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Evaluation and Optimization Path of Scientific Research Innovation Ability of Theoretical Economics Graduate Students in the New Development Stage

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Abstract

China's economic development has entered a new era and a stage of high-quality development, which depends on the support of talent education, which is a solid backing. Among them, improving the scientific research and innovation ability of graduate students plays an important role in building an innovative country. Based on this, this paper constructs the evaluation index system of scientific research innovation ability of theoretical economics postgraduates with 7 second-level indicators and 32 third-level indicators, including scientific research innovation, academic communication, innovative thinking, innovative ability, scientific research quality, scientific research environment and participation in discipline competition. The PCA method in Stata15 is used to comprehensively evaluate the scientific research innovation ability of theoretical economics graduate students in China from 2010 to 2021. The analysis results show that the coefficient of scientific research innovation is the largest among the seven secondary indicators, which is 0.183; From 2010 to 2021, the scientific research innovation ability of theoretical economics graduate students in China shows an upward trend, but there are large regional differences: the eastern region is the strongest, the western region is weak, and the central and northeast are in the middle. Finally, according to the research results of this paper and combined with the "double first-class" construction of colleges and universities and the actual development of national economy, we design and further optimize the training path of scientific research innovation ability of theoretical economics graduate students from the four aspects of realizing interdisciplinary integration development, giving full play to the initiative of educational subjects, combining theory and practice, and improving the supply of scientific research resources.

Keywords

Theoretical Economics Graduate; Scientific Research and Innovation Ability; PCA.

1. Introduction

Since the 19th National Congress of the Communist Party of China (CPC), with the changes of the international and domestic development environment, China's economic development has entered a new era and a stage of high-quality development, and the pressure of economic transformation is huge. To build an innovative country, we must have innovative talents, and the training of innovative talents is inseparable from education, so the construction of innovative country should give full play to the basic role of education, and the development of education as a basic project is also a key step to realize the great rejuvenation of the Chinese nation, we must give priority to it. In addition to increasing financial investment in education and infrastructure investment and realizing education equity, we should base on the long term and improve the quality of education in our country. As the top of the national education system and the main force of the national innovation system, postgraduate education shoulders the

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important mission of training high-quality innovative talents in the new development stage of our country. Actively training high-level innovative talents is an important way to enhance the scientific research potential, comprehensive competitiveness and economic strength of our country. It is also an important content of the innovation-driven development strategy and the construction of an innovation-type country being vigorously implemented in our country. Since the founding of the People's Republic of China more than 70 years ago, China has made remarkable achievements in economic construction, among which the construction and improvement of the discipline of economics has played an important role, providing an important theoretical foundation for China's economic construction. The construction and development of theoretical economics is particularly important to the construction of economic theories with Chinese characteristics.

Table 1. The graduation situation of graduate students in China from 2009 to 2020 Unit: person

Year	Number of graduate students	Number of economists	Number of academic
2009	371273	18327	346865
2010	383600	19110	356849
2011	415687	19232	364750
2012	486455	20257	396976
2013	513626	23226	381854
2014	535863	26283	362950
2015	551522	26344	350983
2016	563938	26978	344415
2017	578045	27788	340479
2018	604368	29788	344155
2019	639666	31625	346922
2020	728627	33901	356502

Data source: collated according to the data provided by the website of the Ministry of Education, PRC.

The development of postgraduate students in our country has expanded in scale, especially since 2009. It can be seen from Table 1 that from 2009 to 2017, the proportion of the number of graduates from academic majors in the total number of graduate students decreased from 93.43% in 2009 to 58.9% in 2017. It can be seen that the graduate education in our country is in an overall pattern in which academic graduate students and professional graduate students account for half of the total. Among them, economics has always been a popular major for undergraduate postgraduate entrance examination. Since 2009, the proportion of graduate students in economics in the total number of graduate students has slightly decreased from 4.94% in 2009 to 4.81% in 2017, but the number of graduates is still on the rise. However, most of them prefer to study applied economics, such as finance and regional economics, and the construction of theoretical economics is not dominant in the number of students. With the expansion of graduate education, the lack of graduate innovation ability is recognized as the primary problem of graduate education. Yuan et al. (2009) found that nearly 50% of the respondents thought that the creativity of master students was "average" and "poor," and 30% of the respondents thought that the creativity of doctoral students was "average" and "poor" [1]. At the same time, people pay more and more attention to the problem that the insufficiency of the function of scientific research in the cultivation of graduate students' innovation ability is caused by the defect of graduate education system and the lack of scientific research

