

# The Impact of Ascribed Factors on Educational Attainment after Higher Education Expansion in China: Evidence from CGSS 2021

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**Abstract.** Since the implementation of China's higher education enrollment expansion policy in 1999, the rapid growth of individuals receiving higher education has achieved a level of popularization. This study utilized data from CGSS2021 to empirically examine the correlation between ascribed factors and educational attainment among two groups, namely the school-age population affected by the enrollment expansion policy and those impacted by the resumption of the college entrance examination. The findings indicated that the impact of gender on educational attainment has been alleviated, while ethnicity has emerged as a considerable influencing factor in light of the expansion policy. Although household registration remains a significant factor affecting educational attainment, its negative correlation has diminished when compared to the previous status. Family cultural and socio-economic backgrounds increasingly contributed to individuals' educational acquisition following the implementation of the enrollment expansion policy.

## 1 Introduction

In 1997, the eruption of the Southeast Asian financial crisis led to a gradual decline in China's economic growth rate. In response to the persistent economic downturn, some economists have suggested that the government should expand higher education to redirect consumer domestic demand towards education, thereby stimulating economic growth and concurrently alleviating employment pressures. In the subsequent year, the State Council promulgated the Decision of the Central Committee and State Council of the Communist Party of China on Deepening Educational Reform and Comprehensive Quality Education, initiating the expansion of enrollment in Chinese higher education [1]. In 1999, the implementation of the policy led to a rapid expansion of students enrolling in tertiary education, surging by 1,670,900 compared to the previous year. Since then, China's higher education has undergone rapid advancements. According to the 1998-2022 Educational Development Statistical Bulletin released by the Ministry of Education of China [2], the gross enrolment rate in tertiary education has soared from 10.5% in 1999 to 59.6% in 2022. By 2022, the total number of students enrolled in various forms of higher education had exceeded 46.55 million. At a press conference in 2022, Wu Yan, Director of the Department of Higher Education at the Ministry of Education, declared that China has established the world's largest higher education system, and its higher education has reached a recognized stage of popularization.

Moreover, higher education plays a pivotal role in influencing intergenerational mobility for individuals. This is particularly evident in the context of China's

deeply entrenched civil official system, which originated in ancient times and was characterized by the dominance of scholars who prioritized literature while suppressing commerce. Education held paramount importance in traditional Chinese thinking, as exemplified by the adage that nothing surpasses learning. Among middle and lower classes, especially in rural areas, higher education has been perceived as the sole avenue capable of transcending social stratification barriers. However, during the initial phase when opportunities for tertiary education were limited, the metaphor "a thousand horses crossing a single wooden bridge" was frequently employed to depict the challenges associated with accessing higher education.

In the era of higher education popularization, a larger number of individuals were able to access higher education. However, there has been a growing concern regarding the limited opportunities for individuals from disadvantaged backgrounds. The extent to which the increased availability of educational resources has truly enhanced equal access to higher education across different social classes has become a prominent topic of scholarly discourse.

## 2 Literature review

According to Martin Trow's theory of massification, the development of higher education can be divided into three stages, namely, the elite education stage with a gross enrollment rate below 15%, the popularization stage of 15%-50%, and the popularization stage is the enrollment rate more than 50% [3]. After World War II, numerous countries implemented various policies and initiatives to advance higher education to the mass development stage.

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Compared to developed countries, China achieved the massification of higher education at a relatively rapid pace despite having a low per capita GDP and investment in higher education [4]. The implementation of China's enrollment expansion policy has led to an unprecedented surge in both absolute magnitude and relative growth rates, which can be described as a "Great Leap Forward" in the global history of higher education [5]. Although the economic prosperity facilitated by enrolment expansion, some have questioned regarding whether it has truly contributed to educational development and social equity [6].

Regarding the discussion of inequality of opportunity in higher education, scholarly attention has been paid to the expansion of higher education has not effectively promoted educational equity. The Coleman Report [7], which examined education in the United States, has been praised as a source of research on educational equity, suggesting that family resources impact on individuals' educational attainment. The influence of family background on the educational opportunities of the children is mainly through cultural reproduction and family resource transformation. Lareau & Weininger emphasized the theory of cultural reproduction and believed that the cultural capital of fathers was conducive to improving the cognitive and learning capacities of children and creating a better family learning atmosphere, which would enhance the probability of the offspring receiving a quality education [8].

In the research on equity in higher education in developed countries, other scholars have pointed out that the higher education in the US has been caught in the midst of multiple interests deeply conditioned by political, economic and racial factors, and its role has been torn between promoting social mobility and entrenching social stratification [9]. Moreover, research from the UK has also found that although the population with experience of higher education has been enlarged by widening participation, the elitist values of higher education in the UK were deeply entrenched and massification has not challenged the traditional elitist paradigm. [10].

