The Impact of Educational Development on Economic Growth: Evidence from Different Regions of China

Yue Xu*

Guangdong Country Garden School, Foshan, 528312, China

*Corresponding author: xy0601@188.com

Abstract. Education development has always been a significant influencing factor in fostering a strong economy. The level of education development greatly impacts a nation's quantity of skilled individuals, technological and military advancements, and industrial growth, among other factors. A robust education level and abundant educational resources can promote and stabilize a country's overall economic progress. This article takes China as a primary example, conducting a specific comparative analysis between the education development levels and the richness of educational resources in the northwestern and eastern regions of China. Furthermore, from an educational perspective within the context of education development, the article explores how education influences the current state of economic development in the region. Simultaneously, it deduces that there exists a proportional relationship between the degree of education development and economic advancement and concludes that education's impact on the economy is both long-term and positive.

Keywords: Education development; economic development; China; northwest region; eastern region.

1. Introduction

In the field of economics theory, education plays a driving, enduring, and positive role in economic development. Abundant educational resources and a high level of quality of education are indispensable factors for propelling the development of an economy. Education fosters the cultivation and growth of talents, which in the long term, can stimulate national technological innovation, industrial upgrading, and optimization. Simultaneously, education contributes to raising the nation's knowledge and cultural levels while reducing illiteracy rates. This leads to an elevated quality of the population and employment rates, thereby contributing to social stability and securing long-term economic development to a certain extent. In recent years, the development goals of many countries have transitioned from mere economic growth to achieving high-quality economic development. A solid foundation in education development and the educational levels of the population, accompanied by technological research and development, societal progress, and improved population quality, are prerequisites for achieving high-quality economic development.

This article primarily delves into the impact of educational development on the economy, using China as a primary example. In recent years, China's economic development has advanced rapidly, securing a significant global position as the world's second-largest economy. However, due to notable disparities in population size, natural conditions, economic foundations, fiscal revenues, and other aspects across different regions of China, regional inequality is a prominent issue. Regarding the distribution of educational resources and the development of educational levels, imbalances have emerged in various regions of China. The eastern regions of China have consistently exhibited higher levels of educational development, with numerous kindergarten, primary, and secondary schools, as well as many top-ranked universities located there. The cultural attainment and educational levels of the population in the eastern region significantly surpass those of other provinces and areas. Cities such as Shanghai, Beijing, and Tianjin in the eastern region are focal points for talent concentration and leading areas of China's economic advancement. Conversely, the northwestern regions of China, particularly the western parts, have long experienced a lack of educational resources and comparatively backward educational development. Educational infrastructure and funding in these areas have been notably lower than in other regions, resulting in lower rates of basic education

coverage. This situation partly explains the economic underdevelopment in China's northwest and contributes to the Chinese central government's recent initiatives in supporting the Western Development policy.

Consequently, due to varying levels of educational development across China's regions, uneven distribution of educational resources, quantities of talent, technological advancement, cultural and educational attainment of the population, and economic development rates have emerged. As the educational development gap between China's northwestern and eastern regions is the most pronounced, there exists a significant disparity in economic development speed. This article will primarily compare the educational resources and development levels in China's northwestern and eastern regions, aiming to analyze how education has led to the current economic development situations in these two areas.

2. The Influence Mechanism of Education Input to Chinese Economy

2.1. An Overview of China's Economic Development

2.1.1 Rapid economic development rate

The Chinese economy has developed rapidly and demonstrated strong resilience. Over the past 40 years of reform and opening up, China's economy has maintained steady and rapid growth, reaching a leading position in the world. According to the preliminary estimation of China's Gross Domestic Product (GDP) for the first quarter of 2023, the GDP has reached a remarkable 28.4997 trillion yuan, showing a year-on-year growth of 4.5% compared to the previous year [1]. Despite the impact of the COVID-19 pandemic in 2020, while the global economy contracted by 3.3% from the previous year, China's GDP continued to rise, standing as the sole major global economy with positive growth [2]. In 2021, through a series of epidemic prevention policies and economic adjustments, the Chinese government promptly stabilized various sectors including industry, services, and food supply, leading to a swift economic recovery.

2.1.2 Diversity of industries.

China is currently undergoing economic structural adjustments and transformational upgrades. Prior to the era of reform and opening up, China's primary economic sources were centered around agriculture and animal husbandry. However, it has since evolved into a robust economic powerhouse led by the development of the tertiary and industrial sectors, with the primary focus on industry and the secondary support of the service sector. Following the initiation of reform and opening up, China's agricultural capabilities have been continuously improving, leading to optimizations in agricultural structure. China adopted the policy of "prioritizing the development of heavy industry," resulting in a more refined industrial system and a stronger industrial foundation. At present, China is the only country in the world that encompasses all industrial categories listed in the United Nations' International Standard Industrial Classification [3]. Simultaneously, since the 18th National Congress of the Communist Party of China, new technologies such as e-commerce, online consumption, and internet finance have gradually permeated people's lives, contributing to a richer economic and industrial structure in China [3].