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resources. Yuan et al. (2009) found that the participation of graduate students in scientific research and innovation practice in our country is very low. Zhen et al. (2013) believed that the proportion of theoretical courses for master's students was greater than that of practical courses. Academic curriculum research is mostly used instead of social practice [2]. Jiao et al. (2017) argued that the innovation ability of graduate students urgently needs to be improved in the new era [3]. Yang Wenjie et al. (2018) believed that the ways to improve the innovation ability of graduate students in the new era should be diversified [4]. Therefore, it is more important to improve the quality of theoretical economics graduate education and scientific research and innovation ability under the background of new economic management in the new development stage. In order to promote the further development of theoretical innovation and economic discipline, we should first be clear about the main factors and specific problems that affect the scientific innovation ability of theoretical economics graduate students in China, so as to provide an effective path choice for improving the scientific innovation ability of theoretical economics graduate students in China.

2. Literature Review

In terms of the definition of the connotation of postgraduates' scientific research and innovation ability, a correct understanding of the connotation of postgraduates' scientific research and innovation ability is helpful to study the specific problems of the lack of postgraduates' scientific research and innovation ability and make specific analysis based on reality. Different scholars have their own understandings (Li Xiaoyu et al.,2009; Luo,2011[5]; Hao et al.,2017). Liu (2017) believed that the development of postgraduate research innovation presents a trend of interdisciplinary and theoretical integration [6]. Du Yan (2018) proposed that the scientific research and innovation ability of graduate students is the ability of graduate students to continuously provide economic value, social value, new theories, new methods and new inventions in the fields of technology and various practical activities.

In terms of factors affecting graduate students' scientific research and innovation ability, there are many problems in the cultivation of graduate students' scientific research and innovation ability in our country at present. Many scholars have analyzed the related factors affecting graduate students' scientific research and innovation ability. For example, the quality of students (Li et al.,2009), weak awareness of graduate students' problems (Wang et al.,2013[7]), the team of tutors (Zhao et al.,2011), innovative quality (Shi et al.,2015[8]), lack of training in research methods, independent design and research ability (Chen et al.,2013), academic environment and external environment Jing (Li et al.,2017) and others, which provide an important reference for the construction of an index system to evaluate the scientific research innovation ability of graduate students in the following paper. Liu (2019) studied how the differences in entrance examination methods affect the scientific research and innovation ability of graduate students [9]. Furukawa (2020) analyzed the problems such as lack of interdisciplinary integration and obsolete empirical analysis tools when introducing machine learning to cultivate the scientific research and innovation ability of graduate students in agricultural and forestry economics and management [10].

In terms of the evaluation index system of postgraduates' scientific research and innovation ability, how to construct the evaluation index system of postgraduates' scientific research and innovation ability mainly includes grey clustering method (Tian Fanglin et al.,2011), AHP method (Jin Li et al.,2013; Du Yan,2018), DEA method (Wang,2013), time series econometric analysis method (Jiao et al.,2017), different disciplines (Yang,2012[11]), and different index systems constructed by different scholars (Liu et al.,2015; Jiao et al.,2016). Zhao et al. (2019) used the hierarchical regression method to analyze the differences in the innovation ability of academic graduate students from the four aspects of innovation policy, social support,

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individual initiative and its moderating effect [12]. Bai et al. (2020) constructed a logistics regression model to test that reading time, access to information channels, and information utilization rate are conducive to improving the scientific research and innovation ability of graduate students [13]. Xu et al. (2022) constructed an evaluation system for the scientific research and innovation ability of graduate students, and used the entropy weight-fuzzy comprehensive evaluation method to evaluate the scientific research and innovation ability of graduate students [14].

Scholars at home and abroad have conducted a lot of research on the scientific research and innovation ability of graduate students. Although there are studies on the training mechanism and path selection of postgraduate scientific research and innovation ability for students majoring in science and engineering, public administration (Li,2017[15]), overall business (Song et al.,2018[16]) and economics and management (Liu,2014[17]), However, the research on the innovation ability of theoretical economics graduate students is relatively lacking. The evaluation system and evaluation method of graduate research innovation ability still need to be further improved. Therefore, this paper draws on the existing research results to build a scientific evaluation system for the scientific research innovation ability of theoretical economics graduate students to comprehensively evaluate the scientific research innovation ability of theoretical economics graduate students, so as to find out the outstanding problems faced by the development of scientific research innovation of theoretical economics graduate students, and further explore a new path to cultivate the scientific research innovation ability of theoretical economics graduate students in the new development stage.

