Research on Efficiency of Allocation of Higher Education Resources in China--Empirical Analysis based on DEA-Malmquist Model

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Abstract: China will take advantage of the Belt and Road decade’s opportunity to achieve further development with the increasing allocation of resources towards higher education. The study examines the allocation of resources in higher education across 18 provinces along the Belt and Road in China from 2014 to 2024 using the DEA and Malmquist models to prove the result dynamically and statically. It simultaneously compares the disparities between the land Silk Road and the Maritime Silk Road. The study demonstrates that universities located in the provinces along the Belt and Road route have a high level of efficiency in allocating higher education resources. Nevertheless, it is imperative to enhance the efficiency of resource allocation in higher education across all provinces. As an illustration, Guangdong has the highest total factor growth rate, while Tibet has the lowest. Furthermore, there is a rapid increase in this rate from 2022 to 2024. The value reaches its maximum in 2023, experiences a steep decline thereafter, and drops below 1.03 in the same year. From 2014 to 2022, China's total factor productivity remains constant, indicating a stable stage interval. The data exhibits a pattern of oscillating growth followed by decline starting from 2022. Regarding regional disparities, the averages of all the routes of the Maritime Silk Road surpass the Land Silk Road. The persistent issue of imbalanced allocation of resources in higher education is evident, so the study focuses on how to maximizing the benefits derived from high education resources allocation.

Keywords: Higher Education, DEA-Mulmquist Model, Investments Efficiency, Belt and Road.

1. Introduction

Firstly, the introduction and execution of the Belt and Road offer novel prospects for the advancement of higher education in China, which initiative aims to foster interconnection and mutually beneficial collaboration among the countries along the route. As the globalization of higher education plays a crucial role in fostering talent development, scientific and technological advancements, and cultural interactions, it is important to study the efficiency of the allocation of resources in higher education. Secondly, high vocational education along the "Belt and Road" is comparatively lacking even though it is a kind of high education. Furthermore, China's development relies on the world, just as the world's development relies on China. Within this framework, the globalization of higher education not only serves to bolster China's influence and international dialogue, but also plays a beneficial role in the global integration process. The allocation of higher education resources under the "Belt and Road" initiative primarily encompasses human, financial, and material aspects.

On the one hand, the efficiency of allocating resources in higher education needs to be constantly adjusted and optimized in response to changes in time and circumstances. This study aims to investigate the efficiency of allocating resources in higher education, focusing on three key aspects: human, financial, and material resources. Additionally, the study analyzes strategies to address the geographical imbalance resulting from the current resource allocation practices, with the ultimate goal of enhancing the overall efficiency of resource allocation in higher education.

2. Literature Review

Based on the current research conducted both domestically and internationally, the majority of studies on higher education efficiency utilize the DEA-ANN model, three-stage model, and DEA-Tobit model. However, this study distinguishes itself by employing a novel approach at the methodological level. Specifically, it combines the DEA and Mulmquist index models, taking into account both dynamic and static factors. Moreover, this study goes beyond the basic education stage and delves into a more comprehensive analysis of higher education, exploring its deeper levels. The advancement in higher education is demonstrated through the innovative application of the DEA and Mulmquist index model to assess the effectiveness of investments in higher education. This study employs the DEA-Mulmquist model, specifically the CCR model within the DEA framework, to address the issues of wastage and inefficient allocation of resources in higher education. Differently, the study's methodology breakthrough the filed by combining the DEA and Mulmquist index models, incorporating both dynamic and static elements to assess the efficiency of higher education investment. Furthermore, it surpasses the basic education stage and delves into the deeper realm of higher education. As a result, the analysis can do little contribution to optimize higher education resources and serve as a reference.

From the foreigner’s prospect, Canada, Vietnam, and Romania are the primary countries at the international level that utilize DEA-related models and are engaged in researching efficiency in higher education. For instance, Jauhar Sunil Kumar, Zolfagharinia Hossein, et al. (2023)
examined the present condition of university education in Canada using DEA-ANN modeling [1]. Tran Thien Vu and Pham Thao Phuong (2022) investigated the effectiveness of higher education institutions in Vietnam from 2012 to 2016 [2]. Olariu Gabriela Vica and Brad Stelian (2022) used a combination of traditional CRS-DEA and VRS-DEA models to analyze the Romanian higher education system [3]. In a separate study, Gabriela Vica Olariu, Stelian Brad, et al. (2017) examined higher education using officially published university data from 2012 to 2015, supplemented with CRS-DEA and VRS-DEA models [4]. Ramón Fuentes, Begoña Fuster et al. (2016) employed a three-stage framework to evaluate educational efficacy [5].

