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Research on the Adequacy of Fiscal Expenditure of Higher Education in China

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ABSTRACT. *Chinese higher education is gradually entering the stage of mass education from the stage of elite education. An important prerequisite for further maintaining the equity of higher education is ensuring the sufficiency of higher education fiscal expenditure. From the perspective of financial adequacy of higher education, this article explores the problem of the fiscal adequacy of higher education that it accounts a generally low percentage in national fiscal expenditure and GDP. Therefore, China should further increase the total amount of higher education financial expenditure and increase the adequacy ratio of it.*

KEYWORDS: *Higher education, Fiscal adequacy, Standard expenditure on education finance*

1. Introduction

Education is an important endogenous driving force for economic growth. Higher education is an indispensable platform and engine for the development of basic research and also the source of national original innovation. Ensuring the high-quality development of higher education is an important task for us to realize a strong country and climb the world's scientific and technological peak[1]. Although China is already considered to be quantity in higher education, compared with other countries in the world, it is still not quality in higher education. Among the top 100 universities ranked by Thomson Reuters in 2020, there are only 3 universities in China. In 2018, the national basic research funding accounted for only 5.5% of the total research and experimental development (R&D) funding. The development of higher education cannot only focus on quantity, but also pay more attention to the quality[2]. According to the theory of the educational production function, education funding is one of the key factors affecting the quality of education. Among them, the state's public financial investment should reach a certain percentage. Thus, is there sufficient public finance for higher education in China?

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2. Research Status of Adequacy of Higher Education Financial Expenditure

Financial adequacy refers to the minimum funding cost required to provide certain educational resources from the perspective of student needs. This concept was first proposed in the United States.

2.1 Foreign Research Status

Around the 1980s, under the perspective of "fairness", American education finance gradually shifted from providing equal educational opportunities for school-age children to providing equal and sufficient educational resources, which led to the concept of "financial adequacy". Many states in the United States have adopted litigation on the adequacy of education finance to determine the precedent of adequate education funding standards in the region, such as New Jersey, West Virginia, and Kentucky[3]. A total of 33 states have launched estimates of the "adequate cost of education finance". There are four main methods for estimating the sufficient cost of education in each state: cost function, successful district, professional judgement, and evidence-based method.

Allan used the cost function method in Wisconsin and Texas to calculate the education financial adequacy index of each region in the state and found that the adequacy results were varying from 49% to 460%, indicating that the distribution of sufficient resources for education finance is very uneven in the different regions. Maryland used the successful school district method to find that the state's basic adequacy annual financial expenditure for 1999-2000 should be $5969. The professional judgement method is a group composed of experts to assess the investment of educational resources necessary to achieve the educational goals of the standard school district. Then substitute the price of each element to obtain the standard funding input for the level of sufficiency. Through the research and calculation of the professional judgement method, Kentucky has increased the investment of 1.097 billion US dollars in education[4]. Finally, Arkansas used the evidence-based method to measure the level of education adequacy in state and increased the state's education expenditure by 25%.

In short. The concept of adequate financial education is to gradually increase the investment in education resources according to the location, social and economic factors of different regions. While equal quality educational resources for different regions are provided, different education expenditure standards can also be formulated. This means adequacy education for guarantee the same quality rather than pursuing absolute fairness in the allocation of education resources is more important[5].

2.2 Domestic Research Status

As early as the 1990s or so, Chinese scholar Shanmai proposed to increase education investment, and maintain a gradual increasing trend of the proportion of

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education appropriation in fiscal expenditure. Since then, Wanshun and Yining have pointed out that Chinese education expenditure accounts for a relatively low proportion of GDP and government expenditures and the education finance is far from adequate levels[6-8]. With the continuous improvement of Chinese economy, the proportion of education expenditure in the general fiscal budget expenditure has increased steadily. But it is also difficult to reach a balanced point in the efficiency and equity of education investment. The concept of adequate education happens to take into account the efficiency and fairness to a certain extent and provide a suitable “middle road” for the reform and development of education in China. Based on the McMahon model, Huang Bin and Yuping constructed a new model to research the co-progressive relation between the education equity and efficiency. They thought that adequate education finance is a financial intervention to promote education equity by improving efficiency. Yu and Xiaopeng built a government standard education expenditure measurement function that took into account regional differences and development cost differences based on the factor analysis method. They calculated the difference between the average standard education expenditure and actual education expenditure in China from 1999 to 2003 and suggested that relevant policies to strengthen education support in poverty-stricken western regions should be formulated while increasing investment in education. Zizhou et al. borrowed US evidence-based method to construct a standard education financial investment model to obtain the total standard compulsory education investment. They came to the conclusion that China’s financial funding is insufficient for compulsory education. Dong et al. combined the cost function method and the evidence-based method to construct a multiple regression equation to measure the national standard education financial expenditure[9]. Their research proved that Chinese current education financial investment can basically meet the development needs of education, but there still exist problems such as a low degree of matching between goals and real funding and uneven levels of urban and rural education financial adequacy. The study of Yipeng found that the financial expenditure of higher education accounted for a low proportion of GDP and the government should still strengthen the long-term growth mechanism of financial expenditure per student for higher education[10].

3. Current Status of Financial Adequacy in Higher Education in China

According to existing research, domestic and foreign scholars usually use the proportion of higher education financial expenditure in GDP to investigate the adequacy of higher education finance based on the perspective of international comparison. This paper selects some of the developed countries for comparison with China, as shown in Table 1. Among them, the international data comes from the statistical data of the OECD official website, and Chinese data is calculated based on the data in “China Education Statistical Yearbook” and “China Statistical Yearbook”.