3. Scientifically Construct the Evaluation Index System of Scientific Research Innovation Ability of Theoretical Economics Graduate Students

3.1. To Establish the Index System of Influencing Factors for the Scientific Research Innovation Ability of Theoretical Economics Graduate Students

The following principles should be adhered to in constructing the evaluation index system of scientific research innovation ability of theoretical economics graduate students according to the construction and training objectives of theoretical economics scientific research university platform and the actual development of scientific research :(1) Orientation. The scientific research innovation ability of theoretical economics graduate students reflects the training objectives of graduate education. Therefore, the guidance of national policies should be reflected in the selection of indicators. Tutors guide students, follow the principle of main training objectives, carry out scientific research and innovation activities, and learn professional knowledge. (2) Diversity: the scientific research and innovation ability of theoretical economics graduate students should be multi-angle and all-round, which should not only reflect the scientific research and innovation ability of graduate students from the perspective of basic education, but also from the aspects of society and scientific research development. (3) Comprehensive, on the one hand, the indicators of the scientific research and innovation ability of theoretical economics graduate students should reflect the status quo of the scientific research and innovation ability of contemporary graduate students and the outstanding problems existing; on the other hand, they should also reflect the comprehensive qualities required in the process of scientific research and innovation activities of graduate students, such as cooperation ability, organization and coordination ability, practical ability, scientific research sensitivity and so on.

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Table 2. Composition of the index system of scientific research and innovation ability of theoretical economics graduate students

Aspect index	Basic indicators	unit of measurement	Criterion Attribute	
			Positive indicator	Negative indicator
research innovation	scientific payoffs	grade		√
	Proportion of scientific research projects	%	√	
	Proportion of research projects weighted average of project level	numerical value	√	
	Number of projects participated	frequency	√	
	Proportion of national projects	%	√	
	Proportion of published papers	%	√	
	Average impact factor of the journal in which the paper is located	numerical value	√	
	Average number of citations of papers	frequency	√	
	Proportion of CSSCI	%	√	
	Number of provincial excellent theses	number	√	
	• National foundation dissertation ratio	%	√	
	Number of books and textbooks	number	√	
	Level of publication	grade		√
academic exchange	Number of academic exchanges	frequency	√	
	Academic exchange level	grade		√
innovative thinking	associative thinking	With or Without	√	
	Flexible thinking	With or Without	√	
	imaginal thinking	With or Withou	√	
	logical thinking	With or Withou	√	
innovation ability	ability to organize and coordinate	strong or weak	√	
	ability of expression	strong or weak	√	
	Analytical and argumentative ability	strong or weak	√	
	Hands-on operation ability	strong or weak	√	
• Scientific research quality •	Comprehensive information processing capability,	strong or weak	√	
	Literature reading and comprehensive ability	strong or weak	√	
	Ability to choose research topics	strong or weak	√	
scientific research environment	teacher resources	number of people	√	
	academic environment	Excellent or poor	√	
	teaching attachments	ten thousand RMB	√	
• Participation in discipline competitions	national level	number of people	√	
	provincial level	number of people	√	
	school level	number of people	√	

According to the guiding, diversity and comprehensive principles of the above index selection, this paper constructs a three-level evaluation index system to scientifically evaluate the

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scientific research innovation ability of theoretical economics major graduate students. Among them, the second-level index system includes 7 second-level indicators such as scientific research innovation, academic exchange, innovative thinking, innovative ability, scientific research quality, scientific research environment, and participation in discipline competitions, and 32 third-level indicators, as shown in Table 2.

1) Scientific research and innovation. Scientific research and innovation includes 13 three-level indicators: Scientific research achievement award, proportion of scientific research projects, weighted average of project level, number of participating projects, proportion of national projects, proportion of published papers, average impact factor of journals in which the papers are located, average number of cited papers, proportion of CSSCI, number of provincial excellent dissertates, proportion of national foundation dissertates, number of works and textbooks, and publication level. Among them, the scientific research achievement awards include national (national social sciences, national nature, Ministry of Education, ministries and commissions), provincial (autonomous regions, municipalities directly under the Central Government) level, city level, school level, etc., and all levels include first level, second level, third level, etc. Generally speaking, the stronger the innovation ability of the first level scientific research achievement awards; The proportion of scientific research projects reflects the proportion of national (National Social Sciences, National Nature, Ministry of Education, ministries and commissions), provincial (autonomous regions, municipalities directly under the Central Government), municipal, and university-level projects in the total projects that graduate students participate in. The project-level weighted average reflects the weighted average of all kinds of projects that graduate students participated in during their study; The proportion of the number of published papers reflects the proportion of class A, class B, class C and class D in the total number of published papers in domestic and foreign journals published during the period of graduate study. The publishing level includes class I, Class II and Class III publishing houses, and generally speaking, Class I publishing houses have the best publishing quality.

