A Study on The Impact of University Enrollment Expansion on Intergenerational Mobility: A Case Study of Different Provinces in China

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Abstract. The impact of university enrollment expansion on intergenerational mobility is one of the key research topics today. In 1999, China implemented an enrollment expansion policy, but with the implementation of the policy, "it is difficult for a poor family to produce a noble son" and similar remarks sparked discussion. To explore whether the expansion of university enrollment has promoted intergenerational mobility and how it affects people in different regions and majors, this article is based on data from the China Comprehensive Social Survey (CGSS) in 2015, 2017, 2018, and 2021, and uses a multiple regression model to analyze whether the expansion of university enrollment has an impact on intergenerational mobility. The main findings of this article are as follows: 1) After the expansion of university enrollment, intergenerational upward mobility in provinces with abundant higher education resources did not significantly affect those with scarce higher education resources. However, the policy of university enrollment expansion promoted intergenerational upward mobility. 2) In addition, the study also found that the choice of major did not have a significant impact on intergenerational upward mobility. The innovation of this article lies in the addition of provincial heterogeneity analysis and the inclusion of professional factors as an influencing factor.

Keywords: Expansion of enrollment in universities; Intergenerational mobility; Analysis of regional heterogeneity.

1. Introduction

1.1. Research background

The implementation of the policy of expanding enrollment in universities has indeed improved the overall education level of the people. According to Martin Trow's theory of mass development, in 2019, China's higher education entered the stage of popularization. However, with the increasing enrollment of ordinary universities, some social problems have gradually emerged. For example, since 2006, due to the prominent employment problem of college graduates, the expansion of enrollment in universities has slowed down but still maintains a growth rate of about 5%. In addition, issues such as unequal educational opportunities and devaluation of academic qualifications are also hot topics in current academic research.

Social mobility is the metabolism of society, and this mobility mainly depends on spontaneous factors such as education, rather than pre-existing factors such as family background [1]. In the 1996 Coleman report, it was shown that education maintains social inequality, leading to class solidification and legalization. But it also points out the possibility of education promoting social equity, and education for individuals means the possibility of acquiring a specific social position. Receiving education was once one of the most important ways for the bottom to move up, but some studies have found that the phenomenon of changing fate occurred before the expansion of higher education, which was still in the elitist stage at that time through reading [2]. The statement that 'it is difficult for a humble family to have a noble son' has gained more people's approval. In fact, the inequality in higher education opportunities between urban and rural students has existed for a long time and has expanded after the expansion of university enrollment. Urban students have gained more admission opportunities [3-5], especially children from advantageous families who are getting more

and more admission opportunities to key universities, while rural students are increasingly distant from key universities [6].

Getting into a university is no longer the top pursuit, and choosing which university to attend and which major to pursue has become a concern for more people. The reason why people are so cautious is that the ultimate question they face after graduation is whether they can find a good job. A good job means a nice income and improving one's economic status.

Since the implementation of the expansion of university enrollment, the overall social higher education qualifications have rapidly expanded, leading to the depreciation of educational qualifications. There has been an oversupply of highly educated individuals in society, making it more difficult to find jobs. Hong Wenjian conducted a survey and analysis on the first-time employment and professional alignment of college students at a certain university in Fujian Province. The study found that the popularity of majors does not represent the popularity of employment. At the same time, universities pay attention to scale expansion while neglecting the quality of education in the process of enrollment expansion. In addition, the employment of college students is also directly affected by the national economic development situation and changes in economic structure [7].

1.2. Reaearch significance

From the theoretical perspective of research, studying the impact of university enrollment expansion on intergenerational mobility is beneficial for improving and enriching relevant theoretical research on intergenerational mobility. The current literature cannot fully explain the impact of the policy of expanding enrollment in universities on social mobility, so studying this issue also has a positive impact on research in fields such as sociology and economics.

From the practical significance of research, in an open modern society, the doors of every class and stratum are open, and increasing intergenerational mobility is inevitable. Developing the economy, improving education levels, and strengthening the fair mechanism of mobility opportunities are the basic ways to increase the upward mobility rate between generations. Analyzing the impact of expanding enrollment in universities on people from different backgrounds can help education administrative departments adjust higher education policies, promote educational equity, facilitate the formation of healthy mobility among social classes, and ensure social stability.

