THE INFLUENCE OF INVOLUTION ON THE INTENTION OF POSTGRADUATE ENTRANCE EXAMINATION

——BASED ON BINARY LOGISTIC REGRESSION MODEL

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**Abstract**

This paper focuses on the influence of educational involution on postgraduate entrance examination intention and its related factors. First, conduct in-depth interviews on the status quo of involution in postgraduate entrance examinations in Guangdong, and then further divide dimensions according to the literature and interview content to conduct an extensive questionnaire analysis. Correlation dimension and quantitative assessment of personal value between educational involution and undergraduate students' intention to take a postgraduate entrance examination. The results of empirical research show that the four dimensions of resources and ability, prospect benefit, herd effect, and personal value positively correlate with undergraduates' postgraduate entrance examination intention. The order of influence is resources and ability > herd effect > prospect benefit > personal value.

**Keywords:** Involution; The influence of postgraduate entrance examination; Personal value; Prospect benefit; Binary logistic regression

1. INTRODUCTION

1.1 Research Background

With the development of the economic level, China's education level has constantly been improving, and graduate education has also achieved good results. The Ministry of Education announced a plan to enroll 189,000 graduate students in 2020 and made it clear that it will continue to expand the corresponding enrollment scale. In recent years, graduates with graduate degrees and postgraduate students have increased rapidly. Statistics show that in 2019, the number of graduate students in China was 2.9 million and 720,000, with the recruitment ratio reaching 4:1. The postgraduate entrance examination growth rate has exceeded 20% in the past three years. At the same time, more NPC and CPPCC representatives on the graduate enrollment expansion proposal to "allow some universities according to their conditions," promote the graduate enrollment and training system perfect, the meticulous pace of development, timely reduce the entry threshold of graduate students, to accept more talents in higher education. The policy and national call all indicate the further "white-hot" graduate education in the future. However, with the gradual expansion of postgraduate education, the groups involved also face various problems. In the process of graduate education from "high inaccessible" to "entering the homes of ordinary people," the graduate group has to face the reality of a lack of ability to give full play to their strengths, increasingly difficult employment after graduation, and "devaluation" of academic qualifications. Considering the value of individual academic qualifications, undergraduate groups are forced to blindly join the "army" of postgraduate entrance examinations or use postgraduate studies to escape from reality but ignore the fundamental thinking about their future. The allocation of tutors, teaching resources, and even the uneven distribution of resource supply and demand, which is challenging to innovate in research direction, are also frequently seen. It is difficult for students and tutors to give full play to their abilities in such internalization.

The research quality is unsatisfactory, leading to difficulty advancing the academic frontier. Educational input only changes at the "quantity" level, but the "quality" has not been improved synchronously. Development efficiency is low; examining the grind in the change process appears the ego lock of type inside the ceaseless coil.

1.2 Research purposes

The scale of higher education in my country has been expanding, and higher education has gradually shifted from elite to popular. With the popularization of higher education, undergraduate degrees also face the phenomenon of "depreciation." The number of people interested in the postgraduate entrance examination is increasing day by day, and the competition among graduate students is becoming more and more fierce. Under the circumstance of limited educational resources, the full scale of postgraduate education is constantly expanding, while the quality of academic training has not improved significantly. Under such a phenomenon of involution in postgraduate entrance examinations, it is essential to study the influence of the involution phenomenon on postgraduate entrance examination intentions. Therefore, this research takes the impact of involution on the purpose of postgraduate entrance examination as the research topic. First, the method of in-depth interview is used. A questionnaire survey is carried out to deeply examine the current situation of involution in the postgraduate entrance examination and the influence of involution on postgraduate entrance examination intention. Provide constructive suggestions for the rational distribution of social resources and improving teaching quality.

