

# Discussion on the Interactive Influences of Improving Quality of Higher Education and Optimizing Allocation of Resources

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Received: June 21, 2021

Accepted: July 27, 2021

Online Published: July 31, 2021

doi:10.5430/irhe.v6n2p39

URL: <https://doi.org/10.5430/irhe.v6n2p39>

## Abstract

This paper focuses on the effective ways to promote the joint development of equity, benefit and quality of higher education, and proposes the viewpoint that reforming the traditional way of allocation of resources has become the demand of the times. It is pointed out that the key to solve the problem lies in the single source of funds and the framework of resource allocation has not yet incorporated the development needs and purport of local, industrial, corporate and university entities.

**Keywords:** equality of educational opportunities, quality and efficiency of higher education, Pareto improvement, allocation mechanism/pattern of educational resources in China

## 1. Introduction

To improve the quality of higher education and enhance the ability of serving local areas is an important proposition facing China's higher education at present. Achieving equity in education sets development goals and foundations for quality improvement and local initiative on a broader scale. It is the basic guarantee and effective way to realize the high quality, high efficiency and fair joint development of higher education to fully explore the local, diverse, financial and public (welfare) functions of the financial aid system of higher education.

## 2. High Quality, Equity and Efficiency Provide Multiple Development Goals and Urgent Needs for the Reform of Resource Allocation

### 2.1 The Influence of Improving Quality on the Realization of Educational Equity

After world War II, the implementation of welfare state policies in European and American countries also increased the financial burden of the government. Especially, Europe and Japan fell into financial difficulties one after another. In recent years, the increase in medical care and pension costs caused by an ageing population in the western developed countries and the trend of slow economic growth, make it hard for these countries' finance to respond to the new round of expansion trend of higher education across the world in the 21st century. For example, the British and French governments did not increase the fiscal expenditure on higher education with the increase of the registered in higher education. Instead, they cut down considerably on higher education funds. On one hand, the financial funds are being cut. On the other hand, the scale of registered students in colleges and universities is still expanding. Therefore, further reduction of funds per student is inevitable. Furthermore, colleges and universities are increasing tuition fees to alleviate financial tension, which makes the guarantee of higher education quality encounter severe situation and pressure. For instance, the Spellings Commission report (2008) from the US Federal Department of Education reflected the backlash against higher tuition fees. In the past two decades, the number of university students in developing countries has more than tripled, while public resources for higher education have only increased by 15% to 20% in the same period (World Bank, 1995). It has been estimated that in most developing countries, the real per capita inputs have fallen by more than 50 per cent.

Equality of educational opportunities, especially in higher education, is the main way to achieve social equity. Educational equity refers to the fact that education, as a quasi-public welfare enterprise, has equity in nature, such as the non-segmentation of educational products. In terms of equal opportunities for higher education, it means that children of a wider range of social classes and families can enjoy the rights and interests of higher education. Such rights and interests involve fairness in the starting point, in the process and outcome. They include equal access to school, expanded course options, financial aid for poor students, equal employment opportunities, and so on. In brief,

it includes two key aspects: first, by establishing a fair competition mechanism and evaluation standards, the rights and interests of higher education can be enjoyed by a wider range of social classes and people; Second, in order to achieve equal development opportunities, it is necessary to compensate low income groups and vulnerable groups, and equality also means different treatment for groups with differences.