2) Academic exchanges. Academic exchanges reflect the situation of graduate students participating in relevant academic exchanges on weekends, holidays, winter and summer vacations during their study, discovering their research deficiencies through exchanges, communicating with other experts and scholars, learning their writing skills, methods and methods, and improving their scientific research and innovation ability, involving the number of academic exchanges and the level of academic exchanges. Generally speaking, the higher the level of academic communication is, the higher the quality requirements for the participating papers are, and the more inspiration the participants may get from the exchange.

3) Think creatively. Innovative thinking, which includes associative thinking, flexible thinking, imaginal thinking and logical thinking, is very important to graduate students' research and innovation ability. Among them, associative thinking reflects that when the graduate students analyze and solve problems, their thinking should be divergent, multi-perspective, multi-dimensional, from this to that, not rigid; Logical thinking reflects the logical ability of graduate students to analyze and solve problems, and their thinking should be logical and organized.

4) Innovation ability. Innovation ability reflects the basic skills of scientific research and innovation mastered by graduate students during their study, involving four aspects: organization and coordination ability, expression ability, analysis and demonstration ability, and hands-on operation ability. Among them, the organizational coordination ability reflects the organizational coordination level of graduate students in the whole process of scientific research. For example, when participating in the research of a project, the division of labor and coordination of questionnaire design, the division of labor and coordination of field research, the collection and analysis of data, the division of labor of writing and other links should be handled well. Only in this way, the research progress of the project will be smooth until the

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completion of high quality. Analytical argumentative ability reflects the ability of graduate students to analyze and argue problems.

5) Scientific research quality. Scientific research quality reflects the basic requirements that graduate students should have for academic research, involving three aspects: comprehensive information processing ability, literature reading and comprehensive ability, and the ability to choose scientific research topics. The comprehensive information processing ability reflects how graduate students capture useful information in the global vast information, as well as the analysis and processing ability of useful information; Literature reading and comprehensive ability reflect graduate students' literature reading level, how to find the literature they need from many literatures.

6) Research environment. The scientific research environment reflects the infrastructure provided by the country, society, universities and research institutions for postgraduate study and academic research, involving three aspects: faculty, academic environment and teaching equipment. Among them, the faculty is a very important scientific research environment, with strong faculty -- professors, academicians and so on May cultivate a large number of high-level talents for the country and society.

7) Participation in subject competitions. At present, participation in discipline competition is also an important way to improve the scientific research and innovation ability of graduate students. The national subject competition is relatively difficult, which can reflect the comprehensive level of participants from different angles.

3.2. Selection of Measurement Methods for Factors Affecting the Scientific Research Innovation Capability of Theoretical Economics Graduate Students

The factors that affect the scientific research innovation ability of theoretical economics graduate students involve seven aspects, such as scientific research innovation, academic communication, innovative thinking, innovative ability, scientific research quality, scientific research environment, and participation in discipline competition. In order to scientifically analyze the factors affecting the scientific research innovation ability of theoretical economics graduate students, the existing literature mainly uses entropy method, relative index method, AHP method, fuzzy comprehensive evaluation, factor Analysis method, PCA (Principal Components Analysis) and so on. Ahp is subjective empowerment; Although the entropy method is objective weight, it does not reflect the relationship between related indicators well. Both factor analysis method and principal component analysis method are objective weights, but the specific changes of each dimension of the former cannot be well described, and can only reflect the changes of common factors, while the latter can not only quantify the indexes of each dimension of scientific research and innovation ability of theoretical economics graduate students. Moreover, it can well describe the contribution degree of the basic indicators of the scientific research innovation ability of theoretical economics graduate students to the total index of the scientific research innovation ability of theoretical economics graduate students. Chen (2004)[18] pointed out that the subjective weighting comprehensive evaluation method was secondary to the objective weighting method, while the entropy method, AHP method and fuzzy comprehensive evaluation method were secondary to the factor analysis method.

In addition, due to the different attributes and dimensions of basic indicators, scientific processing should be carried out before data analysis. The inverse index is adopted in the form of its inverse, in order to converge the effect of all indicators on the scientific research innovation ability of theoretical economics graduate students. The dimensionless processing of the original index is done using the maximin method. The equalized covariance matrix is used as the input variable in the PCA.