**1.3 Significance**

Theoretical significance: Most of the existing education involution research focuses on the analysis of rural primary education and rural education intention, and there are many academic studies, while the research on involution of higher education, especially postgraduate entrance examination intention, is relatively lacking. Unlike previous studies, this study focuses on involution in postgraduate entrance examinations. Through interviews, we understand and analyze the hot issues of postgraduate education, discuss the current situation of involution in postgraduate entrance examinations and the root causes of involution problems, and further analyze the effect of involution on postgraduate entrance examinations. This study avoids the monotony of previous studies, enriches previous correlation studies, and provides a more theoretical basis for the development of postgraduate education in the future.

Practical significance: With the expansion of the scale of postgraduate education in my country, the quality of postgraduate education training has increasingly attracted widespread attention from society. How to rationally allocate resources in cultivating high-level innovative talents is also the focus of postgraduate education development. Understanding the hot issues of contemporary postgraduate education, analyzing the current situation and root causes of postgraduate involution, and exploring the research of involution on postgraduate entrance examination intentions, on the one hand, will help us to effectively evaluate the current situation and problems of postgraduate education involution, and timely propose Constructive advice. On the other hand, it can correctly guide society to pay attention to the problem of involution in education. The scale of postgraduate education continues to expand, and the quality of education and training is also improved.

2. Literature review

**2.1 The concept of involution**

Involution, also known as over densification, originally refers to the phenomenon that "under the pressure of population, farmers continuously increase labor input in the process of rice planting to obtain a higher yield, but the super-intensive labor input does not bring a proportional increase of output, resulting in the decrease of marginal remuneration per unit of labor". Later, American anthropologist Gordon Witzer used "involuting" to describe a kind of cultural pattern: after reaching a specific final form, it can neither stabilize nor transform itself into a new record. Instead, it gets more complicated internally[1]. Internalization occurs in all walks of life, not only in agriculture, government but also in education, and the development of education internalization should be given great attention. In our society, there are many cases where significant increases in investment have not been matched by higher output: China's gross enrollment rate for higher education reached 51.6 percent in 2019, and it can almost be said

that ordinary sanitation workers are also undergraduates. But a moment's reflection reveals that regular sanitation work does not require deep expertise, which can be said to be a waste of educational resources in another sense. With the emergence of "research fever" and the "devaluation" of undergraduate degrees, the scale of higher education in China, the total scale of postgraduate entrance examination is also expanding. Still, the quality of education has not been improved accordingly. In "the education under the condition of the limited education resources, at the expense of the higher education training quality decline in exchange for the growth of the total scale of higher education, which is in the growth of higher education"[1], in the background and combining with the decision whether to study college students one's deceased father grind, help to measure the relationship between the input and output.

**2.2 Domestic and foreign research on involution in education**

"Involution" is also very popular in education, which is reflected in all aspects of the education industry. For example, there is no substantive change in the education system and knowledge innovation. What changes are only quantity, growth without development, and consumption of resources? In popular terms, high-quality teaching resources are limited. To compete for the limited resources, some people pay double efforts, which causes others to feel a sense of crisis, pay double or even triple steps, and then fall into the endless cycle of internal competition. The essence of the internalization of education is the lack of attention to social problems and blindly digging into the internal circulation of the discipline. The result is not to promote the development of the field but to produce useless "knowledge." Foreign studies on the internalization of education are relatively limited. Shuji Nakamura, a Nobel Prize winner in physics, proposed that one of the reasons for the involution of education is that the education system in East Asia is deeply influenced by two modes. The traditional Confucian imperial examination system is the Prussian model, which cultivates manageable nationals instead of students with independent thinking abilities. LeahMclaren, a British scholar, studied the current situation of education in society and pointed out that middle-class families tend to provide the best educational resources for their children, even though it is beyond the family's affordable range. And the number of people receiving the corresponding level of education is far more than the society, which also causes the waste of resources to a certain extent. The concept of "involution" appeared in sociology and economics after being introduced into China.

