Proceedings of CONF-BPS 2026 Symposium: GenAI, Labour Markets, and the Economics of Human and Financial Capital
DOI: 10.54254/2754-1169/2026.LD30668

Reshaping Global Aging: Turning Challenges into Economic Opportunities

Lin Kwun Ting Aaron

Singapore Institution of Management, Singapore, Singapore
ktalin001@mymail.sim.edu.sg

Abstract. The current general trend of rising life expectancy and declining birth rates is characterized by an aging population that is a major and irreversible global situation. Although the theme of aging is often pessimistically regarded as a threat to economic growth, this article analyzes that its negative consequences are not inevitable. The central idea is that the effects of population aging on the economy are malleable. Through strategic investments and policies, societies can transform this demographic change from a burden to an opportunity. It explains how ageing affects the economy through Labour markets, savings and public finances. Crucially, the report identified health as a key factor; A healthier elderly population can work longer hours and be more efficient, directly promoting economic output. Education and technology are also crucial in compensating for the decline in the labor force. Moreover, the rise of the "silver economy" has created new markets in healthcare, leisure, and technology. The conclusion Outlines a multi-level coping strategy. This includes government policies that focus on lifelong health and pension reform, innovation in enterprise products and human resource practices, and technological advances that enhance productivity and independent living. This report shows that the challenge of population ageing can be effectively managed through a proactive and systematic approach, enabling societies to harness the potential of their older citizens.

Keywords: Population Aging, Economic Impact, Silver Economy, Healthy Aging

1. Introduction

In today's world, most nations face the challenge of population ageing, which has become an irreversible trend. The United States Census Bureau projects that by 2025, the global population aged 65 and over will reach 1.6 billion, with 1.3 billion originating from current developing regions. This implies that 25% of the world's elderly population will reside in developed nations, while 75% will be distributed across developing countries [1]. In recent mainstream discourse, population ageing is frequently linked to pessimistic narratives concerning economic slowdown, pension crises, and labour shortages. Research often highlights how increased labour market withdrawal and productivity loss will damage economies [2]. Yet does population ageing inevitably lead to economic decline? Are there other critical factors capable of altering this economic outcome?

This analysis aims to systematically dissect the practical economic implications of population ageing, integrating multi-dimensional strategies to provide a recommended framework for

DOI: 10.54254/2754-1169/2026.LD30668

understanding and addressing demographic ageing. Its core argument is that the consequences of population ageing are malleable. A healthy, well-educated and technologically proficient elderly population can become an economic asset rather than a societal burden. The key to achieving a successful transition lies in health investments throughout the entire life cycle, alongside the proactive cultivation of inclusive institutions and innovation. Importantly, the economic impact of an ageing society is not predetermined but shaped significantly by policy choices and social adaptation. Countries that invest in lifelong learning, age-friendly technologies, and flexible employment models can effectively harness the experience and potential of older adults. Therefore, a proactive and comprehensive approach is essential to transform demographic ageing from a perceived crisis into an opportunity for sustainable and inclusive growth.

2. The heterogeneous landscape of global population aging

On the one hand, extended lifespans represent a defining characteristic: human longevity has markedly increased compared to previous decades. Globally, life expectancy has risen by two decades since 1950 (from 48 years in 1950–55 to 68 years in 2005–10), with projections indicating a further increase to 76 years worldwide [3]. The distinction between 'healthy life expectancy' and 'total life expectancy' is becoming increasingly pronounced, with health progressively emerging as a critical form of human capital. Life expectancy is projected to rise further to 76 years. The gap between 'healthy life expectancy' and 'total life expectancy' is growing markedly, signifying that health is increasingly becoming a vital form of human capital.

Conversely, declining fertility has become a global trend: the global total fertility rate has fallen from 5 children per woman in 1950 to approximately 2.5 today and is projected to decrease further to around 2 by 2050 [4]. This shift is driven by socio-economic factors such as increased female educational attainment, urbanization, and rising child-rearing costs.

Population ageing exhibits marked regional disparities. The first tier comprises deeply aged societies such as Japan, Germany and Italy [5]. According to 2019 data, Japan possesses the world's highest proportion of elderly citizens (aged 65 and over) – reaching 28%. This is followed by Monaco (26%), Italy (23%), Germany, Portugal, Greece, and Finland (all 22%) [6]. These nations face dual pressures of extremely high old-age dependency ratios and declining working-age populations, with core challenges being strain on social welfare systems and shrinking domestic demand.

