

The Impact of High School Entrance Examination Competition on Students' Participation in Extracurricular Tutoring in the Compulsory Education Period: An Empirical Analysis Based on the Data of China Family Panel Studies

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Abstract. We used the Hierarchical Linear Bernoulli Model based on China Family Panel Studies (CFPS) 2016 data and provincial high school acceptance rate data. We explored the relationship between provincial high school entrance examination competition and students' extracurricular tutoring participation during compulsory education. The study found that the high school acceptance rate and occupational high school acceptance rate have no significant effect on the participation rate of students' extracurricular tutoring in the compulsory education stage. However, the high school acceptance rate has a significant positive impact on the participation rate of students' extracurricular tutoring, and there is a heterogeneous effect on the participation rate of students' extracurricular tutoring from families of different social classes. The higher the high school acceptance rate, the greater the probability of students from families with higher social strata participating in extracurricular tutoring. The demonstration high school acceptance rate has a significant negative impact on students' extracurricular tutoring participation rate. It has a heterogeneous influence on students' extracurricular tutoring participation in different school stages and social class families. The education administration department should actively expand high-quality, high school educational resources and increase the demonstration high school acceptance rate. And to increase the number of admissions for the demonstration high school to disadvantaged families with lower social strata to alleviate the pressure of families and stu-

dents from the high school entrance examination competition. This can not only reduce the participation rate of students' extracurricular tutoring during the compulsory education stage, but also promote the equalization of high-quality high school entrance opportunities for children of different classes of families.

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Keywords: Extracurricular Tutoring, High School Acceptance Rate, High School, Demonstration High School, Education Competition

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Introduction

EDUCATION equity is an essential foundation of social equity. China's high school education has made remarkable achievements. The gross enrollment rate of high school has increased from 1.1% in 1949 to 91.2% in 2020; simultaneously, the gross enrollment rate of higher education in China in 2020 is 54.4% (Chu, 2020; Ministry of Education, 2020). It can be seen that there is not a significant gap in entrance opportunities for high school education in China. However, there is still a big gap in entrance opportunities for higher education. From a dynamic perspective, the gap in higher education enrollment opportunities is the accumulation and continuation of unequal opportunities for basic education. Receiving an excellent elementary education will help students enter a better middle school and a high-quality high school, giving them a tremendous advantage in entering universities and even elite universities. The result of gradual stratification means that students entering different levels of schools will have different educational outcomes, which will directly affect their subsequent academic mobility and even social mobility (Yang, 2000). In the hierarchical diversion, middle school is the critical stage. After graduating from middle school, most students receive high school education, some receive secondary vocational education, and a small number directly enter society. It can be seen that the diversion effect of the high school entrance examination is pronounced. Since the admission rate of middle school entering high school is much higher than that of high school entering university, entering a "good high school," that is, demonstration high school,¹ receiving high-quality high school education becomes especially important for middle school students.

Because the demonstration high school is loved by parents and students and recognized by society, for children to gain an advantage in the high school entrance examination competition and receive high-quality high school education, extracurricular tutoring has become an important choice for parents and students. As an essential way of education competition and family education investment, extracurricular tutoring or shadow education has evolved into a worldwide phenomenon, particularly in developing countries and East Asian countries (Bray & Kwok, 2003; Dang & Rogers, 2008; Song et al., 2013). In China, the extracurricular tutoring rate of middle school students has reached 47.3%, and nearly half of middle school students have participated in extracurricular tutoring (Xue, 2016). Extracurricular tutoring is becoming an effective means of competition between students and their families (Song et al., 2013). However, few scholars currently research the relationship between high school entrance examination competition and students' participation in extracurricular tutoring. This study used CFPS 2016 data and collected high school acceptance rate data from various provinces, based on EMI and MMI theories, and through the establishment of the Hierarchical Linear Bernoulli Model, explored the high school acceptance rate that reflects the intensity of high school entrance examination competition and the participation of students in extracurricular tutoring during compulsory education to provide empirical evidence for better formulation of extracurricular tutoring-related policies.

Literature Review

Educational competition is an essential social choice, which mainly revolves around educational opportunities, high-quality school education opportunities, and well-paid employment opportunities with different academic diplomas (Liu, 2004). For students in the compulsory education stage, since China's average high school acceptance rate is above 90%, high school education opportunities are not the focus of education competition. The educational competition mainly revolves around obtaining high-quality high school education opportunities. Therefore, to gain an advantage in the competition, families with higher socioeconomic status will receive additional educational resources through extracurricular tutoring (Lee & Shouse, 2011). Wu (2014) found that because China's high school and university admissions follow the competitive principle of merit-based admissions, qualified families purchase points, "abilities," and "opportunities" by purchasing additional educational resources, that is, extracurricular tutoring. This allows students to gain an advantage in the high school entrance examination competition, damages the right of children from families who cannot provide extracurricular tutoring to enjoy high-quality education and interferes with educational equity (Wu, 2014). Xue (2015) studied the extracurricular tutoring activities of Chinese students in the compulsory education stage and found that extracurricular tutoring enabled the children of the superior class to obtain more quantity and higher quality education so that their children could succeed in the future education and employment competition (Xue, 2015). Zhang and Bray (2017) used data from middle school students in Chongqing to analyze the relationship between high school entrance examination competition and extracurricular tutoring. They pointed out that China's college entrance examination is highly competitive and has high stakes. It puts tremendous pressure on high school students aspiring to go to university.

Consequently, this pressure promotes the school's competition, making the high school entrance examination a high-stakes examination (Zhang et al., 2017). In addition, the uneven distribution of educational resources between regions and schools also forces families to use extracurricular tutoring to gain or maintain a competitive advantage. Zhou and Wu (2018) pointed out that due to the "hothouse effect," students have tremendous pressure to improve academic achievement and the pursuit of elite diplomas. This "atmosphere" full of educational competition will lead to extracurricular tutoring demand (Zhou & Wu, 2018).