2. Literature Review

Since China proposed the policy of expanding enrollment in universities in 1999, higher education has no longer been the right of a few talents, which has caused many hot issues. Many scholars have studied this policy. Zhao et al. validated the differential impact of university enrollment expansion policies on urban-rural income inequality [8]; Liu explored the relationship between human capital expansion and entrepreneurship, focusing on how the expansion of university enrollment affects entrepreneurship [9]. The expansion of university enrollment in China has a wide impact on society, so research on university enrollment expansion can effectively promote social development. Intergenerational mobility is a key factor determining the evolution and development of economic and social inequality [10]. Iannell conducted research on education expansion and intergenerational mobility in Scotland, and the results showed that in the second half of the 20th century, although the overall level of achievement improved, class differences in educational achievement still existed [11]; Lv and Zhao studied the impact of university enrollment expansion policies on the intergenerational mobility of college graduates, and found that university enrollment expansion has a faster effect on the intergenerational mobility between father and son professions, and has a greater promoting effect on male intergenerational mobility than female intergenerational mobility [12]; Zhang found that the implementation of the policy of expanding enrollment in universities has promoted intergenerational mobility of education within urban and eastern and western regions, but has not improved intergenerational mobility of education in rural areas [13]; Peng and Zhao conducted a study on the

impact of intergenerational mobility in education for families with different educational backgrounds in urban and rural areas of China. The results showed that the policy of expanding enrollment in universities significantly improved the intergenerational mobility of education for rural low education families in provinces with limited higher education resources [14].

The impact of enrollment expansion policies varies depending on differences in time, gender, region, and family education background in the above literature. Due to the imbalanced development of higher education levels in various regions, a specific analysis of the impact of university enrollment expansion in different provinces on intergenerational mobility is also of great significance for the relevant research on university enrollment expansion and intergenerational mobility. At the same time, the majors studied by college students will have a certain impact on their professional status opportunities and the quality of employment after status acquisition [15]. The innovation of this paper is to investigate whether the choice of major has an impact on intergenerational upward mobility.

3. Research Hypothesis

In the study of intergenerational mobility, occupation, and other status characteristics are generally used. Rousseau once said , Choosing a career is a major event in life, because career determines a person's future. In China, a major feature of exam-oriented education is that the college entrance examination plays a role in talent screening and selection. After the college entrance examination, students need to choose schools and majors. Although there is not a one-to-one correspondence between major and profession, the major studied to some extent determines the future employment direction. Some majors are considered popular during enrollment, but the employment situation is not ideal upon graduation. A typical example is finance and foreign trade majors. This type of major was very popular in the early 1990s, but by the late 1990s, the employment situation was tightening year by year [16]. It can be seen that measures related to majors and teaching quality are also very important in the expansion of enrollment in universities.

As one of the main driving forces for promoting regional economic development, higher education plays an important role in the regional coordinated development strategy. The factors that can affect the quality of higher education are more diverse and are influenced by factors such as location, regional economic scale, and comprehensive population quality. There are differences in the development of higher education levels among different regions [17]. At the same time, the expenditure on higher education funds in different regions of China is extremely uneven. Overall, the allocation of financial resources for higher education in China shows a significant spatial distribution of "high in the east and low in the west" [18]. The uneven spatial distribution of higher education resources is an important reason why high school graduates in different regions are affected differently by enrollment expansion policies [19]. It has led to unequal educational opportunities in various provinces and regions, exacerbating social polarization, affecting the rational flow of social members among different social classes, and limiting the development and progress of the entire society.

Therefore, the research hypothesis of this paper is: 1. The expansion of university enrollment did not significantly promote intergenerational mobility. 2. While keeping other factors constant, an individual's professional choice will affect their employment opportunities and quality, thereby affecting intergenerational upward mobility. After controlling for other factors, in provinces with scarce higher education resources, with the implementation of university enrollment expansion policies, intergenerational mobility has significantly strengthened.

4. Research Design

The data used in this paper is from the China Comprehensive Social Survey(http://cgss.ruc.edu.cn/) The author selected data from 2015, 2017, 2018, and 2021 and obtained 15871 samples. The descriptive statistics of the relevant variables are shown in Table 1.

