Exploring The Path to Building a Strong Education Country Through the Allocation and Performance Characteristics of Financial Investment in Higher Education in Zhejiang Province

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Abstract. Against the backdrop of promoting the implementation of an education powerhouse, this study aims to explore the path to an education powerhouse by analyzing the allocation and performance of financial investment in higher education in Zhejiang. The article is divided into three parts: Firstly, from the horizontal perspective of economic development and higher education development, it explains the reasons for selecting Zhejiang as the research object. Secondly, through policy texts and data analysis, it will delve into the current situation and characteristics of financial investment in higher education in Zhejiang Province. Finally, select typical universities in Zhejiang Province and use a performance evaluation index system to analyze their performance. This study proposes a series of methods to improve financial investment in higher education, including optimizing the structure of financial investment, strengthening policy support, and improving the efficiency of fund utilization. The aim is to provide a reference for provinces with relatively weak higher education, promote high-quality development of higher education, and assist in the construction of an education powerhouse.

Keywords: Education powerhouse; higher education; financial investment; performance evaluation; Zhejiang.

1. Introduction

In today's era of increasingly fierce global competition, the construction of an educational powerhouse has become a key strategy for national development. Higher education bears the important mission of cultivating high-quality talents, promoting technological innovation, and inheriting culture. It is the core force in achieving the goal of building an educational powerhouse, and some scholars have pointed out that higher education can also promote the realization of common prosperity [1,2]. On January 19, 2025, a series of policy announcements related to the "Outline of the Plan for Building an Education Strong Country (2024-2035)" were released, reflecting the central government's emphasis on building an education strong country [3].

Education investment has played a very important role in promoting the construction of a strong education country, and the proportion of fiscal education expenditure to GDP in China has consistently remained above 4% [4]. The significant increase in financial investment in higher education has promoted the transition from popularization to accessibility, but it also faces challenges such as efficient use of funds and external environmental impacts [5]. Zhejiang, as an important province along the southeast coast of China, has certain representativeness and uniqueness in the fields of economic development and higher education. From the perspective of economic development, Zhejiang is located in a relatively developed region of China, and its economic structure and development model are worth learning from, which may have an impact on financial investment in higher education. In terms of higher education development, Zhejiang has a group of high-level universities, which are relatively leading in terms of the number of universities, discipline layout, and education quality. Therefore, selecting Zhejiang as the research object can help to explore in depth the differences in financial investment allocation and performance of higher education in different regions, and provide useful references for the construction of an education powerhouse.

For Zhejiang Province, an analysis has been conducted on the proportion of comprehensive quota appropriations that are independently used by universities and special appropriations that require government approval in the financial investment structure of local universities. It is pointed out that local governments tend to control rather than delegate power, and an increase in the proportion of public budgets in project expenditures is not conducive to improving university performance [6]. There are also analyses on whether the financial expenditure on higher education matches the level of economic development in Zhejiang Province, pointing out the problem of imbalance between the level of economic development and higher education development in Zhejiang, which further improves the quality of higher education in Zhejiang [7]. Some have also pointed out the unreasonable structure of higher education investment in Zhejiang Province, which has further optimized the funding structure in recent years [8,9]. It has also been pointed out that the performance value and scale efficiency of the 17 provincial universities in Zhejiang Province are low, and there is a situation of redundant investment or insufficient output. Policy suggestions such as establishing and improving the performance allocation and accountability system for university financial investment, and enhancing the flexibility of performance evaluation of higher education financial investment have been proposed (based on DEA) [10]. These policy recommendations and analyses have correspondingly led to further development of higher education in Zhejiang Province, laying the foundation for its strong higher education system.

Starting from policy texts and data, this study will conduct an in-depth analysis of the current situation and characteristics of financial investment in higher education in Zhejiang. By interpreting the policy text, understand the policy orientation and strategic deployment of Zhejiang Province's financial investment in higher education; Using data analysis, reveal the scale, structure, and trends of financial investment in higher education in Zhejiang Province. On this basis, select typical universities in Zhejiang and conduct a comparative analysis of their performance. By evaluating the performance of universities in terms of teaching quality, scientific research achievements, and social services, this study explores the relationship between financial investment and university performance and reveals the advantages and disadvantages of Zhejiang Province's universities in terms of performance. Intended to explore effective paths for building an educational powerhouse. This study not only contributes to enriching the theoretical research on financial investment and performance evaluation in higher education, but also provides empirical evidence for the formulation of higher education financial policies in Zhejiang and even the whole country, contributing to the promotion of high-quality development of higher education in China and the achievement of the goal of building an education powerhouse.