The expansion policy has been accompanied by rising college tuition fees, which has had a complex impact on the enrollment rates of children from low-income and poor families. The government has taken measures of cost sharing approach towards the majors with high private income (popular majors aiming to work in social occupations with high income), and the free-of-charge and cost compensation approach towards the majors with low private income and significant positive externalities (such as the education major and basic disciplines such as literature, history and philosophy). Obviously, to a certain extent, students from families of all social strata diverge at the starting point of higher education. The majors with high tuition fees are occupied by children from higher income groups, and children from poor families are more interested in majors with free fees, low fees and compensations. Let's put aside the differences of personal income after employment as the conventional cost of realizing social equity, then the significant equity effect of improving the quality of higher education here makes the quality problem become the focus of the whole society. The guarantee of excellent quality makes children from poor families stand on the same starting point again with children from higher income families through equal competition by receiving high quality education. In other words, the quality of higher education is the ability to effectively adjust the shunt by society and the gap between rich and poor of important lever of contradiction and conflict. Especially for college students from low-income families, this is equivalent to seize the opportunity of the development of the competition again. It involves the rights of the not only equity of the starting point in higher education, but also equity in the process and equity of the educational outcome.

There are many other issues of educational quality and equity. For example, education fees occupy the highest proportion among all types of fees in China. According to relevant surveys, education expenditure of urban families in China accounts for 65.5% of household consumption expenditure, with 56.5% of parents prioritizing investment in children's education. The average monthly education expenditure of each family in big cities is 500 to 800 RMB, and the total education consumption market in China is about 30 billion RMB. Personal spending on higher education accounts for an average of 66% of annual household income, compared with 24% in the United States. Thus, it can be seen that the proportion of personal spending in higher education in China to the annual household income is much higher than the average all over the world. This shows a larger proportion of expenditure on education and high tuition fees not only becomes an important reason for many children of poor families to lament on education, but also is a key cause for urban residents or middle-income people to be compelled back to poverty and to lead a life with reduced quality as a result of the education.

In addition, according to existing empirical studies, the majority of awards and grants and student loans are occupied by college students from middle and high income families. Research from the World Bank and other international organizations shows that "middle and high income groups in most developing countries overwhelmingly receive the most subsidies and additional benefits for higher education." For example, the top 30% of Indonesians with the highest earning receive 83% of subsidies in higher education. In Thailand, farmers who make up 69% of the total population own only 3% of university enrollments.

The causes of such adverse effects include early dropout from secondary school, access to basic education with poor quality, the fact that vulnerable groups often live in remote areas which results in the high cost of transport and accommodation, and the choice of employment before entering university. Hence, as a matter of fact, the expansion of colleges and universities and the rise in tuition fees have obviously exacerbated the "reverse effect of subsidy". In terms of the proportion of the increase in the number of registered students in colleges and universities in different social classes in China, children from middle and high income families are the biggest beneficiary group.

There will be more obstacles to the realization of equal educational opportunities, but ensuring high quality education and promoting balanced development of higher education is bound to become the key lever and realization way to maintain educational fairness. From the perspective of sociological research, higher education has the function of promoting the mobility and stratification of social members in various classes. Compared with other educational stages, higher education is the stage of realizing social stratification. Therefore, professional training, degree, college teachers and students in higher education have important value in the national life and possess a higher social status. In addition to symbolic meaning endowed on a spiritual level, such value and status also have such true meaning as certain level of income and social status endowed by internal logo of an educational degree. Therefore, they are more likely to gain career opportunities. It can be seen that equality of opportunities in higher

education plays an irreplaceable role in realizing social equity.

