

# Analysis on the Influencing Factors of Postgraduate Education Scale in Fujian Province

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## Abstract

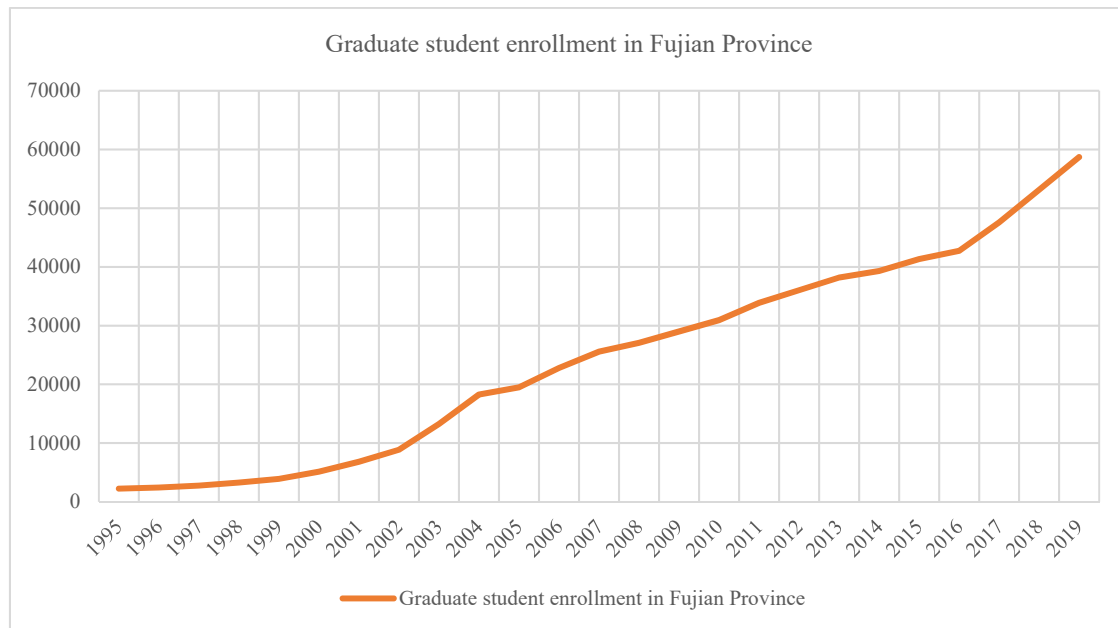
The scale of postgraduate education continues to expand. Through the analysis of education-related data in Fujian province from 1995 to 2019, and by excluding irrelevant variables, it is found that the number of full-time college teachers, the number of college graduates and the total regional output value are important factors affecting the scale of postgraduate education in Fujian Province. To establish a multiple regression model between the scale of postgraduate education in Fujian province and the number of full-time college teachers, college graduates and regional output value. In order to promote the planned and benign expansion of postgraduate education in Fujian province, promote the rational use of educational resources in universities and train more talents, Fujian province should strengthen the faculty of universities and universities, increase the GDP of the region, and encourage college graduates to continue their studies.

## Keywords

Fujian Province; Graduate education; Factors affecting.

## 1. Introduction

Since the founding of The People's Republic of China, the scale of postgraduate education in China has been in the dynamic development of ups and downs, and has experienced rapid expansion, reduction, steady development and positive development stages. [1] From the number of graduate students in 1949 only 600, to now more than 3 million, China's graduate education has experienced an extraordinary process of rapid development from less to more, has established a relatively perfect discipline system and personnel training system. In the era of rapid economic development, countries are more eager for high-quality and high-level talents, which also promotes the continuous expansion of postgraduate scale in China. Ministry of Education and the academic degrees committee of the State Council on the degree and postgraduate education development "much starker choices-and graver consequences-in planning" clearly put forward to expand the scale of graduate student recruit students. In February 2020, the Ministry of Education promulgated the "about" double top "colleges and universities to promote discipline construction, accelerate the several opinions of graduate education in artificial intelligence, also made clear that China will continue to expand the scale of graduate student recruit students.



**Figure 1.** Postgraduate enrollment scale in Fujian Province from 1995 to 2019

Following the footsteps of national policies, the graduate enrollment scale of Fujian province is also expanding steadily year by year, as shown in Figure 1. This study intends to explore the factors affecting the scale of postgraduate education in Fujian province based on the existing data and put forward feasible suggestions. It is conducive to reasonable investment in postgraduate education in Fujian province, to cultivate advanced talents and promote the development of society.

