Perspectives

The Impact of Low Fertility Rates on Labor Demand and Socioeconomic Development in China

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The World Population Prospects report, published by the United Nations in 2022, revealed a decline in the global population growth rate (PGR) to less than 1% — the lowest recorded rate since 1950. Predictions suggest a further decrease to 0.5% by 2050, culminating in negative growth in more than 60 countries and intensifying the issue of population aging (*1*). China, a highly populous nation, is encountering even more acute challenges. By the conclusion of 2022, China's population totaled approximately 1.412 billion, reflecting a decline of 850,000 from the prior year and a natural PGR of −0.06% (*2*). This negative growth, China's first since the 1960s, indicates that the peak of China's population was reached in 2021, with a slide into negative growth from 2022 onward. Examining the population structure between 2010 and 2022, there was a decrease in China's working-age population (ages 15–64) from 74.5% to 68.2% and an increase in the over-65 demographic from 8.87% to 14.9%, whereas the under-15 age group experienced only negligible change. This scenario underscores the escalating trend of aging in China, propelled by persistently low fertility rates.

China's negative population growth poses challenges and opportunities for its socio-economic development. Firstly, changes in population size and structure will bring about major alterations in family dynamics and societal systems, significantly impacting social demands and resource allocation strategies. Additionally, the decline in the working-age population, being central to economic development, will notably curtail economic growth potential. Conversely, a reduced population size will increase per capita resource allocation in sectors like education and healthcare, presenting an opportunity to enhance the quality of life. These demographic changes can also spur a new wave of industrial revolution, creating novel development prospects.

Decelerating or Negative Population Growth is Common in Advanced Economies

The evidence from developed countries suggests that as economic development reaches a specific threshold, it is usual to observe a decrease in population growth, which can even become negative (*3*). The demographic transition theory (*4*), alongside the dual economic development theory (*5*), provides a deeper understanding of the inherent relationship between economic progress and population transitions. In the early phases of societal development, a shortage of resources and inadequate sanitation conditions contribute to high birth and death rates. As socioeconomic conditions advance, enhancements in living standards, technology, and healthcare lead to a decrease in mortality rates, eliciting a swift population growth. With the amelioration of women's social status and shifts in fertility perspectives, birth rates begin to drop, and overall population growth progressively slows down. Consequently, as the per capita gross domestic product (GDP) continues to increase, birth and death rates globally transition from an initial high plateau to a final low equilibrium.

Figure 1 shows that high-income countries have seen a decline in birth rates (from 4‰ to 2‰) and death rates (from 10‰ to under 8‰) since 1960, resulting in a near-zero net population growth rate. Simultaneously, the per capita GDP has consistently grown, reaching approximately 50,000 United States dollars (USD) by 2020. Figure 2 portrays the dynamic patterns in China's population and economic growth. Since its establishment, China has experienced rapid growth in per capita GDP while the net PGR has reduced to −0.6‰. Although the decline in net PGR mimics that of developed countries, the per capita GDP level is strikingly different. This is attributed to the long-term prosperity of developed countries, enabling wealth accumulation and extensive distribution systems. These factors have led to slower population transitions and higher average GDP. Despite China's substantial economic strides, a significant disparity remains compared to developed nations. Concurrently, the swift demographic transition from high to low growth highlights an escalating aging problem before achieving comparable development levels. However, the onset of negative population growth in China should not incite panic, as it is an inevitable milestone in economic progression