### *2.2 The Influence of Improving Quality in Higher Education on School Running Efficiency*

Higher education quality and efficiency are two levels of a category from the perspective of concept analysis. As a macroeconomic concept, quality is usually used together with quality control and quality management. Pedagogy introduces the category of quality, and the provisions of educational quality reflect the common characteristics of different fields of quality provisions. One is to represent a class of objectives or standards, which have both qualitative and quantitative objectives, and to develop a comprehensive index which can be regarded as the realization of qualitative and quantitative objectives. The second is the satisfaction degree of a product or service to achieve the goal or reach the standard, which is the satisfaction degree of consumer demand, that is, the achievement degree of the product or service. Compared with quality, efficiency is a microeconomic concept. In the field of western economics, it is a traditional supporting concept of national economy and wealth system. It is usually used together with labor productivity and management efficiency. Pedagogy introduces the concept of "quality" as well as the concept of "efficiency". Harvard University Professor Michelle Porter divides "efficiency" into "national productivity" and "regional productivity". He believes that the competitiveness of a country can only be expressed as national productivity, whose key success indicators include high technological innovation, relatively low production cost, and the comparative advantage generated by it, etc. Thus, in Professor Porter's view, "efficiency" is comprehensive competitiveness and comparative advantage. Obviously, the concept of "quality" has a broader connotation than "efficiency", especially the quality standard indicating the quality of product competitiveness, which itself is equivalent to higher efficiency. If the evaluation is made by comparison (such as comparing inputs and outputs) in accordance with certain quality objectives and standards, it can not only obtain the identification of "quality", but also form the source of "efficiency".

In terms of the relationship between quality and efficiency in the field of higher education, the quality of higher education has the characteristics of multiple integration, and its focus is bound to concentrate on the construction and development of core competitiveness in the characteristics of institutions, school running benefits, teaching and research achievements. The efficiency of higher education is suitable for performance evaluation and reflects the competitiveness of universities, such as school running efficiency and resource utilization efficiency. Higher education efficiency, as one of the multiple quality standards, is a key index to reflect the core competitiveness. According to the existing results, the correlation between quality and efficiency has composite characteristics. For example, it is calculated through the functional relationship between average cost per student and school size, the cultivation scale of doctoral students is about 1000, and that of master students is about 4000 under the current educational conditions of colleges which are directly affiliated with the Ministry of Education in China. That is, when the number of doctoral students is fewer than 1000 and the number of master students is fewer than 4000 under the current conditions of running colleges and universities in China, the cut on cost per student produced by expanding the scale is relatively significant. However, when the number of doctoral and master students is larger than the above number, the savings of per student cost by further expanding the scale will become insignificant. It can be seen that the relationship between efficiency and quality is generally not a direct relationship. Quality is linked to efficiency through indicators such as scale. That is, scale operation, to a certain extent, can save costs and create higher efficiency. However, too large scale leads to insufficient resources, lower per student cost and management failure are the key factors leading to serious quality problems.

## **3. Optimizing Resource Allocation Becomes an Important Way to Realize High Quality, Fair and Efficient Higher Education**

### *3.1 Analyze the Instrumental Meaning of Optimizing Resource Allocation From the Perspective of "Pareto Improvement"*

The integration of fairness, quality and efficiency of higher education is a developmental problem and a worldwide problem. The trend of expansion in higher education on a worldwide scope again occurs in the 21st century. Among them, it is a basic index of educational equity to benefit broader social classes and groups with increase in the number of registered students in colleges and universities. At the same time, due to the increase of university tuition fees and the reduction of government financial expenditure, it causes a variety of social problems and contradictions that have adverse effects on education fairness. In addition, there are other factors that have an important impact on equality of opportunity in higher education. These include admission tests, quality assurance, student loans and assistance to poor students, student management and services, and career guidance. According to the research results of "Pareto Improvement" and "welfare economics", the reasons leading to market failure and unfair distribution come from two kinds of social behaviors -- monopoly and externality. In order to make the achievements of

development benefit a wide range of classes and people, it is necessary to fundamentally solve the problem of continuous expansion of total social wealth. The way to achieve this is to call on the government to adjust the allocation of resources by means of finance, guiding policies and taxation, and expanding the social welfare security system – “Make at least one person better without making anyone worse off”. Implementation of the "Pareto improvement" and adoption of the rule of "compensation criteria", including the compensation or extra help for the loss of development opportunity of disadvantaged groups, can help to improve their living environment and their basic rights and interests, increase continuously the total national wealth in a macro level, and, at the same time, benefit more extensive classes and people.

