Macroeconomics and New Trends in Higher Education: An Empirical Study of Contemporary Chinese Practice

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The Cobb-Douglas production function and economic growth factor analysis proposed by Denison are combined to analyze China's higher education composite index from 2009 to 2019. It deduces and calculates relevant data to measure the contribution rate of higher education to economic growth in China. Based on the international perspective, it analyzes the new trend of higher education development in developed countries and compares the differences in the development models of higher education among countries. With the help of the Arc GIS platform, it visualizes the regional differences in the investment in higher education and the regional economic development in China in 2019. The human capital theory and the economies of scale theory analyze the new demand for higher education in China's macroeconomic development and propose strategies for its high-quality development.

Keywords: higher education, economic growth, contribution rate, high-quality development

INTRODUCTION

Education is the engine and driving force of economic growth, and the reform and development of higher education have become a new demand. Therefore, investigating the impact of higher education on macroeconomics has become a new proposition. Based on the Cobb-Douglas production function, this paper adopts the statistics on labor and education from the National Bureau of Statistics of China. Combined with the higher education composite index method, it employs the economic growth factor analysis proposed by Denison to measure the contribution rate of higher education to economic growth in China from 2009 to 2019. It tries to innovatively use the Arc GIS platform to map the GDP per capita, education investment, public budget expenditure on higher education per student, and the distribution of colleges and universities by province and city in China in 2019. The differences between economic development and education investment among different regions of China are explored, and a comparison is made with the higher education models of other countries. Based on the calculation results, it examines and considers the existing problems of China's higher education with the strategic orientation of China's overall development. Drawing on human capital theory and the economies of scale theory, it analyzes the impact of higher education on economic growth. It proposes a high-quality development model for higher education in China.

EFFECT OF HIGHER EDUCATION ON ECONOMIC DEVELOPMENT

China's higher education should suit the complicated international economic and social environment. It should expand the new ground for international cooperation in higher education in the countries along the "Belt and Road" and break the trade blockade in higher education services.

ADAPTING HIGHER EDUCATION TO THE NEW PATTERN OF ECONOMIC DEVELOPMENT

Against the complex background of globalization and domestic economic development, China's economy is transitioning from dependence on foreign trade to a domestic demand-driven economy. China's dependence on foreign trade declined to 33.73% in 2023. China's economy has shown a trend of stable recovery and steady improvement. However, the drastic changes in the external environment in the post-pandemic period have placed higher requirements on the high-quality development of China's economy. China's economic growth mechanism should be transformed from external demand-driven and factor-driven to domestic demand-driven and innovation-driven. The future economic sustainability relies on institutional innovation, scientific and technological innovation, and talent innovation to improve the total factor productivity of the community.

In this context, higher education plays a crucial role. Higher education should be adapted to the current economic and social development needs. It must also be forward-looking and insightful, serving the strategic needs of sustainable development of the country and society. Higher education should adapt to the new development pattern and exert innovation's leading role in universities. At the same time, the missions of higher education also include cultivating innovative talents and enhancing its role in promoting China's supply-side structural reform and domestic demand system construction. With the formation of the new development pattern, the social demand for higher education continues to grow. China's higher education system has transformed from elite-oriented and mass-oriented to popular. Its gross enrollment rate was 60.2% in 2023, indicating that the stage of universalization of higher education has arrived generally. At the same time, the number of higher education institutions in China and the student population have shown rapid growth. In 2023, the admission rate of the college entrance examination reached 80.72%, the number of postgraduate students enrolled increased to 4.74 million, and the total number of full-time teachers was 2.0749 million. These figures fully reflect the rapid growth of China's higher education and the social demand for high-quality higher education resources.