2. Background Analysis of Financial Investment in Higher Education in Zhejiang Province

2.1. Overall Development of Higher Education Finance in Zhejiang Province

Zhejiang is located in the southeastern coastal region of China, which provides a unique perspective for studying the distribution and performance differences of financial investment in higher education. From the perspective of economic development, the per capita GDP of Zhejiang Province is 125517.71 yuan, indicating that Zhejiang Province has uniqueness in terms of economic foundation. However, in the field of higher education, the uniqueness of Zhejiang Province will be even more evident.

According to the "China Education Funding Statistical Yearbook" data, from 2015 to 2019, the average proportion of national fiscal education funding to GDP in Zhejiang's general higher education was 0.59%, higher than the national level. In terms of education expenditure per capita in the general public budget, Zhejiang is generally higher than most provinces. The average public budget for education expenses per student in ordinary universities in Zhejiang is also higher than the national average. As shown in Table 1, the average general public budget expenditure on education for ordinary college students in Zhejiang Province has shown an upward trend from 2020 to 2023. The average general public budget expenditure on education for ordinary college students has also shown an upward trend from 2020 to 2023 [11].

Table 1. General Public Utility Expenses and Funds for Ordinary Higher Education Institutions in Zhejiang Province [11].

	2020	2021	2022	2023
General public budget expenditure on education expenses per student in ordinary universities	23507.58	23813.60	26147.39	25650.09
General public budget education expenditure per student in ordinary universities	24756.22	25609.57	27052.70	27525.83

Further analysis shows that the national financial investment in education for higher education in Zhejiang has grown rapidly, with an increase of 19.28 billion yuan in 2019 compared to 2015. However, other regions do not have such fast growth rates, which leads to an uneven distribution of higher education resources and subsequently affects the performance of higher education. Therefore, by analyzing the allocation and performance of financial investment in higher education in Zhejiang, useful references can be provided for exploring the path to building a strong education country.

2.2. Characteristics of Higher Education Investment in Zhejiang Province

In recent years, Zhejiang Province has introduced multiple financial investment policies for higher education, aimed at promoting the high-quality development of higher education. The following analysis will be conducted from three aspects: regional characteristics, hierarchical structure characteristics, and expenditure structure characteristics.

2.2.1 Regional characteristics

In 2024, the funding for higher education in Zhejiang will reach 120 billion yuan, which is at a relatively high level nationwide, and the total budget revenue of Zhejiang universities is showing an upward trend. In 2024, the budget of Zhejiang University will reach 32.9 billion yuan, ranking second in the country after Tsinghua University. Zhejiang University of Technology and other provincial universities have also performed well in terms of budget among their peers, such as Zhejiang University of Technology with a budget of 4.4-billion-yuan, Ningbo University with a budget of 4 billion yuan, and several provincial colleges with relatively high budgets. By 2022, the provincial finance will allocate 5 billion yuan in special funds, with 30% allocated according to the KPI of universities, mainly to support the construction and cooperative education of high-level universities at home and abroad introduced by various regions and universities [12]. The provincial finance has invested 500 million yuan annually for five consecutive years to support Zhejiang University in building a world-class university and to promote clinical medicine to become a national first-class discipline. We fully support Zhejiang University in implementing the Brain Science and Artificial Intelligence Convergence Research Program.

2.2.2 Hierarchical structure characteristics

From the perspective of a hierarchical structure, Zhejiang also has obvious characteristics in terms of financial investment in higher education. Zhejiang Province has a well-established structure in higher education, with multiple high-level universities that possess strong capabilities in research, teaching, and other areas. Zhejiang Province has implemented a comprehensive reform pilot for higher education, clarified the development positioning of various universities, established a classification management and evaluation mechanism, and guided universities to leverage their advantages and develop their characteristics in different fields. Zhejiang Province classifies undergraduate universities according to a two-dimensional structure. The first-dimension divides universities into research-oriented, teaching research-oriented, and teaching oriented types based on factors such as talent cultivation, discipline construction, scientific research, and faculty. The second-dimension divides universities into multidisciplinary and comprehensive categories based on disciplines, major categories, and the number of majors. By forming a "six grid" classification through two dimensions, undergraduate universities in the province are divided into six types, namely comprehensive research-oriented, multi-disciplinary research-oriented, comprehensive teaching research-oriented, multi-disciplinary teaching research-oriented, comprehensive teaching-oriented, and multi-disciplinary teaching-oriented.

