Does the Salary of Elementary and Middle School Teachers Affect Students' Participation in Extracurricular Tutoring?[§]

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Abstract. *Based on the data of China Family Panel Studies 2016 (CFPS 2016), this study analyzed the effect of teacher wage index on students' participation in extracurricular tutoring through a two-layer linear model. We found that the wage index of elementary and middle schools teachers in China is generally low, and this index had a significant negative impact on students' participation in extracurricular tutoring, i.e., the lower the teacher's wage index, the higher the participation rate of students' extracurricular tutoring. Governments at all levels should increase financial investment in elementary and middle schools teachers' salaries. Efforts to improve the salary of elementary and middle schools teachers upon the teacher's wage index as a reference will help to reduce the supply and demand of extracurricular tutoring in the basic education in China, and will also facilitate the implementation of the policy of prohibiting in-service teachers from participating in extracurricular tutoring.*

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I N recent years, extracurricular tutoring has become a hot social issue that concerns the government, students and parents. Among them, paid tutoring by in-service teachers is a focus problem that the government, society and schools have been paying close attention to and trying to solve. Some studies have found that teacher salary was closely related to students' participation in extracurricular tutoring (Brehm et al., 2012; Sujatha & Rani, 2011). Investigation of the relationship between teachers' salary level and students' participation in extracurricular tutoring will help to understand the phenomenon of in-service teacher's paid tutoring, and it will provide a reference for the Chinese government to handle effectively the extracurricular tutoring and paid tutoring for in-service teachers.

Studies found that low salary is a major reason for teachers to participate in extracurricular tutoring. Researchers found that some in-service school teachers in countries such as Cambodia, Mauritius and Romania got paid tutoring for students, and the official salary of teachers in these countries was very low (Bray et al., 2013; Foondun, 2002; Popa & Acedo, 2003). Studies by Brehm, Sujatha, and Rani found that in Cambodia and India, many teachers provide extracurricular tutoring to supplement their income (Brehm et al., 2012; Sujatha & Rani, 2011). In Shanghai of China, Zhang and Bray discovered through questionnaires and interviews that urban teachers are facing increasing economic pressure, and many of them got additional income through shadow education. The survey included 548 students in Shanghai, of them 35.8% had received tutoring in their teachers' homes, and 26.1% had received tutoring at schools. During the interview, they found that some of the teachers' colleagues participated in paid tutoring outside the classroom, and all the school principals interviewed expressed sympathy for their teachers' participation in the tutoring even they got the so-called medium salary (Zhang & Bray, 2017).

The in-service teachers will gain income through direct participation in tutoring and referral to counseling agencies for getting commission. Bray et al. (2018) found that in Siem Reap Province, central Cambodia, almost all extracurricular tutoring is provided by school teachers rather than commerce, and teachers are usually responsible for the same group of students in the school. In addition to direct participation, some school teachers play an intermediary role. Zhang and Bray's survey in Shanghai showed that nearly one-third of the students surveyed said that their tutoring information was from their teachers, through which some teachers got commission by introducing students to counseling agencies (Zhang & Bray, 2017).

In-service teacher is the classroom leader of school education, so if they directly or indirectly participate in paid tutoring, they will encourage students and parents to participate in tutoring. In-service teacher's paid tutoring will bring "benefits" to participating students, and it will be "unfavorable" to those who do not participate in teachers' tutoring. In a survey conducted in Bangladesh in 2017, some students mentioned that receiving tutoring from school teachers would receive extra benefits, including answering skills set by these teachers (Mahmud et al., 2017). Gok's investigation report in Turkey highlighted a teacher's case, in which the teacher clearly told the students: "You didn't take my private class, so I don't talk to you anymore" (Gök, 2010). Kodakos and

Fragiskos pointed out that the paid tutoring of in-service teacher has the risk of concealing the content of the classroom to promote their tutoring needs. They emphasized that when in-service teachers are also extracurricular tutors, they would use the "Margin Management Model", that is, when teachers tutor their students privately, there is a danger of favoring the students who receive tutoring. It is easy for these teachers to deliberately conceal content in regular class teaching to promote the need for their private classrooms, so margin management is necessary (Kodakos & Kalavasis, 2015).

