



Research on the Effect of Family Capital on Education Expenditure

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Abstract. The widespread educational anxiety in China has led each student family to increase education expenditures, but different families have different resources and educational investment capabilities, which in turn exacerbates educational inequality. Based on the analysis of the family capital of 2905 students from preschool to high school in “China Family Panel Studies” in 2018, this study examines the effect of family capital on education expenditure. This study finds that families with higher income and parental education levels have higher education expenditures. Families with higher income have a lower proportion of education expenditure to family income. There is no significant relationship between parental education level and education expenditure as a proportion of family income. There are large variations in the educational expenditures of students' families at various school stages, among which the educational expenditures of high school students' families become a large amount of expenditure for families. This study explains the intergenerational transmission of family capital that has resulted in China's class consolidation. In the end, this study provides educational policy recommendations for the inequality of education caused by the consolidation of class.

Keywords: Family Capital, Education Expenditure, Class Solidification.

1 Introduction

In the past 10 years, China has steadily increased the level of its educational popularization, the opportunities for citizens to receive education have been further expanded, and the level of education has been further improved ^[1]. From the pursuit of fair educational opportunities to the pursuit of fairness in Quality Education has become the key idea driving Chinese education in the modern period. Nevertheless, the problem of educational inequality still exists. With the intensification of competition and the shortage of social resources in China, families with widespread educational anxiety are constantly increasing education expenditures to keep their children competitive. For example, parents not only take their children to participate in interest classes and extra-curricular tutoring, but also buy school district housing to obtain better educational resources. However, different families have different resources, and there are differences in their educational investment capabilities. Therefore, the quantity and quality of

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educational resources available to children are different. Richer and higher-quality educational resources directly or indirectly transform children's educational advantages and higher social status in the future, resulting in educational inequality. In the process of intergenerational transmission of family capital, education expenditure plays an important channel role. If family education resources show stratification, social classes will continue to be replicated, social mobility will be blocked, and eventually lead to class solidification and the aggravation of educational inequality. The "Matthew Effect" on education expenditure will make the gap between students from different families' capitals widen and continue to pass to the next generation.

At present, many empirical studies have confirmed the link between academic achievement and the family wealth of students^[2]. In addition to exploring the impact of family capital on educational outcomes, the differences in educational investment reflected in family capital have also become research topics. Some studies have shown that families with higher income and parental education spend more on children's education^[3-5]. Fan Xiaojie et al.'s research on poverty-stricken areas in China found that family income and the education level of parents are the two most important factors affecting the family education expenditure of households in poverty-stricken areas at their children's basic education stage^[6]. Studies on family economic capital have found that family income significantly affects education expenditure^[7], and low-income families have a heavier educational burden^[8]. Japanese scholar Hashimoto et al. used the relationship between national income and expenditure in Japan in 1989 to conduct research and discovered that income fluctuations significantly impacted changes in family education expenditure, with the average elasticity coefficient of family education spending being 1.72^[9]. Studies on family cultural capital have found that Chinese well-educated parents tend to value their kids' studies and be inclined to spend greater amounts on them^[10].

The amount of education expenditure reflects the ability of family capital investment, and the proportion of education expenditure to family income reflects the willingness to invest in education. The researchers collected family income and expenditure data from the United States, and 12 Latin American and Caribbean countries. They found that families with higher-educated and higher-income heads spent more on children's education, and education expenditures accounted for a higher proportion of family income^[11]. In contrast, the data on the education expenditure of families with pre-school students in China has revealed that education spending as a percentage of family income increases with lower family income^[12]. In China, compared with high-income families, low-income households spend a greater portion of what they earn on kids' education^[13]. These researches reflect that low-income Chinese families attach significant importance to the education of the next generation.

Although researchers have looked at how family wealth affects the cost of education, they have not used the 2018 China Family Panel Studies (CFPS) questionnaires and data to analyze. This study refines the concept of family capital based on Bourdieu's social capital theory. French sociologist Bourdieu proposed in his social capital theory that the traditional class indicator is material assets such as property, wealth, and income, representing economic capital, and the important class indicator is education, art appreciation, consumption, and leisure hobbies representing cultural capital^[14]. Firstly,

family capital is represented by economic capital and cultural capital. Secondly, economic capital mainly consists of household income, and cultural capital mainly consists of parental education level. The above subdivisions allow the research to examine the impact of household capital more accurately on education spending, the effect of household capital on the ratio of education spending to household income, and whether there are significant differences in education expenditure at different school stages.

2 Method

2.1 Data

This research uses the 2018 CFPS data. CFPS is a large-scale social survey conducted by the China Social Science Survey Center of Peking University. The baseline samples include 25 Chinese provinces, municipalities, and autonomous regions, which account for 95% of the country's population. Therefore, the sample data using CFPS can represent the Chinese population, family, and social situation. The family economic questionnaire collected information on family income. The self-answered questionnaire and the children's parent-answered questionnaire collected information on education expenditure, parental education level, students' gender, students' domicile, and schooling stage.

