

# *The Phenomenon of "Involution" in the Craze for Postgraduate Entrance Examinations--An Analysis Based on the Prisoner's Dilemma*

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**Abstract:** In recent years, the employment situation has become increasingly severe. With the boost from schools and mass media, the number of people taking the postgraduate entrance examination has continuously reached new highs, and there has been an internal competition in the postgraduate entrance examination craze. The Prisoner's dilemma, as a model of game theory, can be used to analyze the form of students who are highly competitive. By using two virtual players to compare the different choices students make during their preparation for the postgraduate entrance examination, and by analyzing the results of different decisions through the benefit values, it is concluded that preparing for the postgraduate entrance examination in an "involution" state does not ensure students' safe admission to postgraduate studies; instead, it may lead to a loss-making situation.

## **1. Introduction**

In recent years, the number of college graduates has reached a record high. In the employment environment, fresh graduates with a bachelor's degree are more inclined to pursue a master's degree. On the one hand, it is to pursue a higher degree; on the other hand, it is to escape the current employment pressure. At the same time, China's education policy is guiding the whole nation to pursue a higher level of knowledge, cultural literacy and a better way of life. Undergraduate education has become widespread, and those who want to move to a higher level must receive a higher level of education.

In the process of preparing for the postgraduate entrance examination, there is a phenomenon that some people, in order to achieve the goal of getting admitted to the postgraduate entrance examination, choose a biased way of preparing for the exam, which is bound to affect the essential connotation of the postgraduate entrance examination in selecting high-quality talents and is manifested as a utilitarian behavior. Under such a drive, intense competition can lead to severe involution, and examinees are prone to getting trapped in internal consumption. Moreover, due to the increasing development of information technology, mass media has played a significant role in spreading anxiety about the postgraduate entrance examination. As a result, examinees are unable to make correct judgments about their own and their upcoming rivals' abilities and conditions for the exam, unable to accurately assess the cost of the exam, and start to prepare blindly. This is not

rational. Therefore, it is necessary to conduct a deeper analysis of the competition among college students preparing for the postgraduate entrance examination in the context of the postgraduate entrance examination craze.

## 2. The phenomenon of intra-competition in the postgraduate entrance examination craze

### 2.1 The concept of "involution"

#### 2.1.1 The meaning of involution

Wiesen suggests that Kant first discussed the issue of "involution" in his Critique of Judgment in 1790[1]. In the translation by Wezhomin, the relevant text reads:

Predestination may also have one of its two forms. That is to say, predeterminacy regards each organic matter produced from an organic matter of the same kind as an Edukt or Produkt of that prior organic matter, and the system that regards the production as an edukt is called the der individuellen Praformation system. Sometimes it is also called evolution; A system that regards production as a product is called Epigenesis. The latter system can also be called the der generischen Praformation system, because it regards the internal purposeful tendency that is part of its original species as the productive capacity of the parents, and thus regards that particular form as actually completed. In this way, the opposing theory of individual preformation could also be more appropriately called evolutionism, or die Theorie der Einschachtelung[2].

Deng translated it as: Now, there can be two different ways to deal with predestination. That is to say, it regards every organic matter produced by something of the same kind as either something separated (Edukt) or something produced (Produkt). The theory that reproduces as something that is simply isolated is called the theory of individual preformation, or Evolutionstheorie; The theory of reproduction as something produced is called Epigenesis. The latter can also be called the theory of the preformation of species, because the productive capacity of the progenitor is, after all, preformed according to the inherent purposeful qualities of their race, and thus that particular form is virtualiter (Latin, potentially) preformed. Correspondingly, we might even call the opposite theory of individual prefabrication more precisely Involutionstheorie (or die Theorie der Einschachtelung)[3].