In sum, some empirical studies showed that in countries with low teacher salaries, teachers are more likely to participate in paid tutoring, and teachers who get paid tutoring will encourage their students to participate in extracurricular tutoring in turn, so the in-service teacher salary level will affect students' participation in extracurricular tutoring. Teacher's wage index is an objective quantitative index to measure the relative level of teachers' wages (Organization for Economic Cooperation and Development, 2011). A low teacher's wage index indicates that the level of teachers' wages is low compared to the level of local economic development. Therefore, teachers' life pressure and their income imbalance increase, which may reduce work effort and engage in paid tutoring to supplement income. Both of these aspects all may encourage students to participate in extracurricular tutoring. Therefore, we hypothesized that the salary level of elementary and middle schools teachers has a significant negative impact on students' participation in extracurricular tutoring, i.e., the lower the teachers' salary, the higher the students' participation in extracurricular tutoring.

Students' participation in extracurricular tutoring is affected by two factors: supply and demand. At present, there have been studies explored the influence of individual and family characteristics of students on extracurricular tutoring from the perspective of extracurricular tutoring demand, but no study has explored the impact of features such as in-service teacher on student participation in extracurricular tutoring from the perspective of extracurricular tutoring supply. This study will comprehensively consider the impact of extracurricular tutoring supply and demand on student participation in extracurricular tutoring. After controlling the individual and family characteristics of students in the econometric model, we will observe the effect of teacher salary level on students' extracurricular tutoring participation.

Data Source and Variable Description

The data of the extracurricular tutoring, individual factors, family factors, and school factors in this study come from the 2016 data of China Family Panel Studies (CFPS) of the China Social Science Survey Center of Peking University. According to the variable description of extracurricular tutoring in the data set, extracurricular tutoring mainly refers to supplementary educational activities other than formal school education to improve students' academic performance, including both academic and talent courses. The study objects were elementary and middle school students and a total of 3,109 effective samples were obtained, including 2,332 from elementary school and 777 from middle school.

From the perspective of economics, teachers' wages are the remuneration of teachers for their labor in the organization. When analyzing teacher salaries, we usually use the teacher income index (Du, 2015). *Education at a Glance 2011: OECD Indicators* pointed out that when discussing teacher wages, comparing legal wages with GDP per capita is easy to analyze, and provides a way to examine teacher wages in the context of national wealth (Organization for Economic Cooperation and Development, 2011). Du compared the salary level of teachers with the GDP per capita of various provinces and the discretionary income of urban residents, and examined the changes in the average salary level of teachers in China from 2000 to 2011 (Du, 2014). An suggested that the relative level of teacher wages was a way of judging the comparison between teacher wages and gross national product, i.e., the proportion of teacher average wages to GDP per capita can be called wage index (An, 2014). Xue and Shen used the teacher wage index (Shen, 2018; Xue & Tang, 2017) when measuring the salary of elementary and middle schools. Because teachers' perception of their wages stems from the overall wages paid in the previous year, so the wage index of teachers in 2015 is selected here. The description of the variables is shown in **Table 1**.

Teacher Salary and Student Extracurricular Tutoring Participation Rate in Elementary and Middle Schools by Province

Participation Rate of Extracurricular Tutoring of Elementary and Middle Students by Province

Table 2 shows that the participation rate of extracurricular tutoring of elementary school students in each province was uneven. The top three provinces with extracurricular tutoring participation rate for elementary school students were: Jiangsu, Heilongjiang and Shanghai. Their rate all exceeded 32%, and the number of participants account for more than one third of the sample population in the province. The provinces with lower participation rates were: Guangxi, Guizhou, and Jiangxi. Their participation rates were 1.1%, 1.8%, and 2.9%, respectively, and the number of participants was less than one-third of the number in the province. The participation rate in the eastern China was high, the central region was uneven, and the western region was low. The participation rate of extracurricular tutoring of middle school students in different provinces was also mixed.

The provinces with high participation rates of extracurricular tutoring for middle school students were: Jiangsu, Anhui and Liaoning, with participation rates of 55.6%, 42.1%, and 35.9%, respectively; the provinces with lower participation rates were Guangxi and Guizhou, with 4.2% and 4.4%, respectively. The participation rate of middle school students in the eastern region except Guangdong and the northeast region was relatively high. The participation rate in the central region except Jiangxi was more than 20%, and the participation rate in the western region was uneven. In short, the par-

Table 1. Description of Variables in Statistical Analysis.