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Table 1 the Proportion of Financial Expenditure of Higher Education in GDP

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
China	0.53	0.59	0.56	0.69	0.77	0.69	0.69	0.75	0.73	0.77
US	1.05	1.08	1.07	1.07	1.04	0.95	0.92	0.91	-	-
German	0.92	-	1.01	1.03	1.03	1.02	1.03	1.01	-	-
France	1.12	1.21	1.19	1.16	1.13	1.14	1.14	1.14	-	-
Australia	0.69	0.74	0.78	0.74	0.72	0.72	0.72	0.77	-	-
Canada	1.49	1.52	1.49	1.35	1.29	1.24	1.21	1.20	-	-
Japan	0.48	0.53	0.50	0.52	0.51	0.52	0.49	0.45	-	-
Korea	0.53	0.62	0.66	0.66	0.69	0.75	0.78	0.66	-	-

It can be seen from Table 1 that in recent years, the proportion of higher education financial expenditure in GDP in developed countries has been relatively stable. Most of them basically remained at about 1% except for Australia, and Canada has even reached at 1.5%. The proportion of Chinese higher education financial expenditure in GDP is lower than that of in developed countries, but it is slightly higher than Asian countries such as Japan and South Korea. In addition, the proportion of Chinese higher education financial expenditure in GDP is increasing year by year. It has increased from 0.53% in 2008 to 0.77% in 2017, an increase of 0.24% in ten years.

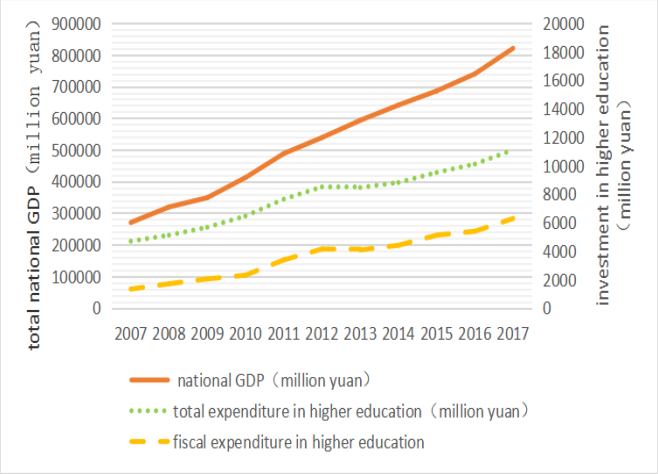

Fig.1 National GDP, Total Expenditure and Fiscal Expenditure in Higher Education from 2007 to 2017

Although the proportion of Chinese higher education fiscal expenditures in GDP has increased, the growth rate of higher education fiscal expenditures is far lower

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than GDP growth. As shown in Figure 1, Chinese higher education financial expenditures and total higher education investment have grown synchronously, and the growth rate of both of them is lower than that of Chinese GDP.

In addition, the fiscal funds for higher education in China are mainly divided into undertaking funds and infrastructure investment, in which the volume of infrastructure investment is relatively small and the growth of it is flat. Figure 2 reflects the classification status of Chinese higher education fiscal expenditures and the proportion of total fiscal expenditures in GDP from 2007 to 2017. We can see that the investment level of Chinese higher education infrastructure has been low over the years, and it has only increased by 24.36 billion yuan from 2007 to 2017. The increase in the proportion of the fiscal expenditure for higher education in GDP is mainly due to the contribution of fiscal undertakings, especially in 2012 when the proportion of higher education fiscal expenditure in GDP had a same breakthrough of the trend with the growth of fiscal undertakings.

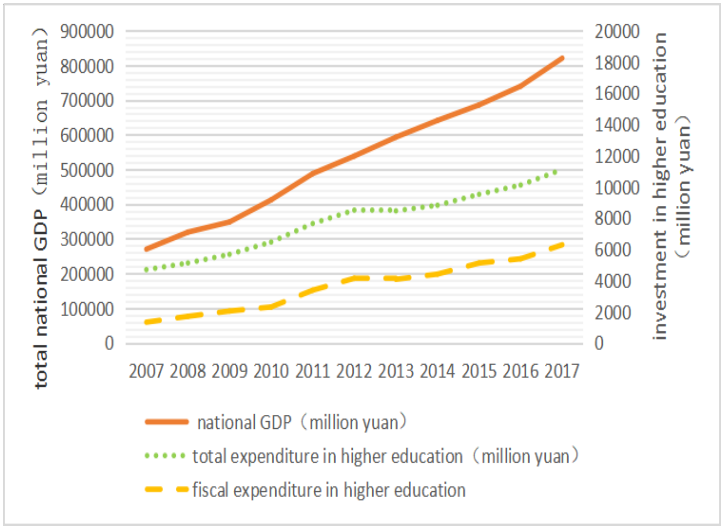

Fig.2 Higher Education Fiscal Expenditure's Classification and the Proportion in GDP in 2007-2017

4. Conclusion

In summary, the proportion of Chinese higher education fiscal expenditure in both national fiscal expenditure and GDP is at a relatively low level. The growth rate of higher education fiscal expenditure is slower than that of GDP, and its growth mainly comes from the growth of higher education undertaking funds. All of this shows that Chinese total fiscal investment in higher education is still insufficient. In view of this, it is necessary to increase the fiscal investment in higher education

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from both the central and local governments' perspective at the same time. Increasing the total fiscal expenditure of higher education in China to ensure the sufficiency of higher education finance.

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