Extracurricular tutoring has become a global phenomenon, especially in Southeast Asia, which is particularly prevalent and has aroused widespread concern among scholars. The increasingly fierce competition between students and families around extracurricular tutoring has not only aggravated the academic burden of students and consumed a large number of family and social resources, but also may weaken the government's policy effectiveness in advancing education equity, maintaining and expanding social inequality (Xue & Ding, 2009; Bray, 1999). However, there are few empirical studies on educational competition and students' participation in extracurricular tutoring. Because of this, this article uses the Hierarchical Linear Bernoulli Model based on the

CFPS2016 data to explore the relationship between the high school acceptance rate reflecting the intensity of high school entrance examination competition and the participation of students in extracurricular tutoring during the compulsory education stage. The research conclusions will help us understand the underlying reasons behind extracurricular tutoring and provide a theoretical basis for the government to govern the extracurricular tutoring problem.

Theoretical Basis and Research Hypothesis

The theory of maximizing maintenance of inequality (MMI) (Raftery & Hout, 1993) and the theory of effective maintenance of inequality (EMI) (Lucas, 2001) provide an excellent theoretical idea in the elaboration of the relationship between middle school entry competition and extracurricular tutoring. According to the theory of MMI, when compulsory education is not universally available, the educational opportunities of children of different social classes are various. To maintain their children's competitive advantage in entering higher education, families with higher social strata will strive to maximize their children's educational opportunities. Only when compulsory education is universally available or reaches saturation can educational opportunities for children of different social strata families decrease. Lucas (2001) further proposed the EMI theory based on the MMI theory. According to the EMI theory, when compulsory education is universally available, due to the imbalance and inadequacy of mandatory education in China, the quality of compulsory schooling differs between urban and rural areas, between regions, and between schools. Thus, the core of education competition shifts to the quality of education rather than the only opportunity of an education. Because Chinese school education needs to take care of every student, it is challenging to achieve differentiated teaching. The teaching time is relatively fixed, which is not very different for students, so extracurricular tutoring has become the "first choice" for parents and students in the education competition. To allow their children to maintain an advantage in the future competition for higher education, families with higher social strata will obtain additional educational resources of higher quality and quantity through extracurricular tutoring.

Currently, China's high school enrollment rate has reached more than 90%. When families of different social classes can receive high school education, they no longer seek high school education opportunities but higher quality high school education. Therefore, for families of different social classes, the core of their education competition lies in going to a "demonstration high school," not a "general high school," let alone a "vocational high school." As China's high school education has been universally available, and even the high school enrollment rate in some provinces has reached 100%, there is less competition for high school enrollment opportunities. In addition, due to the low threshold of vocational education, and in recent years, China has vigorously expanded the enrollment of secondary vocational education, so there is less competition around vocational education entrance opportunities. Therefore, families of different social classes compete mainly around "high school" and "demonstration high school." When the high school acceptance rate of some provinces and cities rises, stu-

dents have a greater chance of enrolling in high school education, which will increase students' anxiety going to a "better high school." Especially for families with higher social strata, facing the increasing competition in education and the lack of high-quality educational resources, they have aggravated their sense of anxiety and sense of urgency (Xue & Fang, 2020). Therefore, to effectively maintain their social status, families with higher social strata will be more sensitive to the high school acceptance rate and encourage students to participate in extracurricular tutoring, which further increases the participation rate of extracurricular tutoring. Only when the demonstration high school acceptance rate increases will this ease the education anxiety of families and students, thereby reducing the participation rate of extracurricular tutoring. Based on this, this article proposes research hypotheses on the relationship among "high school enrollment rate," "vocational high school enrollment rate," "high school acceptance rate," and "demonstration high school acceptance rate" and the participation rate of extracurricular tutoring:

Research hypothesis 1: The high school acceptance rate has no significant effect on the participation rate of students' extracurricular tutoring during the compulsory education stage.

Research hypothesis 2: The occupational high school acceptance rate has no significant effect on the participation rate of students' extracurricular tutoring in the compulsory education stage.

Research hypothesis 3: The high school acceptance rate has a significant positive effect on the participation rate of students' extracurricular tutoring during the compulsory education stage.

Research hypothesis 4: Demonstration high school acceptance rate has a significant negative impact on the participation rate of students' extracurricular tutoring during the compulsory education stage.

Research hypothesis 5: The high school acceptance rate has a heterogeneous effect on the participation rate of extracurricular tutoring of students from different family social classes in the compulsory education stage. As the high school acceptance rate increases, students with higher family social classes are more likely to participate in extracurricular tutoring.

Methodology

Data Source and Variable Description

The data used in this article all come from CFPS data funded by the "985" project of Peking University and implemented by the Chinese Social Science Survey Center of Peking University in 2016. The CFPS sample covered 25 provinces / municipalities / autonomous regions. The target sample size was 16,000 households, and the survey objects included all family members in the sample households. The sample of this study was compulsory education students, a total of 4,158 students, including 2,935 elementary school students, 1,233 middle school students.

This study used occupational high school acceptance rate, high school acceptance rate, demonstration high school acceptance rate, and high school acceptance rate to measure the intensity of high school entrance examination competition. The smaller the acceptance rate was, the more intense the high school entrance examination competition was. On the contrary, the larger the value was, the smaller the high school entrance examination competition was. Since the participation of students in extracurricular tutoring in 2016 is more affected by the educational opportunities in the past year, this study used the high school acceptance rate in 2015 to measure the high school entrance examination felt by middle school students in the province in 2016 as the intensity of the competition.