At the same time, some phenomena in education can also be explained by this word. Xue Luyao et al. (2021) proposed that when the discipline has developed to a certain extent, it will only grow within itself if it is too narrowly divided internally, which is not conducive to the intersection and integration with other disciplines[1]. Pan, B.(2021) pointed out that at the present stage, the teaching resources and equipment and the number of tutors in universities cannot meet the needs of many graduate students, and it is challenging to realize the personalized training of postgraduate students[2]. When studying the factors leading to enrolling, Fang Weihua et al. (2020) mentioned that registering is the result of comprehensive action of multiple factors, and prospect benefit is one of the categories under model innovation[3]. Jepsen et al. (2008) proposed the concept of the "herd effect," which refers to the phenomenon that when people make choices with incomplete information, their ideas or behaviors are influenced and pressured by others and public opinions and adjusted accordingly, and finally conform to the group performance. In this research interview, most interviewees indicated that their intention for the postgraduate entrance examination was more or less influenced by the "postgraduate entrance examination trend" around them. Just as Jepsen said, there are also immediate infection effects and interactive influence among college students, among which the herd effect is also apparent[4]. In addition, we know from the interview that the interviewees believe that the postgraduate entrance examination is also helpful in acquiring resources and improving the ability to a certain extent. Since there is no existing scale to refer to for the relevant topics of this survey, the dimension design is determined by the research team members after consulting a large number of pertinent literature and combining the interview results. The involution is divided into three dimensions: resources and ability, prospect benefit, and herd effect. Furthermore, considering that whether an individual chooses to continue his study will also affect his intention to take

the postgraduate entrance examination, this study also introduces the dimension of personal value to explore the influence of internalization on his intention to take the postgraduate entrance examination more comprehensively[5,8].

3. Study design

**3.1 The questionnaire design**

To study the influence of internalization on the intention for the postgraduate entrance examination, we quantified the relatively subjective factors into measurable objective indicators. We divide involution into three parts: resource and ability, prospect benefit, and herd effect[4-6]. However, in reality, in addition to involution, the pursuit of personal value also impacts postgraduate entrance examination intention, and it isn't easy to distinguish the two entirely in the investigation process[7,9,10]. Therefore, in the questionnaire design, we added the dimension of personal value based on resources and ability, prospect benefit, and herd effect, and designed multiple questions for each of the four sizes to extensively investigate the influence of internalization on the intention of postgraduate entrance examination. The details of the questionnaire are shown in Table 1.

**Table 1 The questionnaire content**

|  |  |
| --- | --- |
| Part | Concrete content |
| Part I: basic information | Gender, number of family children, grade, professional category, whether there is an intention to take the postgraduate entrance examination, whether you like your major, whether you have the idea of changing your major through the postgraduate entrance examination, and the number of scholarships |
| Part II: Investigation of the situation of College Students' postgraduate entrance examination | Resources andAbility | The postgraduate entrance examination can provide more opportunities to communicate with excellent experts or scholars. |
| Graduate graduation will enhance the potential benefits of resources and capabilities. |
| A postgraduate entrance examination is constructive in improving their academic research ability. |
| I think the competition for postgraduate entrance examinations is becoming more and more fierce. |
| I made the choice of postgraduate entrance examination entirely rational. |
| Graduate education is beneficial for employment. |
| I think graduate education can enhance my value compared with undergraduate education. |
| I think today's graduate degree is indispensable for the future development of college students. |
| Prospect Benefit | If you don't take the postgraduate entrance examination, you will lose the opportunity and space to flow upward. |
| It is difficult to find a particularly ideal job during the undergraduate period. |
| The treatment of undergraduate graduates is not as good as that of graduate students. |
| Postgraduate entrance examinations can change fate. |
| Compared with work experience, education is more helpful for a job promotion. |
| The pressure of employment during undergraduate is greater than that of postgraduate entrance examination. |
| Compared with work experience, the further promotion of education is more important to me. |
| If you don't take the postgraduate entrance examination at the University, you miss an excellent opportunity to take the postgraduate entrance examination. |
| Herd Effect | I was more or less affected by the "postgraduate entrance examination trend." |
| If students prepare for the postgraduate entrance examination in advance, I will also prepare in advance. |
| The desire to take the postgraduate entrance examination is due to the expectations of family members. |
| I want to relieve the pressure of employment through the postgraduate entrance examination. |
| I don't want to step into society too early. |
| Personal Values | I like doing academic work. |
| If I don't take the postgraduate entrance examination, I will feel that my life is not complete enough. |
| Under the same circumstances, I will choose the postgraduate entrance examination instead of the job opportunity. |
| I want to continue my further education. |
| I want to know more about my major. |
| If I don't receive a graduate education, I can't be competent for the job I want. |