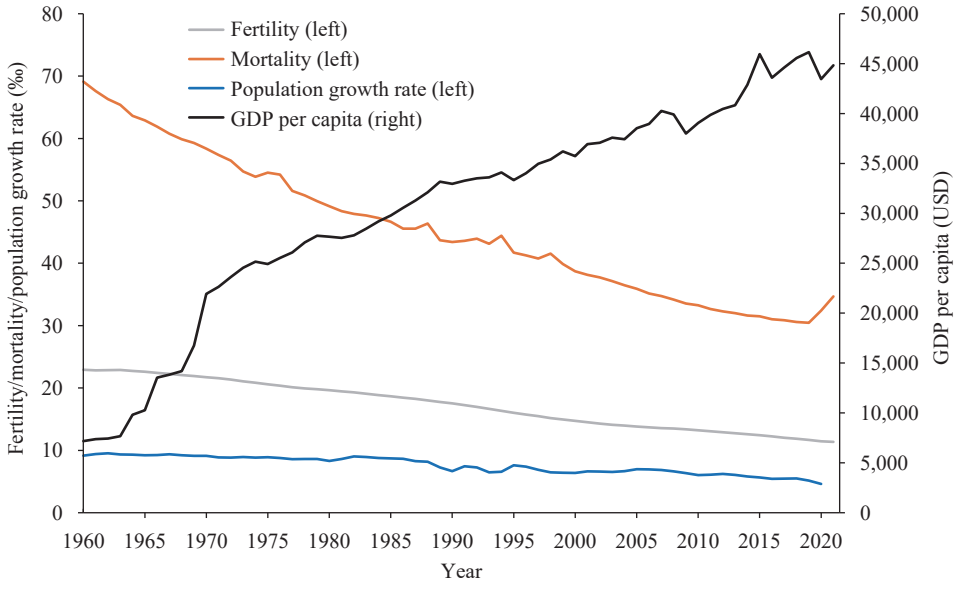

FIGURE 1. Correlation between per capita GDP and net population growth rate in high-income countries.
Note: Data depicted in the figure has been computed independently, utilizing information from the World Bank. All data has been weighted concerning each country's GDP scale and population size.
Abbreviation: GDP=gross domestic product; USD=United States dollars.

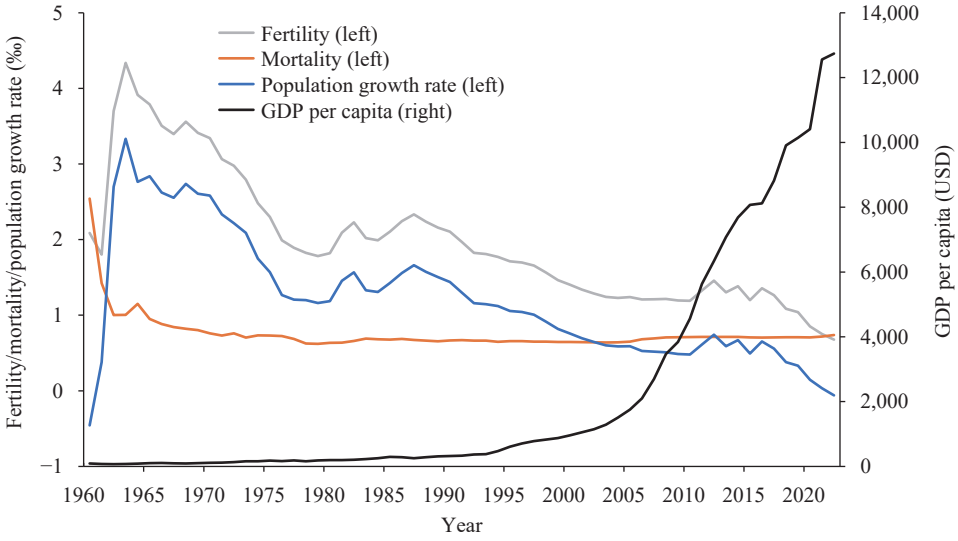

FIGURE 2. The relationship between per capita GDP and population trends in China.
Data source: National Bureau of Statistics.
Abbreviation: GDP=gross domestic product; USD=United States dollars.

and marks a new phase. Addressing this demographic landscape, the pertinent issues are formulating responses to challenges and capitalizing on opportunities for development.

The Profound Effects of Demographic Shifts on China's Socioeconomic Development

Changes in demographic trends and conditions present a host of societal challenges: In the short term, negative population growth could significantly impact industries like infant care and education due to declining demand. A lower birth rate is shrinking the infant care market and increasing competition, while a decreasing youth population risks oversupplying educational resources. Conversely, the expanding elderly population and demand for lifelong learning may cause a shortage of educational resources for seniors, necessitating structural changes in education to

align with demographic shifts.

In the long term, population structure changes could profoundly alter family structures and society. This could result in a continuous rise in the family dependency ratio, increasing family burdens without a commensurate income increase. The government might need to allocate more resources to elderly care, possibly at the expense of the younger workforce, reducing social resource allocation efficiency and threatening long-term societal and economic sustainability.

Population factors significantly affect the long-term potential output level of an economy: Each stage of the demographic transition presents varying impacts on both the demand and supply factors in the economy (*6*). When the size of the labor force is at its peak, it mainly influences the supply side of the economy, thereby determining the potential level of long-term growth. Conversely, at the peak of overall population size, the main economic impact manifests in demand, leading to an immediate decrease in total demand, consequently impinging on the potential output level. Over a longer duration, such a change promulgates a structural shift in demand and subsequently triggers industrial restructuring, introducing fresh opportunities and challenges for the market.