The total high school acceptance rate of a province in 2015 = The total number of students enrolled in the province's high school in 2015/the number of middle school graduates in 2015.²

The vocational high school acceptance rate of a province in 2015 = The number of students enrolled in the province's vocational high school in 2015/the number of middle school graduates in 2015.

The high school acceptance rate of a province in 2015 = the number of students enrolled in the province's high school in 2015/the number of middle school graduates in 2015.

The acceptance rate of a province's demonstration high school in 2015 = the number of students enrolled in the province's demonstration high school in 2015³/ the number of middle school graduates in 2015 (**Table 1**).

Research Methods

Since whether students participate in extracurricular tutoring is affected by multiple levels and factors such as family, province, and city, the data used in this study has a confounding relationship. In addition, since whether students participate in extracurricular tutoring is a dichotomous variable. This study established an estimation model for individual students and provinces, and cities:

- **Zero Model**

This model has decomposed the total difference in students' extracurricular tutoring participation into two levels: individual students and inter-provincial differences. It was mainly used to explore significant differences in students' extracurricular tutoring participation between provinces. The model is as follows:

$$\text{Student layer: } Y_{ij} = \beta_{0j} + r_{ij}, r_{ij} \sim N(0, \delta^2) \quad (1)$$

$$\text{Provincial level: } \beta_{0j} = \gamma_{00} + \mu_{0j}, \mu_{0j} \sim N(0, \tau_{00}) \quad (2)$$

Among them, Y_{ij} indicates whether the i -th student in the j -th province participates in extracurricular tutoring. β_{0j} represents the average participation rate of extracurricular tutoring among students in province j . γ_{00} represents the overall student partici-

Figure 1. Variable Description.

Type	Variable	Description
Individual Level	Participate in extracurricular tutoring	0=No, 1=Yes
	Gender	0=Female, 1=Male
	Schooling stage	0=Elementary School, 1=Middle School
Family Level	Parent's highest professional status	1=Lower, 2=Middle, 3=Upper
	Parent's highest education	1=Illiteracy, 2=Elementary School, 3=Middle School, 4=High School, 5=Associate, 6=Undergraduate, 7=Master's, 8=Doctorate
	Net income per capita	1=Lowest 20%, 2=Mid/Lower 20%, 3=Middle 20%, 4=Mid/Higher 20%, 5=Highest 20%
Provincial Level	GDP per capita in 2015	Continuous Variable
	Total High School Acceptance Rate in 2015	Continuous Variable
	Vocational High School Acceptance Rate in 2015	Continuous Variable
	High School Acceptance Rate in 2015	Continuous Variable
	Demonstration High School Acceptance Rate in 2015	Continuous Variable

participation rate of extracurricular tutoring. μ_{0j} represents the random effect between provinces and cities. δ^2 represents the difference in the participation rate of extracurricular tutoring at the student level. τ_{00} represents the difference in the participation rate of students' extracurricular tutoring between provinces and cities.

• **Full Model**

On the basis of the zero model, the student-level and provincial-level variables were added to construct a full model. It was mainly used to examine the influence of variables at the student and provincial levels on students' extracurricular tutoring participation rate. The model is as follows:

$$\text{Student level: } Y_{ij} = \beta_{0j} + \beta_{1j}\text{gender} + \beta_{2j}\text{zdx} + \beta_{3j}\text{xxjd} + \beta_{4j}\text{fmzy} + \beta_{5j}\text{fmxl} + \beta_{6j}\text{rjsr} + r_{ij},$$

$$r_{ij} \sim N(0, \delta^2) \tag{3}$$

$$\text{Provincial level: } \beta_{0j} = \gamma_{00} + \gamma_{01}\text{GDP} + \gamma_{02}\text{lqv} + \mu_{0j}, \mu_{0j} \sim N(0, \tau_{00}) \tag{4}$$

The Relationship between High School Entrance Examination Competition and Students' Participation in Extracurricular Tutoring

Table 2 presents the basic situation of the participation rate and high school acceptance rate of extracurricular tutoring in various provinces and cities. The average participation

Table 2. Participation Rate of Extracurricular Tutoring and Various Total High School Acceptance Rates by Provinces and Cities.

	Participation Rate of Extracurricular Tutoring (%)	Total High School Acceptance Rate (%)	High School Acceptance Rate (%)	Vocational High School Acceptance Rate (%)	Demonstration High School Acceptance Rate (%)
Heilongjiang	64.50	96.32	67.76	28.56	9.41
Tianjin	62.50	109.41	64.14	45.27	14.37
Jiangsu	59.40	89.56	52.20	37.37	4.78
Shanghai	58.20	97.83	56.68	41.14	18.41
Liaoning	52.90	95.16	62.19	32.96	6.67
Zhejiang	49.00	93.45	54.33	39.12	13.78
Shandong	37.80	85.52	55.86	29.66	18.69
Hunan	36.10	88.33	54.35	33.98	14.20
Jilin	35.80	89.69	67.10	22.59	14.72
Beijing	35.70	90.38	61.16	29.22	17.73
Shanxi	34.00	85.90	58.10	27.80	19.38
Anhui	33.80	104.55	56.68	47.86	39.14
Hubei	33.30	89.12	60.39	28.74	21.20
Henan	32.30	85.59	54.99	30.60	24.21
Shaanxi	28.80	97.69	69.64	28.05	6.70
Hebei	27.80	94.07	58.92	35.14	33.92
Fujian	20.90	98.15	59.38	38.76	9.93
Gansu	20.40	84.62	60.00	24.62	20.76
Guangdong	18.90	81.97	51.39	30.58	12.57
Sichuan	18.90	101.06	55.59	45.47	12.41
Chongqing	18.00	97.68	61.08	36.61	43.30
Jiangxi	12.40	85.80	57.57	28.23	21.95
Yunnan	10.70	77.98	47.56	30.42	15.05
Guizhou	8.20	81.38	48.90	32.48	20.36
Guangxi	8.10	90.41	49.47	40.94	20.40
Average	32.74	91.66	57.82	33.85	18.16

