

Research on Population Aging, Human Capital Accumulation and High-quality Economic Development

Kehan Luo^{1,a,*}

¹*School of Economics and Management, Hebei University of Technology, Tianjin, China, 300131*

a. 948491238@qq.com

**corresponding author*

Abstract: In the 21st century, the huge scale of aging population, the rapid growth of the elderly population, and the "aging before getting rich" have led to tremendous changes in China's population structure. The ultimate reason is that China's fertility rate has dropped significantly. The change in China's population structure is bound to have an important effect on the social and economic development of China. Therefore, this essay creates a comprehensive evaluation of the effects of China's aging population on China's high-quality economic development through the literature review method, and draws the conclusion that China's aging population has a profoundly favorable effect on China's high-quality economic development.

Keywords: Population Aging, Economic Effect, Human Resources

1. Introduction

Population aging has become a global problem. Throughout human history, population production and reproduction in human society have been in a state of high mortality, a high birth rate, and a low growth rate for a long time. Since the industrial revolution in the 19th century, the rapid development of productivity has led to the rapid improvement of people's living and medical standards. As a result, the population developing tendency has been marked by low mortality, low birth rate and low growth rate. However, since 2005, the population over 60 years old has accounted for 10.3% of the world's population, which indicates that more and more countries have stepped into an aging society, and aging has become a problem that cannot be ignored.

An important factor in achieving high-quality economic development is population aging. Clarifying the link between the two has significant theoretical and practical implications. The majority of academics think that population aging has a detrimental effect on economic growth from the perspectives of labor force, savings rate and industrial structure. They are all based on the current state of development to predict the future trend, but they ignore the important factor that human society will continue to develop. New technologies can eventually replace artificial labor in some industries as science and technology advance and the level of output rises. Population aging will have a significant impact on promoting technological innovation, consumption structure, labor transformation, and so on [1]. Therefore, this essay employs the literature review method to study the effect of China's aging population on its high-quality economic growth over the previous two decades and finds that population aging has a considerable beneficial impact on China's high-quality economic growth, and will serve as a compass for the society of China's future development.

2. China's Aging Population Characteristics and Economic Development

2.1. Aging Population Characteristics

With the growth of the economy and advancements in science and technology, the life expectancy of the population has greatly increased. On the contrary, the fertility rate has gradually decreased. China's aging population has gradually increased, since its reform and opening up, as a result of the one-child policy. In China, the percentage of those over 65 has risen to 7% for the first time, which means that China has stepped into the aging society since 2000[2]. According to the Statistics Communique on National Economy and Social Development, China's elderly population over 65 reached 176 million by the end of 2019, making up 12.6% of the country's total population[3]. Throughout the aging process and the speed of economic development in various countries, it can be found that China has the largest population and the fastest aging rate of any developing country in the world. India is one of many countries with a similar development process to China, but its aging rate is far lower than that of China. In 2000, the per capita GDP of China, which had just stepped into aging society, was only \$959, and until 2018, the proportion of China's aging population had exceeded 12%, but the per capita GDP of China didn't exceed \$10000, which means that China is facing the serious problems of "aging before getting rich" and "aging before getting ready" [4].

2.2. Economic Development

China has maintained a high speed of economic development since the reform and opening up, but it has also brought about a number of negative issues, including resource waste and environmental degradation. As a result, it was suggested in the report of the 19th National Congress of the Communist Party of China that China's economic development model had changed from one of rapid development to one of high-quality development, with high-quality development serving as the foundation of Chinese economic development. Li et al. believe that population, technology, and capital are the basic production factors of economic development, and each factor is closely linked. The upgrading of any factor will drive the progress of other factors, so as to improve the quality of the entire economic development[5]. One link at a time, for instance, society's ongoing development drives technology's ongoing innovation, while technology's ongoing advancement drives labor skill growth and better capital allocation, resulting in an upgrade of production factors and more benefits for China's high-quality economic development. Among the three elements, technological innovation is generally considered to be the most important. Innovation is the primary factor driving economic development and the key enabler of the construction of a new economic system, claims the report of the 19th National Congress of the Communist Party of China. High-quality economic development is characterized by consuming the same amount of capital to get more achievements. Therefore, technological innovation is the only way to raise the standard of economic expansion.

Since China officially stepped into the aging society, the demographic dividend has disappeared. The degree of population aging is deepening, and the supply of effective labor in the labor market is falling short of demand, which is not helpful for the economy's high-quality development. Furthermore, the intensification of population aging will bring a number of issues in the economy and society, such as increased social security expenditure. When a large number of elderly people withdraw from the labor market, the government needs to increase its expenditure on pension insurance and medical insurance, which is undoubtedly a greater burden for the government. From 2003 to 2016, the urban medical insurance fund and pension insurance fund increased from 65.39 billion yuan and 311.12 billion yuan to 1076.71 billion yuan and 3185.38 billion yuan respectively. This demonstrates how aging populations are having a significant negative impact on economic

growth[6]. However, against the backdrop of the aging population, a reverse force mechanism will be formed, which can encourage companies to conduct technological innovation and speed the industrial structure's transition and modernization to a certain extent. Simultaneously, technological innovation will drive the level of human capital accumulation that is closely related to it, affecting the high-quality development of the economy.