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This paper uses the principal component analysis method in Stata15 analysis software, firstly calculates the weight of each individual index in the aspect index to synthesize the aspect index, and then synthesizes the total index of scientific research innovation ability of theoretical economics graduate students by the same method, and analyzes the main factors affecting the scientific research innovation ability of theoretical economics graduate students.

4. Comprehensive Analysis of Scientific Research Innovation Ability of Theoretical Economics Graduate Students

4.1. Data Sources and Index Calculation

The analysis data come from the China Education Statistical Yearbook, China Statistical Yearbook, the relevant year data of the statistical yearbooks of 31 provinces (autonomous regions and municipalities directly under the Central Government) in China (excluding Taiwan Province, Hong Kong Special Administrative Region and Macao Special Administrative Region), and the survey data collected in relevant universities and research institutes during holidays and winter and summer holidays. In view of data availability, 2010 is used as the base year for the analysis. For some missing data, the existing data are used to establish a regression model for estimation.

4.2. Determine the Weight of Basic Indicators and Aspect Indexes

Table 3. Selection of weights of basic indicators and aspect indexes

Basic indicators	Weight of basic indicators	Basic indicators	Weight of basic indicators
Scientific Research Achievement Award	0.086	Number of academic exchange	0.563
Proportion of scientific research projects	0.072	Academic exchange level	0.437
Project-level weighted average	0.089	associative thinking	0.248
Number of projects participated	0.074	Flexible thinking	0.259
Proportion of national projects	0.082	imaginal thinking	0.227
Proportion of published papers	0.089	logical thinking	0.266
Average impact factor of the journal in which the paper is located	0.087	ability to organize and coordinate	0.231
Average number of citations of papers	0.068	presentation skill	0.256
Proportion of CSSCI	0.082	Analytical and argumentative ability	0.262
Number of provincial excellent theses	0.077	Hands-on operation ability	0.251
National foundation dissertation ratio	0.065	teacher resources	0.357
Number of books and textbooks	0.066	academic environment	0.346
Level of publication	0.063	teaching attachments	0.297
Comprehensive information processing capability	0.338	national level	0.362
Literature reading and comprehensive ability	0.327	provincial level	0.346
Ability to choose research topics	0.335	school-level	0.292
Aspect index	Aspect index weight	Aspect index	Aspect index weight
scientific research innovation	0.183	Scientific research quality	0.145
academic exchange	0.127	scientific research environment	0.136
innovative thinking	0.145	Participation in discipline competitions	0.117
innovation ability	0.147		

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Using PCA for multi-index factor analysis, reasonable weight should be given to each index in the index system. The selection criterion for the number of PCA is that the cumulative contribution rate of the preceding principal components is not less than 85%.

Before using PCA in Stata15 analysis software for data analysis, KMO test of standardized data should be carried out first. Only after KMO values are above 0.8 can the data be analyzed by PCA analysis method. After that, PCA analysis was started, and the number of principal components was determined according to the criterion that the cumulative contribution rate of the preceding principal components was greater than 85%. The weight of the index was equal to the normalization of the weighted average of the coefficients of the index in the linear combination of principal components with the variance contribution rate of the principal components as the weight. Then the index of research innovation ability of theoretical economics graduate students is calculated by the same method.

By using Stata15 analysis software to perform PCA analysis, the corresponding weights of each basic index can be calculated (see Table 3), so as to calculate the values of each aspect index, and then the weights of each aspect index can be calculated by the same method. It can be seen from Table 3 that the weight of scientific research innovation in PCA analysis of aspect index is the largest, which is 0.183. The weights of innovation ability, innovative thinking, scientific research quality, scientific research environment, academic communication and participation in discipline competition in the scientific research innovation ability of theoretical economics postgraduates are 0.147, 0.145, 0.145, 0.136, 0.127 and 0.117, respectively.

4.3. Measurement Results of the Scientific Research Innovation Ability Index of Theoretical Economics Graduate Students in China

According to the weight of each basic index calculated in Table 3, we can calculate the value of each aspect index, and then use the same method to calculate the weight of each aspect index, and finally get the index value of scientific research innovation ability of theoretical economics graduate students in our country.