2.1.3 Problem of regional inequality

China's economic development is confronted with the issue of regional inequality. Research utilizing the TOPSIS method reveals that the comprehensive level of high-quality economic development in China is relatively modest, presenting an overall spatial pattern of "rapid development in the eastern regions, steady development in the central regions, and slower development in the western regions" [4]. One of the more conspicuous issues in China currently is the problem of unequal regional economic development resulting from disparities in educational development. Balancing educational investment and resources across various regions can effectively stimulate innovation and

foster the cultivation of human capital, thus enhancing the nation's overall high-quality economic development.

2.2. The Influence of the Level of Education Development on the Current Economy in Northwest China.

2.2.1 Challenges in educational development in the northwestern region.

Firstly, there is a problem of insufficient educational funding in China's Northwestern region. The economic foundation of the Northwestern region is weak, with a slower pace of development. The government's financial investment falls short, resulting in a shortage of educational funds and an inability to meet educational demands [5]. As a result, many universities in the Northwest lack adequate hardware facilities and teaching environments, lacking essential facilities like libraries and laboratories. Consequently, the professional education of most students in the Northwestern region lacks proper support, and initiatives for quality education struggle to be effectively implemented [5].

Secondly, there is a shortage of qualified teaching staff in China's Northwestern region. Occupying a vast land area of over ten thousand square kilometers, much of the region consists of mountains, deserts, and arid environments, with a lack of biodiversity [6]. The challenging natural conditions have led to limited human habitation space and hindered the construction of infrastructure like high-speed railways and subways. The inconvenience of transportation and poor living conditions have driven many teachers to choose mainland China or economically developed cities for employment, resulting in a serious brain drain from the Northwestern region. The shortage of teaching staff makes it difficult to deliver teaching in promising fields, impeding the implementation and development of quality education in Northwestern China [5].

Thirdly, educational resources in China's Northwestern region cannot be effectively shared with the developed regions of mainland China. While the Northwestern region boasts a large land area and population, its relatively remote geographical location, combined with limited internet connectivity, hampers resource sharing and academic exchange with educationally advanced regions in the eastern and southern parts of the country. As a result, the Northwestern region struggles to establish diverse, distinctive, and high-quality educational models. Furthermore, due to limited exposure to educational methods and information about economic development in mainland China, graduates from the Northwestern region may struggle to meet the demands of the modern workplace and society.

2.2.2 The impact of the backward development of education on the northwest economy.

Underdeveloped education to some extent hinders talent cultivation. From aspects such as employment rates, domestic and international enrollment rates, industry recognition, and overall societal evaluation, graduates from universities in China's Northwestern region exhibit lower performance compared to those from economically advanced regions [5]. Due to lagging educational development and traditional social norms, Northwestern China struggles to cultivate and attract highly qualified individuals with extensive knowledge. Many of the region's talents also choose to migrate to eastern China or prominent cities for better job prospects and career advancement, exacerbating the issue of talent drain from the Northwestern region. This talent drain and the difficulty in nurturing talents further lead to a deficiency in innovative and high-skilled labor supply for the economic development of Northwestern China. Consequently, this indirectly affects the utilization and development of the region's resource advantages, locational benefits, and cultural strengths.

Underdeveloped education partially hinders the pace of poverty alleviation in the Northwestern region. Many of China's nationally supported poverty counties are located in the western region, and these counties often face deep levels of poverty. Statistical data from 2020-2022 reveals that the GDP values and total foreign trade volume of the Northwestern region lag behind those of other parts of China, showing significant disparities [6]. The causes of poverty and underdevelopment in the northwestern region include harsh natural conditions, a narrow industrial structure, and inadequate basic education. Improving the state of educational development can bring lasting positive effects to the economic development and poverty reduction plans of the northwestern region. High-quality

education can elevate the region's local cultural standards, rectify outdated ideologies, and enable more individuals to escape poverty through well-paying jobs attained through education. Addressing educational issues can also diversify the region's industrial structure. Historically, the northwestern region heavily relies on agriculture and animal husbandry. With a better-educated populace, the local secondary and tertiary sectors could flourish, and draw more people into manufacturing, industry, services, and technology-related jobs, thereby alleviating the poverty issues stemming from a narrow industrial structure. Therefore, the advancement of education holds a lasting and cyclic impact on economic development. Conversely, failure to address the issue of educational underdevelopment would impede the economic progress of the Northwestern region.

