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The Impact of Population Aging on a Country's Comparative Advantage

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Abstract

As one of the most basic and important elements in a country's economic development, population will have a far-reaching impact on a country's development. The rapid development of China's economy is inseparable from the comparative advantage of labor force. However, with the deepening of aging, the labor cost increases, the demographic dividend decreases, and the traditional industrial production mode is unsustainable. At the same time, new industries characterized by digital high technology are booming, while China's export industry is seriously solidified and mostly at the low end of the value chain, so the export industry needs transformation and upgrading, in which human capital is an important driving force. Therefore, it is of great significance to analyze the impact of aging on China's comparative advantage from the perspective of human capital. Therefore, under the background of the deepening degree of aging in China, this topic qualitatively analyzes the relationship between human capital and the transformation and upgrading of export industry from the perspective of human capital, and deduces the theoretical mechanism and path of human capital promoting the optimization and upgrading of export product structure on the basis of theoretical analysis. At the same time, it carries out the econometric analysis and test of panel data and cross-sectional data, introduces relevant variables and quantitatively analyzes the impact degree, Then it tests and summarizes the previous conclusions. Finally, according to the analysis results, it puts forward some suggestions to optimize China's trade structure and enhance competitiveness under the background of aging.

Keywords

Aging; Export Trade; Structur Comparative; Advantage.

1. Introduction

In the context of economic globalization, the process of China's reform and opening up is accelerating day by day. Especially since China's entry into WTO, China's economy has achieved rapid growth. The most important factor is the large labor population and low price. Relying on the factor endowment advantage of labor force, China has been mostly engaged in the production and export of labor-intensive products, and therefore embedded in the low-end link of the value chain. With the in-depth development of economic transformation, the production and export of labor-intensive products show a downward trend. However, at present, capital intensive industries are not mature. Compared with developed countries, they have small advantages and low competitiveness, and still cannot replace the leading position of labor-intensive industries. In recent years, China's economic development has entered a new normal, the speed of economic development has slowed down, and at the same time, major changes have taken place in the population structure.

Population age structure is an important element of a country's comparative advantage, which has a great impact on a country's trade structure. With the change of world trade mode and the

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increase of demand for labor skills, China's original rough industry is unsustainable. The report of the 19th CPC National Congress pointed out that China needs to change its development model and explore new demographic dividends to promote the optimization and upgrading of industries and achieve higher quality economic development.

Based on the above background, from the perspective of human capital, analyzing the impact of population aging on a country's comparative advantage is of great significance to optimize China's export industrial structure, enhance international competitiveness and promote high-quality economic development.

2. Research Significance

2.1. Theoretical Significance

From a theoretical Point of view, at present, most scholars rarely investigate the impact of human capital on the transformation and upgrading of export industry under the background of aging. Therefore, from the perspective of human capital, this paper summarizes China's aging trend, labor comparative advantage and human capital factor endowment, then studies the impact of population aging on a country's comparative advantage, clarifies the relationship between the three, and deduces the mechanism and path of human capital promoting the transformation and upgrading of export industry, It can provide basis and reference for improving China's export competitive advantage and realizing the optimization and upgrading of export industrial structure.

2.2. Practical Significance

From a practical point of view, population aging is increasingly becoming a serious global problem. In the context of globalization, for China, which has long relied on population advantages, the deepening degree of aging is both an opportunity and a challenge. On the one hand, labor-intensive industries will lose their cost advantage and the original rough economic development model will be unsustainable; On the other hand, the aging population will force the improvement of labor quality, realize the second demographic dividend, and urge enterprises to increase capital and technology investment, to optimize and upgrade the export industrial structure. Therefore, from the perspective of human capital, it is of great practical significance to study the impact of population aging on a country's export comparative advantage.

3. Journals Reviewed

At present, there are few articles directly studying population transformation, human capital and export commodity structure. In the early stage, it mainly analyzed the relationship between population and economic and industrial development from a macro perspective. However, with the development of economy, the changes of population age structure, workers' education level, supply and the impact of human capital on economy and trade have been paid more and more attention. The research of Wang Weiguo, Liu Feng and Hu Chunlong (2019) shows that the population age structure will have different effects in different types of countries. In developed countries, the income effect of birth rate should be greater than the substitution effect, and the substitution effect of prolonging life expectancy should be greater than the income effect. In developing countries, the increase of life expectancy and the decrease of birth rate will have an economic growth effect. Cai Fang (2009) and Song Ping (2012) both believe that the end of China's demographic dividend will further promote the increase of labor costs and is not conducive to the development of industry. Williem van zandweghe (2012) also pointed out that China is gradually losing its demographic dividend. If it does not transform and upgrade its export industry, it may lose its comparative advantage. In response to these problems, Shao

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Mimi (2020) proposed to optimize the industrial structure of export commodities, so as to reduce the impact of aging on a country's economy and the international market demand for export products.