Obviously, the realization of "Pareto improvement" in the reform and development of higher education means that higher education realizes the integration effect of fairness, high quality and high efficiency. Firstly, by adjusting the allocation of resources, we can promote the balanced development of higher education in different regions and improve its quality in a wider range. Secondly, it is to promote a wide range of social classes and their children to become real beneficiaries in the process of expanding enrollment and large-scale operation of higher education through the issuance of financial aid policies for poor students and the implementation of various social assistances. Thirdly, it is recognized that improving the quality and efficiency of running schools is the most important to realize the equality of educational opportunities in terms of procedures and mechanisms, which is the basis for realizing the equal rights of college students. "Pareto improvement" can be used as an evaluation index of the efficiency of a country's government behavior, as well as the evaluation index of the quality of higher education system and the efficiency of university running.

### *3.2 Adjust Resource Configuration to Improve the Capability of the Service Region*

Improving the quality, improving the utilization rate of resources and implementing the reform of resource allocation to enhance the ability of serving local areas are the theme clue and research focus of higher education in the next stage of development. Quality management and assurance is a complex multi-dimensional system engineering, which is manifested by the coexistence of resource effect and resource curse effect. Such coexistence means: on one hand, occupying superior resources can effectively improve the core competitiveness of a place and a university, and promoting the balanced distribution of resources is conducive to promoting the balanced development of regional higher education; On the other hand, some regions and universities with superior resources usually do not create high school running benefits, and some even have debt and loan problems. There are also a large number of universities and research institutions who have to come to a hasty conclusion on the research topic due to too many projects and insufficient personnel and research strength, but the quality of research has been reduced. The relationship between resources and development can be summarized as an old saying goes: resources are not almighty, but it is absolutely not going to work without resources.

Some scholars think that the resource distribution of higher education is relatively balanced in China's large administrative divisions. Another article studies the role of local governments in the "resource war" and points out that resources controlled by the central government are scarce and cannot be equally distributed to local governments, which is bound to lead to competition among local governments, such as the competition around enrollment quota allocation. In essence, it is a form of competition between local governments for resources controlled by the central government on the premise that the decision making power of enrollment scale is controlled by the central government. It can be seen that resource allocation is an indispensable factor affecting equity and efficiency, if it is not a decisive factor in the development of higher education. Given the shortage of higher education resources, it is expected that local governments will compete fiercely for resources allocated by the central government. As the performance management of the central government is still in its infancy, its performance indicators are single, mechanical and preference stratified, which gives rise to fraud and corruption. Why "fraud exists"? Because schools don't meet certain criteria, but they still have to get an excellent result. Obviously, the traditional way of resource allocation has exposed many problems and conflicts of interest, which have become the main factors that cause the development of higher education in China to fall into the dilemma of "neither fairness nor efficiency".

In addition, Chinese government shows the characteristics of "compilation allocation" and "priority allocation" in the mechanism/pattern of educational resource allocation. Therefore, starting from the mid-1980s, the education funding system adopted the method of "comprehensive quota" plus "special subsidy". The advantage of quota allocation is that all the colleges and universities in the country are equally provided with regular financial aid according to the scale of quota within the framework established by the government. Its disadvantage is that there is only one investor, that is, the government, and the investment is insufficient. Thus, it is difficult to adapt to the constantly expanding development needs of local higher education. Its administrative operation mode, to a certain extent, has inhibited the

enthusiasm of local governments and institutions to explore effective resources and the needs of the reform. In addition, the central government has allocated "special funds" for key national construction plans and projects that give priority to development. Especially in recent years, the government has intensified special efforts, and the total amount of "special funds" has increased significantly. For example, the major special funds invested in the field of higher education include "211 Project", "985 Project", "Undergraduate Teaching Quality and Teaching Reform Project", "Key discipline construction", and "Pilot program for cultivating top-notch students in basic disciplines". Among them, the "Undergraduate Teaching Quality and Teaching Reform Project" implemented by the Ministry of Education and the Ministry of Finance includes several sub-projects, such as the construction of national high-quality courses, the construction of characteristic majors in colleges and universities, the construction of national teaching team and famous teachers project, and the construction of "experimental area for talent cultivation mode innovation".