In short, Kant divides predeterminism into Evolutionstheorie, or Epigenesis, and Involutionstheorie, or die Theorie, der Einschachtelung. It is clearly inappropriate for Wei to translate both "Evolutionstheorie" and "Involutionstheorie" as "evolutionism". Deng Xiaomang translated it as "preformation theory" and "regression theory" respectively. Although there is some difficulty in understanding, at least the two concepts are distinguished. Involution, which originated from Latin and means wrapped up, was translated by Werner Pluhar as encapsulation. This is where the word "involution" comes from, Weisen believes. But the current popular terms of "involution" and "involution" come more directly from Clifford Geertz's cultural anthropology research.

In his discussion of Java's labor-intensive development direction, Geertz suggests:

The Javanese themselves could not transform into a part of the capital economy, nor could they change the already widespread intensive agriculture into an extensive one. Due to their lack of capital, inability to strip away surplus labor, and administrative barriers that prevented them from crossing their borders (because the rest of the land was filled with coffee trees), slowly, steadily, and ruthlessly, the labor-stuffed agricultural model of Sawash in 1920 was formed: Countless labor forces were concentrated in limited rice production, especially in areas where irrigation conditions had improved due to sugarcane cultivation and yield per unit area had increased. After 1900, even with the development of dryland farming, people's living standards improved only marginally. Rice cultivation, because it was able to maintain marginal labor productivity steadily, that is, the input of

more labor did not lead to a significant decline in per capita income, at least indirectly absorbed almost all of the surplus population that emerged after the entry of Westerners. I call such a self-defeating process "Agricultural involution"[4].

Later, when discussing the responses of small farmers in North China to population pressure, Huang quoted Gertz and translated "Agricultural involution" as "agricultural involution", explicitly referring to "the phenomenon of intensification to the contraction of marginal returns". [5] "Involution" and "involution" thus entered the Chinese language and gradually became buzzwords.

We can use "path-dependence" to understand the underlying causes of "involution" or "involution". According to Douglass North, "path dependence" means that once people choose a system, factors such as economies of scale, learning effects, coordination effects, adaptive expectations, and vested interests will cause the system to constantly reinforce itself in the established direction. Once people make a choice, it's like walking on a path of no return, and the force of inertia will constantly reinforce the choice and make it hard for you to get out. To some extent, all of people's choices are terrifyingly influenced by path dependence, the choices they made in the past determine the choices they might make in the future, and all theories about habit can be explained by "path dependence." [6] Land and capital in economics are like a painter's frame, canvas, and usable elements of painting. This is manifested when a painter can only change the picture by increasing the complexity of color blending, and increasing the complexity of color only manifests as the refinement of the work, and cannot break through the limitations of the frame and the variety of colors. That is, "involution". [7] When job prospects are not optimistic and studying abroad is affected by the pandemic, Chinese college students tend to stay in the country, or even in their own schools to pursue higher degrees. This means not being able to break the "frame", not being able to use new canvases, not being able to use new "painting elements", but merely adding complexity to the "colors". In the "path dependence" of postgraduate entrance examination preparation, examinees, in order to gain a small advantage in the fierce peer competition, strive for more resources for themselves through various channels. In this process, many examinees have spent a lot of time and energy, been busy but had little effect, and failed to get a sense of certainty of possession, resulting in psychological problems such as anxiety, confusion and depression. In the end, they don't even get a good result.

### **2.1.2 The essence of the "involution" mentality of contemporary young people taking the postgraduate entrance examination**

The "involution" mentality of contemporary young people in the postgraduate entrance examination actually reflects a "possession-oriented" way of life. "In the possession-based way of life, happiness for a person lies in his ability to outdo others, in his strong consciousness and his ability to seize, plunder and kill others." [8] Today's young people are eager to possess, from competing to sit in the front row in class to attract the teacher's attention, from obtaining definite knowledge to achieving excellent grades, from boosting grade points, earning comprehensive tests to win scholarships and certificates of honor, from finding good jobs to achieve high incomes - all these are the objects that young people strive to pursue and possess crazily. For them, possession brings a sense of security and satisfaction that is "real" yet "illusory". Different young people choose to pursue postgraduate studies for different "possession" purposes, and different purposes often point to "involution".