THE CONNOTATION OF HIGHER EDUCATION IN THE NEW DEVELOPMENT PATTERN

China's Education Modernization 2035 plan sets the direction for China's education modernization in the new era. By 2035, the competitiveness of higher education will be significantly improved, and higher education will be popularized up to the level of developed countries. Some universities and disciplines will be among the world's first-class ranks or at the forefront (Chen, 2019). China's educational modernization development goal changed to popularizing China's higher education at the level of developed countries by 2035. It reflects the development trend that China's education modernization has steadily upgraded, and the demand for higher education has been satisfied. High-quality development of higher education is essentially to meet the people's growing demand for quality higher education. We should eliminate the imbalance and insufficiency in the development of higher education and comprehensively support the development of higher education in Western China.

Moreover, we should introduce qualified teachers, expand the scale of education, and provide financial support to balance the structure of higher education under the realities of Western China. To facilitate the diversification of higher education, colleges and universities should develop beyond their single teaching structure, find the right target, and organize exceptional teaching. Thus, research-oriented, vocational, and application-oriented universities can go hand in hand and realize a balanced hierarchy. For the high-quality development of higher education, Chinese colleges and universities are increasingly focusing on the quality

of talent cultivation. They have highlighted the characteristics of schooling, putting the high-quality connotative development of higher education into practice (Lu, 2022). Chinese colleges and universities should strengthen the construction of critical programs, create unique and competitive programs, upgrade and transform traditional programs, and eliminate those that cannot adapt to changes in social demand. The relevant documents of the Ministry of Education of the PRC have already specified the direction, providing a sound platform for properly guiding and encouraging colleges and universities to serve local economic development. Chinese colleges and universities have incomparable advantages and irreplaceable positions in serving local economic construction and regional innovation system construction (Feng, 2022). Therefore, they need to abandon the educational concepts that deviate from the development of the times and integrate the concepts of sustainable development and internationalization into higher education modernization. They must also establish educational concepts consistent with modern social development and adapt to high-quality higher education. For this reason, they should cultivate professionals at the forefront of their disciplines who can adapt to globalization with an international outlook. Social structures and practitioners are linked and interact through the governance system and the society's material structure, spiritual structure, and actors (Huang, 2020).

MEASURING THE MACROECONOMIC IMPACT OF HIGHER EDUCATION

The Cobb-Douglas production function measures the contribution rate of higher education to economic growth. The economic growth factor analysis proposed by Denison measures the comprehensive index of China's education and the contribution rate of higher education to economic growth from 2009 to 2019. Human capital theory believes that the education level of the labor force affects economic development. Thus, the educational input E_t is added to the labor input in the C-D function. The C-D function is therefore expressed as follows:

$$Y_t = A_t K_t^{\alpha} (L_{ot} E_t)^{\beta} \tag{1}$$

where Y_t denotes the output, A_t denotes the technology level in period t, K_t denotes the capital stock and $L_{0t}E_t$ denotes the labor input, α denotes the capital-output elasticity coefficient, and β denotes the labor-output elasticity coefficient. In this calculation, β is valued at 0. 482, which is the value of the labor output elasticity coefficient calculated by Liand Geng (2017) based on the data of China from 2002 to 2014. Compared with the international empirical value of 0.73, 0.482 is more in line with China's reality of development. By taking the logarithm of both sides of Equation (1) and solving for the total derivative of time t, we derive the following expression:

$$y = \alpha + \alpha k + \beta l_0 + \beta e \tag{2}$$

y denotes the economic growth rate, k is the growth rate of capital input, l_0 is the growth rate of labor input, and e is the growth rate of education input. Based on this, the contribution rate C_e of education to economic growth is given as follows:

$$C_e = \frac{\beta e}{y} \tag{3}$$

In the meantime, the contribution rate C_h of higher education to economic growth is expressed as:

$$C_h = E_h C_e \tag{4}$$

where E_h denotes the proportion of higher education in the average annual growth rate of the education composite index. We consulted the China Labor Statistics Yearbook to compile the composition of persons employed at various levels of education from 2009 to 2019. Accordingly, we calculate the years of education per capita of employed persons from 2009 to 2019, as shown in Table 1. Labor simplification rate (S_i) is applied in this study. The labor simplification coefficients for primary, middle, high school and higher education are 1, 1. 38, 1. 72, and 2. 34, respectively (Geng, 2013). X_i denotes the years of education per capita for each level of educated persons. The expression for the education composite index (e) is as follows:

$$e = \sum X_i S_i \tag{5}$$

TABLE 1
YEARS OF EDUCATION PER EMPLOYED PERSON IN CHINA, 2009-2019

Year	Primary school	Junior high school	Senior high school	College and above
2009	5. 71	2. 07	0. 61	0. 30
2010	5. 80	2. 18	0. 72	0. 40
2011	5. 88	2. 35	0. 89	0. 52
2012	5. 88	2. 37	0. 92	0. 54
2013	5. 89	2. 39	0. 95	0. 58
2014	5. 89	2. 40	1. 00	0. 65
2015	5. 83	2. 38	1. 08	0. 75
2016	5. 84	2. 40	1. 10	0. 78
2017	5. 86	2. 42	1. 12	0. 78
2018	5. 86	2. 44	1. 15	0. 81
2019	5. 87	2. 46	1. 25	0. 91

As a result, China's education and higher education indexes were calculated from 2009 to 2019, as shown in Table 2. From 2009 to 2019, China's higher education composite index showed year-on-year growth. It indicates that the scale of higher education in China has continued to expand, educational resources have become more abundant, and the level of education has improved. After the education composite index is calculated, the annual real growth rate of GDP is calculated according to the GDP index from 2009 to 2019. The average annual growth rate of the education composite index (Re) and the proportion of higher education in the average yearly growth rate of the education composite index (Eh) are calculated as follows:

$$R_e = [(\frac{e_{n+1}}{e_1})^{\frac{1}{n}} - 1] \times 100\% \tag{6}$$

$$R_e^{'} = [(\frac{h_{n+1}^{'}}{h_n^{'}})^{\frac{1}{n}} - 1] \times 100\% \tag{7}$$

$$E_h = 1 - \frac{R_e^{'}}{R_e} \tag{8}$$

TABLE 2
EDUCATION COMPOSITE INDEX AND HIGHER EDUCATION COMPOSITE INDEX, 2009-2019

Year	Education composite index	Higher education composite index
2009	10. 30	0. 69
2010	10. 98	0. 94
2011	11. 88	1. 22
2012	12. 01	1. 27
2013	12. 18	1. 37
2014	12. 45	1. 52
2015	12. 74	1. 76
2016	12. 86	1. 82
2017	12. 95	1. 82
2018	13. 09	1. 89
2019	13. 54	2. 13

Finally, the contribution rate of education to economic growth and that of higher education to economic growth are calculated by combining equations (3) and (4), respectively. China's GDP's average annual growth rate from 2009 to 2019 is 8.56%. The contribution rate of education to the real annual growth rate of GDP is 17.38%, of which higher education accounts for 6.53%. China has been paying more attention to the development of higher education, increasing the financial investment in higher education and expanding the scale of higher education. Moreover, achievements have been made in popularizing higher education. The contribution rate of higher education to economic growth in China in 2009-2019 is only higher than that of Germany in the early 21st century. There is still a gap between the contribution rate of higher education to economic growth in China and that of developed countries. Therefore, China needs to keep up the pace of higher education development, optimize the allocation of higher education resources, and enhance the contribution of higher education to economic growth.

NEW TRENDS AND CHALLENGES IN THE DEVELOPMENT OF CHINA'S HIGHER EDUCATION

Driven by economic globalization, the internationalization of higher education has gradually become a new trend in countries, and it is more prominent in developed countries. Internationalization of higher education is to organically integrate global concepts into the teaching practice and research practice of higher education in China through transnational, trans-ethnic and trans-cultural communication and cooperation (Xia and Qu, 2018).

