

Relationship Between Inter-regional Disparities in Educational Resources and Economic Development

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Abstract: The connection between interregional differences in educational resources and economic development has drawn the attention of educational researchers. This paper carries out correlation analysis and linear regression analysis on the relationship between educational resource input and economic growth in 31 provinces of China. Taking human, material and financial resources as independent variables, and GDP, talent resources and tax revenue as dependent variables, it is concluded that the level of teachers has a significant positive correlation with the input of educational resources and talent resources and GDP. As a result, this paper puts forward the suggestions to improve the level of teachers, cultivate excellent teachers and expand the financial expenditure on education and optimize the input of education funding structure. The purpose of this paper is to examine how educational resources affect economic development and to make policy recommendations. The adequacy of educational resources may have an impact on a country's human capital, economic growth, technological innovation, employment levels, and the equitable and stable development of a society, which in turn affects the development of the economy, and has important implications for both social equity and sustainable economic development. By examining the impact of educational resources on economic development, this paper serves as a reminder of the importance of educational resources and provides policy recommendations for improving the quality of education and promoting sustainable economic development, thereby contributing to the development of education, economic growth and social progress in our country globally.

Keywords: Educational Resources, Economic Development, Inter-Regional Disparities

1. Introduction

In one prior study on the allocation of educational resources and educational equity, Yuan Xinli et al. analyze the problems of educational resource allocation and carry out measures to explore educational equity. There exists a serious waste and shortage of phenomenon, and puts forward suggestions such as strengthening the relief guarantee in legislation, law enforcement and justice. In another study on the allocation efficiency of higher education resources in Fujian Province, Zhang Fudong et al. argue that the main reason lies in the fact that the scale level is unable to keep up with the needs of technological development. It is proposed that the scale of higher education should be further expanded, the quality of higher education should be continuously improved, the education and teaching evaluation system should be perfected, and the level of higher education teacher team

construction should be upgraded, so as to effectively cultivate high-level talents with all-round development of morality, intelligence, physicality, physical fitness and aesthetics. In one prior study of the contribution rate of China's education investment to economic growth, Fan Bernai and others concluded through correlation analysis and linear regression analysis that there exists a very obvious bidirectional causality between China's education investment and economic growth, i.e., the change of GDP is the cause of the change of education investment, and at the same time, the change of education investment is also the cause of the change of GDP. In the research on the allocation efficiency of general high school education resources, Jin Shuanghua et al. through the Exploratory Data Analysis method study, concluded that China's education resource allocation structure is unreasonable, inter-provincial imbalance, redundancy in distribution and other problems, and put forward to strengthen the integrated management, establish a performance appraisal mechanism, and establish a national level of education help and mutual assistance policy. In the study of China's 2021-2035 general high school education resource demand forecasting and risk warning, Wang Jun, Sun Zhijun and others through the allocation of education resources in the risk warning level assessment, the study found a large gap in education resources, personnel expenditure, and put forward to accurate allocation, especially to strengthen the construction of the teacher team, the construction of school information technology, and the funding of the proposal.

Based on previous literature and experience, it is hypothesized that there is a significant positive correlation between the adequacy of regional educational resources and economic development.

2. Method

2.1. Research Design

This paper was analyzed using correlation analysis and linear regression analysis to investigate the relationship between the adequacy of educational resources and economic development.

The independent variables include human, physical, and financial resources. Human educational resources are represented by the student-teacher ratio and the proportion of highly educated (master's degree) teachers, physical educational resources are represented by the size of the school building floor space school size (student/institution), class size (student/class), books (books/student), computers (desk/student), and assets of teaching equipment (yuan/student), and financial educational resources are represented by the per-pupil financial expenditures on education (yuan/student) [1].

Dependent variables are represented by the level of educational human capital ($h = \text{proportion of unschooled} \times 2 + \text{proportion of elementary school} \times 6 + \text{proportion of junior high school} \times 9 + \text{proportion of senior high school} \times 12 + \text{proportion of college and above} \times 16$) and gdp per capita [2].

Since linear regression requires that the independent and dependent variables be continuous variables, the data were first processed.

For the discrete variables (number of schools, number of teachers, etc.), the data were percentile-disaggregated by dividing the provincial data by the national data and analyzed as percentages.

For the fixed-order variables (classroom qualifications, etc.), the paper was serialized by calculating the weighted average of the variables, which were analyzed in the form of weighted averages.

2.2. Statistical Analysis

The statistical software Stata was used for statistical analysis and correlation coefficient analysis, significance level (e.g., $p < 0.05$), and linear regression analysis were taken to make inferences. The results of the regression model were interpreted and tested to analyze the extent to which the adequacy of educational resources affects economic development, and the results were interpreted and discussed.

