

The Impact of Population Aging on Regional Economic Growth: A Literature Review

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Abstract. The impact of population aging on regional economic growth is an important topic to improve the quality of economic development and avoid economic risks. Firstly, after reviewing the literature on population aging and economic growth at home and abroad, it is found that the impact of population aging on economic growth by scholars at home and abroad is mainly focused on the impact of population aging on various factors of economic growth and the impact of population aging on economic growth. Then it points out the shortcomings of the current research. Finally, based on the above analysis, it puts forward the future research prospects.

Keywords: population aging; economic growth; economic risks.

1. Introduction

The problem of population aging caused by the change of population structure first appeared in the industrialized European countries, and attracted extensive attention of Western researchers. Pitch, a French demographer, wrote the earliest book on population ageing, (Population Ageing and Social and Economic Consequences), which contains most of the previous research results on population ageing and greatly enriches the relevant theory of population ageing. Since the 1980s, there have been a lot of research results on the economic development of population aging all over the world, both in qualitative and quantitative aspects, and the subjects involved in the research are becoming more and more extensive. Domestic scholars studied the economic impact of population aging later than foreign scholars. Until the 1980s, Chinese scholars began to focus on the related issues of population aging and economic growth. This paper reviews and combs the relevant studies on population aging and economic growth at home and abroad.

2. Relevant Research Abroad

Since the 1980s, foreign scholars have made extensive and in-depth studies on the related issues of population aging and economic growth, and on this basis, formed quite a wealth of research results. After systematically reviewing the literature, it is found that foreign scholars mainly focus on two aspects: one is to explore the impact of population aging on various factors of economic growth, including labor factors, consumption and savings factors, human capital factors, social security and technological progress factors, which directly or indirectly affect the economy. The second is to study the impact of population aging on economic growth. Specifically, there are positive and negative effects as well as both positive and negative effects of population aging on economic growth.

2.1 Research on the Relationship between Population Aging, Labor Force, Consumption and Savings

Foreign scholars mainly focus on the quantity of labor supply and labor participation rate. From the perspective of labor supply, foreign scholars generally believe that aging will reduce the number of labor supply. With the aggravation of aging, the growth rate of aging supply will gradually decline, and at this time, if labor productivity also decelerates, it will reduce economic output [1]. In terms of labor participation rate, from a global perspective, female labor participation rate is low, male labor productivity is higher than female, while youth labor participation rate shows a downward trend [2]. In the first half of the 20th century, not only the female labor participation rate kept rising, but also the

middle-aged and old men's labor participation rate began to show an upward trend [3]. In view of the impact of population aging on savings, there are still disputes among foreign scholars. Some scholars believe that the savings rate will decrease by 0.54% for every 1% increase in dependency ratio [4]. On the contrary, some scholars point out that there is a balanced relationship between population aging and savings in the long run, but there is no causal relationship between them in the short run [5]. In the field of consumption, the accelerated aging of the population will reduce the amount of social consumption in the United States [6]. In the study of Austria, on the one hand, population aging will increase residents' consumption expenditure, especially on housing, food and health care, on the other hand, it will reduce consumption expenditure in the field of transportation [7].

2.2 Population Ageing and Other Economic Perspectives

From the perspective of the impact of aging on human capital, the aging of population in OECD countries during 1954-2050 will reduce investment in physical capital, and promote economic growth by increasing investment in human capital [8]. In terms of social security system, the aging population will exert great pressure on the OECD national social security system, thus increasing the financial burden of the government [9]. From the perspective of technological innovation and technological progress, the old people are not conducive to technological progress and technological innovation because of their outdated knowledge, conservative thinking and lack of passion [10]. Whether developing or developed countries, the reduction of the number of young labor force will hinder the improvement of labor productivity. On the contrary, the reduction of the old labor force will increase labor productivity, that is, the aging of population is not conducive to the improvement of social productivity [11].

2.3 Effect of Population Aging on Economic Growth

In terms of the positive impact of population ageing, population ageing will have an increasing effect on per capita output, and the effect will be greater than that of per capita output reduction caused by the reduction of birth population, that is, ageing will promote economic growth [12]. Aging helps to increase investment in human capital, thus compensating for the reduction in per capita output, and has a positive impact on economic growth [13]. From the negative effect of aging on economic growth, the aging society will hinder economic growth through the reduction of savings rate and the decline of the working age population [14]. Aging will cause the decline of labor participation rate in the future and have a negative impact on economic growth [15].