rate of extracurricular tutoring in China has reached 32.73%. The participation rate of compulsory tutoring students in Heilongjiang was the highest, reaching 64.5%, and the participation rate of students in Guangxi province was the highest lowest, at 8.1%. In general, the participation rates of students in the three northeastern provinces, the Yangtze River Delta and the Beijing-Tianjin region, were relatively high. In contrast, the participation rates of students in the central and western areas were relatively low. This was consistent with the results of Xue et al. (2019; Xue & Fang, 2019). The average high school acceptance rate across China reached 91.66%. Among them, the high school acceptance rates in Tianjin, Anhui, and Sichuan exceeded 100%. The reason may be that some middle school students returned to high school after working, which caused the number of high school admissions to exceed the number of middle school graduates. The average high school acceptance rate in China was 57.82%, the highest

was Shanxi Province, which reached 69.64%, and the lowest was Yunnan Province, which was 47.56%. The difference between the two was about 20%. The national average vocational high school acceptance rate was 33.85%, the highest in Anhui Province was 47.86%, and the lowest in Jilin Province was only 22.59%. China requires the admission ratio of high schools and vocational high schools to be 1:1. At present, the high school acceptance rate was much higher than the professional high school acceptance rate. However, the demonstration high school acceptance rates of different provinces and cities were quite different. The national average demonstration high school acceptance rate was 18.16%, the highest was 43.30% in Chongqing City, and the lowest was only 4.78% in Jiangsu Province.

Figure 1 presents the trends in the participation rate of extracurricular tutoring, total high school acceptance rate, high school acceptance rate, vocational high school acceptance rate, and demonstration high school acceptance rate of each province/city/autonomous region. The participation rate of students' extracurricular tutoring in the compulsory education stage of each province increased with the increase of the total high school acceptance rate, high school acceptance rate, and occupational high school acceptance rate of each province. On the other hand, with the increase in the province's demonstration high school acceptance rate, it had declined.

To further explore the relationship between the participation rate of students' extracurricular tutoring in the compulsory education stage of each province and the total high school acceptance rate, occupational high school acceptance rate, high school acceptance rate, and demonstration high school acceptance rate, Pearson correlation was used for analysis. Correlation analysis results (**Table 3**) showed that students' extracurricular tutoring participation during compulsory education in each province was significantly positively correlated with total high school acceptance rate, professional high school acceptance rate, and high school acceptance rate. At the same time, there was a significant negative correlation with the demonstration high school acceptance rate relationship.

The Impact of High School Acceptance Rate on Students' Participation in Extracurricular Tutoring

Using the Hierarchical Linear Bernoulli Model to analyze the impact of high school acceptance rate on the participation rate of compulsory education students' extracurricular tutoring, a zero model without any explanatory variables was first constructed. The results show that the variances of the participation rate of students' extracurricular tutoring within and between provinces and cities are 0.1167 and 0.0065, respectively, and the intra-group correlation coefficient is 0.0528, indicating that 5.28% of the total variation in the participation rate of students' extracurricular tutoring came from the inter-provincial difference. At the same time, from the point of view of the significance level, the p-value of the significance test was zero, indicating that the participation rate of students' extracurricular tutoring had highly significant differences between provinc-

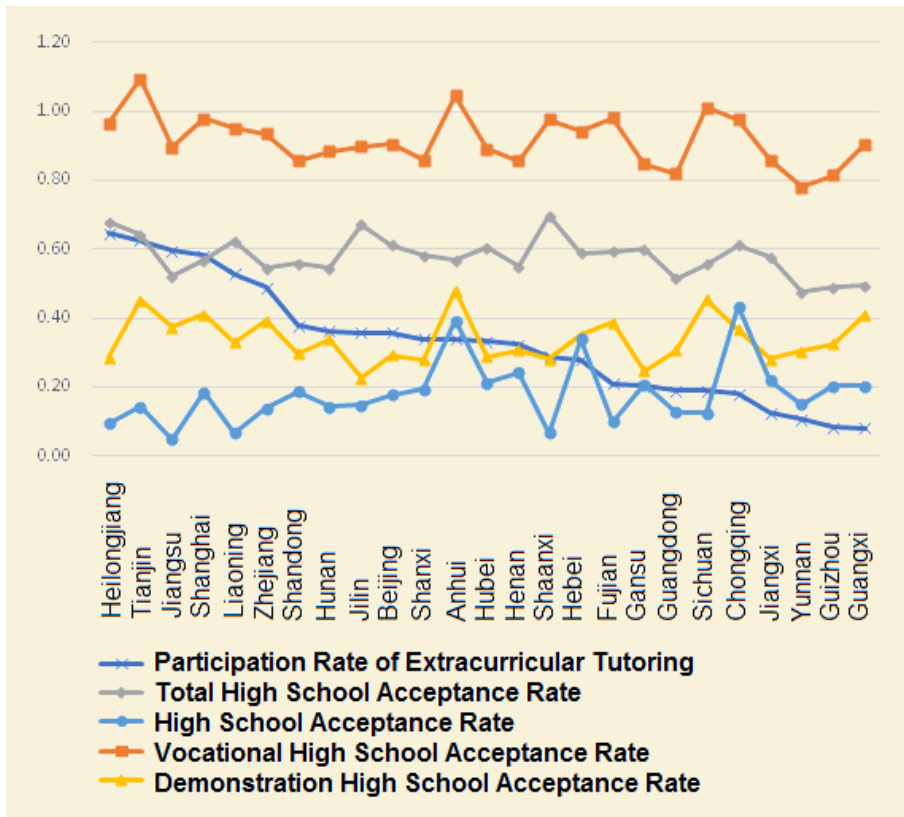


Figure 1. Participation Rate of Extracurricular Tutoring and Total High School Acceptance Rate.