The Impact of the Current Population Situation on the Labor Market

Short-term impacts: Despite the onset of an aging society and the occurrence of negative population growth in China, its massive population size still stands strong. Current data indicates that the working-age population in China (those aged 16–59) achieved its zenith in 2011, and while it has gradually dropped since then, it remains substantial with an estimated 876 million in 2022 (*7*). In terms of structure, the contraction of the working-age population is principally attributed to older workers retiring from the economy. Evidence suggests that the fraction of retirees in relation to China's total population increased by 4.3 percentage points from 2011 to 2022. Furthermore, as urbanization catalyzes the transition of labor from rural to city regions, potential for labor supply expansion is inherent. Concurrently, technological progressions have precipitated a potent substitution effect on labor, with research demonstrating that with each standard deviation growth in robot utilization, the employment rate in China diminishes by 7.5% (*8*). Finally, the longstanding Chinese public education system has amassed a considerable pool of talent for economic escalation. The potential contribution of this human capital to the economy's growth remains untapped, offering substantial support for prospective industrial advancements.

Potential long-term consequences: Population reduction will inevitably alter societal expectations concerning the future, the signs of which will gradually become evident. This transition could be observable in the form of structural transformations, notably the conclusion of the high-growth period in the housing market, a reduction in the populace necessitating education, a decline in demand for infant commodities, and an escalation in the need for elderly care. These structural shifts have the potential to cause a significant change in labor market demand structure (*9*).

The Chinese employment market faces two main challenges. Firstly, structural shortages will intensify due to possible mismatches in supply and demand for skilled talents, with sectors like elderly care facing staff shortages. Secondly, as Figure 3 shows, the increasing proportion of older workers in the labor force may struggle to adapt to the fast-changing industrial landscape, which may lead to increased structural and frictional unemployment.

Understanding China's Population Size and Structure Issue Correctly

A moderate decrease in population has potential benefits for China's long-term economic development: This process could enhance the level of resources per capita and mitigate resource scarcity problems(*10*). Additionally, a reduction in population may stimulate the growth of per capita GDP, relieve saturation in the labor market, and foster increased labor productivity. Furthermore, a decrease in population suggests an associated increase in the per capita allocation of resources. This provides opportunities to further enhance the quality of the population, improving labor productivity.

The future structure of the population presents a significant challenge: As Figure 4 illustrates, changes in population structure are of particular importance in comparison to the overall decrease in population. The incidence of negative population growth in certain countries leads to a swift increase in the portion of the elderly population and a corresponding decline in the

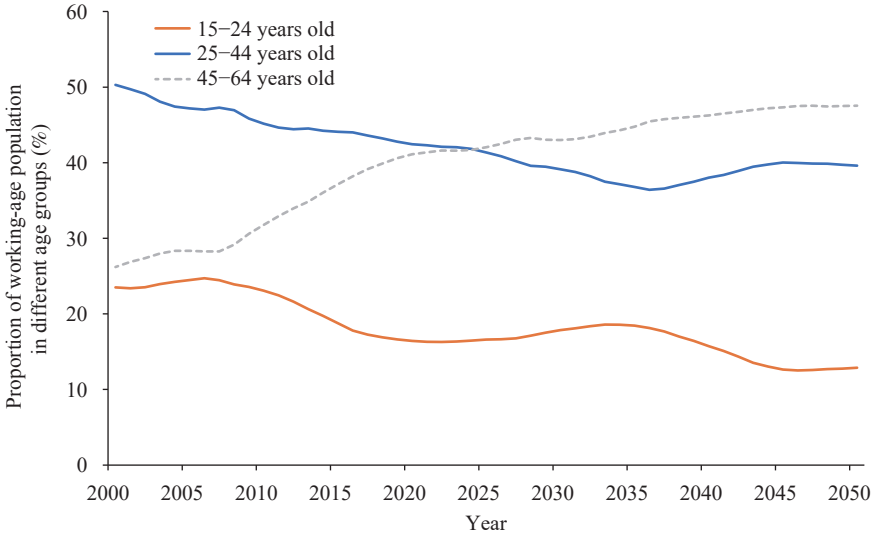

FIGURE 3. Alterations in the composition of the working-age population in China.
Note: Data was sourced from the United Nations Department of Economic and Social Affairs Population Division's 2022 Revision of World Population Prospects.