Table 4. Research innovation ability index of theoretical economics graduate students in China from 2010 to 2021

Year	index	Year	index
2010	0.215	2016	0.567
2011	0.246	2017	0.613
2012	0.359	2018	0.675
2013	0.427	2019	0.716
2014	0.486	2020	0.793
2015	0.524	2021	0.836

It can be seen from Table 4 and Figure 1 that the index value of scientific research innovation ability of theoretical economics graduate students in China from 2010 to 2021 shows an upward trend. From 2010 to 2021, the index value of scientific research innovation ability of theoretical economics graduate students in China increased from 0.215 to 0.836, which is still relatively fast.

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4.4. The Index Results of Scientific Research Innovation Ability of Theoretical Economics Graduate Students in Different Regions in China

According to the regional division of our country, this paper divides our country into four regions: Eastern Region, Central Region, Western Region and Northeastern Region [The Eastern region includes 11 provinces (autonomous regions and municipalities directly under the Central Government) including Beijing, Tianjin, Hebei, Shandong, Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong, Guangxi and Hainan; the central region includes 6 provinces including Shanxi, Anhui, Jiangxi, Henan, Hubei and Hunan; and the Eastern region includes 11 provinces (autonomous regions and municipalities directly under the Central Government) including Beijing, Tianjin, Hebei, Shandong, Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong, Guangxi and Hainan; The western region includes 11 provinces (autonomous regions and municipalities directly under the Central Government) : Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Ningxia, Qinghai, Xinjiang and Inner Mongolia; and the northeastern region includes three provinces: Heilongjiang, Jilin and Liaoning.] . According to the weights of basic indicators calculated in Table 3, the index values of various aspects can be calculated.The same method is used to calculate the weight of aspect index, and finally the index value of scientific research innovation ability of theoretical economics graduate students in China's regions is calculated.

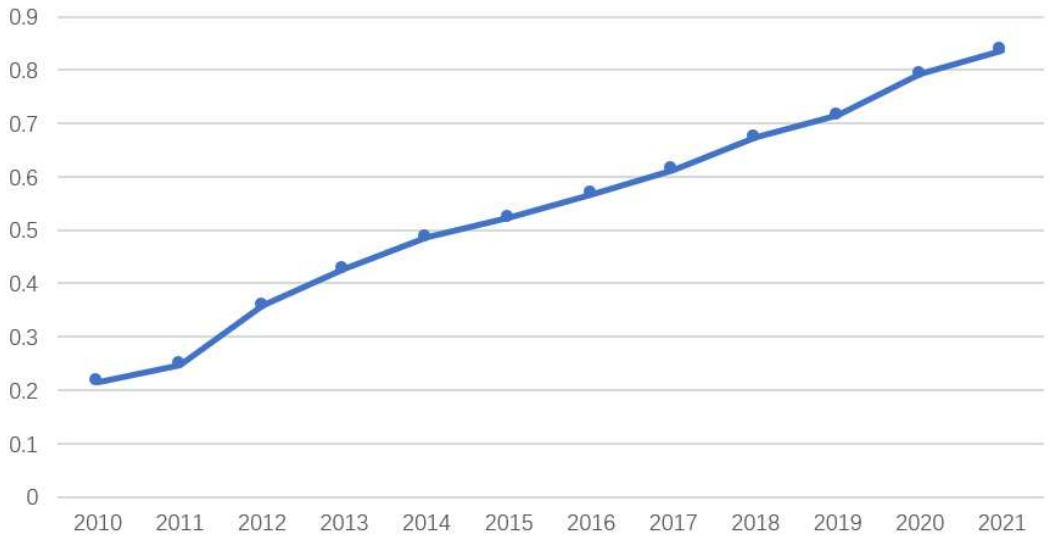

Figure 1. Research innovation ability index of theoretical economics graduate students in China from 2010 to 2021

From Table 5 and Figure 2, it can be seen that from 2010 to 2021, the scientific research innovation ability of theoretical economics graduate students in the eastern, central, western and northeastern regions of China shows an overall upward trend, but there are still large differences in the scientific research innovation ability of theoretical economics graduate students in the four regions. The research innovation ability of theoretical economics graduate students in the western region is the lowest; The research innovation ability of theoretical economics graduate students in the central region is in the middle; The research innovation ability of theoretical economics postgraduates in northeast China was higher than that in the central region from 2010 to 2013, but then it was lower than that in the central region, which may also be related to the level of regional economic development and other factors.