Table 3. Correlation Analysis between Participation Rate of Extracurricular Tutoring and Total High School Acceptance Rate.

	Participation Rate of Extracurricular Tutoring	Total High School Acceptance Rate	Vocational High School Acceptance Rate	High School Acceptance Rate	Demonstration High School Acceptance Rate
Participation Rate of Extracurricular Tutoring	1	0.563**	0.183**	0.462**	-0.240**
Total High School Acceptance Rate	0.563**	1	0.567**	0.582**	0.015
Vocational High School Acceptance Rate	0.183**	0.567**	1	-0.340**	0.050**
High School Acceptance Rate	0.462**	0.582**	-0.340**	1	-0.033*
Demonstration High School Acceptance Rate	-0.240**	0.015	0.050**	-0.033*	1

Table 4. Bernoulli Hierarchical Linear Model Analysis of the Influence of Total High School Acceptance Rate and Vocational High School Acceptance Rate on Participation Rate of Extracurricular Tutoring.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Student Level										
Boy (Girl as a Reference)	-0.257*** (0.083)	-0.257*** (0.083)	-0.256*** (0.083)	-0.257*** (0.083)	-0.257*** (0.083)	-	-	-	-	-0.260*** (0.083)
Net Income Per Capita	0.369*** (0.038)	0.450 (0.601)	0.370*** (0.038)	0.369*** (0.038)	0.370*** (0.038)	0.372*** (0.038)	0.501** (0.218)	0.372*** (0.038)	0.372*** (0.038)	0.371*** (0.038)
Parents' Highest education	0.339*** (0.040)	0.339*** (0.040)	0.085 (0.577)	0.339*** (0.040)	0.339*** (0.040)	0.339*** (0.040)	0.339*** (0.040)	0.181 (0.207)	0.339*** (0.040)	0.339*** (0.040)
Parents' Highest Professional Status	0.294*** (0.064)	0.294*** (0.064)	0.294*** (0.064)	-0.632 (0.982)	0.294*** (0.064)	0.299*** (0.064)	0.299*** (0.064)	0.299*** (0.064)	0.430 (0.363)	0.299*** (0.064)
Middle school (Based on Elementary School)	0.050 (0.091)	0.050 (0.091)	0.050 (0.091)	0.048 (0.091)	-0.401 (1.473)	0.046 (0.091)	0.046 (0.091)	0.047 (0.091)	0.047 (0.091)	0.418 (0.524)
Provincial Level										
GDP Per Capita	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001* (0.000)	0.001 (0.001)	0.001* (0.000)	0.001* (0.000)
Total High School Acceptance Rate	3.221 (2.347)	3.531 (3.278)	2.191 (3.317)	1.268 (3.143)	3.055 (2.408)					
Vocational High School Acceptance Rate						-3.123 (2.588)	-1.561 (3.669)	-5.080 (3.608)	-2.271 (3.479)	-2.687 (2.649)
Interaction Effect										
Total High School Acceptance Rate*Household Income Per Capita		-0.096 (0.711)								
Total High School Acceptance Rate*Parents' Highest Education			0.299 (0.678)							
Total High School Acceptance Rate*Parents' Highest Professional Status				1.092 (1.156)						
Total High School Acceptance Rate* Schooling Stage					0.533 (1.732)					
Vocational High School Acceptance rate*Household Income Per Capita							-0.469 (0.780)			
Vocational High School Acceptance Rate*Parents' Highest Education								0.571 (0.735)		
Vocational High School									-0.470 (1.283)	

Acceptance Rate*Parents' Highest Professional Status										
Vocational High School Acceptance Rate* Schooling Stage										-1.350 (1.878)
Intercept	-6.374*** (1.906)	-6.639** (2.729)	-5.493** (2.764)	-4.719* (2.600)	-6.232*** (1.960)	3.071*** (0.707)	3.512*** (1.019)	-2.516** (1.004)	3.309*** (0.960)	-3.192*** (0.725)
Model Significance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observed Value	3,498	3,498	3,498	3,498	3,498	3,498	3,498	3,498	3,498	3,498
<i>Note: 1. *, **, *** indicate significant at the level of 10%, 5%, and 1%, respectively. 2. Standard errors are in parentheses.</i>										

es and cities. Therefore, this study constructed a multi-layer linear model to discuss and analyze the factors that affected students' participation in extracurricular tutoring.

Table 4 shows that at the student level, the participation rate of boys in extracurricular tutoring was significantly lower than that of girls. The net income per capita of the family, the highest educational background of the parents, and the most elevated occupational status of the parents all had a significant positive impact on the participation rate of students' extracurricular tutoring. There was no significant difference in the participation rate of extracurricular tutoring among students at different school stages. At the provincial level, GDP per capita had no significant effect on the participation rate of extracurricular tutoring. The high school acceptance rate had no significant impact on extracurricular tutoring. The cofounding items of high school acceptance rate and family income per capita, parents' highest education level, parents' highest occupational status, and learning stage were put into the model. It was found that the effects were not significant. This showed that students of different family backgrounds and different stages of the study had no heterogeneity in the pressure brought by competition for high school entrance opportunities. Similarly, the effect of vocational high school acceptance rate on the participation rate of students' extracurricular tutoring had also reached a similar conclusion.