Table 1. Descriptive statistics of variables

Variable	sample size	Mean	Standard deviation	Minimum value	Maximum value
Intergenerational upward mobility	15871	0.92	0.269	0	1
Parental education years	15871	5.76	4.907	0	19
Expansion policy	15871	0.34	0.475	0	1
Gender	15871	0.51	0.500	0	1
Age of offspring	15871	45.83	16.017	18	118
Age of father	15871	74.14	18.039	6	171
Age of mother	15871	71.84	17.486	20	164
Nation	15871	0.93	0.254	0	1
Major	1754	7.47	3.966	1	14
Province	15871	14.66	8.056	1	29
Year	15871	2.40	1.029	1	4

This paper adopts regression analysis, and the regression equation is set as follows:

$$im_i = \beta_0 + \beta_1 expansion_i + \beta_2 pedu_i + \beta_3 expansion_i * pedu_i + \beta_4 major_i + \sum_j^n \lambda_j X_{ji} + \varepsilon_i \quad (1)$$

im_i represents the intergenerational upward mobility of individuals. $expansion_i$ represents the virtual variable of university enrollment expansion policy. $pedu_i$ representing the length of parental education. $major_i$ represents the individual's major. $expansion_i * pedu_i$ represents the interaction term between parental education and enrollment expansion policy. Coefficient β_3 and β_4 are the focus of this paper. X_{ji} represents a series of control variables, including an individual's gender, ethnicity, province of birth, year, parental age, etc.

This paper examines intergenerational upward mobility and uses the difference in education years between father and son to determine whether intergenerational upward mobility has occurred. If the difference in education years between the offspring and their parents is greater than or equal to 0, it is considered that the offspring has experienced upward intergenerational mobility. At this point, $im=1$ is defined. If the difference is less than 0, $im=0$ is defined. The implementation of the college enrollment expansion policy was in 1999. With the age of 7 as the enrollment age, this paper concludes that individuals born before 1980 will not be affected by the enrollment expansion policy, while individuals born after 1980 will be affected. Therefore, individuals born after 1980 are defined as $expansion=1$ and others are defined as $expansion=0$. According to the current educational system, the length of education for primary school and below is calculated as 0 years, with 6 years for primary school, 9 years for junior high school, 12 years for high school (including vocational schools), 15 years for junior college, 16 years for undergraduate studies, and 19 years for graduate studies. The maximum length of education for fathers and mothers is selected as the parents' length of education. Table 2 shows the university competitiveness ranking of 28 provinces involved in CGSS. The top 10 provinces are referred to as provinces with abundant higher education resources, while the bottom 9 provinces are referred to as provinces with poor higher education resources. The offspring of the Han ethnic group is defined as 1, while other ethnic groups are defined as 0. The offspring's gender is 1 for males and 0 for females. The majors studied by the descendants include literature, history, philosophy, law, education, art, science, engineering, agriculture, medicine, military science, economics, management, and others. Adopting the definition of scholars Wang and Liang, the authors retained the sample that answered, "you have been living here since birth" in the

question "Which year did you come to live in this area/county/county-level city" and considered the province where the interview was conducted as the province where the respondent was educated [20].

Table 2. Ranking of University Competitiveness by Province

Ranking	Area	Ranking	Area	Ranking	Area
1	Beijing	11	Hunan	21	Guangxi
2	Jiangsu	12	Henan	22	Shanxi
3	Hubei	13	Anhui	23	Yunnan
4	Shandong	14	Hebei	24	Gansu
5	Guangdong	15	Heilongjiang	25	Guizhou
6	Shanghai	16	Fujian	26	Neimenggu
7	Shaanxi	17	Jilin	27	Ningxia
8	Zhejiang	18	Jiangxi	28	Qinghai
9	Liaoning	19	Tianjin		
10	Sichuan	20	Chongqing		

Data sources: Network of Science & Education Evaluation in China(www.nseac.com)

5. Experience Results

Intergenerational upward mobility is a binary variable; therefore, a logistic regression model is used. Table 3 shows the results of the model regression. The first column shows that, after controlling for other variables, both parental education years and enrollment expansion policies have a significant impact on intergenerational upward mobility at the 1% level. The impact of parental education years on intergenerational upward mobility is -0.026, while the impact of enrollment expansion policies on intergenerational upward mobility is 0.04. After adding the interaction term between enrollment expansion policy and parental education years in column (2), the results show that the estimated coefficient of the interaction term between enrollment expansion policy and parental education years is 0.008, which passes the significance test at the 1% level. This indicates that the enrollment expansion policy in universities promotes intergenerational upward mobility. Thus hypothesis 1 is valid. Considering the differences in majors studied in universities, which can affect intergenerational upward mobility, column (3) includes majors, and the regression coefficient of majors is small and not significant. Therefore, hypothesis 2 is not valid.

