The Economic Impactions of Demographic Dividend and Policy Analysis: Comparison between China and India

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Abstract. The characteristics of the demographic dividend include the proportion of the working population aged 15-64 has increased and a decrease in the dependency ratio. This is very beneficial for the economic of developing countries. Using a comparative analysis approach, this article examines the economic impactions of demographic dividend of the two countries with the largest populations in the world, China and India. By applying the theory of population transition, this research explores how China and India can effectively utilize their demographic dividends through strong policy interventions and considers the common challenges they face due to regional differences and limited infrastructure. The analysis explains how the demographic dividend contributes to economic growth through mechanisms like increased labor supply, higher savings rates, and improved human capital. By comparing successful and unsuccessful cases worldwide, this study identifies key policy factors that influence the realization of the demographic dividend. The findings show that while China is fully leveraging the benefits of its demographic dividend, it now faces challenges related to an aging population. Conversely, India's uneven development is restricting the duration of its demographic dividend. Policy recommendations include strengthening education and skills training, addressing regional disparities, and preparing for an aging society to sustain economic growth.

Keywords: Demographic Dividend, Economic Growth, Regional Imbalance.

1 Introduction

1.1 Research Background

The demographic dividend refers to the potential generated by favorable age structures, specifically a high proportion of the working population aged 15-64 and a low dependency ratio, which creates opportunities for accelerated economic development. This phenomenon occurs during the demographic transition stage, when the birth rate and death rate of a country decrease, temporarily increasing the proportion of the productive labor force [1]. However, realizing this dividend is not automatic; it requires supporting policies in education, healthcare, and the labor market to convert demographic advantages into economic benefits. In many developing countries, due to policy deficien-

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cies or structural constraints, it is difficult to convert population opportunities into economic benefits. This has led to a gap in understanding regarding how to effectively utilize this potential. China and India, as the two countries with the largest populations in the world, provide compelling cases for studying the demographic dividend due to their unique population development trajectories and policy measures.

1.2 Content and Methods

This study addresses two core questions: (1) Why did some countries, such as South Africa, fail to convert the demographic dividend into sustained economic growth? (2) What are the differences and results in the utilization of the demographic dividend between China and India? To answer these questions, this study employed a comparative case study approach, analyzing the "World Population Prospects 2024" and the World Bank's population and economic data, as well as policy evaluations. The analysis focused on the situation in South Africa, where it failed to fully utilize its demographic dividend, which was attributed to insufficient investment in human capital and restrictive policies implemented during the apartheid era, which limited participation in the labor market. Since the 1980s, China has achieved rapid economic growth through its reform and opening-up policies and strict family planning measures, demonstrating successful utilization of the demographic dividend. However, China's aging population now presents challenges to maintaining these achievements. In contrast, India has a younger and growing population, with a longer window of demographic dividend, but faces issues such as regional disparities, low educational levels, and inadequate infrastructure, which limit its ability to fully capitalize on this opportunity. This method involves conducting a qualitative analysis of the policies, as well as conducting a quantitative assessment of population and economic indicators, in order to identify the key factors of success and failure.

1.3 Research Objectives and Significance

The purpose of this research is to analyze the impact of the demographic dividend on the economic growth of China and India, and to identify the policy mechanisms that can facilitate or hinder its realization. By comparing these two countries and drawing on the experiences of cases such as South Africa, this study aims to provide feasible policy recommendations for developing countries (especially those at the early stage of population transition), to maximize the role of their demographic dividend. Specific recommendations include strengthening education and skills training, addressing regional disparities, and preparing for an aging population to maintain long-term growth.

2 Literature Review

2.1 The Theory of Demographic Dividend on Economic Growth

The theoretical basis of the demographic dividend is derived from the theory of population transition. When the birth rate and death rate of a country decrease, the proportion of the population aged 15-64 increased, and the dependency ratio decreases, creating a

"demographic opportunity window" for economic growth [1]. This window drives economic development through the following mechanisms:
(1) Increased labor supply: The increase in the proportion of the working population aged 15-64 means there is an abundant supply of labor, which can support the development of labor-intensive industries
(2) Increased savings rate: The decrease in the dependency ratio enhances the savings motivation of families and individuals, providing more resources for capital accumulation and investment
(3) Improvement of human capital: The increase in educational investment raises labor productivity.