2.3. Result

It can be seen that in human resources for education, the teacher-student ratio and the number of teachers with a master's degree vary considerably from one region to another, and in physical resources, the number of books in the school collection and the assets of teaching equipment vary considerably, and the financial expenditures on education also vary markedly from one region to another (see Table 1). Combined with the actual situation and objective data, this suggests that there are obvious differences in educational resources across provinces and that there is an imbalance in China's educational resources. Among the dependent variables, the levels of gdp and human resources also differ significantly (see Table 2).

Table 1: Descriptive statistics of independent variables

| Variable | Obs. | Mean | Std.Dev. | Min | Max |
|-------------------|------|----------|----------|----------|----------|
| Studentperteacher | 31 | 12.52742 | 2.026175 | 7.62 | 16.94 |
| Master | 31 | 11.94994 | 6.438616 | 5.128084 | 34.64998 |
| School | 31 | 1666.607 | 511.0269 | 498.9159 | 2580.33 |
| Class | 31 | 48.09542 | 5.279069 | 31.4826 | 56.89214 |
| Area | 31 | 49.4478 | 13.69089 | 30.50214 | 100.6677 |
| Book | 31 | 46.01255 | 23.15252 | 17.57041 | 131.1577 |
| Computer | 31 | 0.30515 | 0.263482 | 0.111022 | 1.521761 |
| Equipment | 31 | 6914 | 10017.09 | 1636.364 | 56394.29 |
| Property | 31 | 26571.31 | 16365.57 | 13211.64 | 89993.83 |

Table 2: Descriptive statistics of dependent variables

| Variable | Obs. | Mean | Std.Dev | Min | Max |
|----------|------|----------|----------|-------|--------|
| GDP | 31 | 79619 | 34923.92 | 41046 | 183980 |
| Level | 31 | 1021.881 | 114.631 | 701.7 | 1367.4 |

Table 3: Correlation analysis (Pearson's coefficient)

| | Level | GDP |
|-------------------|-----------|-----------|
| Studentperteacher | -0.5831** | -0.6398** |
| Master | 0.8219** | 0.8824** |
| School | -0.5758** | -0.5497** |
| Class | -0.7401** | -0.7816** |
| Area | 0.5780** | 0.7208** |
| Book | 0.7386** | 0.8393** |
| Computer | 0.7737** | 0.8304** |
| Equipment | 0.7316** | 0.7773** |
| Property | 0.6496** | 0.8486** |

Remarks: *p<0.05; **p<0.01

Table 4: Linear regression analysis

| | Level | GDP |
|-------------------|------------|------------|
| Studentperteacher | 8.940114 | 3305.179 |
| | -13.3907 | -2829.28 |
| Master | 15.20603** | 4194.494** |

Table 4: (continued).

| | | |
|-----------|------------|----------|
| | -5.17865 | -1094.18 |
| School | -0.06004 | 2.206693 |
| | -0.04669 | -9.86531 |
| Class | 1.72583 | 334.6205 |
| | -7.63403 | -1612.97 |
| Area | 0.927089 | 765.0375 |
| | -1.97176 | -416.606 |
| Book | -0.62528 | 666.0279 |
| | -1.58098 | -334.04 |
| Computer | 622.2097 | -15941.3 |
| | -432.459 | -91372.9 |
| Equipment | -0.0082 | -1.84931 |
| | -0.00815 | -1.72201 |
| Property | -.0050236* | -1.84931 |
| | -0.00202 | -0.42658 |

Remarks: *p<0.05; **p<0.01

Correlation analyses show that the independent variables are all significantly correlated with the dependent variable, and it is worth noting that the teacher-student ratio, the number of schools and classes are negatively correlated with gdp and the level of human resources (see Table 3).

After linear regression analysis, it was found that teachers with master's degree and financial expenditure have a significant effect on the economy (see Table 4).

3. Discussion

Cao Guoyong examined the threshold effect of the distribution of urban and rural compulsory education resources on economic growth in China, and found that the impact of the distribution of urban and rural compulsory education resources on economic growth was not a simple linear relationship, but rather a double threshold effect, with the extent of the impact of education resources on economic growth varying in different intervals, and showing a clear non-linear increasing trend. The inconsistency of the results may be due to the different measurement models.

The study shows that there is a significant positive correlation between the adequacy of educational resources and economic development. Among them, the level of teachers in education resources and financial expenditure on education significantly affect GDP, human resources and tax revenue in economic indicators. Therefore, the following two recommendations are made: training quality teachers and optimizing education financial investment.