(1) For students from 985 and 211 universities, employment prospects may be good, but there is a downward trend compared to the past. Faced with the pressure of undergraduate employment and the devaluation of academic qualifications, in cases where expectations cannot be guaranteed, being recommended for postgraduate studies or taking the postgraduate entrance examination is no longer just an option, but can be regarded as a fallback option.

(2) For students from other universities, the employment prospects with a bachelor's degree are average or even difficult. Besides the employment pressure, there is also a prevailing "elite school complex" in society. They hope to improve the level and value of their degree by getting into a 985 or 211 university. Under the anxiety of the prestigious school complex, a high degree becomes an obsession for postgraduate entrance examination. Many postgraduate entrance examination candidates who have taken the exam for the second or even the third time are affected by this sentiment, and this complex is not only present in the postgraduate entrance examination, but also in the college entrance examination, the high school entrance examination, and even which primary school or kindergarten they attend.

(3) For students with excellent undergraduate grades, with the impact of the COVID-19 pandemic, the path to studying abroad is blocked and employment may not be ideal. Instead of facing the fear of employment pressure when entering society, it is better to continue studying at the same school for postgraduate studies. At least it will not lose the resources of the Alma mater and increase the advantage of future employment. Good grades during their undergraduate years can help them define their interests, but the undergraduate stage is about cultivating comprehensive qualities and does not focus on a specific development direction. Studying for a master's degree can help them gain more knowledge reserves in the field they are interested in.

(4) For students with average or even poor undergraduate grades, they may attribute their grades to the fact that their major does not match their interests, and thus hope to change their major to pursue a postgraduate degree to achieve a change in their situation. In this case, students may choose to pursue postgraduate studies in a different major, and there are usually two situations in the choice of major. One is out of interest. They think that choosing a new major will be more in line with their learning interests and their future career plans. Second, because of "good job prospects" and "easy admission", these people have no definite interest direction and think more about the difficulty of the exams and job opportunities.

(5) For some majors, a master's degree is even regarded as a necessary condition for entering the workforce, such as basic science and medicine. For such students, a bachelor's degree is basically equivalent to unemployment. Medical students are often required to have a master's or doctoral degree if they want to work in a tertiary hospital. In addition, there are requirements for the medical students' Alma mater, and graduates from prestigious universities have an advantage.

The first and third cases are typical of "involution". The number of college graduates has been increasing year by year. Stimulated by factors such as the growing employment pressure on graduates, especially the increasing difficulty of studying abroad, the difficulty of postgraduate entrance examination has not decreased but increased despite the increase in master's degree programs and the increase in the number of postgraduate admissions. The "safety line" behavior of the first and third types of students is an important reason.

## 2.2 The manifestations of the "involution"

### 2.2.1 External manifestations

#### (1) The pursuit of excellence in low output

Low output means repetitive work that requires little mental effort. In the comment sections of some postgraduate entrance examination tutors, there are often pictures of note-taking check-ins. If the teacher has a live class today, some examinees tend to upload a notebook in a very short time to compete for a top spot in the comment section. In addition to the speed of uploading, many students also strive for excellence in the form of their notes, such as choosing a beautiful background image for electronic creation and adding cute stickers, so that they can stand out among all the notes in the comment section and win attention and praise from others. At this point, these students do not aim

to review and organize quickly, but to enjoy the pursuit of others and to seek the consolation of seeming to review faster than others on the surface.