NEW TRENDS IN THE DEVELOPMENT OF HIGHER EDUCATION IN DEVELOPED COUNTRIES

Digital transformation has become a priority for the sustainable and healthy development of higher education institutions worldwide. The organic integration of higher education and the regional economy is conducive to giving full play to the advantages of universities in high-tech professionals, competitive disciplines, regional strategies, and spatial patterns. In recent years, the number of international students has increased. Based on their education development model, most developed countries are firmly committed to internationalizing higher education. Also, they have taken the construction of "globalized universities" as a new development direction for higher education (Xu, 2022). The Top Ten Strategies for Digital Transformation, published by EDUCAUSE, explores the challenges and trends of digital

transformation in higher education (Zhang, Tan and Peng, 2021). The German federal government has launched the Digital Education Program, and many universities have expanded the scope of digital education. Thus, the digital higher education model has progressed (Deng, 2021). The United States and European countries have carried out market-oriented higher education reforms. Without relying on the government or other institutions, they run their schools directly in the competitive market environment, promoting the flexible and rational development of university education in the intricate market (Gu and Kong, 2014). American scholar Ortega specified that universities should exclude scientific research activities and concentrate on free and professional education, making constant innovations and reforms on the path of higher education (Brubacher et al., 2002). As a developing country, Russia has followed the example of the United States by emphasizing integrating education, science and production. It advocates the establishment of close ties between universities and enterprises and the formation of synergies between universities, research institutes, and research centers in specialized fields and enterprises (Geng, 2013). Generally speaking, the openness to innovation and advanced education concepts are the major contributors to the development of developed countries into higher education powerhouses.

Education is a crucial factor for sustainable economic growth. Consequently, public spending on education is of great interest to researchers and policymakers. The channels through which education affects economic growth vary depending on a country's development level. Despite increased public spending on education, it does not affect the market supply and demand for real occupations (Ziberi et al., 2023). There is a dependence on natural resources for economic growth and a need for environmental protection. These results call for sustainable regulation of limited resources, increased funding for human capital, and a stronger focus on research and innovation. Renewable energy production and consumption should be promoted. The intricate relationship between these factors and the quality of the environment should be clarified (Chu et al., 2024). Higher education offers the potential to support global, national and local development. Universities have contributed to addressing self-identified development challenges and have realized their enormous development potential in partnership with the government and the private sector. Limited academic freedom and institutional autonomy prevent the full realization of the potential of higher education (Chankseliani, Qoraboyev and Gimranova, 2021).

PROBLEMS IN CHINA'S HIGHER EDUCATION

Higher education is currently encountering many challenges. These challenges mainly stem from structural incoherence, deviations in educational concepts, and deficiencies in the development capacity of colleges and universities. China's current higher education system is plagued by poor quality in cultivating talent in colleges and universities. First of all, the continuous expansion of the scale of colleges and universities is not synchronized with the allocation of resources. It leads to an increasing imbalance in the distribution of higher education resources between different regions. Such imbalance affects the unity of education quality and exacerbates the regional disparities in education development. Secondly, China's higher education system lacks an international outlook. Students cannot participate in international training and exchanges, constraining higher education's quality improvement and internationalization. China's higher education system is not yet perfect. There were 3,074 higher education institutions in China as of 2023. China's higher education has entered the primary stage of popularization. However, the uneven regional distribution of higher education and education funding is relatively marked. Higher education development and reform will face opportunities and challenges. They are caused by the transformation of the social situation in China and abroad, the optimization of China's overall strategic layout, and the information technology revolution (Zhong, 2021).

In terms of hierarchical structure, the distribution of graduates with bachelor's degrees, college degrees and master's degrees is unreasonable, resulting in the "waist drum" pattern in the talent market. Junior colleges are not positioned and are not differentiated from universities. There is a shortage of skilled talents in higher vocational education. The scale of undergraduate education expands overly fast, and educational resources per student decline. As a result, the quality of undergraduate students declines, and graduates find it difficult to get jobs (Du, 2016). Regarding classification, regular colleges and universities are separated

from adult colleges and universities. The scale of public colleges and universities has a significant advantage over private colleges and universities, resulting in financial difficulties for the government.