Variable Type	Variable Name	Variable Description
Extracurricular Tutoring	Whether to Participate in Extracurricular Tutoring	0=No, 1=Yes
Personal Factors	Gender	0=Female, 1=Male
	Household Registration (Hukou)	0=Agricultural, 1=Non-Agricultural
	Math Scores	1=Poor, 2=Medium, 3=Good, 4=Excellent
	Chinese Performance	1=Poor, 2=Medium, 3=Good, 4=Excellent
Family Factors	Parent's Highest Education	1=Illiterate, 2=Elementary School, 3=Middle School, 4=High School, 5=Junior College, 6=Undergraduate and Above
	Parental Education Expectations	1=Middle School And Below, 2= High School, 3=Junior College, 4=University Undergraduate, 5=Master's Degree and Above
	Annual Household Income Per Capita	Continuous Variable, Unit: CNY
School Factors	Demonstration/Key School	0=No, 1=Yes
	Class Size	Continuous Variable, Unit: Person
2015 Teacher Wage Index	Average Salary of Elementary School Teachers in the Province in 2015 / GDP Per Capita in 2015	Continuous Variable
	Average Salary of Middle School Teachers in the Province in 2015 / GDP Per Capita in 2015	Continuous Variable

ticipation rate of elementary and middle students in the eastern region is mostly higher than that in the western region, and the central region is high, and the rate of elementary school students is uneven.

Relative Salary of Teachers in Elementary and Middle Schools by Province

Teacher wage index refers to the proportion of teachers' average salary to GDP per capita. This is a way of judging the comparison of teachers' wages with gross national product, which indicates the relative level of teachers' wages (An, 2014). Regarding the reasonable level of wages, it is believed that the teacher wage index should be reasonably between 1.8:1 and 2:1 in developed countries and 2.5:1 and 3.5:1 in developing countries (Qu, 1995). Chinese elementary and middle schools teacher wage index is shown in **Table 3**. The wage index of elementary school teachers in the table is the average salary of elementary school teachers in 2015/GDP per capita in 2015, and the wage index of middle school teachers in 2015 is the average salary of middle school teachers in 2015/GDP per capita in 2015.

Table 3 shows that the average value of the middle school teachers' wage index was higher than that of elementary school teachers. The provinces with elementary school teachers whose wage index was less than 1 were Jiangsu, Liaoning and Shanghai, all of which are provinces in the eastern region where the economies are relatively de-

Table 2. Participation Rate of Extracurricular Tutoring in Elementary and Middle Schools.

Province	Participation Rate of Extracurricular Tutoring	
	Elementary School Students (%)	Middle School Students (%)
Hebei	16.1	15.9
Shanxi	18.9	22.2
Liaoning	22.5	35.9
Jilin	16.1	33.3
Heilongjiang	37.0	33.3
Shanghai	32.7	31.6
Jiangsu	39.0	55.6
Zhejiang	27.6	28.6
Anhui	22.4	42.1
Jiangxi	2.90	12.5
Shandong	21.1	16.0
Henan	20.8	27.4
Hunan	14.5	27.3
Guangdong	10.6	8.80
Guangxi	1.10	4.20
Chongqing	7.40	25.0
Sichuan	12.8	17.2
Guizhou	1.80	4.40
Yunnan	6.80	11.8
Shaanxi	18.4	25.0
Gansu	7.10	15.6
Nationwide	14.3	20.1

veloped. The provinces with elementary school teachers whose wage index was higher than 2 were Gansu, Guizhou and Yunnan, all of which are western provinces, indicates that the teachers' wage level and economic level are relatively commensurate. The wage index of elementary school teachers in the eastern region was lower than the average level, and the central region was uneven, but the western region, except Chongqing and Shaanxi, other provinces were higher than the average. The provinces with middle school teachers whose wage index was lower than 1 were Jiangsu and Liaoning, and those higher than 2 were Gansu, Yunnan and Guizhou. Therefore, the wage index of middle school teachers in the eastern region was lower than the average, the central region was at the middle level, and the western regions except Chongqing and Shaanxi were all above the average. It can be seen that the relative salary of elementary and middle schools teachers in the eastern region is not commensurate with the level of economic development, but the relative salary of teachers in some western provinces matches the level of economic development. Overall, the relative salary of teachers in China is relatively low.

Table 3. The Wage Index of Elementary and Middle School Teachers in Each Province in 2015.