## 2. Research Design

### 2.1. Data Sources

The numbers of postgraduate enrollment, college graduates, regional output value, per capita GDP and full-time teachers in Fujian province from 1995 to 2019 come from Fujian Statistical Yearbook and China Statistical Yearbook.

### 2.2. Selection of Influencing Factors

In the research on the influencing factors of the scale of education, most scholars study the influencing factors of the scale of higher education. Two scholars, Zheng Fengxia and Gu Chuanyuan, studied the main factors influencing the scale of higher education in Sichuan province, including the total population of the region, the gross regional product and the urbanization rate. Then they established a multiple regression model to calculate the scale of higher education in Sichuan Province, providing an important reference for formulating the strategic planning of regional higher education development in Sichuan province. [2] Hu Junshan and Yang Ling studied the data from 1985 to 2003 and found that there was a close correlation between the number of college enrollment in China and the national financial expenditure on education and the average income of rural families. Among them, the number of college enrollment was positively correlated with the expenditure on education and negatively correlated with the average income of rural families. [3]

The scale of postgraduate education is often described by the number of students. In this study, the number of postgraduate enrollment in Fujian province is selected as the scale of the development of postgraduate education in Fujian Province. There are many factors affecting the scale of postgraduate education, including economy, politics, population and culture.

First of all, the scale of postgraduate education will be affected by relevant national policies and social events. For example, in 2020, affected by the epidemic, a large number of companies went bankrupt, the national economy declined, and graduates found it difficult to find jobs, facing a grim situation. Therefore, the enrollment of postgraduate students will be expanded by 189,000 in 2020 to ease the social employment pressure. Under the current management system of colleges and universities, the important factors that restrict the number of graduate students include the setting of academic sites, the faculty, the characteristics of talent cultivation, the history of running schools and the campus environment. [4] But these factors are difficult to analyze with data quantification, and some factors are difficult to predict artificially. Therefore, political factors are not considered in this study. Economically, there is a correlation between graduate education and economic development. It has been confirmed in the relevant studies of many scholars. For example, Fang Chao and Luo Yingzi empirically analyzed the correlation between graduate enrollment scale and regional economic growth in Jiangsu province by establishing a linear regression model between graduate enrollment scale and regional economic growth space, and the results show that regional economic growth has a significant impact on the sustainable growth of graduate enrollment scale. [5] In this study, the regional output value and per capita GDP of Fujian province were included into the influencing factors. In terms of population, the population factor is not only a demand factor that affects the scale of higher education, but also a supply factor. [6] Therefore, the number of college graduates is taken as one of the influencing factors in this study. Culturally, the quality of education is greatly influenced by the strength of teachers. Therefore, this study adopts the number of full-time teachers as one of the influencing factors.

The correlation between the selected four variables, namely, the number of college graduates, regional output value, per capita GDP, and the number of full-time teachers, and the scale of postgraduate education in Fujian province is analyzed. The specific values are shown in Table 1. The correlation between the number of students enrolled in Fujian province and the number of college graduates, regional output value, per capita GDP and the number of full-time teachers in Fujian province were all greater than 0.94 ( $p < 0.01$ ), indicating that the scale of postgraduate education in Fujian province is significantly correlated with these factors.

**Table 1.** Correlation analysis between graduate student enrollment and influencing factors

		the number of full-time teachers	the number of college graduates	regional output value	per capita GDP
Fujian province	Kendall correlation coefficient	.973**	.940**	1.000**	1.000**
	Sig.	.000	.000	.000	.000
	N	25	25	25	25

### 2.3. Multiple Linear Regression Analysis

Multiple linear regression applies to a variable that is often affected by multiple variables to reveal the linear relationship between the explained variable and other multiple explanatory variables. The multiple linear regression equation established in this study is:

$$Y = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \sigma$$

Where  $y$  is the dependent variable, representing the graduate enrollment scale of Fujian Province,  $X_1$  represents the number of full-time teachers in colleges and universities,  $X_2$  represents the number of undergraduate and junior college graduates in colleges and universities (thousands),  $X_3$  represents the total regional output value (ten thousand yuan),

and  $X_4$  represents per capita GDP (yuan).  $\sigma$  is the constant term,  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$  and  $\beta_4$  are the coefficients of each variable.