Current research on the equity of higher education in China focuses on the impact of expansion policies on educational attainment and intergenerational mobility. Some scholars have concluded that China's expansion of higher education has not succeeded in alleviating inequality, particularly in helping students from low socio-economic backgrounds obtain entry to elite universities [11]. There have been large differences in the impact of social class background, and the upper-class advantage in opportunity for undergraduate education has expanded exponentially with the implementation of the enrolment expansion policy. Simultaneously, the descendants of well-educated family have maintained and expanded their opportunity advantage in access to all forms of higher education [12]. In addition, gender, ethnicity, region, and other ascribed factors contributed significantly to inequality in education [13]. Empirical evidence has also been adopted by scholars to analyze the impact of unequal educational attainments across different social backgrounds, several studies suggested that the expansion

policy has not significantly narrowed the gap of inequalities [14] [15].

## 3 Method

### 3.1 Data

This article utilized data from the Chinese General Social Survey (CGSS), the earliest nationwide, comprehensive, and continuous academic survey in China, which was widely used in social science research. CGSS 2021 was the latest survey data released so far, covering basic information educational and work experiences, etc., of respondents and their parents. This paper selected two sample groups based on the criterion of attending university at the age of 18. One group consisted of individuals born between 1980 and 2003, representing the school-aged population following the implementation of the higher education expansion policy. The other group comprised individuals born between 1958 and 1979, representing the school-aged population after the resumption of the university entrance examination. An empirical investigation was conducted using these sample groups to examine whether the higher education expansion policy has effectively fostered educational equity. After deleting the invalid data, the total number of samples after the expansion and after the resumption of the entrance examination was 2303 and 2696 respectively.

### 3.2 Variables

#### 3.2.1 Dependent variables

The educational attainment of the sample was used as the dependent variable in this study. Respondents' current highest level of education was collected in the CGSS. The original data had 13 categories representing different levels of education. In this paper, the level of education was re-categorized into 7 broader categories: no education, private school, primary school, junior high school, senior high school (including vocational high school, technical secondary school, and technical school), college (including adult education), undergraduate (including adult education), and postgraduate. The dependent variable was transformed into a continuous numerical variable measured by the minimum years of education(eduy) of the respondents, which were 0, 3, 6, 9, 12, 15, 16 and 19 for no education, private school, primary school, junior high school, senior high school, college, undergraduate and postgraduate. In this case, the dependent variable for the sample of the higher education expansion named eduy1, and the dependent variable after the resumption of the college entrance examination named eduy2. Additionally, a dichotomous variable of whether the sample had attained higher education (hedu) was obtained from the original data, which contained both those who had attained higher education (hedu=1) and those who had not (hedu=0).

### 3.2.2 Independent variables

Following previous studies on the impact of ascribed factors on educational equity, this paper used gender, ethnics, household registration, family educational background, and family socio-economic status as independent variables. Gender was dichotomized into male (coded as 1) and female (coded as 2). Ethnic was dichotomized into Han (coded as 1) and non-Han (coded as 2). In China, the household registration status adopted in the college entrance examination generally corresponded to the status at age 14. Thus, this study

employed the specific age hukou situation that was dichotomized into rural (coded as 1) and urban (coded as 1). Parental educational attainment at age 14 of the respondent was also converted to minimum years of educated experience with the same way as dependent variable. The average of the parents' educational year was utilized as an indicator for the family's educational background (fedu). In the CGSS, respondents were asked about their family's social status in adolescence and given a score from 1 to 10, which was regarded in this study as an indicator of family's socio-economic background (fse). Descriptive statistics were presented in Table 1.

**Table 1:** Descriptive Statistics

Variable	1980-2003(N=2303)		1960-1979(N=2454)	
	Mean	Std. Deviation	Mean	Std. Deviation
eduy	12.77	3.685	9.02	3.980
gender	0.57	0.495	0.56	0.497
ethnic	0.08	0.275	0.07	0.261
hukou	0.62	0.485	0.76	0.426
fedu	7.77	3.703	3.62	3.614
fse	3.84	1.787	3.16	1.992

### 3.3 Statistical analysis

This study used a quantitative analysis model to examine the impact of ascribed factors on individual higher education attainment in two samples with different periods. For the dependent variable was transformed into continuous numerical variable, Chi-square distribution, correlation analysis, and multiple linear regression were opted to empirical analysis whether the implementation of higher education expansion policy has promoted the educational equality. Statistical analysis of data was conducted using SPSS 23.0.