## (2) Non-active learning

There is a hot topic during the postgraduate entrance examination process, which is "Why did you choose to take the postgraduate entrance examination in the first place?" Perhaps many people would answer that taking the postgraduate entrance examination is the trend and everyone is competing for a degree, so they can't fall behind others. Some say it's the expectations of their parents. Very few answers come from one's own thoughts. Some students have no idea about the postgraduate entrance examination at all before preparing for it. They don't know the difference between an academic master's degree and a professional master's degree, they don't know what subjects need to be examined, and they don't know that there is a re-examination in addition to the preliminary examination. Part of the reason is that they spend more time on non-academic matters during their undergraduate years and do not learn about them in advance. Part of the reason is that as long as their parents or people around them do not popularize knowledge, they will not take the initiative to learn about it. In fact, we can see that most people have insufficient internal motivation to take the postgraduate entrance examination, and more external reasons drive them to do so; There is also a popular joke on the Internet: after entering college, studying becomes a matter of being excluded by others, because we know that after entering college, many students become tired of studying, and when they see someone studying hard, they become anxious, either assimilating the other student and lying flat together, or being forced to follow others to study. This will result in a consequence that, not being active in learning, one will naturally have low concentration, low learning efficiency, and even affect one's learning outcome tomorrow. Since I'm not studying actively, I naturally don't make a detailed study plan that suits me.

### 2.2.2 Inner performance

The "involution" mentality of contemporary young people taking the postgraduate entrance examination is first manifested as anxiety and panic. Since the majority of those who choose to take the postgraduate entrance examination are fresh graduates or those who have failed in the first attempt and choose to take it again, this group is in an important transitional period of life. They not only have heavy graduation pressure, but also, as they are about to enter society, they are also under various pressures brought by society, such as employment pressure, home purchase pressure, retirement pressure, etc. These real-life predicaments make contemporary young people anxious about being abandoned by society and fearful of failure as defined by the world, so they strive to seize every opportunity that can be seized at the moment and run with all their might. However, the competition for the postgraduate entrance examination is so fierce that many examinees are eager for success but feel that it is of no avail and even more frustrated and depressed.

Secondly, the "involution" mentality of contemporary young people is also manifested in confusion about the present and confusion about the future. Some students have no interests or hobbies of their own, no personality or talent of their own, fear falling behind their peers, and rush into a single field without thinking, finding themselves in a very fierce competition. These students lack rational thinking and scientific planning, have no clear and profound understanding of themselves, and are not clear about their life goals and meanings. They are influenced by the environment and want to prove their worth through busyness, but lose themselves unconsciously. So when the people around them choose to take the postgraduate entrance examination, they don't think about whether it suits them or not. Instead, they follow others on the path of preparing for the exam, starting out in confusion and then giving up one after another in the middle.

Finally, the "involution" mentality of contemporary young people in the postgraduate entrance examination is also characterized by depression and loss, with individuals entering an endless



self-consumption. After the emergence of "involution", the next thing that follows is self-consumption. Internal consumption refers to internal exhaustion. Self-exhaustion is mostly caused by one's excessive concern for external evaluations or excessive comparison, which leads to the constant depletion of one's willpower and the senseless exhaustion of being obsessed with one thing. On the one hand, they are dissatisfied with the endless competition among their peers and feel exhausted and powerless by the endless cycle they are trapped in, but on the other hand, they lack the confidence and courage to escape from this predicament. "Both parents and students are accustomed to designing their lives, aiming for a definite outcome. They don't want to take any risks and insist on taking the safest route." As a result, even when students are physically and mentally exhausted, they dare not slack off in the slightest. The situation of being in a difficult situation but being powerless makes the mood of contemporary college students even more depressed. Under such depression, students who cannot effectively relieve their emotions are prone to develop a negative mentality, or further evolve into a negative behavior of giving up themselves.

## **2.3 The result of the involution**

### **2.3.1 Intense competition**

The most prominent manifestation of the "postgraduate entrance examination fever" is the intense competitive pressure imposed on students. Many examinees give up all activities unrelated to the postgraduate entrance examination, devote their daily time to the study of postgraduate entrance examination subjects, abandon social activities, and some even choose to skip the undergraduate courses they should have taken.

### **2.3.2 Preparation for the exam is utilitarian and exam-oriented**

Today's postgraduate entrance examination preparation is overly utilitarian and exam-oriented, neglecting the development and improvement of their overall abilities. Due to the unclear and improper purpose of the postgraduate entrance examination, the academic level of postgraduate education in our country has not been raised accordingly with the increase in the number of examinees and the number of admissions. Instead, they blindly follow the exam preparation without thinking deeply about whether they are suitable and capable of becoming a postgraduate student.