3. Theoretical Analysis

3.1. The Influence Mechanism of Population Aging on High Quality Economic Development

Enhancing the effectiveness and quality of economic development is at the heart of high-quality economic development. From an economics perspective, Supply and demand are the key ways that population aging affects high-quality economic growth.

3.1.1. Supply

It has a great impact on the labor supply. As the aging of the population continues to intensify, Chinese work force size and share are both getting smaller. At the beginning of the 21st century, China's population of working age started to decrease after reaching its peak[7]. The direct consequence of the aging population is the reduction of China's labor supply. Additionally, China's workforce structure is aging as a result of the its aging population. The intensification of population aging will increase the percentage of workers who are middle-aged or older in China's labor market, which will affect labor productivity. The changes in labor supply and labor productivity will inevitably affect China's economic growth. However, this impact is only temporary. The decline of labor supply and labor productivity will form a reverse force mechanism for technological innovation in enterprises. This reverse force mechanism will urge enterprises to accelerate technological innovation. New technologies will replace part of the labor force, thus promoting economic growth[8].

3.1.2. Demand

The population aging significantly affects the savings rate. This hypothesis is based on the life cycle theory. According to the life cycle theory, people will set their own consumption level based on their own labor income throughout lives, attempting to achieve an average consumption level at each stage of life. The aging of the population will prolong the average life span of people, so people will try to increase their labor income when they are young and middle-aged to meet their consumption needs when they are old. In addition, population aging also has a significant impact on consumption. For the majority of elderly people, their consumption expenditure mainly focuses on medical insurance, health care products, etc. As the age increasing, people's physical quality is not as good as before. Therefore, when the aging population increases greatly, the consumption and expenditure on medical care will increase synchronously. At the same time, the per capita consumption of the aging industry will also increase greatly.

To sum up, ageing of the population will favor high-quality economic growth through both supply and demand.

3.2. The Influence Mechanism of Population Aging on Human Capital

Human capital is the wealth that employees bring to the table in the form of expertise, cultural level, professional quality, and state of health. The characteristics of Human capital is distinguished by the fact that it is associated with the specific person and is not transferred with the sale of goods. It mainly includes education capital, health care capital, labor force domestic outflow capital and immigration capital, of which education capital is the most important.

As far as education capital is concerned, most people believe that the economic burden of population aging has overtaken the share of education capital, as the intensification of population aging has increased people's pension savings. In addition, the aging of the population has made most of the public capital allocated by the government go to elderly care, medical care and other projects. However, it is undeniable that the extension of life expectancy also increases the return period of human capital. Compared with material capital, the higher return rate of human capital also urges people to increase their investment in human capital. Specifically, education capital can be roughly divided into two aspects, quantity and quality[9].

With the implementation of China's one-child policy and the changing attitudes of young people in China, China's fertility rate has inevitably declined, and the number of children born per family has also decreased. Therefore, the education mode of most families for children has changed from quantity to quality. More and more children have received high-quality education since childhood, which has improved the investment in human capital.

From the perspective of the quality of education capital, in 2000, there were only 723 students in secondary and higher education institutions for every 100,000 people in China. In 2018, this number reached 2658. In less than 20 years, the quality of China's human capital has achieved large-scale growth[10]. As the population's aging intensifies, the population of labor has decreased significantly. Enterprises can only increase the input of innovative resources to increase labor productivity and make up for the vacancy in the labor population. Enterprises' innovative technology requires sophisticated talents, so the labor force shortage population caused by aging population will promote the pursuit of higher education by more young people in order to meet the demands of each company.

3.3. The Influence Mechanism of Human Capital on High Quality Economic Development

Technological innovation is at the core of high-quality economic development. Only through innovation to drive economic development can our economy develop in a high-quality way. However, in the process of technological innovation, personnel is the most direct and important factor in technological innovation. Only by continuously accumulating human capital can a country's economy develop with quality. Population aging is getting worse, and fewer people are entering the labor market, which leads to the restriction of labor-intensive industries. To encourage high-quality economic growth, China must achieve the shift from labor-intensive industries to technology intensive industries[11]. Therefore, when people generally receive high education, the overall quality of China's labor force will be greatly improved, which will not only promote China's industry from labor-intensive to technology intensive, but also improve the labor productivity of enterprises. In addition, high-quality labor population will also improve their ability to learn independently and absorb knowledge and skills from abroad, promoting high-quality economic development. Compared with those who have only received secondary or primary education, those who have received higher education tend to have higher professionalism and innovation ability. When the labor force in the whole society generally has a higher level of innovation ability, it will undoubtedly contribute favorably to China's high-quality economic development.

In conclusion, building up one's human capital significantly helps to foster the growth of an economy that is of high caliber. As a result, population aging has a considerable positive effect on high-quality economic development.

4. Suggestion

Based on the theoretical logic that population aging affects the accumulation of human resources and high-quality economic development, the author demonstrates that ageing of the population has a favorable effect on high-quality economic growth and puts forward three suggestions.