Province	Elementary School Teacher Wage Index	Middle School Teacher Wage Index
Hebei	1.35	1.42
Shanxi	1.62	1.7
Liaoning	0.88	0.90
Jilin	1.07	1.11
Heilongjiang	1.47	1.54
Shanghai	0.93	1.03
Jiangsu	0.85	0.91
Zhejiang	1.14	1.26
Anhui	1.55	1.64
Jiangxi	1.45	1.47
Shandong	1.05	1.15
Henan	1.17	1.26
Hunan	1.12	1.21
Guangdong	1.02	1.08
Guangxi	1.47	1.58
Chongqing	1.25	1.41
Sichuan	1.59	1.76
Guizhou	2.13	2.21
Yunnan	2.1	2.27
Shaanxi	1.14	1.17
Gansu	2.26	2.32
Mean Value	1.36	1.45

The Wage Index of Elementary and Middle Schools Teachers and the Student Participation Rate of Extracurricular Tutoring

In 2015, the average value of the elementary school teachers' wage index was 1.42, and the average value of the middle school teachers' wage index was 1.51.

Figure 1 shows the relationship between the elementary school teachers' wage index and the students' extracurricular tutoring participation rate. The provinces with lower wage index among elementary school teachers have relatively higher participation rate; on the contrary, the province with higher wage index among elementary school teachers have relatively lower participation rate. For example, the provinces with elementary school teachers whose wage index was less than 1 were Jiangsu, Liaoning, and Shanghai, all of which are in the eastern China. The participation rates of these three provinces in extracurricular tutoring were very high, at 39%, 22.5%, and 32.7%, respectively. The provinces with elementary school teachers whose wage index was
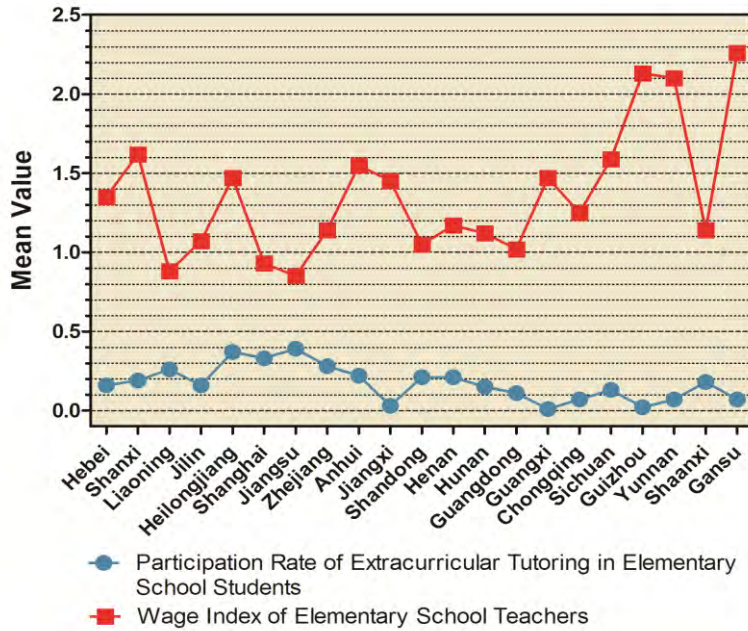
Figure 1. Elementary School Teacher Wage Index and Students' Extracurricular Tutoring Rate.

higher than 2 were Gansu, Guizhou and Yunnan, all of which are in the western China, and the participation rates of extracurricular tutoring in these three provinces were relatively low, at 7.1%, 1.8% and 6.8%, respectively.

Figure 2 shows that between the wage index of middle school teachers and the participation rate of students' extracurricular tutoring are also reversely related. In the provinces with high wage index of middle school teachers, the participation rate of students in extracurricular tutoring was relatively low; on the contrary, in the province with low wage index of middle school teachers, the participation rate of extracurricular tutoring students was also relatively high. For example, the provinces with middle school teachers whose wage index was less than 1 were Liaoning and Jiangsu. The participation rates of students in these two provinces were very high, at 35.9% and 55.6%, respectively. The provinces with middle school teachers whose wage index was higher than 2 were Gansu, Yunnan and Guizhou. The rate of students participating in extracurricular tutoring in these three provinces was 15.6%, 11.8% and 4.4%, respectively.