The second tier comprises nations experiencing 'ageing before affluence', a category to which Chinese society belongs. As the world's fastest-ageing nation, China's population aged 65 and over will constitute one-quarter of its total population by 2050. While the global population aged 60 and above grew by 3% over 65 years (1950–2015), China's increased by over 4% in just 15 years (2000–2015), with per capita income remaining at a medium level. These nations face the dual pressures of economic growth and pension provision, constrained by a narrowing time window and inadequate institutional preparedness.

The third category comprises nations within the demographic dividend window, such as Nigeria. With a fertility rate of 5.2, this country boasts a high proportion of youth and an ample labor supply [7]. For such nations, the core challenge lies in urgently converting population size into human capital to alleviate shortages in employment, education, and healthcare resources.

DOI: 10.54254/2754-1169/2026.LD30668

3. The impact of aging on the macroeconomy

Population aging exerts pressure on the macroeconomy through three channels: the labor market, savings and investment, and public finance. Regarding the labor market channel, the quantitative effect manifests as a decline in the proportion of the working-age population: for every 1 percentage point increase in the proportion of the population aged 55-69, the real per capita GDP growth rate decreases by 0.674 percentage points [8]. The structural effect is reflected in the rise in the median age of the labor force: the labor force participation rate typically peaks around age 40, falling below 50% for men at age 65 and below 50% for women at age 55, which may affect overall innovation and occupational mobility.

In the savings and investment channel, although the negative correlation between the proportion of the population aged 65 and over and the savings rate is far less pronounced than expected, population aging can still lead to a decline in the national savings rate and affect capital accumulation. In terms of public finance, pension systems face severe challenges: currently, pension expenditures in EU countries account for approximately 13% of GDP. In the future, European countries will be forced to further increase pension spending for the elderly. For example, the UK will have to allocate an additional 3% of its GDP to pension expenditures over the next 40-50 years [9]. Meanwhile, in terms of healthcare spending, age-related chronic diseases and disabilities are causing a sharp increase in per capita healthcare costs, testing fiscal sustainability.

Health is a key moderating variable for mitigating the negative economic impacts of population aging. Theoretically, health can be considered core human capital, directly determining the older generation's willingness to participate in the workforce, their ability to work, and their productivity. By incorporating the interaction term between the inverse of the disability-adjusted life years (a proxy indicator of health status) for the 55-69 age group and the proportion of this age group in the total population, the analysis shows that this coefficient is positive and significant at the $p<0.01$ level in the five-year average GDP growth model, indicating that better health among the 55-69 age group leads to higher GDP growth, regardless of population size [10].

Policy simulations further show that a 5% decrease in the disability-adjusted life year rate among the elderly would increase Singapore's per capita GDP growth by 179% between 2020 and 2100, providing evidence for treating health as an investment [11].

Furthermore, improved education levels and technological advancements are important compensating factors. Higher human capital can offset the impact of declining labor force size. More importantly, the widespread application of industrial robots and artificial intelligence can compensate for labor shortages.

4. Reshaping the population aging

Population aging has driven structural changes in the consumer market. On the demand side, growth is concentrated in healthcare, long-term care services, leisure travel, financial services (such as annuities and wealth management), and age-friendly technologies and home renovations. In 2011, Japan and its company Unicharm became the first country/company to outsell baby diapers, confirming the structural growth of the elderly consumer market.

Companies are actively responding to these changes. In terms of product innovation, Volkswagen developed the Golf Plus, a model like the classic Golf but with more space and higher seating. Furthermore, Ford developed technologies to facilitate parallel parking to meet the needs of the elderly. In terms of service model innovation, Pine Tree Senior Care Services, a Singapore-

DOI: 10.54254/2754-1169/2026.LD30668

controlled company, employed 500 nurses in China in 2009 to provide home-based elderly care services to 20,000 seniors.

Population aging has driven a restructuring of the global industrial geography. Labor-intensive manufacturing is shifting from aging countries to younger ones, creating a phenomenon known as "demographic arbitrage". Simultaneously, global competition for talent is intensifying, with many countries addressing labor shortages through immigration, despite challenges in the social integration and political acceptance of immigrants. The demand for highly skilled immigrants is growing, leading to fierce competition among nations.

However, the effectiveness of immigration policies varies in countries with lower unemployment rates like Germany and the Netherlands, social acceptance of immigrants is higher. In contrast, EU countries with higher unemployment rates, such as Spain and Italy, exhibit greater resistance to immigration.

5. Systemic response strategies

Regarding health-first strategies, policy focus should shift from "treatment" to "prevention" investing in life-cycle health promotion and chronic disease management. This can reduce disability rates among the elderly and increase economic returns. Pension system reform requires the development of a multi-pillar model to reduce over-reliance on public funds. Sweden's pension system explicitly relies on "state-contributed defined accounts"; in Germany, the fixed-income pension formula has been revised by introducing a "sustainability factor" which proportionally reduces annual pension increases based on population aging. These reforms enable pension levels to automatically adapt to demographic changes and enhance the system's sustainability.