From the domestic prospect, DEA models are created to analyze the efficiency of universities in all 31 provinces of China using the following approach: Siti Fatimah and Umi Mahmudah (2019) employed a two-stage DEA-VRS model and a super-efficiency model study Primary education [6]. Sangchan Kantabutra (2012) utilized the super-efficiency DEA model to investigate the efficiency of higher education resources directly under the Ministry of Education in China [7]. In 2024, the researchers used the highly efficient DEA model and Malmquist productivity index to thoroughly examine the input-output efficiency of the resources in Chinese universities under the Ministry of Education [8]. Additionally, Fang Yongheng and Lan Chunxiang (2020) employed the three-stage super-efficient SBM model to evaluate the efficiency of universities [9].

From the economic circle prospect, The DEA-related models are employed to analyze the efficiency of higher education in the West, such as Chengdu-Chongqing Economic Circle. For instance, Olariu Gabriela Vica and Brad Stelian (2022) conducted a study efficiency of universities in western China by using the super-efficient DEA Windows-Malmquist-Tobit model [10]. Li RC, Luo YY, Chen B (2023) et al. used the DEA-Malmquist model to examine the efficiency and level of total factor productivity (TFP) in the Chengdu-Chongqing Twin Cities Economic Circle [11]. Additionally, in 2014, Nazarko and Saparastas evaluated the research performance of 19 Polish universities of technology [12].

From the country aspect, Temoso Omophile, Tran Carolyn Thi Thanh Dung and Myeki Lindikaya et al. (2023) employed the network-based DEA method to examine the performance of South African higher education institutions in a network structure of teaching and research for the period 2009–2016 [13]. Tran Thien Vu, Pham Thao Phuong and Nguyen Mai Huong et al. (2023) aims to examine the economic efficiency of Vietnamese 172 higher education (HE) institutions within the 2012–2016 inclusive period through the Data Envelopment Analysis (DEA) approach [14]. Olariu Gabriela Vica and Brad Stelian (2022) evaluate the relative efficiency of study programs in Romanian higher education using the DEA method. This study is based on 38 study programs from a public university in Romania, using a traditional DEA approach: CRS-DEA and VRS-DEA models, with an output orientation for three academic years [15].

Different from the prevailing approach currently, The study utilizes the DEA-Tobit model and the Malmquist index model, combining with static and dynamic analysis to assess the efficiency of higher education investment. Furthermore, The results offer insights for enhancing education quality in the Belt and Road region.

3. Construction of the Model and Selection of Indicators

3.1 Construction of the Model

3.1.1 CCR Model

The DEA method, known as Data Envelopment Analysis, was introduced by A. Charnes and W. W. Cooperin 1978. The method used to assess the relative effectiveness of input-output combinations in a static setting by establishing a decision-making unit (DMU) with multiple inputs and outputs. Compared to other models, the DEA method offers the advantages of not requiring weighting assumptions or quantitative manipulation of data. Traditional DEA models consist of the BBC model and the CCR model, which respectively represent the variable perspective of returns to scale and the constant perspective of returns to scale.

Using CCR as an illustration, the formula for the CCR model is as follows.

$$\text{DMU} = \begin{cases} \tilde{z}_i = (x_{i1}, x_{i2}, \ldots, x_{in}) \\ \tilde{y}_i = (y_{i1}, y_{i2}, \ldots, y_{in}) \\ i = 1, 2, \ldots, n \end{cases}$$ (1)

Equation (1) The linear solution for the input-output efficiency value of each Decision Making Unit (DMU) is as follows:

$$\min_{\gamma_k, \lambda} \lambda \sum_{i} x_{i1} \gamma_i \leq \lambda x_0$$

s. t. $$\sum_{i} x_{ik} \gamma_i \geq \lambda y_k$$

$$\gamma_i \geq 0, i = 1, 2, \ldots, k, \ldots n$$ (2)

3.1.2 Setting up the Malmquist model

Sten Malmquist initially introduced the Malmquist index, which was subsequently modified by Fare et al. (1989) to transform it from a theoretical index to an empirical index. In addition, The Malmquist index is a nonparametric measure.

The production frontier party measures changes in total factor productivity (TFP) and decomposes them.