The Effect of Elementary and Middle Schools Teachers' Wage Index on Students' Participation in Extracurricular Tutoring
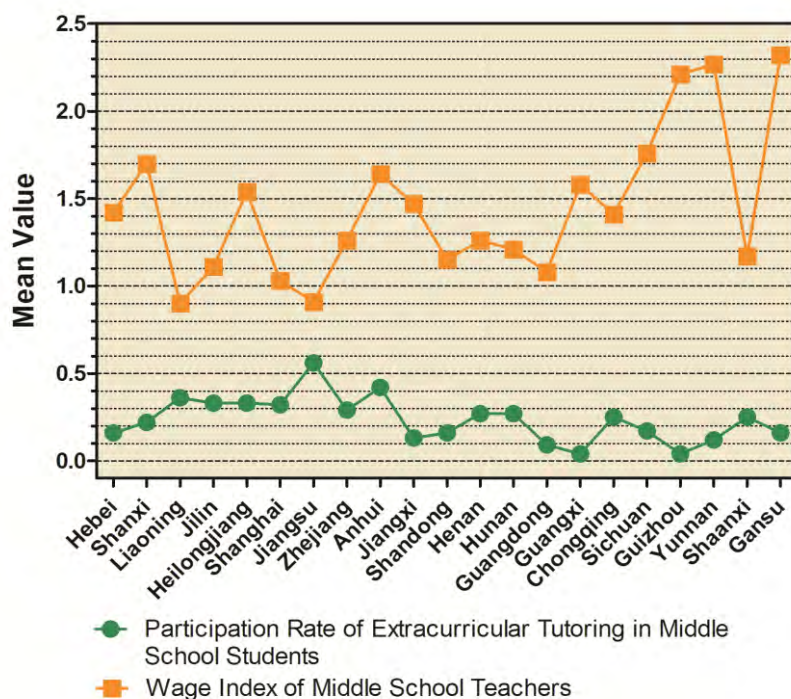
Figure 2. Middle School Teacher Wage Index and Students' Extracurricular Tutoring Rate.

The hierarchical linear model is proposed to address the limitations of traditional statistical techniques when processing multi-layer structure data and the possible misinterpretation of the analysis results. It is suitable for proper and in-depth analysis and interpretation of widely existing multi-layer nested data (Osborne & Neupert, 2013). When the hierarchical linear model is analyzed at different levels, it can make full use of the information of each layer to decompose the factors influencing students' participation in extracurricular tutoring at all levels, so it is more accurate and more reasonable.

When analyzing the elementary and middle schools teacher wage index affecting students' participation in extracurricular tutoring, we introduced the hierarchical linear model, because the sample of students in this study is nested in different provinces and regions, and teacher salaries are different in different provinces. For this kind of data with nested structure, HLM2 can be used to examine the effect of student-level variables and provincial-level teachers' wage index variables on students' participation in extracurricular tutoring.

At the beginning of the model construction, the zero model was first estimated to explain the percentage and significance of the total variance of the dependent variable that could be explained by the differences between groups. Then, HLM2 was built.

$$\text{Lay1: Tutor} = \beta_0 + \beta_1 \text{gender} + \beta_2 \text{parentedu} + \beta_3 \text{parentexpectation} + \beta_4 \text{salary}$$
$$+ \beta_5 \text{language} + \beta_6 \text{math} + \beta_7 \text{key school} + \beta_8 \text{classsize} + \gamma$$
$$(1)$$

$$\text{Lay2: } \beta_0 = \gamma_{00} + \gamma_{01} \text{teachers'salary} + \mu_0$$
$$(2)$$

Among them, the dependent variable Tutor represents whether students participate in extracurricular tutoring. The independent variables are divided into two levels: the first level is individual level variables, including student gender, parental education level, parental education expectations, family per capita income, whether it is a key school, class size, language performance, and math performance; the second level is Provincial level variables, including teachers' salary index.

A Hierarchical Linear Model Analysis of the Effect of Elementary School Teachers' Wage Index on Students' Participation in Extracurricular Tutoring

Construct a zero model in the sample of elementary school students. The zero model refers to a model that has no predictor variables at the individual level and the provincial level. This is mainly used to observe whether the dependent variable is statistically significant at the provincial level. This study conducted a zero-model analysis of whether students participated in extracurricular tutoring in the past 12 months. The results are shown in **Table 4**.