THE MACROECONOMIC IMPACT OF CHINA'S HIGHER EDUCATION

Progress in higher education is closely linked to the development of human capital. The popularization of higher education has improved people's education level and comprehensive quality, promoting human capital accumulation and quality. Moreover, it satisfies the people's growing cultural and spiritual needs for a better life and stimulates their enthusiasm to contribute to China's macroeconomic development. Furthermore, it reinforces the talented personnel for China's economic construction and boosts the macroeconomic development. Higher education development stimulates society's innovative wisdom and cultivates innovative talents. Thus, it helps to break the bottleneck of crucial technology that restricts economic and social development and facilitates the optimization and upgrading of industrial structures. At the same time, it helps to accomplish the task of supply-side structural reform, providing the core forces for macroeconomic development. The economies of scale theory suggests that increasing the absolute volume of an enterprise's products decreases unit costs. Expanding the scale of operations reduces operating costs, thereby increasing profits. Backed by this theory, China has continued to develop higher education and raise its status in society, bringing about positive effects that cannot be underestimated. The development of higher education has stimulated the cultivation of highly qualified personnel. The emergence of these talents has led to a qualitative leap in various industries' scale and mode of operation. It guarantees product quality and safety, effectively adjusts the industrial structure and enhances enterprises' international competitiveness. It also drives the transformation of economic development mode and creates absolute advantages for macroeconomic development. In short, guided by the human capital and the economies of scale theory, higher education can cultivate professionals to serve the economic construction. It provides a favorable business environment and advanced technical support for developing enterprises and the market economy. It adjusts and optimizes the industrial structure and gives a strong impetus to China's macroeconomic development.

The global innovation pattern has changed significantly, showing a trend of transferring from Europe and the United States to the Asia-Pacific region and from the Atlantic region to the Pacific region. Based on the successful experiences of the world's education centers, we should seize the historical opportunity and combine China's local education practices to continuously improve the support, contribution, international influence and global leadership of China's education. In this way, China can soon become a significant education center worldwide (Zhou and Li, 2024). While higher education, science and technology innovation and economic development in China's provincial-level central cities are highly coupled, there is a massive gap in development between cities. Most central cities have only realized coupled development between higher education and science and technology innovation, between higher education and economic development or between science and technology innovation and economic development. They have not fully integrated and synergized the three aspects. Some cities even develop merely one of the three aspects (Jing, Zhang and Sun, 2023). Higher education is the crux as the Chinese government regards science and technology as China's primary productive force, talent as the primary resource, and innovation as the primary driver of growth. It plays a pivotal strategic role in the realization of Chinese modernization. In some sense, the height of the development of higher education determines the height of China's development. Higher education is responsible for nurturing talents for the country, assumes the crucial functions of scientific research and social service, and carries out the historical mission of cultural inheritance and innovation (Zhi, 2023).

A NEW MODEL FOR CHINA'S HIGHER EDUCATION

Under China's economic transformation background, China has shifted from the high-speed growth stage to the high-quality development stage, emphasizing quality and efficiency. Universities and colleges are essential bases for cultivating innovative talents and promoting scientific and technological innovation,

and they are directly related to China's future competitiveness. Therefore, the high-quality development of higher education has become an inevitable choice of national strategy.

