does not pay attention to the development of corresponding industrial structure, the education structure is too advanced for industrial structure, the educated labor force will undoubtedly flow to other areas with higher industrial structure. On the other hand, if the education is too lagging for industrial structure, it will also be detrimental to the upgrading of industrial structure and economic growth.

Therefore, the government should establish a dynamic adjustment mechanism of education structure and industrial structure. With the upgrading of industrial structure, the national education structure also needs to be upgraded. While upgrading the national education structure, a country should also pay attention to promoting the development of industrial structure. Otherwise, educational structure and industrial structure will become mutual constraints.

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