The zero model showed that with student participation in extracurricular tutoring as the dependent variable, its p value was < 0.01, which means that the predictor variables of the second layer have a significant impact on the variation of the dependent variable. In **Table 4**, the variance between groups was 0.009, the variance within the group was 0.117, and the intra-group correlation coefficient (ICC) = 0.071 was further calculated. ICC is to test whether the dependent variable is different between different groups. According to Cohen's definition, 0.071 is a moderate intra-group correlation (Less than 0.059 indicates low-level intra-group correlation, 0.059-0.138 is moderate intra-group correlation, and greater than 0.138 is high-level intra-group correlation). The data in this study were moderately related within the group, so the differences within the group cannot be ignored. This means that the degree of variability caused by the difference from the provincial level in students participating in extracurricular tutoring was 0.009, which was about 7.1% of the variance. On the one hand, the predictor variables of the second layer have a significant impact on the variation of the dependent variable; on the other hand, according to the estimation results of ICC (cross-level correlation coefficient), the dependent variable has obvious differences between groups, and the characteristics of the differences between groups must be considered. Therefore, it is suitable to use a HLM2 for analysis.

Table 4. Elementary School Sample Zero Model Parameter Estimation.

Parameter	Variance Estimation	Standard Error	Intra-Group Correlation Coefficient	Chi-Square Value	P-Value
Intercept Term (Variation Between Groups U_0)	0.009	0.004	0.071	52.043	0.000
Level 1 (Variation Residual Within the Group R)	0.117	0.003			

Model 1 and Model 2 (**Table 5**) were the influencing factors of extracurricular tutoring participation of elementary school students. Model 1 was the basic model, which estimated the influence of control variables on extracurricular tutoring participation in the elementary school samples. The data showed that in elementary school, the higher the annual per capita income of the family, the more non-agricultural students were less likely to participate in extracurricular tutoring. The larger the class size, the higher the likelihood of students participating in extracurricular tutoring. The higher the parent's education level, the higher the likelihood of students participating in extracurricular tutoring.

Model 2 adds the variable of 2015 average salary of elementary school teachers/2015 GDP per capita (2015 elementary school teachers' wage index) to the control variable. After the addition, the logarithm likelihood drops from 1,378.003 to 1,376.780, and the values of AIC and BIC also decrease. . This showed that the addition of this variable had statistical significance, which made the model fit better. The data shows that the agricultural household in Model 2 is negatively significant, that is, the more agricultural household students, the lower the possibility of participating in extracurricular tutoring. Parents' education level, family per capita income and class size were positively significant, i.e., the higher the parent's education level, the higher the family's per capita income and the larger the class size, the greater the possibility of students participating in extracurricular tutoring. The coefficient of elementary school teachers' wage index was -0.096 ($p < 0.05$). The results of the data showed that the greater the ratio of the average salary of elementary school teachers to the annual per capita GDP, the less likely students was to participate in extracurricular tutoring. For each additional unit of elementary school teacher wage index, the possibility of students participating in extracurricular tutoring decreases by 0.096 units, i.e., the higher the elementary school teacher wage index, the lower the possibility of students participating in extracurricular tutoring.

Mixed Model Analysis of Middle School Teacher Salary to Students Participating in Extracurricular Tutoring

Table 5. Multi-Layer Linear Model Analysis Results of the Impact of Elementary School Teacher Wage Index on Students' Participation in Extracurricular Tutoring.

Variable	Model 1	Model 2
Individual Level Variable		
Gender: Female (Male=1)	0.022 (0.015)	0.023 (0.015)
Agricultural Household Registration (Non-Agricultural Household Registration=1)	-0.096 *** (0.025)	-0.094*** (0.025)
Chinese Performance	0.008 (0.010)	0.008 (0.010)
Math Scores	-0.016 (0.010)	-0.016 (0.010)
Annual Household Income Per Capita	1.726*** (5.862)	1.650 *** (5.856)
Parent's Highest Education	0.015* (0.008)	0 .014* (0.008)
Parents' Educational Expectations for Their Children	0.008 (0.007)	0 .009 (0.007)
Non-Key School (Key School=1)	-0.014 (0.019)	- 0.015 (0.019)
Class Size	0.001** (0.000)	0 .001** (0.000)
Provincial Level Variable		
Average Salary of Elementary School Teachers in 2015 / GDP Per Capita in 2015		- 0.096** (0.036)
Intercept Term	0.094 (0.067)	0.229*** (0.084)
Sample Size	2,332	2,332
Random Effect		
Sd (Intercept)	0.004 (0.002)	0.003 (0.001)
Sd (Residual Error)	0.110 (0.003)	0.110 (0.004)
Goodness of Fit		
-2 Restricted Log Likelihood	1,378.003	1,376.780
Akaike's Information Criterion (AIC)	1,382.003	1,380.780
Schwarz's Bayesian Criterion (BIC)	1,393.119	1,391.972

*Note: 1. ***, **, * represent significant at the 1%, 5% and 10% levels, respectively.*

2. Standard errors are in parentheses.

Table 6. Middle School Sample Zero Model Parameter Estimation.