### **2.3.3 Fail to truly solve the problem of employment**

Some people pursue postgraduate studies with the aim of improving their academic qualifications for better employment. However, the expansion of postgraduate enrollment has led to the devaluation of academic qualifications and still fails to truly solve the employment problem. The upward shift in the focus of social employers on recruiting talents has led to many postgraduates having to choose jobs that undergraduate students could handle, while undergraduate students have to look down for jobs, often resulting in a waste of talent.

## **3. The boost of media**

### **3.1 Encouragement from the school**

In the course of a student's growth, the school has a promoting effect on whether they choose to pursue postgraduate studies, which stems from the demand of colleges and universities for the quality of talent cultivation. [9] The school strongly supports undergraduate students taking the postgraduate entrance examination, especially in regular institutions and those in some less

developed areas. Many students are instilled with the idea of taking the postgraduate entrance examination by their teachers as soon as they enter university. During the four years of school, the school has adopted corresponding publicity models for students of different grades to publicize the various policies and services for undergraduate students to take the postgraduate entrance examination.

Why are schools so enthusiastic about postgraduate entrance examinations? First of all, it is indeed for the better development of the students themselves. Getting into a postgraduate program not only enhances students' academic qualifications and personal abilities, but also broadens their future development space. In the postgraduate stage, one can also come into contact with more outstanding people, thereby enhancing one's taste and pursuit, and becoming more clear about the life and direction one wants to move forward. Secondly, taking the postgraduate entrance examination can ease employment. Those who succeed in the postgraduate entrance examination are included in the statistics of employment, and being admitted to a postgraduate program is regarded as successful employment. In recent years, with the acceleration of the popularization of higher education and the superimposed impact of the spread of the COVID-19 pandemic, the employment situation of college students has been severe and structural contradictions have been prominent. Employment rate is an important indicator of various evaluations, assessments and rankings of schools and majors. If the employment rate of students in a certain major is not satisfactory and does not reach the local or national average, then this major may face the danger of reduced enrollment, enrollment the following year or even suspension of enrollment. This may have little impact on "Double First-Class" universities, but it is like adding insult to injury for a large number of provincial universities, especially newly established undergraduate institutions, which is why some universities strongly encourage students to pursue postgraduate studies. Finally, encouraging students to actively participate in the postgraduate entrance examination and increase the rate of postgraduate entrance examination is not only because a higher rate of postgraduate entrance examination can enhance the school's reputation, but also because it can recruit more students.

### 3.2 The influence of mass media

With the development of the information age, mass media plays an indispensable role in life, imperceptibly constructing reality for people and transforming objective reality into media reality. If one fails to pay attention to the selection of the subject matter and the number of reports, and fails to handle the relationship between partial truth and overall truth, intentionally or unintentionally exaggerating a certain kind of facts and magnifying a certain corner of society, the one-sided media reality it creates will interfere with the public's accurate judgment and comprehensive cognition, leading to excessive emotional reactions. The formation and disappearance of social anxiety are closely related to mass media. To some extent, the media can act as a "booster" of social anxiety if they exaggerate their reports in order to attract attention and gain economic benefits [10].

During the postgraduate entrance examination, the proliferation of such "fake news" can easily serve as a "catalyst" for examinees' anxiety. The postgraduate entrance examination blogger "Kongka Kongka Kongka Kongka" posted the following tweets in 2021: "Postgraduate Entrance Examination takers, Don't go home for summer vacation!", "If you don't do something before going to bed, can you be called a graduate student?". Several of these tweets, such as "End-of-month progress survey! See if you're holding you back", have finally voted on the current daily study time statistics. This is just the tip of the iceberg among many mass media, but the negative fake news fabricated by the media has caused a series of worries about test-takers preparing for the exam. It's normal to have negative forces during the preparation period for the postgraduate entrance