The demographic dividend can be further divided into the first demographic dividend and the second demographic dividend. The first demographic dividend arises from an increase in the proportion of the working population. In contrast, the second demographic dividend is associated with a high savings rate and capital accumulation in an aging society [2]. Building on this framework, research highlights the specific mechanisms through which the demographic dividend affects economic sectors, such as agriculture, in China. Through research on China's agricultural economic growth, the demographic dividend contributes to economic growth by enhancing agricultural labor productivity and promote the migration of young people from rural areas to cities [3]. However, the demographic dividend does not automatically translate into economic growth. The complementary policies of education, healthcare, and the labor market are crucial. Otherwise, it may lead to the failure of fully releasing the demographic dividend [4].

Recent studies have further explored the complex relationship between the demographic dividend and economic growth. The impact of the age structure of the population on economic growth varies with educational levels and economic openness. Particularly in the context of low educational attainment, the demographic dividend may lead to economic instability. Moreover, the realization of the second demographic dividend depends on changes in saving behavior and the improvement of financial markets. Especially in countries where aging is accelerating, the increase in household savings has led to a decrease in consumption and total demand, thereby leading to a decrease in the inflation rate [5]. These studies indicate that the economic effects of the demographic dividend have nonlinear characteristics and are significantly influenced by policy environments and human capital.

2.2 Comparison between Success Cases and Failure Cases

The cases of successful exploitation of the demographic dividend are mainly concentrated in the East Asian economies, such as South Korea, Singapore, and the Taiwan region. According to estimations, during the period from 1966 to 1990, the demographic dividend contributed approximately 1.4-1.9 percentage points of the average annual GDP growth rate for the economic growth of East Asia (Bloom & Williamson, 1998). These economies have succeeded in transforming the demographic dividend through investment in education, open economy policies, and labor market reforms. South Korea, for example, during the 1950s and 1960s, nearly 20,000 classrooms were

built and 3,000 more repaired[6]. This significantly improved the quality of its workforce. Singapore made full use of its labor force by attracting foreign investment and promoting export-oriented industrialization; Taiwan has promoted rural-urban labor mobility and employment through flexible labor market policies.

In contrast, some countries have failed to make effective use of the demographic dividend. In some developing countries, economic growth is limited due to the failure to effectively manage resource pressure caused by demographic dividend. For example, during the demographic dividend window period, some Latin American countries, such as Brazil, failed to transform their population advantage into economic growth due to low education level, insufficient infrastructure, and policy errors, but fell into the "middle-income trap" [7]. Since 1975, population changes in South Africa have led to a continuous increase in per capita income. Despite the opportunities presented by demographic changes, policies under apartheid hindered investment in human capital and optimal employment at working age, largely impairing the country's ability to reap dividends [8].

3 Comparative analysis between China and India

3.1 Data Comparison Policy Analysis

According to the World Population Prospects 2024 and the World Bank, India's population will surpass China's in 2023 to become the world's most populous country. By 2025, India's population is expected to be 1.46 billion and China's 1.41 billion. The population structure in the two countries is significantly different [9,10]:

Based on the figure 1 and figure 2 respectively showing the total population of China and the changing trends of the population in different age groups provided by the United Nations, the proportion of China's working population aged 15-64 has been declining continuously since 2012, falling to 68.6% in 2022, and the dependency ratio of the population is about 40%. The dependency ratio is projected to exceed 50% in 2036, marking the closing of the demographic dividend window.