## 4 Results

After conducting the chi-square test that showed as table 2, it was found that in the sample group after the higher education expansion policy, the p-value for gender (p =0.262) was greater than 0.05, indicating no significant difference between genders and higher education following the expansion. However, both ethnicity (p =0.007) and household registration (p <0.001) have less

than 0.05, suggesting a significant disparity between Han and minority nationalities in accessing higher education, with a higher proportion of Han individuals receiving higher education compared to minority nationalities. Additionally, there was also a notable discrepancy between urban and rural household registrations regarding access to higher education, with a higher proportion observed among urban households. Moreover, after the resumption of the college entrance examination, in the sample group, both gender (p <0.001) and household registration (p <0.001) exhibited p-values less than 0.05, indicating a significant disparity in higher education between genders. The proportion of male students receiving higher education was higher than that of female students. Similarly, akin to the situation after enrollment expansion, there existed a notable discrepancy in higher education between urban and rural household registrations after the resumption of gaokao. The proportion of urban household registrations attaining higher education surpasses that of rural household registrations. Nevertheless, ethnic groups (p =0.414) demonstrated a p-value larger 0.05, suggesting no substantial difference in higher education between Han nationality and minority nationalities following the resuming of the gaokao.

**Table 2:** Chi-square distribution

	1980-2003					1960-1979				
	hedu		hedu (%)	c <sup>2</sup>	p	hedu		hedu (%)	c <sup>2</sup>	p
	No	Yes				No	Yes			
<i>gender</i>										
<i>male</i>	494	497	50.2%	1.260	0.262	920	172	15.8%	12.339	<0.001
<i>female</i>	685	627	47.8%			1213	149	10.9%		
<i>ethnic</i>										
<i>Han</i>	1064	1049	49.6%	7.218	0.007	1975	299	49.6%	0.126	0.414
<i>non-Han</i>	115	75	39.5%			158	22	39.5%		
<i>household</i>										

<i>rural</i>	883	546	38.2%	169.246	<0.001	1722	148	7.9%	184.462	<0.001
<i>urban</i>	296	578	66.1%			411	173	29.6%		

To further investigated the relationships among ascribed factors and individual education years, as well as the differences between the two sample groups in different periods, this study conducted a correlation analysis of the dependent variable and independent variables. The results of the correlation analysis were presented in table 3. It was observed that during the period of 1980-2003, after the implementation of higher education expansion policy, gender, ethnic group, household registration status, family cultural background, and family socioeconomic background exhibited significant correlations with education years. Specifically, gender, ethnicity, and household registration indicated significant negative correlations with education years among samples, whereas family cultural background and family

socioeconomic background demonstrated significant positive correlations with dependent variable. Similarly, during the period of 1960-1979 following resumption of college entrance examinations, gender, household registration status, family cultural background, and family socioeconomic background display significant correlations with education years. Consistent with findings from enrollment expansion policy period, gender and household registration exhibit significantly negative associations with education years while family cultural background and family socioeconomic background present significantly positive relationships. Yet, no correlation was found between ethnic group of samples and their educational attainment during this period.

**Table 3: Correlations analysis**

Variable	1980-2003		1960-1979	
	P-value	Correlation	P-value	Correlation
gender	<0.001	-0.080**	<0.001	-0.178**
ethnic	<0.001	-0.102**	0.087	-0.035
household	<0.001	-0.302**	<0.001	-0.352**
fedu	<0.001	0.511**	<0.001	0.438**
fse	<0.001	0.201**	<0.001	0.179**

\*\*Correlation is significant at the 0.01 level (2-tailed).

Based on the results of correlation analysis, a multiple linear regression model was further established. For the 1980-2003 sample group, all independent variables displayed significant correlations with the dependent variable, thus were incorporated in the multiple linear regression model of this sample group. The data presented in table 4 reveals that there was no indication of multicollinearity among the five independent variables in the multiple linear regression model, as evidenced by VIF values below 5. The regression equation was significant (F=177.208, P<0.001), meaning that at least one of the five independent variables had a significant effect on years

of education within the sample. Among these variables, gender did not have a significant effect on years of education with  $p=0.182>0.05$ . Ethnic groups had a negative correlation with education years ( $\beta=-0.728<0$ ,  $p=0.002<0.05$ ), as well as a negative correlation between household registration and years of education ( $\beta=-0.828<0$ ,  $p<0.001$ ). Conversely, family cultural background significantly and positively affected education years ( $\beta=0.444>0$ ,  $p<0.001$ ), while family socio-economic background also had a positive correlation on education years ( $\beta=0.106>0$ ,  $p = 0.006<0.05$ ).