examination, but we should not deny or ignore the mainstream because of this. Exaggerating the problem of preparing for the exam is no different from "rubbing salt in the wound", which is bound to have a greater negative impact on the examinees under the general trend of "postgraduate entrance examination fever". In recent years, online social media has become an important platform for information dissemination and reception, penetrating people's lives. "Have you ever believed Online rumors?" on Huanqiu.com In a survey of 10,530 people, 64 percent said they did. From this, it can be seen that in this information-rich age, rumors have a broad mass base. Some people lack independent thinking ability and critical consciousness. They usually accept whatever is circulated and shaped on the Internet. Their emotions are greatly affected by online public opinion and they cannot control their own emotions. Their thoughts and perceptions are also easily influenced by online public opinion. As a result, when self-media exaggerate and fabricate facts, examinees are unable to make correct interpretations and judgments in the face of complex facts and wrong guidance, and thus tend to act wrongly.

## 4. Interpretation of the Prisoner's Dilemma

### 4.1 The Prisoner's Dilemma

Game theory is a class of theories used to analyze how and how the two or more parties in a game make decisions in their interactions. There is a "Prisoner's dilemma" model in game theory, which was explained in the early 1950s by Albert Tucker, a mathematics professor at Princeton University, using "the story of Two thieves."

Police caught two thieves suspected of robbery, but there was only evidence of their illegal possession of guns, a situation that would only result in a two-year sentence. So one police officer came up with a clever trick to break up the gang of thieves. He first went to thief A's detention room and told him that if B confessed, B would only be sentenced to four years in prison, but A would be sentenced to 20 years. He also said: If you plead guilty first, you can fight for acquittal because of the testimony. After leaving A's detention room, the police went to find B again with the same rhetoric. The result was -- both pleaded guilty and were sentenced to four years in prison.

Table 1 shows the benefit matrix for both sides of the game model.

Table 1 The original matrix of the Prisoner's Dilemma

	A Denial of guilt	A pleaded guilty
B Not guilty	R2, R2 (perfect ideal)	T4, S20
B Guilty	S20, T4	P4, P4 (Final reality result)

Note: Numbers indicate prison terms.

In the model, we use confessions and non-confessions respectively to represent the strategies that thieves can choose when being interrogated after being arrested. R (reward) is used to represent the cooperative reward for the thief's choice of not confessing; Use T (temptation) to indicate the temptation of betrayal when the thief chooses to confess; S (temptation) indicates the payment of being deceived when one thief chooses not to confess and the other chooses to confess; P (punishment) indicates the punishment for betrayal when both thieves choose to confess. When the thief makes judgments based on personal reason, the order of gain is:  $T > R > P > S$ ; when the thief makes judgments based on organizational reason, the order of gain is:  $R+R (2) > T+S=S+T (10) > P+P (16)$ . The prisoner's dilemma occurs when two thieves are detained separately and lose the opportunity and channel for communication, thus failing to form effective communication.



## 4.2 The relationship between the internal competition in the postgraduate entrance examination and the Prisoner's dilemma

Suppose 4.5 million examinees prepare for the exam in a conventional way, waiting for the final result. One day they start to wonder if their rivals are preparing in the same way, and with the development of information technology, some people spread anxiety through channels such as mass media, and under the influence of their own negative psychological suggestion and the influence of external mass media, examinees start to change their way of preparing. Student A, fearing to fall behind others, chose to study until three or four in the morning every night and get up very early the next day to start studying. Similarly, student B, with the same mentality, chose to increase the intensity of his review. As a result, the first consequence is a decline in the student's physical condition, and even worse, a series of diseases; In addition, many examinees' unconventional way of preparing for the exam often leads to two outcomes: one is a sharp increase in the final admission score line, which in turn leads to more intense competition in the postgraduate entrance examination the following year; The second is that they overexert their energy and physical strength and fail to achieve the desired results, or even perform poorly. In the college entrance examination, there are limited places in prestigious universities, and candidates compete with each other only once. From the perspective of game theory, "betrayal" is inevitable. Therefore, the "Prisoner's dilemma" intensifies "involution", which is manifested as the uniform Prisoner's dilemma under the logic of game theory. In the "repetitive Prisoner's dilemma" game, because the game is repeated many times, competition will cause harm to both sides, and win-win cooperation is more beneficial to both sides in the long run. But in the case of the "single Prisoner's dilemma" where the game is played only once, "betrayal" is the best choice. This "betrayal" will cause the game to be out of balance, and the other parties will have to follow up to create a new equilibrium. Once the equilibrium is reached, under the logic of the "single Prisoner's dilemma", a new "betrayal" will occur again, and so on, a new round of arms race will begin.