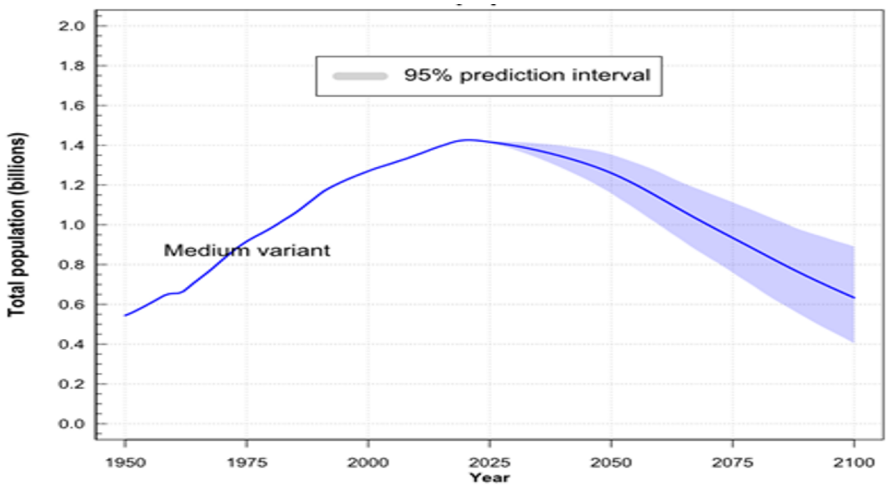

Fig. 1. China total population. Source: United Nation-World Population Prospects 2024

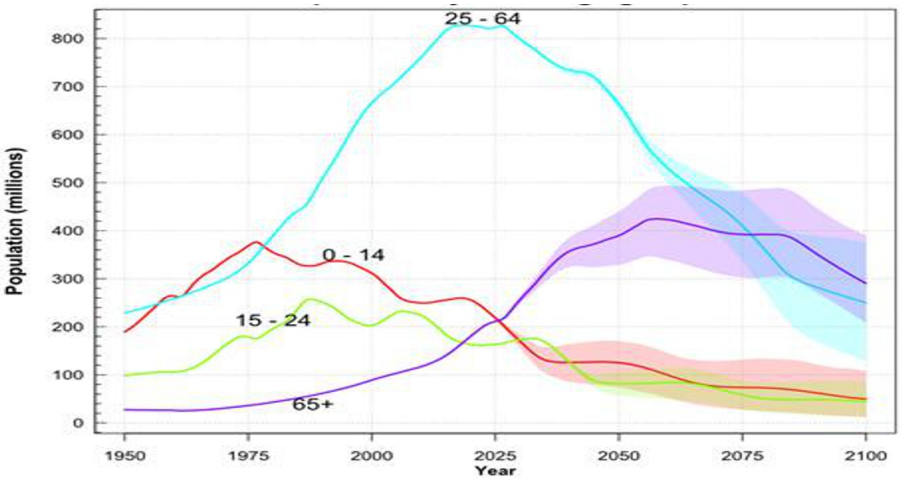

Fig. 2. China population by broad age groups. Source: United Nation-World Population Prospects 2024

According to the figure 3 and figure 4, the working-age share of India's population, at about 65 percent, is projected to remain at about 59 percent until 2041, with a demographic dividend window that lasts until 2061. The current dependency ratio is 43%, which is lower than China's, but there are obvious regional differences.

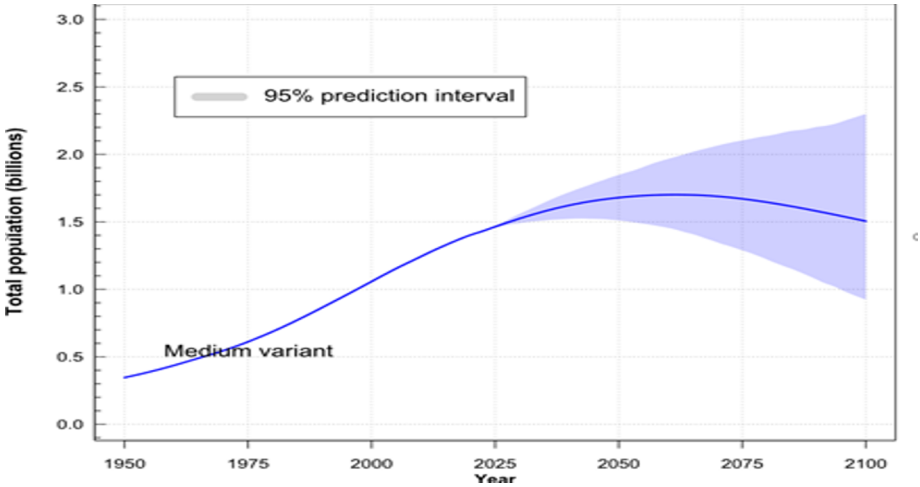

Fig. 3. India total population. Source: United Nation-World Population Prospects 2024