TFP changes are transformed into technical progress (EC) and technical efficiency changes (TC) assuming constant returns to scale (CRS) in the analysis. Assuming variable returns to scale (VRS), changes in technical efficiency are further broken down into pure technical efficiency change. Pech and scale efficiency refer to the measurement and evaluation of the effectiveness and productivity of a system or process. Modification of the secant.

The Malmquist productivity change index is advantageous because it addresses the limitations of the single static level of
DEA through its dynamic examination. The Malmquist index evaluates efficiency by analyzing the change in efficiency from period t to period t+1, using the technical level of period t as the benchmark for a given condition in period t or using the technical level of period t as the benchmark for a given level in period t+1. The Malmquist index is calculated using two formulas, namely Eq. Three and Eq. 4.

\[
M_1^t = \frac{D_i^t(x^t, y^t)}{D_i^{t+1}(x^{t+1}, y^{t+1})}
\]

\[
M_1^{t+1} = \frac{D_i^{t+1}(x^{t+1}, y^{t+1})}{D_i^{t+2}(x^{t+2}, y^{t+2})}
\] (3)

The total factor productivity, which quantifies the change in efficiency from period t to t+1, is calculated by taking the geometric mean of the indices in equations 3 and 4 as the standard.

\[
TFP(x^t, y^t, x^{t+1}, y^{t+1}) = \frac{D_i^{t+1}(x^{t+1}, y^{t+1})}{D_i^{t+2}(x^{t+2}, y^{t+2})} \times \frac{D_i^{t+2}(x^{t+2}, y^{t+2})}{D_i^{t+1}(x^{t+1}, y^{t+1})}
\] (4)

3.2 Indicators Selection

Checking the effectiveness of allocating resources in higher education can enhance the organization of resource allocation. Human, financial, and material resources, which are the fundamental components of resource allocation, play a crucial role in assessing resource allocation efficiency. This study considers human resources, finance, and materials as the main input indicators. The secondary indicators include the number of higher education teaching staff, higher education funding, and the number of higher education institutions. Scientific research products can be an evaluation standard. So the study focuses on two primary output indicators: the scientific research output of higher education and its social service function. Additionally, it considers three types of domestic patent applications and the number of deputy senior staff as secondary output along the Belt and Road region. Even though, the development of higher education is considered a priority national investment project. However, there is still room for improvement in the distribution of higher education resources. Therefore, this study chooses the stage panel data from 2014 to 2024 as the sample period and selects 18 provinces and cities located along the Belt and Road as the sample subjects: The Maritime Silk Road encompasses five provinces and cities, namely Shanghai, Zhejiang, Fujian, Guangdong, and Hainan. On the other hand, the Land Silk Road covers thirteen provinces and cities, including Inner Mongolia. The data used in this thesis is derived from the China Statistical Yearbook. The findings of this study serve as a valuable reference for enhancing the efficiency of allocating higher education resources nationwide.