Under the "Prisoner's Dilemma" model, when a system is established, the majority of the people covered by the system will be forced to cater to it. And when this system is not the optimal solution, then all the catering efforts of the people will become ineffective catering. As a result, everyone is working hard and getting up early and going to bed late, and there is no significant increase in overall benefits. After getting caught up in the "prisoner's dilemma" of "involution", it is a silent waste and idleness for both individuals and groups, as well as for careers and lives. In a chapter of Game Theory and Life, Professor LAN Fisher explains the Prisoner's dilemma, which is that people often choose to abandon the best cooperation strategy for the sake of their own interests, thus getting into a situation where their interests are far compromised[11].

## 4.3 Analysis based on the Prisoner's Dilemma

### 4.3.1 Model establishment

From the students' perspective, establish virtual game players, the game between Student A and student B, compare the different preparation states of two students applying to the same school and the same major, and analyze whether intra-competition is the best choice in the context of students' postgraduate entrance examination fever.

Hypothesis 1: The student makes decisions completely rationally and without considering the order of the decisions, that is, the model is a completely information static game model. Under this model, both Student A and student B choose regular exam preparation.

Hypothesis 2: Student A opts for regular exam preparation, while student B, due to unease and anxiety, opts for involution. In the model, it is shown that the utility for student B is greater or

lower than that for student A.

Hypothesis 3: When student A prefers intense competition due to unease and anxiety, student B opts for regular exam preparation. In the model, it is shown that the utility for student A is greater or lower than that for student B.

Hypothesis 4: Under the influence of mass media, the unease of student A and student B is exacerbated, and both choose to be in A state of internal competition, which is presented in the model as being on par or lower for both student A and student B compared to before.

Table 2 shows the benefit matrices for both sides of the game model.

Table 2 Prisoner's Dilemma matrix for postgraduate entrance examination

	Student A prepares for the exam regularly	Student A is highly competitive
Student B studies regularly	N,N (50,50)	T,N- (80,20) or (20,50)
Student B is involution	N-,T (20,80) or (20,50)	P, P (50,50) or (20,20)

In the model, we denote the strategies that candidates can choose when preparing for the postgraduate entrance examination as conventional preparation and intra-competition, respectively. Let N represent the benefits that candidates can gain from choosing regular preparation; Let T represent the benefits of the student's choice of internal competition, where N- due to the candidate's own factors, there may be two results of the benefits; N- represents the benefit of one candidate choosing regular study and another candidate choosing intense competition; P indicates the benefits of both candidates choosing the benefits of internal competition, in which case P may result in two benefits due to the candidate's own factors.

#### 4.3.2 Analysis of the model

Core assumptions:

- (1) Both regular study and intense competition are beneficial for test-takers.
- (2) Due to the particularity of the competition for a graduate degree, the different choices of the examinees will affect their own benefits as well as those of the other party.
- (3) The game sets the subjective factors that affect the examinees mainly in terms of the amount of knowledge and physical condition that may result from different preparation state choices. Therefore, when examinee A and examinee B make the same choice, it can be considered that the subjective factors that affect the outcome are excluded.

(4) The benefit values correspond respectively to the possibility of the candidate being admitted.

Four different equalization strategies can be obtained by comparing the size of the benefit values.