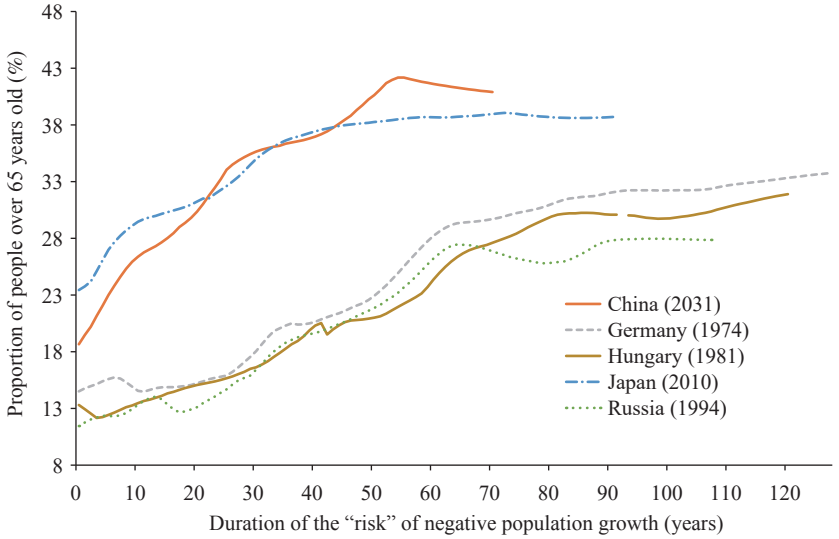

FIGURE 4. Trends in the proportion of aging population in China and selected countries with negative population growth.
Note: Data was sourced from the United Nations Department of Economic and Social Affairs Population Division's 2022 Revision of World Population Prospects.

working-age and youthful populations. This dramatic decrease in population can upset the balance between elderly individuals and the future younger population, thereby affecting socio-economic development. The dissolution of the demographic dividend exacerbates labor market discrepancies. Simultaneously, several factors, such as the enhancement rate of human capital, savings rate, capital return rate, and the efficiency of resource allocation, can curtail the potential for economic growth due to demographic changes.

Negative population growth in China offers novel opportunities for development in various sectors: Primarily, this shift prepares grounds for breakthroughs within the education and healthcare sectors. The spiral down in the number of compulsory-education students in the future implies that if the public education expenditure ratio to the GDP remains static, there will be a substantial improvement in the sufficiency of educational resources. This phase paves the way for China's third significant advancement, leading to the creation of a second demographic dividend (*11*). Second, the critical source

of economic growth is the "population health dividend," which comprises the workforce and elderly health (*12*). Lastly, negative population growth influences expectations surrounding family savings and the capital market in a way that promises more stabilized demand within the capital market. This transition also suggests new investment avenues for industries like healthcare, elderly care services, smart homes, and ecotourism.

Implications and Policy Recommendations

The transition of China into a phase of negative population growth marks a significant historical shift in its demographic landscape, indicating the onset of an unprecedented era in its population dynamics (*13*). Although this demographic transition presents challenges to the potential output level of the economy, it concurrently offers unique opportunities. As a result, a strategic policy response that includes a series of appropriate measures must be implemented to effectively address this transformative shift.

First, it is essential to develop and enforce supportive, flexible fertility policies that respect individual, family, and societal preferences. These policies should primarily seek to reduce the financial burden associated with childbearing. Second, it is imperative to leverage available opportunities to enhance the overall well-being and productivity of the population. This could involve improving national education and health levels by distributing educational resources equitably and investing heavily in the public health infrastructure. Third, it is crucial to address income distribution and diminish wealth disparities, particularly the prominent urban-rural divide and the limited size of the middle-income group. Fourth, we must promote urbanization and eliminate hindrances to population mobility to facilitate the efficient allocation of human resources and stimulate economic growth. Finally, establishing and strengthening a comprehensive social security system and corresponding institutional frameworks is key to mitigating the long-term adverse impacts of capital substitution on labor income shares.

In conclusion, China is experiencing significant changes in population structure and size, including slowing population growth, increased aging, and declining fertility rates. These shifts pose challenges to economic growth, the labor market, and the social security system. It also creates new opportunities for population quality improvement and industrial transformation. To tackle this demographic transition, it's imperative to enact strategic policies, including encouraging fertility, investing in education and technological innovation, and reforming the social security system. Through comprehensive and thoughtful policies, China can effectively address these challenges and pave the way for future socio-economic development.

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