Table 5 presents the high school acceptance rate and demonstration the high school acceptance rate on students' extracurricular tutoring participation rate. The results showed that the high school acceptance rate had a significant positive effect on students' extracurricular tutoring; that is, the higher the high school acceptance rate was, the higher the participation rate of extracurricular tutoring was. The cofounding items of high school acceptance rate and family income per capita, parents' highest educational background, parents' highest professional status, and learning stage were added to the model. We found no heterogeneity in the impact of the high school acceptance rate on the participation rate of extracurricular tutoring among students of different family incomes, parents' highest education level, and learning stage. However, students with other parents' professional status had heterogeneity in the influence of high school acceptance rate on the participation rate of extracurricular tutoring.

Table 5. Bernoulli Hierarchical Linear Model Analysis of the Influence of High School Acceptance Rate and Demonstration High School Acceptance Rate on Participation Rate of Extracurricular Tutoring.

	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18	Model 19	Model 20
High School Acceptance Rate	6.212*** (2.178)	4.632 (3.225)	6.729** (3.394)	2.126 (3.228)	5.476** (2.269)					
Demonstration High School Acceptance Rate						2.789*** (1.520)	-3.826* (2.139)	-4.206* (2.266)	-3.305 (2.086)	-2.158 (1.552)
Interaction effect										
High School Acceptance Rate*Household Income Per Capita		0.535 (0.802)								
High School Acceptance Rate*Parents' Highest Education			-0.160 (0.810)							
High School Acceptance Rate*Parents' Highest Professional Status				2.465* (1.426)						
High School Acceptance Rate*Schooling Stage					2.149 (1.989)					
Demonstration High School Acceptance Rate*Household Income Per Capita							0.330 (0.478)			
Demonstration High School Acceptance Rate*Parents' Highest Education								0.422 (0.499)		
Demonstration High School Acceptance Rate*Parents' Highest Professional Status									0.286 (0.795)	
Demonstration High School Acceptance Rate* Schooling Stage										-1.984* (1.152)
Intercept	7.300*** (1.269)	6.398*** (1.858)	7.596*** (1.958)	4.975*** (1.855)	6.878*** (1.320)	3.153*** (0.508)	2.967*** (0.574)	2.896*** (0.591)	3.055*** (0.574)	3.285*** (0.511)
Model Significance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observed Value	3,498	3,498	3,498	3,498	3,498	3,496	3,496	3,496	3,496	3,496

Note: The above models control gender, household net income per capita, parent's highest education level, parent's highest occupation, schooling stage at the student level, and controls per capita GDP at the provincial level. Due to space reasons, it is omitted from the article.

In contrast, the demonstration high school acceptance rate had a significant negative impact on students' extracurricular tutoring participation. Thus, it showed that the improvement of the demonstration high school acceptance rate could reduce the participation rate of students' extracurricular tutoring. After adding the confounding items of the demonstration high school and different family backgrounds and learning stages, the results showed no heterogeneity in the demonstration high school acceptance rate on the participation rate of extracurricular tutoring among students of diverse family backgrounds. However, students of varying learning stages had heterogeneity in the demonstration high school acceptance rate on the participation rate of extracurricular tutoring.

In the research mentioned above, there was heterogeneity in the influence of acceptance rate on the participation rate of extracurricular tutoring among students of different learning stages and the highest professional status of their parents. To further explore the profound differences of heterogeneity, this study carried out sub-sample regression on different school stages and the highest occupational status of parents. **Table 6** shows the sub-sample regression results of varying school stages. Whether it is the elementary school sample or the middle school sample, the high school acceptance rate and vocational high school acceptance rate significantly affected students' extracurricular tutoring participation. However, the high school acceptance rate had a significant positive impact on students' extracurricular tutoring participation. Among them, the coefficient of the middle school sample was higher than that of the elementary school sample, indicating that the high school acceptance rate had a more significant impact on the participation rate of middle school students' extracurricular tutoring than elementary school students. On the other hand, in the elementary school sample, the demonstration high school acceptance rate had no significant effect on the participation rate of extracurricular tutoring.

In contrast, in the middle school sample, the demonstration high school acceptance rate significantly negatively affected the extracurricular tutoring participation rate. The increase in the acceptance rate of the demonstration high school could dramatically reduce the probability of middle school students participating in extracurricular tutoring. Because middle school students face direct pressure from high school entrance examination competitions, they are more sensitive to the demonstration high school acceptance rate. However, elementary school students face more competitive pressure from the beginning of middle school, so the increase in the demonstration high school acceptance rate could significantly reduce the participation rate of middle school students' extracurricular tutoring. In contrast, the impact on elementary school students was not significant.

Table 7 presents the effect of acceptance rate on the participation rate of extracurricular tutoring among students with different parents' highest professional status. In the samples of the highest occupational status of different parents, neither the high school acceptance rate nor the vocational high school acceptance rate significantly affected the participation rate of students' extracurricular tutoring. The high school acceptance rate has a significant positive impact on the participation rate of students' ex-

Table 6. Bernoulli Hierarchical Linear Model Analysis of the Influence of Total High School Acceptance Rate on the Participation Rate of Extracurricular Tutoring of Students in Different School Stages.

	Elementary School Sample				Middle School Sample			
Total High School Acceptance Rate	2.500 (2.386)				4.416 (2.846)			
Vocational High School Acceptance Rate	-4.039 (2.609)				-2.744 (3.209)			
High School Acceptance Rate	6.130*** (2.222)				7.158*** (2.562)			
Demonstration High School Acceptance Rate					-2.378 (1.585)			
Intercept	-5.977*** (1.932)	-3.060*** (0.705)	-7.443*** (1.303)	-3.423*** (0.537)	-7.062*** (2.308)	-2.923*** (0.882)	-7.545*** (1.502)	-3.423*** (0.537)
Model Significance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observed Value	2,448	2,448	2,448	2,448	1,050	1,050	1,050	1,050

Note: The above models control gender, household net income per capita, parent's highest education and parent's highest occupation at the student level, and controls per capita GDP at the provincial level. Due to space reasons, it is omitted from the article.