Based on the data of various variables in Fujian province from 1995 to 2019, SPSS26 was used for stepwise analysis to screen out eligible variables. The variables required to pass the test: Partial correlation coefficient  $> 0.5$ , T value  $> 0.05$  and

VIF  $< 10$ . The variables that passed the test were finally determined as three independent variables: the number of college graduates, the total regional output value and the number of full-time college teachers in Fujian Province, excluding other irrelevant variables.

### 3. Build the Model

The three independent variables screened from the previous stage are the number of college graduates in Fujian Province (thousands).  $X_3$  represents the total output value of the region (ten thousand yuan) and the dependent variable, the number of graduate students (people) in Fujian Province, to establish a multiple linear regression equation. The results are shown in Table 2, and the specific model is as follows:

$$Y = 1.347 X_1 - 1511.577 X_2 + 0.695 X_3 - 6812.869$$

According to the above equation, under the condition that regional GDP and the number of college graduates remain unchanged, the number of graduate students in Fujian province will increase by 1.347 when the number of full-time teachers increases by 1. Under the condition that the number of full-time teachers and the GDP of Fujian province remain unchanged, the number of graduate students in Fujian province will decrease by 1511.577 for every increase of college graduates. Under the condition that the number of full-time teachers and college graduates in Fujian province remains unchanged, the number of graduate students in Fujian province will increase by 0.695 for every increase of GDP of 10 thousand yuan.

**Table 2.** Multiple regression prediction equation table of postgraduate education scale in Fujian Province

Model	Unnormalized coefficient	Normalization coefficient	t	Sig.
	B	Beta		
(constant)	-6812.869		-10.290	.000
the number of full-time teachers	1.347	1.180	14.427	.000
the number of college graduates	-1511.577	-.649	-7.254	.000
regional output value	.695	.493	17.626	.000

## 4. Research Conclusions and Policy Recommendations

### 4.1. Research Conclusions

This research based on Fujian province from 1995-2019, nearly 25 years of postgraduate enrollment, the number of this specialized subject graduates of colleges and universities, the output value, per capita GDP, the number of full-time teachers in colleges and universities five historical data, using analysis step by step, select relevant higher three variables, respectively is the number of this specialized subject graduates of colleges and universities, area total output value, the number of full-time teachers in colleges and universities, The main conclusions are as follows:

1. The number of college graduates, regional output value and the number of full-time teachers are the main factors influencing the expansion of postgraduate education in Fujian Province.

2. The multiple linear regression equation model is established between the number of full-time college teachers (X 1), the number of college graduates (X 2), the regional output value (X3) and the dependent variable, the number of graduate students (Y) in Fujian Province:

$$Y = 1.347 X 1 - 1511.577 X 2 + 0.695 X 3 - 6812.869$$

## 4.2. Policy Suggestions

### 4.2.1. Strengthen the Faculty of Universities and Colleges

Among the factors affecting the scale of postgraduate education in Fujian province, the number of full-time teachers has the greatest influence, which has a positive impact. On the one hand, should introduce more talent introduction policies and measures to attract talents from home and abroad, from teaching in fujian and gives them life more convenient, academically, encourage innovation, create a strong academic atmosphere, for teachers to build a is able to give full play to the individual talents and can fully realize the value of teachers' teaching platform. On the other hand, we encourage full-time teachers who have taught in universities in Fujian to go to other excellent provinces, regions and countries for further study, constantly improve their own abilities, and help the expansion and prosperity of the teaching staff in universities in Fujian.

### 4.2.2. Increase GDP

The GDP of Fujian province is also one of the important factors affecting the scale of postgraduate education in Fujian Province. It can be seen from the above data that the GDP of Fujian Province has a positive impact on the scale of postgraduate education. The increase of regional GDP is conducive to increasing the input of educational resources in regional colleges and universities, constantly optimizing educational facilities and promoting the expansion of postgraduate scale. Fujian province can actively develop the secondary and tertiary industries to enhance the increase of regional GDP, encourage excellent talents from Fujian to return home for development, innovation and entrepreneurship, and promote the development of regional economy. It can also introduce talents from home and abroad to help fujian develop.

### 4.2.3. College Graduates Are Encouraged to Further Their Studies

There is a negative influence between the number of college and college graduates and the size of graduate students in Fujian Province. It is necessary to encourage college graduates of various majors to continue their studies and enhance their employment competitiveness while improving their academic qualifications and abilities. The graduate student scale expands greatly, brings the diploma depreciation to everybody to hold the post. As we all know, in the new era, we need more high-end talents with knowledge and skills, so that we can not be defeated and stand firm in the tide of globalization.

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