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Table 5. Research innovation ability index of theoretical economics graduate students by regions in China from 2010 to 2021

Year	East	South	West	North
2010	0.227	0.205	0.202	0.236
2011	0.256	0.239	0.213	0.251
2012	0.368	0.369	0.348	0.357
2013	0.445	0.417	0.397	0.437
2014	0.496	0.456	0.429	0.446
2015	0.537	0.512	0.487	0.514
2016	0.587	0.557	0.526	0.547
2017	0.632	0.617	0.598	0.603
2018	0.692	0.678	0.625	0.665
2019	0.735	0.723	0.683	0.718
2020	0.823	0.803	0.738	0.798
2021	0.867	0.847	0.796	0.842

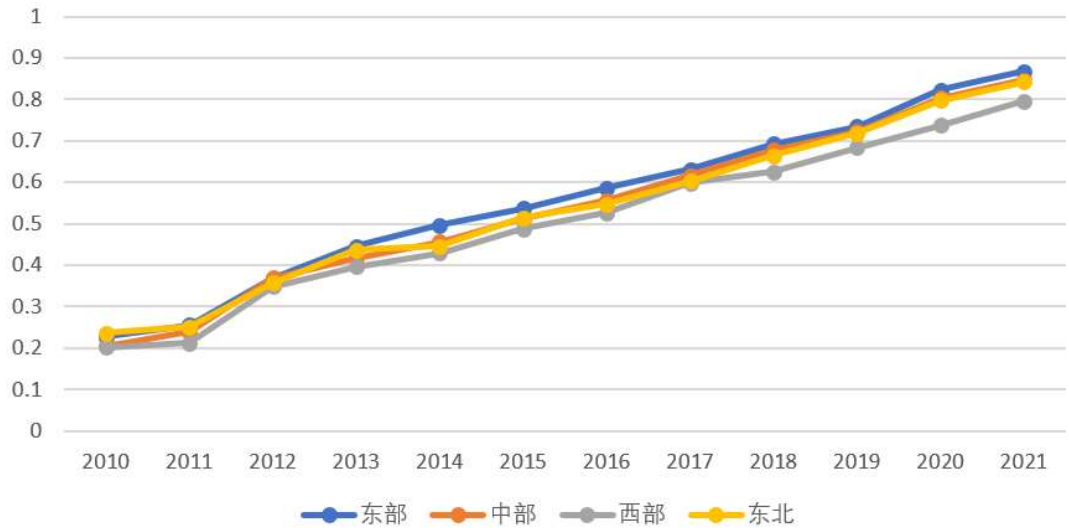

Figure 2. Research innovation ability index of theoretical economics graduate students in different regions of China from 2010 to 2021

5. Further Optimize the Path Selection of Scientific Research Innovation Ability of Theoretical Economics Graduate Students

At the beginning of the 20th century, many scholars proposed to pay attention to the localized development of Chinese economics. Cheng Enfu (2005)[20] also believed that Marxist theory should be the main idea for running schools, and Western economics and political economy should be paid equal attention to rebuild the mainstream economic paradigm in China. Through the comprehensive evaluation of the scientific research and innovation ability of theoretical

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economics graduate students in China, it can be found that there are still many deficiencies in the level of scientific research and innovation ability of theoretical economics graduate students. Therefore, the further optimization of the scientific research and innovation ability of theoretical economics graduate students in the new development stage should be based on the basic goal of graduate training.

5.1. Realizing Integrated Interdisciplinary Development

It can be seen from the analysis results that the weight of innovative thinking in the scientific research innovation ability of theoretical economics graduate students only accounts for 0.145, and there is still a lot of room for improvement. As a typical academic major, theoretical economics graduate program has set up secondary disciplines in addition to traditional political economy, Western economics, history of economic thought, and in recent years, population, resources and environment, world economy, etc. These have contributed to the comprehensive development of theoretical economics at different levels. Broad academic vision is the foundation of cultivating innovative thinking. In today's world, with the great integration of knowledge development, it is necessary to break the inertia of thinking and further expand the breadth and depth of thinking to cultivate the scientific research and innovation ability of graduate students. In addition to the theoretical knowledge of this specialty, related interdisciplinary majors should be set up to expand students' knowledge and theoretical vision in the training of theoretical economics graduates in the new development stage. On the one hand, subject integration can avoid the singularity of courses and make students' knowledge network structure more comprehensive, thus helping to expand their innovative thinking. On the other hand, the research methods and ideas of different disciplines are different. Through the integration of disciplines, students can understand the advantages and disadvantages of different research methods, and learn to analyze and demonstrate the same problem from different perspectives, so that the analysis of the problem is more comprehensive and profound, so as to improve their scientific research and innovation ability.