Both the competent departments of the State Council and the Ministry of Education have invested a lot of funds in the construction of disciplines, famous teachers and talent training bases in colleges and universities. Similar quality projects have obviously become an important component of higher education resources. Whether the invested funds can obtain the expected benefits not only attracts the attention of the government but also the public opinion. Its key lies in two aspects. One is the key point and way that the government implements quality guarantee. The second is the definition and selection of priority criteria. With the progress of the above projects, remarkable achievements have been made in the curriculum and faculty construction of colleges and universities. However, to some extent, the academic circles have raised some doubts. For example, if the government applies uniform criteria for selecting and subsidizing students, are these criteria really conducive to obtaining higher educational efficiency? Did it actually help expand children enrollment and participation rates in low income families? Will it have a constraining effect on enrollment expansion, making it more difficult for nontraditional students to earn degrees? What other impacts does a quality assurance approach have on excellent teaching, teaching time, teaching resources, institutional planning and the ability to develop new courses?

It can be seen that government-induced policies and quality assurance methods have many influences on institutional reform, talent cultivation and curriculum construction. With the strong support of the government, some selected universities, key disciplines and key laboratories have obtained sufficient funds to cultivate their comparative advantages and significantly enhance their core competitiveness in a short period of time. In addition, for most of the participating universities, the change in strength is not obvious. This is because the evaluation standard and selection mechanism of the special funds put in by the central government and the Ministry of Education have the characteristics of priority selection, which has a great guiding influence on the adjustment and construction of curriculum and teacher structure in most colleges and universities. In pursuit of national resources, some colleges and universities build various quality projects according to unified standards and in line with the government's demand model, while ignoring their own advantages and characteristics, as well as ignoring the attention and inclusion of local and business needs. Therefore, not only the benefit of resource utilization is not good, but also the main body enthusiasm of colleges and universities to broaden the source of funds is generally lacking. However, as far as the top-down power mechanism of national resource allocation is concerned, there must be a certain number of restrictions on key construction, selection and funding. If the standards of excellence are too broad or the number of selection is too large, it will lead to the risk of inaccuracy and dishonesty. Power operation mechanism has standardized influence and authoritative function, which is suitable for promoting "quality education" and cultivating "elite talents". However, the rigid and mechanical characteristics of administrative mechanism are obviously not suitable for colleges and universities to build diversified courses and improve the flexibility and adaptability of service areas. The author thinks that the allocation of national resources is coordinated and assisted by administrative mechanism as the main body and market mechanism as the main body. For instance, the government can set up organizations such as the Higher Education Appropriations Committee or the Higher Education Foundation, through which colleges and universities can support curriculum and faculty development. Compared with the government, the foundation mechanism is more local, diverse, charitable and financial, so it is more suitable for funding teaching and research in local colleges and universities, and for stimulating the enthusiasm of local colleges and universities to generate income.

#### **4. Conclusions**

It is worth thinking deeply that whether the positive effects of preferential policies conform to the principle of fairness and whether supporting measures are implemented to offset the negative effects is the key basis for determining the "example effects" of preferential policies. Priority development comes from the government's need to improve efficiency, which itself has the negative effect of promoting the unbalanced development of resources. The pursuit of efficiency and fairness in the development of higher education is manifested as the "example benefit"

and "encouragement effect" of rewarding high-quality education. On the contrary, errors such as standard definition or selection mechanism will lead to the loss of fairness, and ultimately damage the improvement of resource utilization efficiency. Therefore, the government needs to envisage the social impact of the loss of equity when it makes priority development plans, and implements supporting measures to prevent the unfairness caused by academic fraud and corruption from getting out of control and spreading.

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