Parameter	Variance Estimation	Standard Error	Intra-Group Correlation Coefficient	Chi-Square Value	P-Value
Intercept Term (Variation Between Groups U_0)	0 .008	0 .005	0 .049	73.537	0.000
Level 1 (Variation Residual Within the Group R)	0 .154	0 .008			

Table 7 : Multi-Layer Linear Model Analysis Results of the Influence of Middle School Teacher Wage Index on Students' Participation in Extracurricular Tutoring.

Variable	Model 3	Model 4
Individual Level Variables		
Gender: Female (Male=1)	0.022 (0.031)	0.024 (0.031)
Agricultural Household Registration (Non-Agricultural Household Registration=1)	-0.126*** (0.046)	-0.108** (0.046)
Chinese Performance	-0.016 (0.020)	-0.012 (0.020)
Math Scores	-0.015 (0.018)	-0.021 (0.015)
Annual Household Income Per Capita	4.429 (5.192)	3.633 (5.184)
Parent's Highest Education	0.052*** (0.015)	0 .052*** (0.015)
Parents' Educational Expectations for Their Children	0.011 (0.015)	0 .008 (0.015)
Non-Key School (Key School=1)	-0.035 (0.036)	- 0.040 (0.035)
Class Size	0.002 (0.001)	0 .002 (0.001)
Provincial Level Variables		
Average of Secondary Education Teachers in 2015 Wages/2015 GDP Per Capita		- 0.089* (0.048)
Intercept Term	0.105 (0.150)	0.233 (0.167)
Sample Size	777	777
Random Effect		
Sd (Intercept)	0.004 (0.003)	0.004 (0.003)
Sd (Residual Error)	0.144 (0.008)	0.143 (0.008)
Goodness of Fit		
-2 Restricted Log Likelihood	682.061	677.424
Akaike's Information Criterion (AIC)	686.061	681.424
Schwarz's Bayesian Criterion (BIC)	695.027	690.378

Note: 1. ***, **, * represent significant at the 1%, 5% and 10% levels, respectively.

2. Standard errors are in parentheses.

By constructing a zero model in the middle school samples, the results were shown in **Table 6**. In this zero model, whether the student participated in extracurricular tutoring was the dependent variable, the inter-group variance was 0.008, the intra-group variance was 0.154, and the significance level was $p < 0.001$.

Further calculation of the intra-group correlation coefficient (ICC) = 0.049, its P value was < 0.01, i.e., the second-level predictor variables have a significant impact on the variation of the dependent variable, and the impact of the provincial-level variables on the dependent variable needs to be considered. Therefore, it was suitable to use hierarchical linear model for analysis.

Models 3 and 4 were the influencing factors of extracurricular tutoring participation of middle school students. Model 3 was the basic model, which estimated the influence of control variables on extracurricular tutoring participation in the middle school samples. It can be seen from **Table 7** that in the basic model, middle school par-

ents' educational background and household have a significant impact on students participating in extracurricular tutoring.

Model 4 added the variable of 2015 middle school teachers' wage index to model 3, the logarithm likelihood dropped from 682.061 to 677.424, and the values of AIC and BIC also decreased, indicating that the addition of this variable had statistically significance, and the model fitting was better. The data showed that the highest educational level of parents was significant at 0.01 and household was significant at 0.05, i.e., non-agricultural household students were more likely to participate in extracurricular tutoring than agricultural household students. The coefficient of the variable of wage index for middle school teachers was -0.089 ($p < 0.1$). The data showed that the greater the ratio of the average salary of middle school teachers to the annual per capita GDP, the less likely students was to participate in extracurricular tutoring. For every additional unit of middle school teacher wage index, the possibility of students participating in extracurricular tutoring decreased by 0.090 units, i.e., the higher the secondary school teacher wage index, the lower the possibility of students participating in extracurricular tutoring.