**3.2 Sample characteristics**

**Fig. 1 Professional distribution of in-depth interview subjects**

See Figure 1 for details of the significant category distribution of the in-depth interview samples. Students majoring in management, legal philosophy, computer science, and economics were 16% each. Language categories include many minor languages, so the number of interviewees accounts for 35%. On the whole, the distribution of interview samples is relatively reliable.

**Fig. 2 Gender distribution**

**Fig. 3 The grade distribution**

As shown in Figure 2 and figure 3, the subjects of this survey are undergraduate students in Guangdong University Town. There are 169 male students among the surveyed samples, accounting for 40.6% of the total sample and 59.4% of female students. Female students account for a large proportion, but the overall gender ratio is reasonable. At the same time, the group with the most significant proportion in the sample is junior students, nearly 50%, followed by sophomores, accounting for 32.32%, and senior students, accounting for 13.46%, ranking third. The proportion of first-year students and those who take the postgraduate entrance examination while working accounts for 5.77%, less than the other three grades.

**Fig. 4 Whether you have the intention of postgraduate entrance examination**

**Fig. 5 Sample specialty distribution**

The total sample size is 416; 284 students intend postgraduate entrance examination, 132 students have no sense of postgraduate entrance examination, and the distribution is three to seven. In the survey sample, students majoring in economics and language accounted for more than half of the samples. In contrast, the group of students majoring in art was small.

**Fig. 6 Whether you like this major**

As can be seen from Figure 6, nearly half of the students are neutral about their major and "not sure whether they like it or not," accounting for 43.75% of the students who like their major, while 12.02% of the students are not satisfied with their current major.

**Fig. 7 Whether you have the idea of changing your major through a postgraduate entrance examination**

As shown in Figure 7, 61.06% of the students do not have the purpose of changing majors through the entrance examination, and 38.94% of the students hope to change their current significant choice through the entrance examination.

4. The empirical analysis

**4.1 Binary Logistic Regression**

Binary Logistic regression is a method to predict dependent variables according to the relationship between independent variables and dependent variables. Dichotomy refers to the dependent variable data having only two values, namely 0 or 1. The binary Logistic regression model adopts a logical probability distribution function,$ X\_{1}$, $X\_{2}$, …,$ X\_{k}$ is a set of independent variables, and $Y$ is independent variables. Let the probability of $Y=$1 be $p$, then the likelihood of $Y$=0 be $1−p$. Since the dependent variable $Y$ has only two values, it can be regarded as the Bernoulli test result. Logit transformation is made for $p$, recorded as $Logit(p)$. With $Logit(p)$ as the dependent variable, the regression equation is established:

The general form of the binary logistic regression model is:

$Logit\left(p\right)=β$0+$ β$1$X\_{1}+β$2$X\_{2}$+…+$β$k$X\_{k}$

Transform it to obtain:

$p=\frac{exp⁡(β\_{0}+β\_{1}X\_{1}+β\_{2}X\_{2}+…+β\_{k}X\_{k})}{1+exp⁡(β\_{0}+β\_{1}X\_{1}+β\_{2}X\_{2}+…+β\_{k}X\_{k})}$

This model assumes that variable $X$ is a nonrandom variable. Where $k$ is any positive integer,$ β\_{0}$ is a constant term. When all independent variables are equal to 0, it means the natural logarithm of the ratio(the probability ratio of $Y$=1 and$ Y$=0), Parameter$ β\_{j}$($j$=1, 2, …, $k$) is called the logistic regression coefficient. The meaning is that when other independent variables are fixed when the level of independent variable $X\_{j}$ increases by one unit of measurement, the ratio will be caused by $e^{β\_{j}}$ times before the increase. Parameters of binary Logistic regression model$ β$0, …,$β$k are calculated by the maximum likelihood estimation method and through the likelihood ratio test, H-L test, and significance test to verify the degree of prediction and reliability of the model to ensure the rationality of the model.