2.2 Samples

The samples selected in this study are the families of students from preschool to high school. After excluding samples with missing data, this study obtains the family data of 2,979 samples. When collecting education expenditure information in the self-answered questionnaire and the children's parent-answered questionnaire, questionnaires clearly state that the expenses funded by relatives and friends, or other institutions are not included in the education expenditure. Therefore, 74 samples whose education expenditure is higher than the family income are excluded. The study finally obtains the family data of 2905 students from preschool to high school.

2.3 Variables

Dependent Variable

Education expenditure refers to the education-related expenses directly paid by the family in the past 12 months, including fees paid to schools, fees for attending cram schools, tutoring, and other expenses. However, education expenditure excludes funding from relatives and friends or other institutions. This study also introduces family income to calculate the percentage of household income that is spent on schooling.

Independent Variables

Family capital includes family income and parental education level. Family income refers to a family's overall income within the last year, including salary income, rental

income, government subsidies, or other financial support by relatives and friends. Parental education level variables select a higher education level between the father and mother. And then, the study divides samples into four groups, named “junior high school and below-educated families, high school-educated families, college-educated families, undergraduate and above-educated families”.

Control Variables

It is extremely important to control other factors that may affect education investment. In this study, three variables of gender, domicile, and schooling stage are controlled. This study explores the family education expenditure of students in different school stages. Students' school stages are divided into four groups, named "preschool stage, primary school stage, junior high school stage, and high school stage". The preschool stage includes nursery schools, kindergartens, and preschools. The high school stage includes high school, technical secondary school, technical school, and vocational high school.

Table 1. Description of main variables

	All samples in 2018
N	2905
Continuous variable (mean/standard deviation)	
Education expenditure	5438.199 (7206.21)
Family income	72748.2 (80652.55)
The proportion of education expenditure to family income	0.1125 (0.1456)
Classification variable (frequency/%)	
Domicile (rural areas)	2300 (79.17)
Gender (female)	445 (15.32)
Schooling stage	
Preschool stage	1023 (35.22)
Primary school stage	874 (30.09)
Junior high school stage	256 (8.81)
High school stage	752 (25.89)
Parental education level	
Junior high school and below	1819 (62.62)
High school	591 (20.34)
College	275 (9.47)
Undergraduate and above	220 (7.57)

As shown in Table 1, the proportion of family education expenditure to family income is 11.25%. The sample includes a large proportion of rural students (79.17%) and a large proportion of boys (84.68%). And the students in the preschool stage are the most (35.22%), and the students in the junior high school stage are the least (8.81%). The education level of parents in the sample is mostly junior high school and below (62.62%).

2.4 Data Analysis Method

This study mainly uses Multiple Linear Regression to evaluate the effect of family capital on education expenditure. Since the parental education level variable is ordinal, the parental education level is divided into high school and above, college and above, and undergraduate and above, which include in the regression model respectively. Considering that the impact of family capital on education expenditure is affected by gender, domicile, and schooling stage, this study constructs a multiple linear regression model for education expenditure that includes family income, parental education level, and all control variables.

3 Results

3.1 Differences in Household Expenditure on Education

The ANOVA test shows that there are significant differences in the education expenditure of families with different parents' education levels. As shown in Table 2, the higher the parental education level is, the higher the household expenditure they would like to pay on education. The amount of education expenditure of families with a bachelor's degree and above is the highest, with an average value of 11,973.16 yuan. However, there is no significant difference in the proportion of education expenditure to family income of families with different parental education levels.

Table 2. Differences in household expenditure on education

	Education expenditure		The proportion of education expenditure to family income	
	mean	Standard deviation	mean	standard deviation
N		2,905		2905
All samples	5438.199	7206.21	0.1125	0.1456
Junior high school and below	4160.926	5163.17	0.1165	0.1561
High school	5720.293	6146.713	0.1087	0.1297
College	8052.567	9986.795	0.1067	0.1295
Undergraduate and above	11973.16	13246.83	0.0974	0.1092
F		101.22**		1.52

Note: * $p < 0.05$; ** $p < 0.01$.

As shown in Table 3, simple correlation analysis shows that education expenditure is significantly positively correlated with family income, and the proportion of education expenditure to family wealth is significantly negatively correlated with family income. As shown in Figure 1, with the increase in family income, the amount of education expenditure gradually increases. As shown in Figure 2, with the increase in family income, the proportion of education expenditure to family income decreases.

Table 3. Correlation analysis of education expenditure and family income

Variable	Variable	Pearson correlation coefficient
Education expenditure	Family income	0.3576**
The proportion of education expenditure to family income	Family income	-0.2342**

Note: * $p < 0.05$; ** $p < 0.01$.