2.2.3 Characteristics of expenditure structure

Zhejiang Province has concentrated funds to support the construction of Zhejiang University's "Double First Class" initiative, as well as to encourage provincial universities such as Zhejiang University of Technology and Ningbo University to compete for the initiative and strengthen the development of advantageous disciplines and research platforms; Increase investment in basic disciplines, applied disciplines (such as digital economy, biomedicine), and interdisciplinary fields, and support new research-oriented universities (such as Xihu University and Oriental Institute of Technology) to introduce top talents and conduct cutting-edge research; Establish special funds for collaborative innovation centers and industry education integration projects in universities, guide cooperation between universities, enterprises, and research institutes, promote the transformation of scientific and technological achievements and the cultivation of applied talents, and enhance the efficiency of fund output; Appropriately increase the proportion of personnel funds such as performance-based salaries and research rewards for teachers, and stimulate their enthusiasm; At the same time, we will strictly control administrative expenditures, compress non-essential expenses, and ensure that funds are directed towards the front lines of teaching and research. Through the above measures, Zhejiang Province has achieved a shift in higher education funding from "heavy investment" to "heavy efficiency", ensuring that financial resources are accurately directed towards key areas and maximizing the empowerment of universities for connotative development.

2.3. Investment and Performance of Some Universities--Performance of Zhejiang University

In the previous text, the distribution of financial investment in higher education in Zhejiang Province was analyzed, revealing the regional characteristics, hierarchical structure, and expenditure structure of financial investment distribution in Zhejiang Province. These characteristics provide important clues for understanding the current performance of higher education in Zhejiang Province. Next, by analyzing the performance data of Zhejiang University, a typical university, we will further explore the root causes of the better performance of higher education in Zhejiang Province. Choosing this university for analysis is not only because it is a top institution in Zhejiang Province, but also because its performance in talent cultivation, scientific research, and innovation can intuitively reflect the effect of financial investment. By analyzing the differences in teaching satisfaction, further education rate, subject competitions, research funding, and research achievements, we can more clearly see the impact of financial investment on university performance, providing strong empirical support for optimizing the structure of financial investment in higher education and improving the efficiency of fund utilization.

Firstly, in terms of teaching satisfaction, according to relevant authoritative websites, the overall satisfaction rate of undergraduate students at Zhejiang University with teaching in 2023 is 97.37%, and shows an upward trend. In the 2018-2019 academic year, students' satisfaction with the curriculum was 96.38%, and their overall satisfaction with the teacher was 96.43%. The enrollment rate of Zhejiang University is 66.39%, with 85.8% of the 2022 graduates from Zhu Kezhen College of Zhejiang University pursuing further education. Among them, 61.7% of overseas students went to the top 20 universities or top 5 disciplines in the world for further education.

In terms of academic competitions, Zhejiang University won 97 national and above-level awards in 2019, including 37 national first prizes (or champions) and 24 world first prizes (or champions) in various academic competitions.

Research funding and personnel investment: The science and technology expenditure budget of Zhejiang University is divided into categories such as basic research, applied research, scientific and technological conditions and services, major scientific and technological projects, and other discipline technology expenditures. As shown in Table 2, during the period of 2020-2024, the operating budgets of institutions in basic research were 1794.48-yuan, 1206.08-yuan, 1257.08-yuan, 1369.56 yuan, and 1362.46 yuan, respectively; The budgets for key laboratories and related facilities are 3296.03-yuan, 20785.84-yuan, 14796.08-yuan, 8532.72 yuan, and 10697.55 yuan, respectively. The total value of this category fluctuates greatly from year to year, but remains at a relatively high level. The high-tech research budget for applied research has been changing year by year, with amounts of 6010.5, 5617.46, 6242.53, 5042.7, and 4594.97 yuan, respectively. The special fund for scientific and technological conditions was 450 yuan in 2020, 561.09 yuan in 2021, and 0 yuan from 2022 to 2024. The budgets for major science and technology projects also vary, with 1303.61, 885.61, 3383.98, 3231.58, and 2998.23 yuan, respectively. The technology expenditure for other disciplines was 41.26 yuan in 2020 and 0 yuan in other years. The total expenditures for each year are 41895.88, 29056.08, 25679.67, 18176.56, and 19653.21 yuan, respectively [13]. In 2022, Zhejiang University's research funding will reach 5 billion yuan.