Table 7. Bernoulli Hierarchical Linear Model Analysis of the Influence of Total High School Acceptance Rate on the Participation Rate of Extracurricular Tutoring of Students with Different Parents' Highest Professional Status.

	Lower Level Sample				Middle Level Sample				Upper Level Sample			
Total High School Acceptance Rate	2.003 (2.803)				3.854 (2.943)				3.589 (3.001)			
Vocational High School Acceptance Rate	-4.115 (3.118)				-3.133 (3.174)				-3.458 (3.592)			
High School Acceptance Rate	5.292** (2.563)				7.056*** (2.741)				8.179*** (3.156)			
Demonstration High School Acceptance Rate					-4.350** (2.018)				-2.388 (1.834)			
Intercept	-4.964** (2.273)	-2.391*** (0.850)	-6.324*** (1.490)	-2.377*** (0.624)	-6.536*** (2.403)	-2.729*** (0.868)	-7.459*** (1.625)	-2.839*** (0.649)	-5.721** (2.435)	-2.125** (0.993)	-7.393*** (1.846)	-2.820*** (0.776)
Model Significance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observed Value	1,794	1,794	1,794	1,794	1,326	1,326	1,326	1,326	378	378	378	378

Note: The above models control gender, per capita net income per household, the highest education level of parents, and schooling stage at the student level, and controls per capita GDP at the provincial level. Due to space reasons, it is omitted from the article.

tracurricular tutoring. Among them, the coefficient of the sample of students whose parents' occupational status with the upper level was the largest, but that of the samples of students whose parents' occupational status with the lower level was the smallest. It can be seen that the high school acceptance rate had a more significant impact on the upper samples and had a minor effect on the lower samples. In the samples whose parents' occupations were classified as more inferior, the demonstration high school acceptance rate had a significant negative impact on the participation rate of extracurricular tutoring. That is to say, the improvement of the demonstration high school acceptance rate could significantly reduce the participation rate of extracurricular tutoring for students whose parents' occupational classification was lower. However, in samples whose parents' occupations were classified as middle and upper levels, the demonstration high school acceptance rate had no significant effect on the participation rate of extracurricular tutoring.

Conclusion and Suggestion

Discussion

According to the MMI theory, when high school education is not yet widespread, people's primary goal is to get education opportunities, that is, "going to high school." Now high school education has been universally available. More than 90% of middle school students can receive high school education, and more than 50% can receive vocational high school education. As a result, the attractiveness of high school education opportunities and professional high school education opportunities is significantly reduced. This study found that the increase in the high school acceptance rate has instead promoted students' extracurricular tutoring participation. Only the increase in the demonstration high school acceptance rate can effectively reduce the participation rate of extracurricular tutoring. Combined with the EMI theory, the core of the current high school education competition is not the opportunity to receive education but the quality of education, that is, "a good high school." Thus, going to high school can no longer effectively maintain their children's dominant position in high school education and future higher education competition for families with higher social strata.

Moreover, due to the undifferentiated educational opportunities of high schools and the scarcity of high-quality high school educational resources, the expansion of high school enrollment has increased the pressure of education competition from higher-class families in the social class and further aggravated their academic anxiety. Therefore, families with higher social strata will try to get their children to participate in extracurricular tutoring, trying to help them build an advantage in the high school entrance examination competition to enter the demonstration high school and receive better high school educational resources. In addition, even if the demonstration high school acceptance rate is increased, it will only reduce the participation rate of extracurricular tutoring for lower social class families. However, students from families with higher social strata still choose to participate in extracurricular tutoring to ensure that they effectively maintain their competitive advantage in high schools. Furthermore, some do-

mestic and foreign studies have found that extracurricular tutoring can help improve students' academic performance (Xue, 2016; Dang, 2007). This will increase enrollment opportunities and high-quality high school educational resources for demonstration high schools, which are more enjoyed by children from families with higher social strata. As a result, the differences in admission opportunities for children of different social classes in the demonstration high school have been enlarged, resulting in unequal admission opportunities for the demonstration high school, which is not conducive to social mobility and educational equity.

When studying the impact of high school entrance examination competition on compulsory education students' extracurricular tutoring participation, the high school acceptance rate in the study used 2015 data, while compulsory education students' extracurricular tutoring participation used 2016 data, which can avoid two-way cause and effect to a certain extent problem. However, the problem was still not solved, leading to a certain deviation in the estimation results. Therefore, in follow-up studies, we will try to use tracking data to reduce endogenous interference further.

Conclusions

This study was based on CFPS 2016 data and collected data on high school acceptance rates in various provinces. Following the MMI and EMI theories, by constructing the Hierarchical Linear Bernoulli Model, exploring the impact of high school entrance examination competition on students' extracurricular tutoring participation in the compulsory education stage, the following main research conclusions are drawn.

First, the participation rate of students in Chinese compulsory education in extracurricular tutoring is 32.74%, and nearly one-third of students participate in tutoring. Second, China's average high school acceptance rate is 91.66%, and most middle school students can receive a high school education. Third, China's average high school acceptance rate is 57.82%, and the average vocational high school acceptance rate is 33.85%. This is quite different from the policy objective of maintaining roughly the same enrollment scale for high schools and secondary vocational schools during the high school stage in China. Fourth, the average demonstration high school acceptance rate in China is 18.16%, indicating that China's high-quality high school education resources are relatively scarce.