2.3. Education's Stabilizing Role in Economic Development—A Case Study of China's Eastern Region.

2.3.1 The education development in China's eastern region is relatively high.

China's economy exhibits the phenomenon of "faster development in the east, slower development in the west". Its educational development level reflects a similar pattern in direct proportion to the pace of economic advancement. In terms of illiteracy rates, the eastern, northeastern, and central regions of China generally have rates lower than the national average, while there remains room for further reduction in illiteracy rates in the western regions. Regarding compulsory education rates, the provinces in the eastern, northeastern, and central parts of China are approaching or surpassing the overall national development rate and level, reaching 65.06% [7]. The majority of Chinese university students are concentrated in the eastern region, with Beijing, Tianjin, and Shanghai being particularly prominent. There is a noticeable economic agglomeration effect among the educational population of university students, as places with stronger economic foundations tend to attract more talent [7]. Simultaneously, the Beijing-Tianjin-Hebei and Yangtze River Delta regions (located in the eastern part of China) are hubs for high-quality tertiary education, likely to become areas of significant international influence in the future [8]. In summary, the eastern regions of China possess a strong economic development foundation, rapid educational development, abundant educational resources, and exert a high level of attractiveness to talents.

2.3.2 High-quality investment in education has accelerated the pace of economic development in eastern China.

The eastern region of China, including Beijing, Shanghai, Zhejiang, Guangdong, and Jiangsu, is in the forefront of China's high-quality economic development. Among them, Beijing's index of high-quality economic development is 82.3, ranking first among the 31 provinces in China [9]. To a large extent, the abundant educational resources and advanced level of educational development in places like Beijing and Shanghai have stabilized the local economic growth.

The availability of excellent educational resources has endowed the eastern region of China with a highly educated, skilled, and insightful workforce. Influential global universities are situated in cities like Beijing, such as Tsinghua University, Beijing University. These universities annually contribute outstanding talent to various sectors, promoting high-quality developments across fields, especially in technology, service industries, and new energy sectors. In 2022, Shanghai, Beijing, and Tianjin ranked among the top three in China's comprehensive science and technology innovation index, with scores of 87.14, 86.22, and 83.5, respectively [10]. In summary, the development of education effectively channels talent into the economy, and the innovation and technological progress brought by this talent serve as crucial sources for stabilizing and boosting economic development.

An improved education system encourages the establishment of businesses in the eastern region of China. In areas where education levels are high and the intellectual population is concentrated, there tends to be a greater inclination towards entrepreneurship. The establishment of more businesses enhances local competition, leading to more efficient resource allocation within businesses and the economy, ultimately achieving high-quality economic development. Furthermore, the creation of

businesses generates more employment opportunities and a variety of job positions, further solidifying positive economic development and economic diversification.

The elevated level of educational development and cultural literacy in the eastern region of China has attracted increased foreign investment. Due to the high level of education, the concentration of talent, complete industrial chains, and strong economic foundation in this region, numerous multinational corporations have set up in economically advanced areas of the East. Foreign investment plays a significant role in China's economic development, with current popular investment sectors including new energy, automobiles, communications, healthcare, information technology, and artificial intelligence. Meanwhile, investment in the eastern region will continue to lean towards research and development segments and headquarters activities within the industrial chain, further enhancing the quality of investment [11].

3. Conclusion

In summary, the level of educational development is directly proportional to the level of economic development. A robust level of educational development can, to a certain extent, enhance and elevate the local talent pool, technological advancement, employment rate, population quality, cultural level, establishment of businesses, and diversification of industries, thereby driving long-term economic growth. Based on a comparison and analysis of educational development and educational resources in the northwest and eastern regions of China, the educational level in the western region is relatively lagging behind. Coupled with underutilized geographic and cultural advantages, the economic foundation of the western region is weaker, leading to slower development. However, there are still numerous development opportunities and potential for growth in the western region. Conversely, the eastern region of China possesses abundant educational resources and a higher educational level. This, to some extent, stabilizes the region's long-term economic development and solidifies its international status and influence in key economic areas. Thus, it is evident that a lower level of educational development can directly result in brain drain, outdated societal norms, and economic issues stemming from a lack of diversification. Conversely, improving educational development not only promotes economic growth but also ensures the stability of long-term economic progress.

Regarding the issue of economic development lag in the western regions due to the underdeveloped education levels, there is still room for resolution. First, the governments of the western regions should increase local financial allocation for education. The government can allocate more financial revenue to improve local education, establish more universities to attract students for education, provide additional subsidies to existing local schools to enhance educational facilities and raise teachers' salaries to attract more outstanding teachers from other regions to work in the northwest.

Secend, the western regions should engage in the sharing of educational resources with rapidly developing areas in China. Universities in the eastern regions of China can establish more inter-regional student exchange programs or set up systems for sharing educational resources, enabling students from the northwest to have timely access to modern educational methods and abundant educational resources.

Third, the northwest regions should fully leverage their local characteristics to cultivate the uniqueness of local education. The northwestern regions of China are home to various ethnic groups, and the local language, culture, religious beliefs, and social concepts differ from those in the inland areas of China. Therefore, the northwest regions can rely on their distinctive features to develop unique teaching methods, fully tapping into local advantages in all aspects. Educational models that align with the local cultural environment can better promote the educational attainment of local students and advance the rate of education dissemination."

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