Firstly, the government should improve old-age security and increase the consumption of the elderly. Pension security plays a significant part in improving the consumption desires and consumption levels of the elderly. Although the increase in pensions will add financial pressure on the government in the short term, in the long run, it can improve the welfare of the elderly and increase consumption, which in turn is beneficial to the evolution of society and the economy. In addition, with the increase in the elderly's demand for material and spiritual life, many elderly industries such as elderly tourism, medical insurance, healthcare supplies, and others, will emerge. The elderly's view on consumption determines the sustainable development of the elderly industry to a certain extent. The government should improve people's awareness of the elderly industry and services, and encourage enterprises to provide better products, and take care of senior people's actual requirements to accomplish high-quality economic growth.

Furthermore, China should seize the development opportunity brought by the aging population. High-quality economic growth will be significantly benefited by the aging of the population through both supply and demand. On the one hand, population aging has led to the growth of China's aging population, which has driven the development of the aging market. The aging industry has a beneficial impact on China's GDP. On the other hand, the population aging has changed the number and structure of China's labor force and reduced labor productivity. These factors have forced enterprises to accelerate technological innovation and increase investment in independent research and development capabilities. The above proves that technological innovation can successfully encourage the economy's high-quality growth, so the government should increase financial support to universities and encourage them to conduct scientific research. Simultaneous, universities and colleges ought to strengthen cooperation with enterprises, and understand the requirements timely, and actively apply relevant research results to production, so as to speed up the process of aging population forcing modernization of technology, and enhance the quality of China's economic growth.

Finally, China should build up its human capital more. This article demonstrates that the accumulation of human capital has contributed to the high-quality growth of the Chinese economy through the quantity and quality of human capital. At the same time, the accumulation of human capital has played a key role in promoting China's technological innovation. The government should establish a sound system of social security and health service to ensure the physical and mental health of citizens, and enable more young people to free themselves from complicated daily work and devote themselves to study and work. In addition, the government should increase the popularity of higher education to encourage more people to receive higher education.

5. Conclusion

This article mainly discusses population aging's effects on Chinese economy's high level of growth. It is determined that population aging can successfully boost the high-quality development of China's economy due to its effects on human capital accumulation, which have an impact on China's economy. In the future, China can combine Internet technology and population aging to further explore how population aging can contribute to China's high-quality economic development.

Reference

- [1] Li L.L., and Qin Q., *Population Aging, Social Security Expenditure and Economic Development* [J]. *Economic Issues Exploration*, 2020 (05): 40-52.
- [2] Zhao J., Yao D., *Population Aging, Industrial Intelligence and High Level "Going Global" of Manufacturing Industry* [J]. *East China Economic Management*, 2021,35 (02): 48-56. DOI: 10.19629/j.cnki.34-1014/f.200607005
- [3] Song X.Y, Luo C., and Zhao C.Y., *The impact of population aging on the optimization and upgrading of the service industry -- a dual perspective based on structure and efficiency* [J]. *China Population Science*, 2021 (02): 101-113+128

- [4] Shao M.M., Guo K.M., and Yang L.S., *Population Aging, High Quality Economic Development and Industrial Structure Transformation* [J]. *Industrial Economic Review*, 2020,11 (04): 76-92. DOI: 10.14,007/j.cnki.cjpl.2020.04.006
- [5] Li C.N., Ge J., and Zhao S.J.Y., *Artificial intelligence, aging and high-quality economic development* [J]. *Contemporary Economic Science*, 2022,44 (01): 77-91
- [6] Tian M.Y., Luo M., and Wu Q.T., *Population Aging, Financial Pressure and Bias of Basic Public Service Expenditure* [J]. *Northwest Population*, 2021,42 (04): 103-113. DOI: 10.15884/j.cnki.issn.1007-0672.2021.04.010
- [7] Fu J.H., and Cao X.C., *Research on the Impact of Population Aging on China's High quality Economic Development* [J]. *Economic Issues Exploration*, 2021 (06): 44-55
- [8] He D.M., and Liu P., *Population aging, transformation and upgrading of manufacturing industry and high-quality economic development -- based on the intermediary effect model* [J]. *Research on Economy and Management*, 2020, 41 (01): 3-20. DOI: 10.13502/j.cnki.issn1000-7636.2020.01.001
- [9] Liu W., and Zhang L.Y., *Economic development potential and human capital quality* [J]. *Management World*, 2020, 36 (01): 8-24+230. DOI: 10.19744/j.cnki.11-1235/f.2020.0002
- [10] Liu C.K., and Lin M.Y., *Population Aging, Human Capital Accumulation and High Quality Economic Development* [J]. *Economic Issues Exploration*, 2020 (07): 168-179
- [11] Chang X.F., and Song Y.H., *Financial expenditure, human capital accumulation and high-quality economic development -- a study based on dynamic stochastic general equilibrium model* [J]. *Macroeconomic Research*, 2022 (06): 15-28+56. DOI: 10.16,304/j.cnki.11-3952/f.2022.06.005