NEW DEMANDS OF MACROECONOMIC DEVELOPMENT ON HIGHER EDUCATION

In the ever-changing international political and economic situation, the Chinese government makes it clear that "China must accelerate the establishment of a "dual circulation" development pattern, in which domestic economic cycle plays a leading role while international economic cycle remains its extension and supplement (Zou, 2020)." Efficiency and equity must be considered when developing higher education in China. It involves the joint work of financial, social capital, and individual and family inputs, which constitute the "factors of production" of higher education. The government should continue to expand the scale of higher education, reform the mode of training high-standard talents in fundamental disciplines, and increase educational supply to meet the new social needs. At the same time, universities should promote new majors, such as new engineering, new medical science, new agriculture and new liberal arts. They should innovate and integrate the whole process from input to output of education resources, strengthen academic discipline and significant structure adjustment, and cultivate innovative talents that meet future economic development needs. They should optimize the allocation of higher education resources and deepen the reform of the management system.

Moreover, the autonomy of higher education institutions should be expanded to stimulate the entire society and promote the diversification of higher education. As crucial institutions of cultural inheritance and international exchanges, universities should maintain an open and cooperative attitude under the new development pattern of dual circulation. They should cultivate talents, develop disciplines and transform innovative achievements. They should export high-quality higher education resources to countries along the Belt and Road. They should also narrow the gap in education quality between China and Western developed countries and activate domestic higher education resources in China through education system reform and internationalization efforts. The dual-circulation pattern of the economy has put forward new requirements for international exchanges and cooperation in higher education. The new dual-cycle development pattern provides a new impetus and direction for the internationalization of higher education in China. It promotes the high-quality development of higher education and adapts the theory of circular economy to the attributes of the two social and economic resource systems.

DEVELOPING HIGHER EDUCATION TO ENHANCE THE MOMENTUM OF ECONOMIC GROWTH

In the new era, the structural layout of China's higher education is faced with the imbalance of regional development, posing new challenges to optimizing the structure of higher education and cultivating various types of talents adapted to the needs of the economic structure. We should optimize the structure of higher education, especially adjusting the ratio of undergraduate and postgraduate students and developing majors oriented to specific social needs. It is significant for cultivating various professionals and promoting economic restructuring and upgrading. On the one hand, a pyramid-type hierarchical structure should be constructed, emphasizing the characteristics of each level of education, to address the imbalance between the levels, types and significant structures of higher education and regional development. Moreover, the construction of a diversified higher education system should be promoted.

On the other hand, the internationalization of higher education also plays a significant role in promoting economic growth. Foreign advanced technology and scientific research methods should be introduced to improve the quality of human resources. International students can also be attracted to study in China. It can directly generate economic gains through tuition fees, living expenses and spending by visiting friends and relatives. It can also indirectly enhance regional economic growth capacity by promoting consumption, trade and investment, and technological innovation. Due to socialist modernization, innovation-driven development and other strategies, higher education has gradually become a new driving force for regional economic development (Xie, 2018).

Given that most students' consumption needs can be satisfied in the vicinity of the university, the development of universities can fulfill their own needs and drive the economic growth of the surrounding area and the flow of capital. It is necessary to build a diversified and hierarchical higher education system oriented to the needs of the future society. We should strengthen the academic exchanges and cooperation between China and other countries and closely integrate the development of colleges and universities with the economic and social development of the region. Thus, it can cultivate more high-quality talents, push forward the optimization and upgrading of economic structure, and provide solid educational support.

BUILDING A HIGH-QUALITY HIGHER EDUCATION SYSTEM

In the new era, China's economy is developing by leaps and bounds to realize the great rejuvenation of the Chinese nation. In this context, it is of great significance to build a high-quality higher education system. In response to problems in China's higher education system, it is proposed that a high-quality higher education system be built.

First, it is necessary to speed up the optimization and adjustment of the structure of higher education and foster high-caliber talents. Regionally, efforts should be made to improve higher education in backward regions and central and western China. It involves expanding the scale of school operations, strengthening the academic disciplines, and attracting an influx of talent. We need to improve the quality of teachers, cultivate teachers for counterpart support, and improve the teaching skills of local teachers. It should develop regional education, cultivate local professionals, formulate higher education development strategies according to local conditions, and emphasize cultivating practical talents. The government should vigorously support the development of higher education in Western China and provide policy concessions and economic assistance. The hierarchical structure of higher education should be oriented towards a pyramidal pattern. College education should be professionalized, focusing on cultivating high-level technical personnel. Undergraduate education should be popularized. Graduate education should focus on elite training. These three modes should be integrated and promoted mutually, forming a benign interaction.