Discussion and Conclusion

Through the above analysis, it is found that the relative salary of elementary and middle schools in China is relatively low. In 2015, the Wage Index of elementary school teachers in all provinces of China was between 0.87-2.26, and the Wage Index of middle school teachers was between 0.9-2.32. None of them has reached the level of 2.5-3.5 for the wage index of teachers in developing countries. This study showed that the wage index of elementary and middle schools teachers in China had a significant negative effect on students' participation in extracurricular tutoring. The province with the lower elementary school teacher wage index has the higher participation rate of extracurricular tutoring. Elementary school teachers with the lowest wage index in Jiangsu (0.85) had the highest extracurricular tutoring participation rate (39%), accounting for more than one-third of the province's elementary school samples. The same was true for middle school teachers. In Liaoning (0.9) and Jiangsu (0.91), where the middle school teachers' wage index was lower than 1, and their students' participation in extracurricular tutoring was high, at 35.9% and 55.6%, respectively. This showed that the relative level of teachers' salary had a significant impact on students' participation in extracurricular tutoring. Our findings corroborate the findings of Foondun et al. in Cambodia and other countries (Foondun, 2002), the lower the teacher's salary, the more students' tutoring; this also was agreement with Zhang and Bray's survey in Shanghai, China from the perspective of teacher salary (Zhang &Bray, 2017).

Adams's *Equity Theory* believes that the enthusiasm of employees depends on the degree of fairness in distribution (i.e., sense of fairness); and this sense of employees depends on a process of social comparison, that is, a person not only cares about his absolute income, but also cares about his relative income (Chen & Gao, 2008). When teachers in elementary and middle schools in China compare their income horizontally with other professionals in the society, if they feel that their income is lower, they will

feel unfair, so they will seek to increase their income or reduce their work to obtain a sense of fairness. On the one hand, some in-service teachers will participate in paid tutoring in an attempt to increase their income. On the other hand, some in-service teachers who do not participate in paid tutoring will reduce the work effort in their daily school teaching. Meanwhile, some in-service teachers not only participate in paid tutoring but also reduce the teaching effort, and they will intentionally teach less important content in the classroom, deliberately guide or encourage students to participate in extracurricular tutoring activities they organized or involved in. This had pushed up the scale of students' participation in extracurricular tutoring, impacted the order of school education and disrupted the normal school education ecology, and also harmed the equity of education and increased the burden of student learning.

In 2015, the Ministry of Education of China issued the *Regulations on Prohibiting Elementary and Middle Schools and In-service Teachers from Participating Paid Tutoring* (Ministry of Education of China, 2015), which prohibits in-service teachers from participating in paid tutoring. Since the document was issued, some provinces and cities had also issued relevant policy documents. On the basis of "6 prohibitions", Henan Province put forward "prohibition on elementary and middle schools in-service teachers from deliberately failing to complete education and teaching tasks in the classroom" and "prohibition on elementary and middle schools teachers from teaching after school for being paid" (Henan Provincial Department of Education, 2015); Beijing also issued policy document stating "whether the in-service teacher organizes or participates in paid tutoring will be regarded as an important basis for annual assessment, job title evaluation, promotion, rewards, and punishments" (Liang, 2017). On the basis of prohibition, the relevant documents also proposed to "educate and guide the teachers to practice the core values of education, stand up for morality, and consciously refuse paid tutoring; select and promote outstanding teacher models, and fully demonstrate the spirit of dedication and kindness of teachers" (Ministry of Education of China, 2015). The guidance of correct values is conducive to weakening teachers' sense of injustice and reducing motivation to go out for tutoring.

Given that Chinese elementary and middle schools teachers' wage index has a significant negative impact on students' participation in extracurricular tutoring, and the current Chinese elementary and middle schools teachers' wage index is generally low, governments at all levels should increase financial invest to teachers' salaries. With the teacher's wage index as the reference standard, strive to increase the relative salary of elementary and middle school teachers. For provinces with stronger financial strength and lower teacher wage indexes, governments at and below the provincial level should increase the financial input, and focus on raising the teacher wage index and improving the relative level of teacher wages. For provinces with weaker financial strength and lower teacher wage index, central and provincial governments should increase fiscal transfer payments to help local governments at all levels of the province increase the input and strive to improve the teacher wage index. The efforts of governments at all levels to increase the salary of elementary and middle schools teachers will help reduce the supply and demand of extracurricular tutoring in the basic education in China, and

also provide a basis for prohibiting in-service teacher from participation in extracurricular tutoring.

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