Table 3. The impact of college enrollment expansion on intergenerational upward mobility

	(1)	(2)	(3)
expansion	0.040***	-0.026***	-0.059**
	(5.40)	(-2.74)	(-2.02)
pedu	-0.026***	-0.028***	-0.017***
	(-38.08)	(-34.19)	(-5.98)
expansion pedu*		0.008***	0.010***
		(6.47)	(3.00)
major			-0.001
			(-0.74)
Control variable	YES	YES	YES
Constant term	1.181***	1.203***	1.174***
	(67.03)	(67.11)	(23.57)
Sample size	15871	15871	1754
R^2	0.160	0.163	0.120

Explanatory note: ***. **. * represent significant levels at 1%, 5%, and 10%, respectively; The values in parentheses represent the robust standard error of heteroscedasticity.

Subsequently, this paper further examined the impact of enrollment expansion policies on intergenerational upward mobility in different provinces, as shown in Tables 4-6. Due to the influence of geographical location and economic scale among provinces, there are also differences in higher education resources. Therefore, individuals from provinces with abundant and poor higher education resources were selected for regression analysis. Table 7 shows that in provinces with abundant higher education resources, the estimated coefficient of the interaction term between enrollment expansion policy and parental education years is 0.009, but it did not pass the significance test. In provinces with poor higher education resources, the estimated coefficient of the interaction term between enrollment expansion policy and parental education years is 0.010, which is significant at the 1% level. This indicates that the implementation of enrollment expansion policy promotes intergenerational upward mobility in provinces with poor higher education resources, and there is no significant impact on provinces with abundant higher education resources. Therefore, hypothesis 2 is valid. It is consistent with Zhang Jianhua's conclusion that " generational mobility has strengthened in provinces with poor higher education resources " [21].

Before enrollment expansion, it was easier to attend universities in provinces with abundant educational resources than in provinces with poor educational resources. Therefore, students from provinces with abundant educational resources were more likely to obtain higher education enrollment quotas. After enrollment expansion, new enrollment quotas were more likely to be obtained by students from provinces with poor educational resources. Therefore, in provinces with poor higher education resources, enrollment expansion policies promoted intergenerational upward mobility.

Table 4. The impact of enrollment expansion in universities across provinces on intergenerational upward mobility（ranking 1 to 10）

	Beijing	Jiangsu	Hubei	Shandong	Guangdong	Shanghai	Shaanxi	Zhejiang	Liaoning	Sichuan
expansion	0.167*	0.023	-0.077*	-0.031	-0.077*	-0.184**	-0.033	0.005	-0.055	-0.015
	(1.92)	(0.56)	(-1.74)	(-0.89)	(-1.74)	(-2.07)	(-0.92)	(0.06)	(-0.78)	(-0.33)
pedu	-0.021***	-0.028***	-0.035***	-0.025***	-0.035***	-0.037***	-0.031***	-0.025***	-0.030***	-0.033***
	(-5.69)	(-7.90)	(-8.54)	(-6.90)	(-8.54)	(-10.77)	(-6.43)	(-5.28)	(-6.84)	(-6.86)
*expansion*pedu*	-0.008	0.008	0.011*	0.005	0.011*	0.023***	0.006	0.008	0.013*	0.013*
	(-1.01)	(1.39)	(1.67)	(0.97)	(1.67)	(2.77)	(0.85)	(0.98)	(1.70)	(1.69)
Constant term	1.220***	0.888***	1.352***	1.204***	1.352***	1.851***	1.262***	1.241***	1.355***	1.233***
	(11.68)	(3.50)	(14.29)	(17.23)	(14.29)	(17.24)	(14.29)	(11.91)	(13.08)	(15.98)
Sample size	727	916	760	918	760	726	546	481	550	633
R^2	0.164	0.200	0.217	0.144	0.217	0.288	0.165	0.167	0.190	0.212

Explanatory note: ***. **. * represent significant levels at 1%, 5%, and 10%, respectively; The values in parentheses represent the robust standard error of heteroscedasticity.