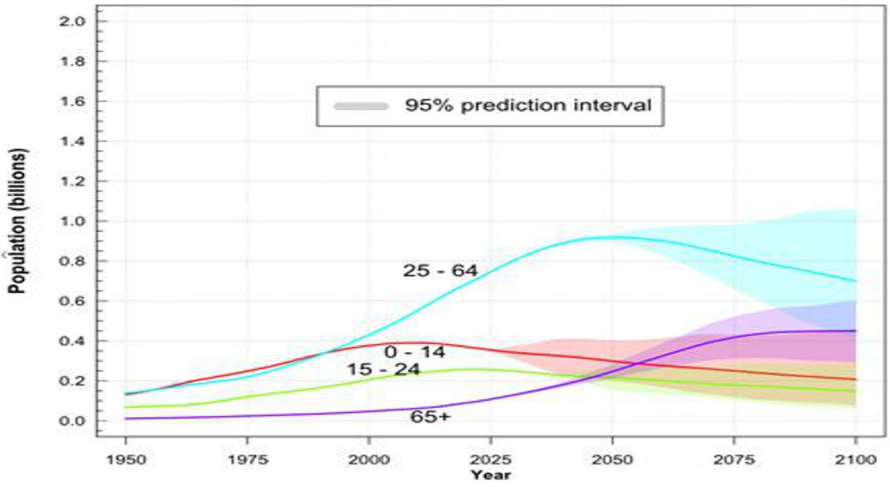

Fig. 4. India population by broad age groups. Source: United Nation-World Population Prospects 2024

In terms of economic growth, the average annual growth rate of China's GDP reached 10% from 1980 to 2010, and the demographic dividend contributed about 15%-20% of the growth. In India, the average annual GDP growth rate since the economic reforms of the 1990s has been about 6-7 percent, and the demographic dividend has contributed about 2 percentage points.

3.2 Policy Analysis

China has effectively controlled population growth through the family planning policy, creating a population structure with a low dependency ratio. At the same time, the re-

form and opening up policy has shifted China's focus from agriculture to manufacturing and services, more and more rural laborers entered cities, promoting industrialization and urbanization. In addition, China's investment in education has significantly increased the level of human capital. However, these measures have also had many effects. First of all, the strict family planning policy has accelerated the aging of society, which has led to a shortage of labor force and increased the pressure on the welfare system. Secondly, the large-scale migration of the rural population to cities has accelerated the aging process of rural areas and caused a shortage of labor. At the same time, cities are also confronted with problems such as overpopulation and strained infrastructure.

India has had a family planning policy since 1952, with limited effect until the 1980s when incentives were introduced to reduce fertility. In recent years, the Indian government has tried to improve the educational level of the labor force and employment opportunities through policies such as "Skill India" and "Digital India", but the effect of these policies is not satisfactory due to insufficient infrastructure and unbalanced regional development [11]. However, the issue of regional imbalance has restricted the implementation of these policies. The educational attainment of the population in rural and underdeveloped areas remains very low. Furthermore, the high birth rates in some areas have led to a situation where the local job market cannot keep up with the increasing demand for employment.