The complexity of export products can measure a country's position in the international division of labor, and also reflect a country's export comparative advantage to a certain extent. At present, there are few studies on human capital, population structure and export commodity complexity, and most of the existing studies focus on theoretical research. Sayan (2005) was the first foreign scholar to study the relationship between population aging and export trade structure. Through diamond model, it is concluded that population aging will promote the accumulation of capital factors in a country, reduce the relative price of capital-intensive commodities and promote the export of capital-intensive commodities. Canning (2007) believes that the quality of labor force matched with technological innovation and industrial structure is the power source to promote the upgrading of industrial structure. Andersson (2001) also believes that the change of natural structure of population can affect a country's trade and economy through the change of human capital.

Based on the research of foreign scholars and taking China as the research object, domestic scholars also began to study the relationship between the change of population age structure, the complexity of export products and human capital. Xue Jiliang (2013) established a linkage equation set model and found that human capital and industrial optimization promote each other through inter provincial data test. Huang Wenzheng (2011) used VaR method to estimate, and found that human capital has a positive effect on the upgrading of industrial structure. Dai Qian and BIE Chaoxia (2006) considered the externality of human capital, constructed an endogenous technological change trade model, analyzed the dynamic relationship between human capital, comparative advantage and industrial upgrading, and believed that the level of human capital determines the location of factor endowment and the height of industrial structure. Cai Xing (2016) found that the aging population forced the optimization and upgrading of China's export structure. In addition, by establishing diamond model, Wang Youxin and Zhao Yajing (2016) proved that in terms of capital intensive products, countries with a small population and a high degree of aging have more export comparative advantages.

Through sorting out the previous literature, it is found that first, it mainly focuses on the relationship between population and macro-economy, and less considers the relationship between population and the adjustment and upgrading of industrial structure; The research on the relationship between the total population and trade dividend in the early stage is rarely concerned, while the research on the relationship between the total population and trade dividend in the later stage is mainly focused on the relationship between the population and the population structure; Third, the existing research on human capital and industrial structure transformation is mostly based on the qualitative analysis of theory and policy. There is little in-depth research on how human capital promotes industrial optimization and upgrading, and there is little empirical analysis of its internal relationship with panel data.

Therefore, this project mainly discusses the relationship and mechanism of the impact of population aging on a country's comparative advantage from the perspective of human capital under the trend of aging.

4. Influencing Factors

First of all, compared with other countries, the development of China's population age structure is special, with the characteristics of rapid development, large regional differences, amazing aging development speed and ahead of economic development. China is facing the embarrassing situation of "getting old before getting rich". The degree of economic development is still unable to carry the accelerated aging population. It is facing a major

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challenge that the degree of population transformation does not match the degree of economic development. Secondly, since the 1980s and 1990s, China's export commodity structure has been greatly improved, and the export proportion has continued to rise steadily from mainly exporting labor-intensive products to capital intensive products. This phenomenon is closely related to the great improvement of China's capital endowment. Although high-tech products perform well in terms of export scale, at this stage, China's comparative advantage of high-tech products is still relatively weak, and the added value and technical content of products are not high, which determines that China's export of high-tech products is not obvious compared with developed countries. However, with the deepening of aging and the continuous strengthening of labor skill proficiency, China's export trade structure has been greatly improved. Therefore, if we can seize the opportunity to improve the export industrial structure, we will gradually realize the transformation of comparative advantage and add new impetus to China's export-oriented economic growth.

Finally, it is significant to explore the impact of population age structure on export comparative advantage from both theoretical and empirical levels

At the theoretical level, the derivation results of OLG model show that countries or regions with higher degree of population aging and fewer children. The zone has higher per capita capital and has more export comparative advantages in high-tech commodities

In general, considering the particularity of China's population age structure and the special period of economic structure transformation. Aging and fewer children bring great pressure on labor supply and social burden, but it will force China's industrial upgrading to a certain extent and realize the transformation of China's export comparative advantage; Moreover, in the case of low international competitiveness of China's high-tech products, China's cost advantage in exporting high-tech products brought about by the change of population age structure does improve China's export comparative advantage. Therefore, the aging population and fewer children have accelerated the evolution of China's comparative advantage.