Table 5. The impact of enrollment expansion in universities across provinces on intergenerational upward mobility（ranking 11 to 19）

	Hunan	Henan	Anhui	Hebei	Heilongjiang	Fujian	Jilin	Jiangxi	Tianjin
expansion	-0.056	-0.030	-0.053	0.079	0.029	-0.053	-0.018	-0.008	-0.141
	(-1.55)	(-0.86)	(-1.21)	(1.09)	(0.53)	(-0.98)	(-0.38)	(-0.21)	(-0.82)
pedu	-0.035***	-0.032***	-0.042***	-0.033***	-0.026***	-0.032***	-0.031***	-0.035***	-0.032***
	(-6.68)	(-7.74)	(-10.14)	(-7.18)	(-6.58)	(-6.67)	(-7.25)	(-8.83)	(-7.16)
*expansion*pedu*	0.015**	0.004	0.017**	-0.014	-0.004	0.012	0.009	0.010*	0.011
	(2.12)	(0.79)	(2.18)	(-1.48)	(-0.58)	(1.52)	(1.41)	(1.84)	(0.71)
Constant term	1.122***	1.264***	1.467***	1.301***	1.190***	1.307***	1.153***	1.254***	1.680***
	(6.49)	(11.70)	(15.02)	(8.68)	(11.78)	(14.00)	(10.96)	(18.96)	(11.12)
Sample size	650	915	646	591	673	473	607	907	334
R^2	0.191	0.199	0.271	0.214	0.146	0.214	0.185	0.203	0.282

Explanatory note: ***. **. * represent significant levels at 1%, 5%, and 10%, respectively; The values in parentheses represent the robust standard error of heteroscedasticity.

Table 6. The impact of enrollment expansion in universities across provinces on intergenerational upward mobility（ranking 20 to 28）

	Chongqing	Guangxi	Shanxi	Yunnan	Gansu	Guizhou	Neimenggu	Ningxia	Qinghai
expansion	-0.056	-0.062	-0.009	-0.011	-0.036	0.060	-0.011	0.008	-0.233**
	(-1.55)	(-1.20)	(-0.16)	(-0.33)	(-0.66)	(1.08)	(-0.27)	(0.09)	(-2.16)
pedu	-0.035***	-0.029***	-0.018***	-0.035***	-0.040***	-0.003	-0.013	-0.024**	-0.049***
	(-6.68)	(-6.15)	(-3.84)	(-6.26)	(-7.85)	(-0.92)	(-1.65)	(-2.51)	(-3.34)
*expansion*pedu*	0.015**	0.003	0.002	0.011	0.020**	-0.004	0.013*	-0.006	0.041***
	(2.12)	(0.40)	(0.33)	(1.39)	(2.50)	(-0.63)	(1.71)	(-0.50)	(3.19)
Constant term	1.122***	1.327***	1.240***	1.178***	1.112***	0.971***	0.997***	1.161***	1.491***
	(6.49)	(12.89)	(11.73)	(15.19)	(10.13)	(11.37)	(7.44)	(8.18)	(4.82)
Sample size	650	511	533	518	431	267	189	167	72
R^2	0.191	0.166	0.079	0.227	0.249	0.035	0.132	0.155	0.311

Explanatory note: ***. **. * represent significant levels at 1%, 5%, and 10%, respectively; The values in parentheses represent the robust standard error of heteroscedasticity.

6. Discussions

In the entire sample, only a portion of the samples have data related to majors, and research on majors is based on the fact that the education years of the sample are greater than or equal to 15, indicating that the education level of the sample is at or above junior college level. A small sample size and limitations in the sample may be the reasons for the hypothesis not being valid. This article is beneficial for promoting the impact of research majors on intergenerational mobility in future.

7. Conclusions

This paper mainly explores the impact of university enrollment expansion policies on intergenerational mobility. Using CGSS data from 2015, 2017, 2018, and 2021, a logistic regression model is used to analyze the impact of university enrollment expansion policies on intergenerational upward mobility. The research results are as follows: Firstly, the policy of expanding enrollment in universities has promoted intergenerational upward mobility. Secondly, the major did not have a significant impact on intergenerational upward mobility. Thirdly, there is heterogeneity in the enrollment expansion policy among provinces. There is no significant impact in areas with abundant higher education resources, but the policy of expanding enrollment promotes intergenerational upward mobility in areas with poor higher education resources. This is because it was easier to attend schools in provinces with abundant higher education resources before the implementation of the enrollment expansion policy, and the newly added enrollment quotas after the expansion were more obtained by students from provinces with poor educational resources. Therefore, the enrollment expansion promoted intergenerational upward mobility in regions with poor educational resources. Finally, due to the limited sample data on majors in the CGSS survey, we can continue to explore the impact of majors on intergenerational upward mobility before and after enrollment expansion in the future, based on the abundant sample data. This is conducive to in-depth research on the impact of college enrollment expansion on intergenerational mobility.

8. Authors Contribution

All the authors contributed equally, and their names were listed in alphabetical order.

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