(1) When (N, N), that is, when both candidates choose regular preparation, a pure strategy Nash equilibrium is obtained. Nash equilibrium means that in a game, if one party chooses a certain strategy regardless of the opponent's strategy choice, that strategy is called the party's dominant strategy. If any player chooses the best strategy when the strategies of all the other players are determined. In this model, if both candidates choose regular preparation and each has a 50% chance of successful admission, it is called Nash equilibrium. At this point, the factors that could influence the admission results of candidate A and candidate B themselves have been excluded, and whether they can be admitted and who will be admitted depends on objective factors such as the difficulty of the answer sheet during the exam. This is a normal state of preparation.

(2) When one candidate is in an internal competition state and the other is in a regular competition state, two situations are derived, mainly depending on the candidate who chooses the internal competition, the strategy discussed is (80,20). One candidate gets the expected review effect and gains an increase of 80, while the other candidate loses an increase of 20 due to the opponent's intense study.

(3) When one examinee is in the state of internal competition and the other is in the state of regular competition, two situations are derived, mainly depending on the examinee who chooses internal competition. The strategy discussed is (20,50). Under the intense study, one candidate, due to internal consumption, experiences a decline in physical fitness, poor memory, etc., and thus fails to achieve the expected review effect, the benefit value drops to 20, while the other candidate, originally due to the intense study of the opponent, would cause the benefit value to drop to 20, but due to a wrong decision of the opponent himself, the benefit value remains unchanged at 50 in the end.

(4) When (P, P), a pure strategy Nash equilibrium is obtained, that is, both examinees choose to study for the internal competition. In such cases, two scenarios will occur. One is that both have achieved the desired review results under the internal test preparation, and since both have made such a choice, the benefit value is the same as both choosing the regular test preparation, which is 50%. The second is that both are over-exhausting due to the intense competition. Under such circumstances, the chances of admission for the examinee will decrease. Both are 20%. Due to excessive physical consumption and high mental stress, the examinee may not be able to prepare well or perform poorly during the exam. The occurrence of these possibilities may prevent the examinee from getting higher than the school's cinema line. It's even possible that they fall below the national line.

#### 4.4 Model results

The model yields four different equilibrium strategies by comparing the size of the benefit variable. Different postgraduate entrance examination preparation choices for candidates of the same target university will lead to very different results. Therefore, students must think rationally, correctly assess their abilities and physical endurance, avoid blindly choosing preparation methods, and make choices based on their own conditions and considering multiple factors comprehensively. Avoid making irrational decisions due to the "postgraduate entrance examination craze" and ending up losing more than you gain.

#### 5. Conclusion

Based on the above analysis, when the employment outlook is not optimistic and studying abroad is affected by the pandemic, Chinese college students are affected by "path dependence" and tend to stay in the country or even stay at their own university to pursue higher degrees. The "postgraduate entrance examination fever" will become a long-term trend of socialization. Driven by real factors and media, intense competition will lead to severe involvement, and candidates will be unable to make correct judgments about their own and their upcoming rivals' ability and status for the exam, and are prone to making wrong decisions and blindly preparing for the postgraduate entrance examination. According to the Prisoner's dilemma model constructed by the author, the numerical analysis of the benefits shows that even if students choose to engage in involution, it is not certain that they will achieve the desired benefit outcome; rather, it is more likely that they will suffer a lose-lose situation. To some extent, the postgraduate entrance examination is a zero-sum game. First of all, information about the postgraduate entrance examination should be as open and transparent as possible. Relevant departments such as the examination authority should introduce policies to effectively regulate the postgraduate entrance examination market and prevent misleading information from emerging. Secondly, make full use of online channels to build a platform for students to communicate and reduce communication barriers among each other; Finally, students should not blindly engage in meaningless internal competition and thus get trapped in endless internal consumption. They need to think rationally, respond with a calm mind, and choose

the right way of preparing for the exam that suits them, so as to have the possibility of truly breaking through.

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