### Table 1: Input and Output Indicators for the Allocation of Higher Education Resources

<table>
<thead>
<tr>
<th>Province/Municipality</th>
<th>TE</th>
<th>PTE</th>
<th>SE</th>
<th>TE</th>
<th>PTE</th>
<th>SE</th>
<th>TE</th>
<th>PTE</th>
<th>SE</th>
<th>TE</th>
<th>PTE</th>
<th>SE</th>
<th>TE</th>
<th>PTE</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inner Mongolia</td>
<td>0.358</td>
<td>0.346</td>
<td>0.875</td>
<td>0.359</td>
<td>0.347</td>
<td>0.346</td>
<td>0.346</td>
<td>0.345</td>
<td>0.296</td>
<td>0.394</td>
<td>0.337</td>
<td>0.326</td>
<td>0.394</td>
<td>0.337</td>
<td>0.326</td>
</tr>
<tr>
<td>Liaoning</td>
<td>0.904</td>
<td>0.862</td>
<td>1</td>
<td>0.973</td>
<td>0.882</td>
<td>0.876</td>
<td>0.839</td>
<td>0.874</td>
<td>0.743</td>
<td>0.916</td>
<td>0.773</td>
<td>0.744</td>
<td>0.916</td>
<td>0.773</td>
<td>0.744</td>
</tr>
<tr>
<td>Jilin</td>
<td>0.724</td>
<td>0.706</td>
<td>0.95</td>
<td>0.721</td>
<td>0.704</td>
<td>0.696</td>
<td>0.702</td>
<td>0.694</td>
<td>0.606</td>
<td>0.779</td>
<td>0.679</td>
<td>0.667</td>
<td>0.779</td>
<td>0.679</td>
<td>0.667</td>
</tr>
<tr>
<td>Heilongjiang</td>
<td>0.757</td>
<td>0.731</td>
<td>1</td>
<td>0.791</td>
<td>0.764</td>
<td>0.763</td>
<td>0.76</td>
<td>0.758</td>
<td>0.648</td>
<td>0.828</td>
<td>0.706</td>
<td>0.681</td>
<td>0.828</td>
<td>0.706</td>
<td>0.681</td>
</tr>
<tr>
<td>Shanghai</td>
<td>1</td>
<td>0.994</td>
<td>1</td>
<td>1.223</td>
<td>1</td>
<td>0.98</td>
<td>1.249</td>
<td>1</td>
<td>0.924</td>
<td>1</td>
<td>1.117</td>
<td>1</td>
<td>1.004</td>
<td>1</td>
<td>1.117</td>
</tr>
<tr>
<td>Zhejiang</td>
<td>1</td>
<td>0.924</td>
<td>1</td>
<td>1.196</td>
<td>1</td>
<td>0.977</td>
<td>1.294</td>
<td>1</td>
<td>0.936</td>
<td>1</td>
<td>1.187</td>
<td>1</td>
<td>0.987</td>
<td>1</td>
<td>1.077</td>
</tr>
<tr>
<td>Fujian</td>
<td>0.646</td>
<td>0.627</td>
<td>0.935</td>
<td>0.664</td>
<td>0.64</td>
<td>0.643</td>
<td>0.649</td>
<td>0.56</td>
<td>0.743</td>
<td>0.639</td>
<td>0.621</td>
<td>0.743</td>
<td>0.639</td>
<td>0.621</td>
<td></td>
</tr>
<tr>
<td>Guangdong</td>
<td>1</td>
<td>0.965</td>
<td>1</td>
<td>1.234</td>
<td>1</td>
<td>0.999</td>
<td>1.444</td>
<td>1</td>
<td>0.851</td>
<td>1</td>
<td>1.299</td>
<td>1</td>
<td>0.961</td>
<td>1</td>
<td>1.299</td>
</tr>
<tr>
<td>Guangxi</td>
<td>0.414</td>
<td>0.459</td>
<td>0.995</td>
<td>0.491</td>
<td>0.48</td>
<td>0.479</td>
<td>0.833</td>
<td>0.472</td>
<td>0.404</td>
<td>0.555</td>
<td>0.438</td>
<td>0.443</td>
<td>0.555</td>
<td>0.438</td>
<td>0.443</td>
</tr>
<tr>
<td>Hainan</td>
<td>0.187</td>
<td>0.185</td>
<td>1</td>
<td>0.202</td>
<td>0.201</td>
<td>0.193</td>
<td>0.183</td>
<td>0.176</td>
<td>0.163</td>
<td>0.221</td>
<td>0.204</td>
<td>0.191</td>
<td>0.221</td>
<td>0.204</td>
<td>0.191</td>
</tr>
<tr>
<td>Chongqing</td>
<td>0.694</td>
<td>0.682</td>
<td>0.936</td>
<td>0.736</td>
<td>0.723</td>
<td>0.712</td>
<td>0.717</td>
<td>0.706</td>
<td>0.624</td>
<td>0.803</td>
<td>0.709</td>
<td>0.704</td>
<td>0.803</td>
<td>0.709</td>
<td>0.704</td>
</tr>
</tbody>
</table>

### 4. Empirical Analysis

#### 4.1 Static Analysis of CCR Model

This study utilizes the DEA model to examine the technical efficiency of resource allocation in higher education within the Belt and Road. The technical efficiency value is determined by multiplying the pure technical efficiency and scale efficiency.