Second, the high school acceptance rate and vocational high school acceptance rate significantly affect students' extracurricular tutoring participation. Increasing the high school acceptance rate and vocational high school acceptance rate cannot reduce the participation rate of students' extracurricular tutoring. It shows that there is less competition between high school admission opportunities and vocational high school admission opportunities. Moreover, students of different family backgrounds and different stages of study have no heterogeneity in the competitive pressure brought by high school education entrance opportunities and vocational high school entrance opportunities. It shows that the core of education competition among families of different social classes is not high school education entrance opportunities and vocational high school education entrance opportunities.

Third, the high school acceptance rate has a significant positive effect on students' extracurricular tutoring; that is, the higher the high school acceptance rate is, the higher the participation rate of students' extracurricular tutoring is.

Fourth, the demonstration high school acceptance rate has a significant negative impact on students' extracurricular tutoring; that is, increasing the demonstration high school acceptance rate can significantly reduce the student's participation rate of extracurricular tutoring.

Fifth, the impact of high school acceptance rate on the participation rate of extracurricular tutoring of students from families of different social classes is heterogeneous. The higher the high school acceptance rate, the greater the probability of students from families with higher social strata participating in extracurricular tutoring. The high school acceptance rate has no heterogeneous influence on students at different school stages. Whether it is the elementary school sample or the middle school sample, the high school acceptance rate significantly positively affects students' extracurricular tutoring participation.

Sixth, the demonstration high school acceptance rate has a heterogeneous effect on the participation rate of extracurricular tutoring among students from different social classes. For example, the demonstration high school acceptance rate has a significant negative impact on the participation rate of extracurricular tutoring for students whose parental occupation is classified as lower but has no significant effect on the participation rate of extracurricular tutoring for students whose parental occupation is classified as middle and upper. Finally, the demonstration high school acceptance rate has a heterogeneous effect on students at different school stages. For example, the demonstration high school acceptance rate has no significant impact on the participation rate of extracurricular tutoring for elementary school students. Still, it has a significant adverse effect on the participation rate of extracurricular tutoring for middle school students.

Suggestion

First, expand high-quality high school educational resources, increase the demonstration high school acceptance rate, and reduce the participation rate of students' extracurricular tutoring during the compulsory education stage. As China's high school education has been universally available, the high school entrance examination competition is more about the quality of high school education, that is, "a good high school," not just "a high school" education opportunity. However, the scarcity of high-quality high school resources has caused Cohort Crowding in the admission opportunities of demonstration high schools. The supply elasticity of the demonstration high school is relatively small, which makes its competition more intense (Bound & Turner, 2007). To allow their children to enter the demonstration high school, families with higher social strata seek out-of-school education, that is, extracurricular tutoring, to help their children maintain their advantages in the competition for further instruction. Therefore, we must try our best to expand high-quality high school educational resources, increase the supply capacity of demonstration high schools, and increase the acceptance rate of demonstration high schools so that a broader range of families can enjoy high-quality high

school educational resources. It can relieve the pressure of parents and children from high school entrance examination competitions to a certain extent. It can also reduce the participation rate of students' extracurricular tutoring during the compulsory education stage.

Second, to target disadvantaged families with lower social strata to increase enrollment quotas for demonstration high schools, weaken the social reproduction role of extracurricular tutoring, and promote the equalization of high-quality high school enrollment opportunities for children of different classes of families. This study found that to maintain their competitive educational advantage effectively, families with higher social strata let their children participate in extracurricular tutoring to increase their chances of entering the demonstration high school. In addition, the increase in the demonstration high school acceptance rate has reduced the participation rate of extracurricular tutoring for students whose parents' occupational classification is lower. However, middle-class and upper-class families still choose to participate in extracurricular tutoring. Therefore, even if the demonstration high school acceptance rate increases, families with higher social classes will still allow their children to participate in extracurricular tutoring. This will make it easier to increase the number of places in the demonstration high school to be more occupied by higher social class students and expand the inequality of opportunities for children of different families to obtain high-quality high schools. At present, some provinces have introduced similar policies, such as the "target to school" and "spot allocation" of Beijing high school admission and the "spot allocation to school" policy of Shanghai. Therefore, while increasing the acceptance rate of the demonstration high school, the enrollment of the demonstration high school should be increased for disadvantaged families with lower social strata to weaken the social reproduction effect of extracurricular tutoring. Furthermore, allowing children from more disadvantaged families to enjoy high-quality high school educational resources will promote equalizing high-quality high school enrollment opportunities for children of different classes of families. This will create conditions for breaking the solidification of classes and realizing the rational flow of different social classes.

Notes

1. *Demonstration high school is the abbreviation of "demonstrative general high school that implements quality education." It is the comprehensive implementation of the education policy and the exemplary performance of education laws, regulations, and related policies. School-running ideas are correct, moral education is strengthened, and education and teaching reforms are actively carried out. Teachers' quality and school-running conditions are good, school-running has characteristics, and students' morality, intelligence, and physical development are comprehensively developed. Society and colleges, and universities have a good evaluation of students. The school has a high management level, has a long history of running a school, and has a high reputation in and outside the province (autonomous region, municipality).*
2. *The total number of high school enrollment in the province and city was vocational high school enrollment and high school enrollment. The number of vocational high school enrollment, the*

number of high school enrollment, and the number of middle school graduates were all derived from the 2015 education statistics file of the Ministry of Education. See: http://www.moe.gov.cn/s78/A03/moe_560/jytjsj_2015/

3. The number of students enrolled in the demonstration high schools of each province and city is announced by the demonstration high schools of each province and city.

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