**Table 4: Multiple Linear Regression of samples in 1980-2003**

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	VIF
	B	Std. Error	Beta			
(Constant)	9.594	0256		37.445	0.000	
gender	-0.178	0.133	-0.024	-1.336	0.182	1.023
ethnic	-0.728	0.239	-0.054	-3.049	0.002	1.011
household	-0.828	0.148	-0.109	-5.605	0.000	1.203
fedu	0.444	0.020	0.446	22.345	0.000	1.267
fse	0.106	0.038	0.051	2.745	0.006	1.108
F				177.208		
P				<0.001		
R <sup>2</sup>				0.278		

Dependent Variable: eduy1

Due to there was no correlation found between ethnicity and years of education from correlations analysis in 1960-1979 sample group. Hence, this independent variable was not considered in the multiple linear regression model for this sample group. Besides, the

variables of gender, household registration, family cultural background, and family socio-economic background were incorporated (refer to table 5). The multiple linear regression model revealed no multicollinearity among the four independent variables, and the VIFs are all less than

5. The regression equation was statistically significant ( $F=232.864$ ,  $P<0.001$ ), indicating that one or more of the independent variables had a significant impact on the years of education of the sample group following regression to the college entrance examination. Specifically, gender exhibited a significant negative effect on education years ( $\beta=-1.373<0$ ,  $p<0.001$ ), as do

household registration and the dependent variable ( $\beta=-2.187<0$ ,  $p<0.001$ ). The data showed that family cultural background has a significant positive effect on education years ( $\beta=0.391 > 0$ ,  $p<0.001$ ) and that family socioeconomic background was also positively correlated with years of education ( $\beta = 0.106 > 0$ ,  $p = 0.006 < 0.005$ ).

**Table 5:** Multiple Linear Regression of samples in 1960-1979

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	VIF
	B	Std. Error	Beta			
(Constant)	9.773	.227		43.120	.000	
gender	-1.373	.138	-.171	-9.934	.000	1.007
household	-2.187	.171	-.234	-12.771	.000	1.135
fedu	.391	.020	.355	19.266	.000	1.117
fse	.082	.036	.041	2.268	.023	1.145
F				232.864		
P				<0.001		
R <sup>2</sup>				0.276		

Dependent Variable: eduy2

According to the data analysis, it was suggested that the implementation of the enrollment expansion policy has effectively mitigated the impact of gender on years of education, thereby diminishing its significance as a crucial determinant influencing educational equity. With the expansion of higher education enrollment, ethnic group has emerged as a salient determinant influencing individuals' educational attainment. Regardless of the time period examined in this paper, household registration has historically exerted a significant impact on educational outcomes. Yet its negative correlation has diminished since comparison to the period with the reinstatement of the college entrance examination. Furthermore, both family cultural background and socioeconomic status have witnessed an augmented influence on individuals' higher education attainment following the expansion of enrollment.

## 5 Discussion

This study examined the impact of ascribed factors on educational achievement using data from CGSS2021, which revealed relevant conclusions, but there were still several limitations. Firstly, the factors influencing access to education are vast, intricate, and interconnected. For instance, some scholars argue that social stratification existed in the secondary education access and affects higher education via educational accumulation gaps [16]. Secondly, this paper covered all regions in the country broadly, without examining correlations between categorizing regions and higher education attending. In accordance with regional development disparities, disparities exist in access to higher education across various areas of China, spanning from well-developed to lesser-developed regions, across provinces, between municipalities within the same province, and even

between differing districts within the same city. It was expected that subsequent research could investigate the determinants of educational equity from a more micro perspective.

Meanwhile, China's higher education has entered the stage of massification. A larger number of individuals have gained access to higher education, and although these individuals have not been concerned about educational equity, another issue that has increasingly plagued them is the relevance of their chosen majors for employment prospects. This concern has sparked a scholarly discussion on the devaluation of academic qualifications and the problem of overeducation [17]. Despite the expansion in China's higher education system resulting in a surge in educated individuals, there remains a significant shortage of talent required to drive and lead national industrial development transformation as well as address core technological challenges and technical bottlenecks. Therefore, China's journey towards achieving high-quality education still requires substantial progress.

## 6 Conclusion

Since the implementation of China's higher education enrollment expansion policy in 1999, the rapid growth of individuals receiving higher education has achieved a level of popularization. This study utilized data from CGSS2021 to empirically examine the correlation between ascribed factors and educational attainment among two groups, namely the school-age population affected by the enrollment expansion policy and those impacted by the resumption of the college entrance examination. The findings indicated that the impact of gender on educational attainment has been alleviated, while ethnicity has emerged as a considerable influencing factor in light of the expansion policy. Although household

registration remains a significant factor affecting educational attainment, its negative correlation has diminished when compared to the previous status. Family cultural and socio-economic backgrounds increasingly contributed to individuals' educational acquisition following the implementation of the enrollment expansion policy.

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