5.2. Giving Full Play to the Initiative of Educational Subjects

Improving the research innovation ability of theoretical economics graduate students cannot be separated from the joint efforts of scientific research subjects. From the analysis results, it can be seen that the weights of scientific research innovation, academic communication and participation in discipline competition in the scientific research innovation ability of theoretical economics postgraduates are 0.183, 0.127 and 0.117 respectively, among which scientific research innovation accounts for the highest proportion, while the latter two items account for a relatively low proportion, and there are many deficiencies that need to be further improved. First of all, as the main force of scientific research and innovation, graduate students need to give full play to their initiative and creativity, get rid of the single knowledge infusion, cultivate their awareness of problems, and think about problems with critical thinking. In terms of paper publication, the proportion of papers in core journals such as SCI, EI, CSSCI and CSCD is relatively low, which reflects that the innovation ability of theoretical economics graduate students is at the middle and lower level. As a graduate student, they should actively participate in academic activities. For example, independently apply for project projects, participate in academic seminars and reports, participate in academic exchange conferences and so on to improve their own scientific research and innovation ability. Secondly, from the perspective of tutors, the scope of knowledge teaching is limited, and it is more about the teaching of scientific research and innovation experience. Tutors should mainly guide students in the process of scientific research, teach students according to their aptitude, arrange training plans according to their personal development, and follow up and check the progress. It is necessary to strengthen communication and cooperation between teachers and students, and conduct academic discussion and debate, which is conducive to the divergence and improvement of the

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innovative thinking of theoretical economics graduate students. At the same time, tutors also need to maintain the enthusiasm of academic creation, improve their own comprehensive quality, and provide broader ideas and suggestions for students in the learning process.

5.3. Combination of Theory and Practice

It can be seen from the analysis results that the weights of innovation ability and scientific research literacy in the scientific research innovation ability of theoretical economics postgraduates are 0.147 and 0.145 respectively, which are not very high. The development of theoretical economics is not only based on the understanding of the past economic thoughts. First, in the classroom teaching, economic theory should be organically combined with the actual economic development, attention should be paid to the current economic hot spots and difficult problems, and combined with the frontier dynamics of the academic development of theoretical economics, theoretical knowledge teaching should be integrated into the solution of practical economic problems, and students' ordinary knowledge learning should be linked with the application of projects and fund projects. Stimulating students to choose their own research interests to ensure the continuity of their scientific research and innovation is helpful to improve the scientific research and innovation ability of graduate students. Second, it is necessary to cultivate the comprehensive academic quality of graduate students. The process of graduate scientific research and innovation is a gradual and comprehensive process. In addition to learning and mastering solid theoretical knowledge, it is also necessary to strengthen thinking training and train students to collect materials, information and data through relevant ways and conduct scientific processing. Combined with the hot and difficult points in the process of economic development, we should flexibly use appropriate research methods to analyze practical problems and cultivate the sensitivity of scientific research innovation of graduate students. Third, colleges and universities should change the educational concept, take the development of innovation and entrepreneurship education as the goal, and increase the practical teaching of graduate students, so that the theoretical knowledge learned by students can be applied to practice, and re-create and innovate after practice, which will greatly improve the scientific research and innovation ability of theoretical economics graduate students.

5.4. Improving the Supply of Scientific Research Resources

From the analysis results, it can be seen that the weight of scientific research environment in the scientific research innovation ability of theoretical economics postgraduates only accounts for 0.136. At present, the development scale of theoretical economics itself has limitations, and in the enrollment process, most students prefer to apply economics. First of all, schools should reasonably allocate the supply of theoretical economics resources, and hold as many academic reports on theoretical economics as possible, inviting authoritative experts and scholars in the industry to conduct academic exchanges. This will help theoretical economics graduate students to broaden their professional horizons, create a good atmosphere for knowledge learning and academic exchanges, and enhance their scientific research and innovation ability. Secondly, we should improve and optimize the incentive mechanism for scientific research achievements of theoretical economics graduate students. Scientific and effective achievement incentive mechanism can stimulate the enthusiasm and initiative of theoretical economics graduate students in scientific research and innovation, whether it is material reward or spiritual incentive. Third, colleges and universities should build domestic and overseas exchange program platforms for theoretical economics graduate students as much as possible, improve the scholarship system, encourage students to participate in various types of exchange, short-term study Tours and other "going global" projects, expand the academic vision of graduate students, and integrate their scientific research and innovation ability into the process of globalization. Finally, relevant departments should increase the investment in scientific

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research funds of theoretical economics graduate students, strengthen the construction of scientific research software and hardware, and provide solid financial and material support for the scientific research innovation of theoretical economics graduate students.

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