First, quality teachers should be trained to improve the quality of education.

With regard to the capacity of teachers themselves, first of all, the capacity of the teaching force should be improved. Optimize the curriculum of teacher education, combine theory with practice, and train teachers with professional knowledge of education, teaching methodological skills and educational ethics. Secondly, it is recommended to establish a complete mentor guidance system, where new teachers are led and guided by veteran teachers to learn practical educational experiences and methods, and rapidly improve their own experiences and ability levels.

In terms of the teacher management system, it is recommended to set up reasonable incentive mechanisms, such as salary rewards, title selection, and promotion opportunities, etc. By setting up rewards, motivation is stimulated, and teachers are motivated to keep learning in order to improve their own abilities. Taking the UK as an example, the performance evaluation for teachers shows full

teacher subjectivity, our country should respect the autonomy of teachers when managing teachers, take the initiative to participate in the evaluation, play the theme of positivity, and enhance the effect of incentives by improving internal motivation [3].

In terms of teacher training, attention should be paid to the establishment of a model of teacher training that combines learning and work, so as to realize learning by doing and active learning [4]. The study found that there is still a lack of training for rural teachers in China, so for the training of teachers in backward areas, there should be an appropriate policy inclination of resources for rural teachers [5].

In terms of the teaching profession, firstly, it is recommended to recruit members from different backgrounds in different fields, so as to provide students with a wider range of knowledge and experience and to promote all-round development of human beings by promoting diversity in the teaching profession. Secondly, a positive outlook on education should be established. Through a series of courses, increased publicity at the social level, and so on, teachers' sense of social responsibility and educational mission should be strengthened, and optimistic, responsible, and respectful outlook and values on education should be fostered in order to raise the ideological awareness of the teaching force. Finally, the focus should be on building teachers' moral character and establishing a correct concept of history and ethnicity, culture and morality [6].

Through the above means, the comprehensive quality and competence level of the teaching force will be upgraded, scholarly teachers will be cultivated, and systematic theoretical learning, perfect skill training and scientific self-reflection will be carried out, so that the level of teachers' competence will be high, and the level of teaching will be improved, thus promoting the development of higher-quality education [7].

Secondly, optimize the investment of education funds and make rational use of resources.

First, according to the significant correlation between teachers and human resources, it is recommended that education funds should be invested in teacher training, so as to improve teachers' professional development and teaching ability, thus improving the quality of education.

Secondly, it is recommended to increase the overall expenditure on education finance. According to the research results, there is a positive correlation between education finance expenditure and Gdp, so it is important to increase education finance expenditure for the development of the economy and the professional development of teachers.

In all, There is a significant correlation between the adequacy of educational resources and economic development, and the level of teachers in educational resources and financial expenditure on education significantly affect human resources and GDP in economic indicators, respectively.

High-quality teacher level can promote the improvement of education quality by providing students with better teaching methods and more personalized support, and can cultivate talents with more innovative abilities, which can become the quality human capital of the society and play a key role in socio-economic development.

The government's increased financial expenditure on education is an improvement in the supply of human and material resources for education. This includes the improvement of school infrastructure, the training of better teachers, the provision of high-quality teaching materials and educational technology, and so on. Fiscal expenditure on education can promote the improvement of education, which can train more talents and contribute to socio-economic upgrading.

As well, central and local financial expenditures on education should also follow the principles of equity and efficiency, and expenditures should be controlled by the central government; it is recommended that the central government's responsibility for investment in higher education be strengthened, and that the experience of other countries be followed in establishing a system of funding for basic education based on the supply of provincial governments [8].

It is possible to establish a perfect student financial aid system so that students from economically disadvantaged families can have the opportunity to study; the amount of subsidies for preschool education in China was established in 2011, and by 2017 the amount of subsidies had reached 188.21 billion yuan [9]. By subsidizing students in impoverished areas, the difference in educational resources between urban and rural areas can be narrowed, and the degree of equity in education can be enhanced.

The results of Lu Wei's empirical research show that urban-rural education inequality can be effectively improved by reducing the gap between urban and rural junior high school education expenditure, so optimizing education financial expenditure is of great significance for China's balanced economic development [10].

4. Conclusion

In conclusion, this study investigates the relationship between the adequacy of educational resources and economic development in China. Through correlation and linear regression analyses, it is revealed that there is a significant positive correlation between the sufficiency of educational resources and economic development. Key findings from the study indicate that the level of teachers and financial expenditures on education play a crucial role in influencing human resources, GDP, and tax revenue. Suggestions for improving the quality of education are also discussed.

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