According to the analysis in Table 2, the overall technical efficiency is greater than 0.9 but less than 1, which indicates that it is still in an inefficient state. When looking at specific provinces and cities, the technical efficiency values of 7 provinces and cities, including Shanghai, Fujian, Guangdong, Guangxi, Hainan, Shanxi, and Gansu, are all greater than 1. Shanghai, Fujian, Guangdong, and Hainan exemplify the Maritime Silk Road and, when considering the average technical efficiency value. According to the result, Maritime Silk Road has advantage than the land Silk Road. In terms of the mean value of technical efficiency, the mean value of the Maritime Silk Road is the highest, and the Belt and Road is medium. The Land Silk Road exhibits the lowest mean value of technical efficiency. The former technical efficiency value is greater than 1 in an effective state, and the latter two technical efficiency mean value is less than 1 in an ineffective state. The overall efficiency requires immediate improvement in horizontal comparison, while there exists a significant disparity in educational investment efficiency between the Maritime Silk Road and the Land Silk Road in vertical comparison. To efficiently adapt the allocation of resources in higher education investment and enhance the efficiency and effectiveness of its resource allocation. Table 3 compiles data on the decomposers of technical efficiency, allowing for an examination of the degree to which adjustments are made. The scale of higher education and the change in management technology have an impact on technical efficiency. Table3 presents the technical efficiency decomposition value of higher education resource allocation efficiency in provinces along the Belt and Road from 2014 to 2024.
The overall technical efficiency value of the land and sea Silk Road is lower than the scale efficiency value. The overall provincial and municipal scale efficiency is greater than or divided by the pure technical efficiency, except Inner Mongolia and Chongqing, two provinces and municipalities, whose scale efficiency is lower than the pure technical efficiency. From the geographical location, Inner Mongolia and Chongqing are part of the land Silk Road.

The lack of high-quality talent in Inner Mongolia, caused by inadequate infrastructure, has hindered the progress of higher education in the region. For Chongqing, the absence of a budget for funding higher education has a negative impact on the effectiveness of investing in higher education. In addition, the insufficient allocation of funding for higher education has a detrimental impact on the quality of teaching, research, and faculty development. The current focus on enhancing the efficiency of higher education resource allocation, as well as minimizing investment costs and maximizing investing efficiency benefits.

### 4.2 Dynamic Analysis of Malquist Inde

The table displays the technical efficiency change, production efficiency change, pure technical efficiency change, scale efficiency change, and total factor productivity for the Belt and Road Initiative from 2014 to 2024.

<table>
<thead>
<tr>
<th>Year</th>
<th>Technical efficiency change</th>
<th>Production efficiency change</th>
<th>Pure technical efficiency change</th>
<th>Sale efficiency change</th>
<th>Total factor productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-2015</td>
<td>1</td>
<td>1.035</td>
<td>1.003</td>
<td>0.998</td>
<td>1.035</td>
</tr>
<tr>
<td>2015-2016</td>
<td>1.002</td>
<td>1.003</td>
<td>1.002</td>
<td>1</td>
<td>1.004</td>
</tr>
<tr>
<td>2016-2017</td>
<td>0.991</td>
<td>1.057</td>
<td>0.992</td>
<td>0.999</td>
<td>1.048</td>
</tr>
<tr>
<td>2017-2018</td>
<td>0.984</td>
<td>1.031</td>
<td>0.998</td>
<td>0.985</td>
<td>1.014</td>
</tr>
<tr>
<td>2018-2019</td>
<td>1.004</td>
<td>1.075</td>
<td>1.007</td>
<td>1</td>
<td>1.074</td>
</tr>
<tr>
<td>2019-2020</td>
<td>0.982</td>
<td>0.961</td>
<td>0.99</td>
<td>0.991</td>
<td>0.943</td>
</tr>
<tr>
<td>2020-2021</td>
<td>0.984</td>
<td>0.992</td>
<td>0.993</td>
<td>0.998</td>
<td>0.973</td>
</tr>
<tr>
<td>2021-2022</td>
<td>1.006</td>
<td>1.006</td>
<td>1.002</td>
<td>1.004</td>
<td>1.012</td>
</tr>
<tr>
<td>2022-2023</td>
<td>0.89</td>
<td>1.447</td>
<td>1.065</td>
<td>0.836</td>
<td>1.289</td>
</tr>
<tr>
<td>2023-2024</td>
<td>0.981</td>
<td>1.059</td>
<td>1.005</td>
<td>0.977</td>
<td>1.04</td>
</tr>
</tbody>
</table>
Subsequently, it reverts back to the previous state of equilibrium. Nevertheless, when considering future trends, it is important to acknowledge that total factor productivity remains susceptible to the ongoing possibility of a persistent decrease. The possibility of a long-lasting decrease in total factor productivity remains a concern in relation to future patterns.