3.3 China and India Industries' use of Demographic Dividend

China's demographic dividend is mainly reflected in the manufacturing and service sectors. In the 1980s and 1990s, China attracted a large amount of foreign investment through its low-cost labor advantage and became the "world factory." For example, textile, electronics, and automobile manufacturing have benefited from an abundant labor supply. In recent years, as the demographic dividend has waned, China has turned to technology-intensive industries to maintain competitiveness through artificial intelligence and high-end manufacturing. However, the rapid expansion of manufacturing capacity has led to overcapacity in industries such as steel and electronics, resulting in inefficiency and waste of resources. Additionally, some industries that relied on low-cost labor in the early stage have struggled to adapt to the increase in wages, which has further exacerbated the difficulty of maintaining a dominant position in the global market.

India's demographic dividend is mainly in information technology and services. India has become the world's top destination for information technology outsourcing and customer service centers, thanks to a large, young, educated, and English-speaking workforce. Due to excessive reliance on low-end outsourcing, India has also found it difficult to achieve an innovative transformation. The shortage of positions in new high-tech industries such as artificial intelligence also restricts technological progress and economic diversity.

3.4 Experience and Challenges of China and India

China's successful utilization of its demographic dividend has been driven by strong policy implementation, infrastructure investment, and education popularization. The reform and opening up policy unleashed labor potential, while the establishment of

coastal special economic zones attracted foreign investment. However, an aging population and rising labor costs have become current challenges that need to be addressed by postponing retirement and improving human capital. In contrast, India has partially realized its demographic dividend through economic liberalization and IT industry development, but regional imbalances, uneven education levels, and gender discrimination have limited the release of the dividend.

3.5 Common Challenges

In summary, China has maximized the benefits of its population by implementing strong policies, investing in infrastructure, and education. However, it is currently facing challenges such as an aging population, overcapacity, and rising wages. Although India's benefits have lasted longer, due to regional development imbalances, reliance on low-end outsourcing, and a single economic structure, its benefits have not been fully utilized. In addition, the uncertainty of the global economic environment and the substitution effect of technological progress on low-skilled labor pose challenges to the utilization of the demographic dividend in both countries.

4 Policy Suggestions

4.1 Recommendations for China and India

China should promote the transformation from a demographic dividend to a talent dividend. This requires China to increase investment in higher education and vocational training, and upgrade labor skills to meet the needs of technology-intensive industries. Secondly, China can learn from Japan's measures on delaying retirement. By postpone the retirement age or rehiring retired workers, the beneficiaries in society can be transformed into contributors [12]. This will alleviate the problem of labor shortage. At the same time, pension systems should be optimized to ensure a balance between saving rates and spending power in an aging society.

India needs to further strengthen education and skills training, expand the coverage of Skills India, and focus on upgrading the vocational skills of the low-skilled labor force to reduce youth unemployment. India's inequality problem is also a major factor limiting the demographic dividend. Infrastructure investment and tax incentives should be used to encourage enterprises to invest in less developed regions and narrow the regional gap. In addition, India should improve gender equality, increase investment in women's education, eliminate gender discrimination in the workplace, and increase female labor force participation.

4.2 Common Implications for Developing Countries

First. Seize the window period of demographic dividend: developing countries should formulate supporting economic and educational policies at the peak of the proportion of working population aged 15-64 to transform population benefits into economic benefits and maximize the dividend effect. Second. Invest in human capital: investment in education and health is the key to transforming demographic dividend into economic growth and avoiding the risk of "population debt". Third. Address inequality:

Strengthen infrastructure construction and issue policies to encourage investment to narrow regional disparities. Fourth. Build a sound social security system: prepare for an aging society and ensure the realization of the second demographic dividend.

5 Conclusion

Through theoretical analysis and comparison between China and India, this study reveals the significant impact of demographic dividend on economic growth. China's experience shows that strong policy implementation and human capital investment can effectively transform the demographic dividend, while India's case shows that regional imbalance and insufficient education may hinder the release of the dividend. The study emphasizes that the demographic dividend does not automatically translate into economic growth, which requires matching economic policies and institutional support.

The significance of this study is to help developing countries make better use of the demographic dividend. Future research can further explore the impact of technological progress on demographic dividend and how to continuously release "talent dividend" in an aging society. The limitation of this study is that the data are mainly based on macro statistics and lack in-depth analysis of individuals, so the conclusions can be further verified by combining microdata in the future.

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