

Research on the Relationship Between China's Aging Population and Income Inequality from the Regional and Community Perspectives

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Abstract

There is a significant positive correlation between income inequality and Aging in the whole country. Although there are some differences between income inequality and Aging in different regions, the overall positive correlation is also significant. Due to the large income gap and the imbalance of the structure of different social strata in China, income inequality will be enlarged, the universality of income upgrade will be weakened, resulting in obvious income stratification phenomena such as polarization and structuralization of income, leading to difficulties in income upgrade. At present, China has not established a complete social old-age security system, and the deepening of Aging population will also affect the income and welfare level of low-income families, and even aggravate the income distribution gap of residents. Therefore, if we ignore the reality of population changes in the process of China's economic development, we will probably overestimate the income inequality caused by the system or institutional factors, and at the same time ignore the policy implications of the impact of population structure change on the income structure.

Keywords

Regions and communities; China's aging population; Income inequality.

1. Introduction

Since the construction of socialism with Chinese characteristics entered a new era, China's economy has gradually shifted from rapid development to high-quality development. With the rapid progress of science and technology, rapid economic development and profound social transformation, the income of Chinese urban and rural residents has continued to increase [1]. According to the International Monetary Fund's (IMF) report on China's national economic growth rate, China's per capita CDP in 2018 was US\$97. While China's economic construction has achieved world-renowned achievements, China's economic development has become increasingly unbalanced and insufficient. On the one hand, China's economy has maintained high-quality and rapid growth since the reform and opening up. At present, China has replaced Germany as the world's largest commodity exporter. From the perspective of total economic output, China has surpassed Japan to become the second largest economic power in the world after the United States. China is expected to become the largest economy in the world by 2030. On the other hand, the trend of the widening gap between the rich and the poor caused by the unbalanced and insufficient economic development is also more prominent. While China's income gap is widening, China's population age is also undergoing structural changes [2]. In 2018, 11.9% of the total population was aged 65 and over. Compared with the growth rate of the elderly population in other developed countries, the average annual growth rate of the elderly population in China is more than twice that of the western developed countries [3].

According to the international standard, China has entered the ranks of Aging society. However, unlike the background of Aging population faced by developed countries, China's economic structure of "getting old before getting rich" is bound to change with the gradual increase of the proportion of the elderly population [4]. The influence of economic development level in different regions on the Aging population is heterogeneous, and the economic development level in the same region has different effects on groups with different socio-economic status. This difference is reflected in the social situation of everyone's life, and it presents distinct spatial heterogeneity along with the regional development gap. Everyone is exposed to the double health risks brought by the region and their own economic development level [5]. Therefore, this paper puts forward the relationship between China's aging population and income inequality from the perspective of region and community.

2. Aging Population and the Theory of Income Inequality in Regions and Communities

2.1. Aging Population and Income Inequality

In the broad demographic research process, the term "Aging" is defined as two meanings: one refers to the physiological aging process of natural individuals, and the other refers to the phased aging process of the entire population group. In studying the impact of Aging on income inequality, we mainly focus on the process of the overall Aging population in China [6]. At present, the statistics and definition indicators for the elderly are mainly judged by dividing the age of the individual. Influenced by the increasing average age of the world population and the insufficient supply of labour force, the criteria for defining the elderly by foreign scholars have undergone a dynamic process of continuous rise and fluctuation, from the original Swedish demographer Sandbach's definition of 50 years old to the United Nations Population Division's starting age of 65 years old [7] in 1956. Chinese and foreign scholars agree that the rising process of the proportion of the elderly population in the total population is defined as Aging population. Generally speaking, if the population over 60 years old reaches or exceeds 11% of the total population in a region or the population over 65 years old reaches or exceeds 8% of the total population in the region, then the phenomenon of Aging population exists in the region. See Table 1 for the definition criteria of Aging society in each period.

Table 1. Standards for defining aging society in different periods

Chronological Division	Source of division	Age starting point for the elderly	Defining standards for an aging society
1990	Sandba	50	The proportion of the elderly $\geq 30\%$
1956	United Nations Population Division	65	The proportion of the elderly $\geq 7\%$
1975	United States Population Advisory Board	65	The proportion of the elderly $\geq 10\%$
1977	Edward Rosette	60	The proportion of the elderly $\geq 12\%$
1982	World Assembly on Aging	60	The proportion of the elderly $\geq 10\%$

The concept of "income inequality" is derived from Ricardo's factor income distribution theory. After Pareto uses the Pareto cumulative distribution function to measure the income share of different economic units at the micro level, it is clear that income is different. The connotation of equality. Domestic and foreign scholars use Gini coefficient, coefficient of variation, Theil

index, Lorentz curve and other methods to establish and measure income inequality, which provides a basic evaluation basis for scholars' research on income inequality. Internationally, the Gini coefficient is usually used to comprehensively examine the degree of income inequality of residents. The value is 0-1. The larger the value, the more unequal income, and 0.4 has been established as the international warning line.

2.2. Regional and Community Aging Income Inequality

The impact of socioeconomic level on Aging is also deeply "rooted" in the social and economic development situation of a country or region, which reflects distinct "spatial heterogeneity". Studies have shown that economic development at the regional level has positive externalities, as does the overall Aging impact on the population. From international experience, the Aging status of residents in developed countries is significantly less than that in developing countries. At the same time, within each country, the incidence and mortality of diseases are also closely related to the level of social and economic development. Since the reform and opening up, China has experienced profound social transformation, and the regional economic differences are also increasing day by day. The Aging of population is influenced by macro-level socio-economy, meso-level community, micro-level family and personal economic status. Income inequality and income distribution are two concepts closely related.