From a decomposition perspective, the static analysis up until 2021 serves as the turning point in time. During the early period, the total factor productivity is nearly 1, indicating a reasonable investment layout in higher education. The technical efficiency, pure technical efficiency, and scale efficiency all play coordinated roles in this structure. From a dynamic perspective, between 2021 and 2022, there is a positive correlation between the change in total factor productivity, production efficiency, and pure technical efficiency. The rate of increase in these factors also accelerates, suggesting that production efficiency and the contribution of technological progress to total factor productivity gradually increase during this period. Conversely, there is a negative correlation between changes in scale efficiency, changes in technical efficiency, and total factor productivity. The decrease in scale efficiency is a result of the rise in student enrollment in higher education and the growth of higher education institutions, both of which contribute to the increased cost of managing higher education. Insufficient education funding relative to the rising cost of management exposes the disadvantages of investing in higher education, specifically in terms of investment inefficiency. From a broad perspective, at a stationary state, the overall factor productivity values of the provinces and cities along the Belt and Road after 2022 initially range from 1 to 1.2, then increase to between 1.2 and 1.4 in 2023, and finally gradually decrease to approximately one.

From 2024 until now, the decomposition values indicate that the most significant decline is observed in terms of the change in productive efficiency, followed by the change in technical efficiency, and finally, the change in pure technical efficiency.

5. Conclusion and Recommendation

5.1 Conclusions

By combining the analysis of the current state of higher education development with a strong education country's development strategy, it is important to formulate both long-term and short-term education investment plans and optimize the allocation of resources in higher education to enhance staffing efficiency:

(1) Enhancing the allocation of higher education resources based on manpower needs and value excellence. From the perspective of human resources, higher education plays a crucial role in developing highly skilled individuals and has the responsibility of finding a talent cultivation model that aligns with the needs of the country and society.

(2) Enhance the overall proficiency of higher education instructors. Supporting educational research and innovation programs allows for increased opportunities for higher education teachers to share their accomplishments.

(3) Utilizing physical force to facilitate the implementation of resource allocation in higher education. The construction of infrastructure is an integral part of higher education development.

(4) The allocation of funds towards educational infrastructure should be augmented in order to ensure that schools meet the requisite standards for educational facilities and conditions, thereby establishing a fundamental assurance for enhancing the quality of education.

(5) Promotion of the sharing of educational resources between schools, regions, and even countries, which accelerates the development of a platform for sharing higher education resources and enhances the utilization of resources. Furthermore, enhance the oversight and evaluation of higher education facilities and implement continuous monitoring of educational infrastructure projects to promptly detect and address any issues.

(6) Funding to spearhead the effective distribution of resources in higher education from a financial standpoint. Implementing an effective financial funding management mechanism is beneficial for maintaining a balance between national income and expenditure to establish a scientific education.

(7) Overall construction of higher education resource allocation equalization

The demand for cultivating high-quality talents on the Land Silk Road is growing stronger as the domestic industrial structure undergoes adjustment and upgrading, so the State should support to reduce the disparity with the Maritime Belt and Road.

5.2 Suggestions

On the 10th anniversary of the Belt and Road Initiative, higher education has injected new momentum into the Belt and Road construction, becoming an indispensable force supporting economic and cultural development along the Belt and Road. The study explored the allocation of resources in higher education across 18 provinces along the Belt and Road in China from 2014 to 2024, focusing on the efficiency of resource allocation in higher education by using both dynamic and static analysis methods, specifically the DE A and Mulquist index model. To some extent, The study's methodology breakthrough the filed by combining the DEA and Mulquist index models, incorporating both dynamic and static elements to assess the efficiency of higher education investment. According to the results, The efficiency of higher education resource allocation along the Belt and Road needs to be improved, and there are significant differences between the Maritime Silk Road and the Silk Road. So the study presents pertinent recommendations regarding human, material, and financial resources. Simultaneously, considering the difference between the Maritime Silk Road and the Land Silk Road, the government can adapt its policies accordingly. What’s more, favoring the land-based Belt and Road and providing preferential treatment and will enhance the overall allocation of national higher education resources and optimize their resource allocation efficiency. Furthermore, combining the analysis of
the current state of higher education development with a strong education country’s development strategy is very necessary. In addition, it is important to formulate both long-term and short-term education investment plans and optimize the allocation of resources in higher education to enhance staffing efficiency. Based on the study, the analysis can do a little contribution to optimize higher education resources and serve as a reference. In the future, the construction of higher education will further take into account the overall planning of resource allocation issues such as human resources, finances, and materials, aiming to improve the comprehensive level of higher education.

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