Regarding classification, the current split between regular and private universities has hindered the development of higher education and lifelong education. We should clarify the entities running various types of universities, formulate a standard management system, and integrate educational resources. The links between them should be strengthened, and the gap in educational resources should be narrowed. In this way, it can promote the development of higher education and realize the strategic goal of talent cultivation.

Secondly, it should activate the educational resources of colleges and universities, optimize the allocation of resources, and push forward the sustainable development process of higher education. Higher education assumes a dual role in promoting the sustainable development of society. First, upgrading citizens' humanistic qualities helps society abandon the stereotyped notion of dominating and overspending natural resources. It contributes to establishing a harmonious symbiosis mechanism between human beings and nature. Second, as a sub-system of the social system, higher education enhances the ability of colleges and universities to serve society through the transformation of scientific research achievements. It requires optimizing the allocation of educational resources and reducing waste to support the sustainable development of society more efficiently. There is an imbalance in the development of higher education in China's eastern, middle and western parts. Quality higher education resources are primarily concentrated in Eastern China. A reasonable and efficient allocation of educational resources must be implemented first to build a high-quality higher education system. The coverage of high-quality education resources should be expanded to embody the concept of equality in education. It involves the distribution of material resources and the importance of the quality of education and fairness of opportunity. At the same time, all sectors of society should be mobilized to participate in running schools in different forms. It will increase the public's participation in higher education, improve the popularization rate, and facilitate the development of high-quality higher education.

Thirdly, international cooperation should be deepened and internationalized education should be established. Higher education institutions should actively respond to the concept of internationalized

education. They should strengthen international cooperation, enhance internationalization and offer international courses to enable students to come into contact with and experience international thoughts and cultures. In this way, it helps to cultivate students' international vision and lay a solid foundation for them to be internationally competitive. The government plays a vital role in promoting international cooperation in education. It should increase the number of government-sponsored overseas students, provide exchange opportunities, and operate universities jointly organized by China and other countries. Thus, the government provides strong support for the internationalization of higher education. While pursuing internationalization, Chinese universities must also uphold their educational advantages and development features. Chinese colleges and universities should study and learn from advanced international education concepts and teaching modes, follow the socialist principle, and take the road of socialist education development to suit Chinese conditions. They should deepen international cooperation and establish the concept of internationalized education. China's higher education system needs to be built as a high-quality system to enhance its competitiveness and build China into an educational power. Through policy guidance, theoretical support, practical implementation and government support, China's higher education will play a more significant role in the global arena. Moreover, it will cultivate more high-quality talents with international vision and competitiveness for China's long-term development.

CONCLUSION

In the new era, the world is reshaping the pattern of development. The competition for talent and education increasingly characterizes the competition for advanced science and technology. Higher education plays an increasingly important role in the high-quality development of macroeconomics. This paper adopts the Cobb-Douglas production function and economic growth factor analysis proposed by Denison to derive and measure the composite index of higher education in China. It also measures the contribution rate of higher education to economic growth. It examines the differences in higher education models between China and some developed countries from an international comparative perspective. It explores feasible strategies to promote high-quality and balanced development of higher education in China. The measurement results reveal that China's higher education composite index continued to grow between 2009 and 2019. The scale of China's higher education system has expanded, educational resources have become increasingly abundant, and the level of education has increased. However, China's higher education system has developed unevenly in the eastern and western regions, and its primary structure has not been adapted to the socio-economic-industrial structure. Given this, a modernized, innovative, coordinated, and open higher education system should be constructed to meet the new international and domestic development patterns and optimize the supply structure. It is crucial to promote the high-quality development of China's macroeconomy.

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