Companies need to promote innovation in human resource management and implement age structure adjustments. 3M Europe's human capital division has launched a life-cycle employment model that improves the productivity of older employees through flexible work arrangements, mixed-age teams, and knowledge transfer programs; XCare program also includes health management and flexible retirement options to balance employee needs and corporate efficiency. Furthermore, in terms of market strategy and product innovation, companies should view older adults as a diverse and valuable consumer market and conduct targeted product development and marketing.

Technological innovation is the fundamental means to address population aging. In terms of improving productivity, the widespread application of industrial robots and artificial intelligence can compensate for labor shortages: empirical studies from 17 countries show that the use of robots can improve total factor productivity. In terms of ensuring quality of life, assistive technologies, telemedicine, and smart homes help older adults maintain their ability to live independently and reduce their dependence on care services.

6. Conclusion

This systematic review shows that population aging is a serious global challenge, but its economic impact can be effectively managed through proactive intervention. Health is the most underestimated and most effective area for investment, and it is key to unlocking the economic potential of older adults, as it directly determines their capacity to remain economically active, engage in lifelong learning, and adapt to new technologies. No single solution will work; a systemic project involving governments, businesses, communities, and individuals is essential. This requires

DOI: 10.54254/2754-1169/2026.LD30668

breaking down traditional silos and fostering collaborative action across all sectors of society, from healthcare and education to finance and urban planning.

In terms of policy implications, a whole-of-government approach to aging governance should be advocated. Policymaking should be forward-looking and coordinated, integrating health, education, innovation, and social security policies. Beyond government action, a "whole-of-society" mindset is equally critical, encouraging businesses to create age-friendly workplaces and products, and communities to build strong social support networks. Future research should focus on identifying the causal relationship between health and economic output: more sophisticated research designs, such as longitudinal studies and natural experiments, are needed to determine the returns on health investments. Simultaneously, localized pathways for developing countries should be explored, along with social policies and industrial models suited to the "aging before becoming wealthy" national context. This includes developing affordable community-based care models and leveraging digital technologies to bridge service gaps in rural areas. Finally, research into the potential impact of technology and ethics on older adult employment and social equity must be intensified. A deeper understanding of these interconnected factors will provide more precise academic support for addressing the aging population problem and pave the way for a more resilient and inclusive silver economy.

References

[1] Maestas, N., Mullen, K. J., & Powell, D. (2023). The effect of population aging on economic growth, the labor force, and productivity. American Economic Journal: Macroeconomics, 15(2), 306-332.
[2] Schneider, J. L., Rowe, J. H., Garcia-de-Alba, C., Kim, C. F., Sharpe, A. H., & Haigis, M. C. (2021). The aging lung: Physiology, disease, and immunity. Cell, 184(8), 1990-2019.
[3] Lukyanets, A., Okhrimenko, I., & Egorova, M. (2021). Population aging and its impact on the country's economy. Social Science Quarterly, 102(2), 722-736.
[4] He, Y., Yu, M., & Hou, Y. (2022). Aging population, inflation and economic growth. Aging, 4(1), 2022.
[5] Jones, C. I. (2022). The end of economic growth? Unintended consequences of a declining population. American Economic Review, 112(11), 3489-3527.
[6] Fan, J., Zhou, L., Zhang, Y., Shao, S., & Ma, M. (2021). How does population aging affect household carbon emissions? Evidence from Chinese urban and rural areas. Energy Economics, 100, 105356.
[7] Guo, Y., & Wang, J. (2024). Practices for rural population aging in China: Land-based pension. Habitat International, 151, 103136.
[8] Aranda, M. P., Kremer, I. N., Hinton, L., Zissimopoulos, J., Whitmer, R. A., Hummel, C. H., ... & Fabius, C. (2021). Impact of dementia: Health disparities, population trends, care interventions, and economic costs. Journal of the American Geriatrics Society, 69(7), 1774-1783.
[9] Wang, Q., & Wang, L. (2021). The nonlinear effects of population aging, industrial structure, and urbanization on carbon emissions: A panel threshold regression analysis of 137 countries. Journal of cleaner production, 287, 125381.
[10] Bengtson, V. L. (2024). Is the "contract across generations" changing? Effects of population aging on obligations and expectations across age groups. In The changing contract across generations (pp. 3-23). Routledge.
[11] Hunjra, A. I., Azam, M., Bruna, M. G., & Taskin, D. (2022). Role of financial development for sustainable economic development in low middle income countries. Finance Research Letters, 47, 102793.