**4.2 The basic assumptions**

1．The dependent variable is dichotomous.

2.There is no multicollinearity between Independent variables$ X\_{1}$, $X\_{2}$, …,$ X\_{k}$.

3.There is a linear relationship between the continuous independent variable and the logit transformation value of the dependent variable.

4.There are no apparent outliers, leverage points, and strong influence points.

5.Analyze the significance of the comprehensive linear influence of each independent variable on the dependent variable, select the independent variable that has a significant linear impact on the dependent variable, and conduct a corresponding analysis on its independent variable, obtain the binary logistic regression equation, and verify it accordingly.

**4.3 The basic parameters**

$ Y$：Whether you have the intention to take the postgraduate entrance examination (with the intent to take the postgraduate entrance examination, the value is 1; without the will to take the postgraduate entrance examination, the value is 0)

$X\_{1}$：Resources and capabilities

$X\_{2}$：Future benefits

$X\_{3}$：Herd effect

$X\_{4}$：Personal value

**4.4 Model building**

Firstly, preliminary prediction is made based on existing sample objects. The output is the predicted classification results calculated when the model only contains constant terms. SPSS25.0 will judge whether the observed things have the intention of postgraduate entrance examination according to whether the significance is more significant than 0.5. The classification is shown in Table 2.

**Table 2 Classification table**

|  |  |  |
| --- | --- | --- |
|  | Postgraduate entrance examination intention | Observed value |
| Observed value | 0 | 1 | Percentage correct |
| Postgraduate entrance examination intention 0 1 | 0 | 120 | 0.0 |
| 0 | 264 | 100.0 |
| Overall percentage（%） |  |  | 68.8 |

Note: a. Constants are included in the model.

b. The cut-off value is 0.500

Because the model only contains constant terms, the prediction probability of all test objects is the estimated value of sample rate P=0.688; That is to say, the accuracy rate of all observation objects is judged as "to take the postgraduate entrance examination" is 68.8%. It also indicates that in the current sample, more than half of the survey objects intend to take the postgraduate entrance examination. Therefore, when the model does not contain any independent variables, all the observation objects in the sample are predicted to have the intention of taking the postgraduate entrance examination.

**Table 3 variables in the equation**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | B | S.E. | Wald | df | p | Exp(B) |
| constant | .773 | .156 | 24.542 | 1 | .000 | 2.167 |

In the output results in Table 3, B is the estimated value of the standard term without the Introduction of independent variables in the model, S.E is its standard error, and Wald is the statistical test of whether the overall regression coefficient is 0. The practical meaning of Exp(B) is that the ratio of the general research object with postgraduate entrance examination object and that without postgraduate entrance examination intention is 2.167.

The score test results of variables in the model are shown in Table 4.

**Table 4 Model building**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Score | Df | Sign. |
| variables | Resources and capabilities | 51.826 | 1 | .000 |
| Future benefits | 57.591 | 1 | .000 |
| Herd effect | 74.928 | 1 | .000 |
| Personal value | 49.661 | 1 | .000 |
| Overall statistics | 92.329 | 4 | .000 |

Dependent variable: have the intention of postgraduate entrance examination.

Resource and ability, prospect benefit, herd effect, and personal value in the coefficient table are all less than 0.05, which can reject the null hypothesis and significantly influence the intention for the postgraduate entrance examination. The meaning of "score" is to test the theory by introducing four variables into the current model: resource and ability, prospect benefit, herd effect, and personal value when the regression coefficient of the variable is equal to 0. The independent variable with the highest score is the "herd effect," indicating that this dimension has the most significant influence on the respondents who "do not intend postgraduate entrance examination."