Combining the "China Statistical Yearbook" and the new standards defined by the United Nations World Health Organization for the elderly population, the Aging population coefficient calculated in this paper is the percentage of the population aged 65 and over in the total population of each region. As shown in Table 2.

Table 2. National Population Aging Coefficient (%) from 1988 to 2010

Year	1988	1990	1992	1996	1999	2003	2005	2008	2010
Aging coefficient (%)	5.63	5.73	6.23	7.52	8.64	9.68	10.21	10.36	9.99

Income distribution refers to "location" and "degree of dispersion", and location indicates the trend of income distribution in a balanced state, such as the median. The degree of dispersion reflects imbalances in distribution, such as variances. The unequal or unfair income distribution study is just the degree of distribution. The difference of the degree of distribution will inevitably lead to the emergence of income inequality. The study of income inequality is based on the income distribution theory, which is often interwoven. Therefore, the first step to study income inequality is to clarify the theoretical evolution of income distribution inequality.

3. The Relationship Between China's Aging Population and Income Inequality Based on Regional and Community Perspectives

Under the background that China has experienced significant changes in its macroeconomic structure and microeconomic foundation in recent years, does the relationship between China's income inequality and Aging also show time-varying characteristics, or does it have significant spatial characteristics between Aging population and income inequality, that is, there is a nonlinear dynamic mechanism between Aging population and income inequality? Different from the background of Aging population faced by developed countries, the economic characteristics of "getting old before getting rich" and the imperfect old-age security system force China to face great challenges when dealing with the negative effects brought by Aging. Among them, income inequality is bound to change as the proportion of the elderly population gradually increases. Among the existing research results investigating the causes of income inequality in China, scholars mostly attribute it to the impact of the economic system and income distribution policies, but ignore the impact of the change in the population's age

structure on income inequality. Due to the heterogeneous composition of the economic population, within different groups, the degree of income inequality is also different.

Whether at the individual or community level, the higher the income, the larger the population of Aging. After joining the education level, we can see that the health level of college-educated elderly is significantly better than that of other groups, which have no significant health differences at lower individual/community income levels. However, in high-income groups (at the individual/community level), the health index is more differentiated. Among them, in the aspect of individual income, although the income starting point of the elderly who went to college is higher than that of other people, among the high-income people, the health index gradually converges, that is, "low inequality, high average". At the level of community average income, the high health index shows the form of "low average and high uneven" at different educational levels. Therefore, it can be inferred that Aging population leads to the change of income inequality structure in the economic field.

Table 3 shows the Gini coefficient of urban and rural consumption from 2016 to 2019. The urban-rural division here is based on the urban-rural classification of the National Bureau of Statistics. The results show that the Gini coefficient of consumption in rural areas is lower than that in cities, and whether urban or rural, the Gini coefficient of consumption is The trend of change over time is very obvious, showing volatility.

Table 3. Gini Coefficient of Urban and Rural Consumption in Different Years

	Overall	2016	2017	2018	2019
Rural	0.6235	0.5967	0.5965	0.6542	0.5157
City	0.7492	0.7342	0.7428	0.7687	0.7689

Since the policy of reform and opening-up was formulated and implemented smoothly, China's macroeconomic structure has undergone significant changes. This includes not only the rapid growth of the total economic output and the continuous optimization and upgrading of the industrial structure and trade structure of the world, but also the significant improvement and improvement of micro-economic aspects such as disposable income and per capita consumption, which measure people's living standards. In other words, China's economy has achieved rapid growth in its macro-total and has improved in its micro-level performance optimization. However, along with the gradual increase of economic aggregate and quality, there are serious problems such as deterioration of ecological environment, destruction of natural resources, widening income gap and Aging of population structure, etc. In view of this, whether the relationship between income inequality and Aging in China also shows time-varying characteristics under the significant changes in macroeconomic background.

4. Conclusions

The theory of social stratification believes that education level and personal income are both important influencing factors of socioeconomic status. Both social causality and healthy choice theories also recognize the positive relationship between economic status and health. Therefore, this article analyzes the socio-economic factors of Aging population. We can find that at the community level, with the improvement of economic level and health level, among people with different education levels, Aging shows the phenomenon of "convergence" with low education level and "divergence" with high education level, and shows The "low-level average" situation. At the personal level, this trend is just the opposite. This suggests that Aging is confronted with more complex factors at the individual and group levels. Specifically, in the early stage of Aging, because Aging was mainly caused by the decline of fertility rate, the

existence of a large number of "population dividends" has greatly promoted the development of China's extensive economy, and rapid economic development has also led to a sharp expansion of income gap, so Aging and income inequality in this stage is a positive relationship. With the deepening of Aging, the causes of Aging population gradually changed, from fertility decline to life extension. The direct consequence of Aging caused by life extension is that the "demographic dividend" gradually decreases and disappears. With the gradual disappearance of the "demographic dividend", the extensive high growth model maintained by labor-intensive industries is unsustainable, the economy begins to cool down, and income inequality begins to ease. At this stage, Aging eases income inequality. The expansion of income inequality brought by Aging and other population structures can be alleviated by population policy, social security and intergenerational transfer payment policy.

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