3. Domestic Research Status

Domestic research on population ageing and economic growth also focuses on the impact of population ageing on various factors of economic growth and economic growth.

3.1 Research on the Relationship between Population Aging, Labor Force, Consumption and Savings

In China, there exists the fact that the old before the rich, which will increase the demand for labor force, while the old will reduce the supply of labor force. The combination of the two poses a challenge to China's economic growth [16]. From 2015, China's labor force began to show a downward trend, the supply of labor began to be lower than the demand for labor, and this imbalance between supply and demand will continue to increase [17]. The research based on Leff model shows that there is a negative correlation between the dependency ratio and the savings rate in China from 1982 to 2002 [18]. On the contrary, some scholars took 1995-2005 as the research period, showing that the increase of elderly support in China will promote the joint growth of savings rate of urban and rural residents [19]. The empirical test of provincial panel data in China from 1996 to 2011 also shows that the impact of population aging on the consumption rate of urban and rural residents is different. Aging has a significant negative impact on rural consumption rate, but has no significant impact on urban consumption rate [20].

3.2 Population Ageing and Other Economic Perspectives

In terms of human capital, The acceleration of population aging process promotes the accumulation of human capital and per capita investment in education[21].Improving the level of human capital is an effective way to solve the crisis of population aging[22].In terms of the impact of population aging on social security system, China has a large number of disabled and semi-disabled elderly, which increases the burden of the National Medical Insurance Fund[23].China should learn from the experience of European countries in social security system reform, improve the social security system, and further improve the relevant social security policies[24].In terms of technological progress, the aging population will have a negative impact on labor input, technological progress and capital accumulation[25].Some scholars have questioned that the increase of the dependency ratio of the elderly population and the proportion of the elderly population will promote the increase of total factor productivity[26].Although aging will lead to the reduction of labor supply and the increase of labor cost, it will force enterprises to increase investment in capital and technology, thus promoting technological innovation[27].

3.3 Effect of Population Aging on Economic Growth

From the positive impact of population aging, aging will bring new opportunities for the development of the elderly industry, and promote economic growth by improving consumption level[28].The early stage of population aging is conducive to China's economic "transformation, restructuring", promoting the development of capital economy, promoting social development and cultural development[29].Through the empirical analysis of panel data of China from 1990 to 2008,it is also concluded that both population growth rate and population aging will have a negative impact on economic growth[30].In addition, using the expanded Solow model, we find that population aging has a dual effect on China's economic growth, and the two effects are different in magnitude. The aggravation of aging will aggravate its negative impact on the economy [31]. Some scholars have pointed out that the negative impact of aging on macro-economy is moderate, and at the same time, it will also have a positive impact on the economy [32].

4. Review and Prospect of Research

Based on the above literature, scholars at home and abroad have made extensive research on the impact of population aging on economic growth using qualitative and quantitative methods on different theoretical bases, and have achieved fruitful results, broadening the research horizon of Population-Economy issues. Although the relevant research at home and abroad has important theoretical and practical significance, it is not difficult to see its shortcomings. On the one hand, there are many studies on the relationship between population aging and economy from the national macro perspective, and relatively few studies on the medium-level of a certain region. On the other hand, in the past literature, more traditional methods are used to explore the problem of population aging and economic growth, and the relationship between population aging and economic growth cannot be studied in a multi-dimensional way with the times. For example, population aging acts on economic growth through the transmission of intermediary variables to a certain extent. There is a spatial effect between population aging and economic growth, and population aging has an impact on economic growth. At the same time, regional economic growth will also affect the economic growth of adjacent areas, which are seldom involved in the existing studies.

To sum up, in the future related research, we can focus on the following aspects and make marginal contributions: first, focusing on the regional and meso-level research. In recent years, the development of urban agglomerations has been paid more and more attention and support by the Party and the state, and has gradually become a research hotspot of scholars at home and abroad. We can focus on Beijing-Tianjin-Hebei, Yangtze River Delta, Pearl River Delta and other urban agglomerations with world influence. The second is to explore the intermediary path of population aging affecting economic growth. To some extent, population aging does not directly affect economic growth, but through the transmission of intermediary variables to economic growth. From the

perspective of intermediary, we can discuss the economic effects of population aging and scientifically calculate its path of action. Thirdly, we can analyze the impact of population aging on economic growth in the spatial field. The economic effect of population aging can be analyzed by building a multi-dimensional spatial panel model and comprehensive indicators. In the follow-up study, we can start from these topics, in order to measure the impact of population aging on regional economic growth more comprehensively and accurately.

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