5. Policy Recommendations

The aggravation of population aging not only makes the effective labor supply insufficient, but also causes the aging of labor population. Some enterprises, especially processing trade enterprises, will face the problems of "labor shortage" and "labor difficulty". The production capacity of enterprises will be affected and the export scale will be limited. Under the background of irreversible population aging, we should face up to the national conditions. If we take positive countermeasures, China can stand out in the new round of economic development and stand tall among the nations of the world with a higher attitude. Combined with the conclusions of this paper, the following suggestions are put forward:

1. Enhance human capital to offset the adverse effects of population aging

China implemented a comprehensive two-child policy in early 2016, which has increased the birth rate to a certain extent. However, if we want to offset the adverse impact of population aging on trade scale and increase labor supply is far from enough, we also need to improve "population quality", that is, pay attention to education investment and improve the education level of labor force. By improving the average education level of workers, we can cover the lack of labor force caused by population aging to a great extent, and the empirical analysis of this paper shows that human capital plays a very significant role in promoting the upgrading of export trade structure. If the input of human capital can be increased, the labor productivity of a country will be greatly improved, which will offset the harm of the reduction of the absolute number of labor force caused by the intensification of population aging. Therefore, the government should increase investment in education. First of all, it should further improve the popularization rate of compulsory education. The allocation of educational resources should be

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appropriately inclined to areas with backward economic development, especially some poor areas, where the dropout rate is still very high. The government needs to increase support and formulate assistance policies accurately. Then we should develop education at different levels and different majors, train all kinds of talents for social development, turn population pressure into human resource advantage, and reduce the impact of population aging; In terms of employing labor force, enterprises should not only pay attention to academic qualifications, but should pay attention to vocational training. They can provide subsidies for workers to participate in vocational training courses, and even provide free vocational training courses, so as to improve workers' vocational skills and labor quality, match training with market demand, improve practical skill level, and enable labor force to better meet the needs of enterprise production and development, only in this way can the goods of enterprises be competitive.

2. Increase R & D investment and promote the beneficial impact of population aging

From the surplus to shortage of traditional labor force and the gradual aggravation of China's aging, labor wages have been rising in recent years, the production costs of enterprises have increased significantly, and the international competitive advantage of export commodities has gradually weakened. Because the long-term extensive development model destroys the sustainable development ability of resources and environment, the development of China's export trade can no longer rely on the original extensive investment development model. Enterprises should increase R & D investment, so as to improve the capital and technology content of produced goods. The government needs to give enterprises appropriate preferential policies in R & D investment, improve relevant systems to protect and support enterprises' R & D investment, and help Chinese enterprises gain the initiative in export trade. At the same time, all industries should also actively learn advanced technology. Zhang Xuhong (2004) mentioned that the development of China's traditional industries such as resources and labor-intensive industries needs to introduce technology, change the demand elasticity of output factors, enhance their comparative advantages and continue to develop traditional industries. Therefore, China should improve its ability of independent innovation and use technological upgrading to drive the transformation of export commodities from low-tech content to high-tech content. For labor-intensive industries such as agricultural and sideline industries and textiles, it is necessary to absorb new technologies, new materials and new energy through continuous technology input, so as to improve the added value of products and transform them into new products with deep processing and high technical content. For capital and technology intensive industries such as electromechanical and high-tech products, it is necessary to formulate technical standards, constantly learn to carry out independent research and development, consciously reduce dependence on foreign technology, and give full play to the agglomeration and leading role of the National High-tech Development Zone, so as to make high-tech products become strategic products of China's future export trade and improve the international competitiveness of China's export commodities.

3. Increase the utilization of foreign direct investment

The empirical analysis shows that the contribution of foreign direct investment to the export of capital intensive commodities is very significant. Therefore, we should increase the utilization of foreign direct investment, make full use of technology spillover effect and promote the upgrading of enterprise product quality. In essence, foreign direct investment is an embodiment of international industrial division of labor. The home country makes foreign investment to realize the transfer of low-tech industries, so as to make the domestic industrial structure more reasonable and advanced. The invested countries can not only directly increase investment output, but also obtain advanced management experience and technical level through technology spillover effect. For China, on the one hand, we can actively introduce foreign capital, formulate and adopt reasonable foreign capital introduction policies, encourage investment from developed countries, make foreign direct investment more concentrated in

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capital intensive industries, and more effectively promote the optimization of China's industrial structure through high-quality foreign-funded enterprises. Therefore, how to reasonably and fully benefit the advanced technology brought by foreign-funded enterprises is an important issue of our concern; On the other hand, we can increase foreign investment, clarify the internal needs of China's industrial adjustment, formulate a reasonable industrial direction of foreign direct investment, transfer some labor-intensive industries and labor-intensive links in capital technology industries to other developing countries, stop some manufacturing and production links, and focus more on capital technology intensive links, such as product R & D and product marketing, Promote the optimization of China's industrial structure and realize the upgrading of export trade structure.

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