From the perspective of scientific research achievements, Zhejiang University ranks among the top in the country in terms of the number of scientific research projects and the output of scientific research results. In 2019, undergraduate students from Zhejiang University won 1 international championship, 3 runner-up awards, 1 third place, 23 first prizes (gold medals), and 5 second prizes (silver medals).

Table 2. Zhejiang University Science and Technology Budget Table.

			2020	2021	2022	2023	2024
Zhejiang University Science and Technology Expenditure Budget	Fundamental Research	Institutional Operation	1794.48	1206.08	1257.08	1369.56	1362.46
		Key Laboratories and Related Facilities	3296.03	20785.84	14796.08	8532.72	10697.55
		Sum	34090.51	21991.98	16053.16	9902.28	12060.01
	Application Research	High-Technology Research	6010.5	5617.46	6242.53	5042.7	4594.97
	Technological Conditions and Services	Science and Technology Conditions Special Project	450	561.09	0	0	0
	Major Technological Projects	Major Science and Technology Projects	1303.61	885.61	3383.98	3231.58	2998.23
	Technical Expenses for other Disciplines	Technical Expenses for Other Disciplines	41.26	0	0	0	0
	Sum	Sum	41895.88	29056.08	25679.67	18176.56	19653.21

Through the comparative analysis of investment and performance of Zhejiang University, it can be seen that higher financial investment can significantly improve the talent cultivation and research innovation performance of universities. These data indicate that optimizing the structure of fiscal investment and improving the efficiency of fiscal fund utilization are key measures to enhance the performance of universities and promote high-quality development of higher education.

3. Suggestion

Based on the research on the allocation of financial investment in higher education in Zhejiang Province, this article believes that in ensuring higher education investment, attention should be paid to building a scientific and reasonable funding guarantee mechanism from multiple dimensions. Firstly, it needs to optimize the structure of fiscal investment by increasing financial support for higher education, especially focusing on weak links and key areas, allocating resources accurately, ensuring that funds are invested accurately and 'used on the cutting edge', and providing a solid fiscal foundation for higher education to make up for its shortcomings and strengthen its advantages. Secondly, efforts should be made to improve the efficiency of fund utilization by establishing a sound performance evaluation system for fiscal funds, strengthening the supervision of funds throughout the entire process, constructing an open and transparent mechanism for fund utilization, and effectively enhancing the efficiency of fund utilization, so that every fund can achieve maximum benefits. At the same time, actively expanding diversified financing channels, encouraging social forces to participate in higher education investment through policy guidance, and comprehensively utilizing various methods such as government subsidies, service purchases, and fund rewards to stimulate the vitality of social capital investment, gradually increasing the proportion of social forces in higher education investment, and forming a diversified investment pattern led by the government and coordinated by society. In addition, we will strengthen policy guidance and institutional construction, clarify the responsibilities and obligations of the government, universities, and society in higher education investment through the formulation of clear policy documents, establish a clear and efficient investment guarantee mechanism, ensure the effectiveness of various support policies, and provide long-term institutional guarantees for the sustainable and healthy development of higher education.

4. Conclusion

This study conducts an in-depth analysis of the distribution and performance differences of financial investment in higher education in Zhejiang Province, and combines a specific case of Zhejiang University to reveal the significant impact of financial investment on higher education performance. Zhejiang University has performed well in terms of teaching satisfaction, further education rate, subject competitions, research funding, and research achievements, thanks to the sustained high investment and optimized financial support structure of Zhejiang Province in higher education.

Through analysis of Zhejiang Province and Zhejiang University, this study concludes that optimizing the structure of financial investment in higher education and increasing financial support for higher education are key measures to improve university performance and promote high-quality development of higher education. This discovery not only provides empirical evidence for the financial policies of higher education in Zhejiang Province, but also provides useful references for other provinces in making decisions on financial investment in higher education.

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