**4.5 The summary of this chapter**

This study adopts the research method of binary Logistic regression model to discuss the influence of undergraduates' intention to take the postgraduate entrance examination from four dimensions and draws the following conclusions according to the research results:

1.Resource and ability, prospect benefit, herd effect, and personal value significantly influence undergraduates' intention of postgraduate entrance examination, which is positively correlated. Therefore, the in-depth study of these four dimensions is of great significance.

2.The influence of internalization on undergraduates' intention for postgraduate entrance examination is mainly reflected in the following three dimensions: resources and ability, prospect benefit, and herd effect, and the order of the influence degree is: resources and ability > herd effect > prospect benefit. It can be seen that the overall situation of social resources is the most essential criterion for undergraduates to decide whether to take the postgraduate entrance examination.

3.The non-enrolling influence dimension, such as personal value, has a weak influence on undergraduates' intention to take the postgraduate entrance examination. Therefore, it can be seen that self-motivated plays a less decisive role in deciding whether to take the postgraduate entrance examination for most of the survey samples.

5. Summary

**5.1 Main conclusions**

1.The increase in resources and abilities offered by a graduate degree has the most significant impact on undergraduates' decision to take the postgraduate entrance exam. Quality education resources are limited, and to be fair, the public can only compete for the limited resources by constantly moving towards higher education. The original intention of education is to broaden people's horizons and promote social development and national progress. However, in the internalized competition, higher education has been reduced to a track to win the corresponding resources and obtain the corresponding ability through academic qualifications.

2.The prospect benefit of having a bachelor's degree or above is second only to the resources and abilities brought by the postgraduate entrance examination. Influenced by internalization, the public tends to pursue higher education, resulting in over-saturation of the undergraduate market and no significant improvement in the quality of postgraduates. In the context of the inflation of higher education diplomas, the pressure of social competition has not been suppressed with the general improvement of the educational level of the whole people but has been continuously intensified.

3.Herd effect is not as influential as "resources and ability" and "prospect benefit" but is also a significant factor. Under the influence of internalization, the number of people choosing to take postgraduate entrance exams is on the rise, and quite a few of them are following the footsteps of the public rather than making decisions prudently based on their situation, which has certain blindness and is not conducive to their development.

4.The results of this survey show that the realization of personal value also impacts the respondents' intention to take the postgraduate entrance examination, but this is mainly influenced by self-drive and has no direct relationship with internalization.

**5.2 Suggestions**

*1. Allocate educational resources wisely —— based on resources and capabilities*

The development of postgraduate education in China is unbalanced and inadequate; some degree authorization centers are overcrowded, while some master supervisors have less than one student per year. At the same time, the development level of hardware infrastructure among universities is not balanced. Based on these circumstances, the government should reasonably allocate resources, such as increasing educational resources input to less popular colleges and universities and giving specific welfare policies to attract students or implementing high-quality educational resources sharing policies among colleges and universities.

*2.Conduct job guidance and improve the job market —— based on prospects*

Unit of choosing and employ persons can appear some "not a graduate student does not recruit" phenomenon, its fundamental reason lies in the internal competition of job seeker. As everyone pursues higher education, the demand for the same position also increases. To alleviate this problem, at the national level, the education department should carry out macro-control, analyze the employment market, provide clear guidance for those who are waiting for employment, and alleviate the phenomenon of blind postgraduate entrance examination; At the social level, employers should consider all aspects of the ability of applicants in the recruitment, rather than the only academic background, which can not only find the most suitable for a specific position for the unit but also improve the abnormal job market.

*3.Plan your studies and careers properly —— based on herd effect*

The postgraduate entrance examination is a kind of further study, is a kind of behavior to improve themselves and contribute to a specific field of behavior. If you are not interested in the area you are applying for and follow the public to take the postgraduate entrance examination; you may lose interest in learning or even have weariness in learning at the postgraduate stage. In this case, a blind postgraduate entrance examination will waste educational resources and affect the individual's

physical and mental health. The recent frequent "suicide of graduate students" is the best proof.

Therefore, whether an individual chooses employment or continues to study, they should make a reasonable plan according to their actual situation, and comprehensively analyze the advantages and disadvantages of both, so as not to follow blindly and be responsible for themselves.

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