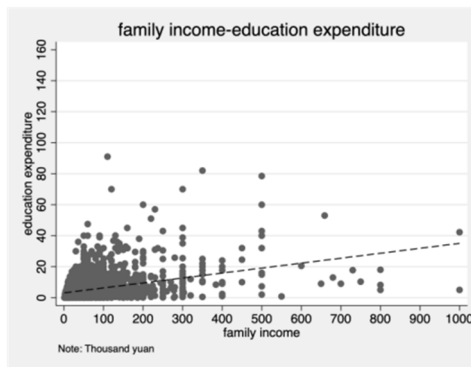


Fig. 1. Relationship between education expenditure and family income

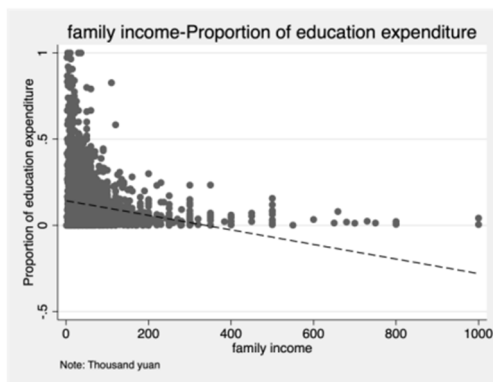


Fig. 2. Relationship between the proportion of education expenditure and family income

3.2 The Effect of Family Capital on Education Expenditure

Since all the control variables in this study have a significant impact on the dependent variable, a multiple linear regression model is created to examine the linear association between education expenditure and family capital after controlling the factors of gender, domicile, and schooling stage. Because the independent variable parental education level in this study is an ordinal variable, three linear regression models were established. The F values (7, 2897) of the three models are 117.81, 122.91, and 120.07 respectively, and the P value ($\text{Prob} > F$) = 0.0000, indicating that the overall model fit is good, and there is at least a pair of significant correlation between variables.

Family income and education spending have a considerable positive association, as demonstrated in Table 4. The amount of money a family would like to spend on education increases with family income. Specifically, for every 1 yuan increase in family income, education expenditure will increase by about 0.028 yuan. Model 1 shows that high school and above-educated families spend 1709.632 yuan more on education than those with junior high school and below-educated families. Model 2 shows that college and above-educated families spend 2954.756 yuan more on education than those with high school and below-educated families. Model 3 shows that undergraduate and above-educated families spend 3564.116 yuan more on education than those with a college degree or below-educated families. Through the prediction of the model, it can be concluded that families whose parents have a higher level of education invest more in education. To sum up, higher family capital significantly increases education expenditure.

Table 4. Effect of family capital on education expenditure

	Education expenditure		
	Model 1	Model 2	Model 3
Family income	0.0276137** 0.0015568	0.0265545** 0.0015623	0.0266488** 0.0015734
High school and above-educated family	1709.632** 276.0932		
College and above-educated family		2954.756** 362.241	
Undergraduate and above-educated family			3564.116**
Gender(female)	580.0286 407.7192	612.65 405.8009	499.8637 614.9584 406.8921
Domicile(rural areas)	-2185.001** 326.0284	-1869.664** 328.4428	-2174.058** 320.487
Preschool stage	-2707.174** 369.6462	-2775.918** 367.3994	-2626.392** 366.8131
Primary school stage	-4298.09**	-4327.956**	-4227.656**

	374.6418	372.7223	373.2197
Junior high school stage	-2763.545**	-2771.646**	-2878.977**
	468.5343	466.2798	467.6503
cons	6921.321**	6913.27**	7307.245**
	440.8045	427.5229	419.6235
Adjusted R ²	0.2197	0.2271	0.2230
Obs	2905	2905	2905

Note: * $p < 0.05$; ** $p < 0.01$.

3.3 Different School Stages on Education Expenditure

The results of the ANOVA test reveal that students in various educational stages spend significantly different amounts on education ($p < 0.001$), and there are also significant differences in the proportion of educational expenditures of students in different schooling stages ($p < 0.001$). As shown in Table 5, the average education expenditure of high school students and preschool students is higher than that of primary students and junior high school students. Except for the primary school stage, the proportion of education expenditure of families of students in other school stages exceeds 10%. The education expenditure of high school students accounts for the highest proportion of household income, which is 17.94%. The education expenditure of primary school students accounts for the lowest proportion of family income, which is 6.89%.

Table 5. Different school stages on education expenditure

	Education expenditure		The proportion of education expenditure to family income	
	mean	standard deviation	mean	standard deviation
N		2,905		2,905
All samples	5438.199	7206.21	0.1125309	0.1455661
Preschool stage	5597.413	6360.982	0.1008013	0.1195515
Primary school stage	3536.561	6658.702	0.0689072	0.1211062
Junior high school stage	4513.809	7561.18	0.1119261	0.1535829
High school stage	7746.443	8057.13	0.1793941	0.1747827
F		39.09**		66.50**

Note: * $p < 0.05$; ** $p < 0.01$.

4 Discussion

4.1 Insufficient Educational Resources Available to Families have Become Barriers to Class Mobility

China's preschool through high school students are the subjects of this research, which looks at the effect of family wealth on educational costs in 2018. From the perspective

of parental education level, which represents the family's cultural capital, the higher education level of parents will spend more education expenditure on their children. The following explanations could explain this. First, the intergenerational transmission of cultural capital enables more educated parents to realize that education is an important way to maintain social class and achieve the class transition, so they are prepared to devote more funds to their children's schooling. Secondly, parents with higher education have benefited from their occupational status, upbringing, and taste, so they are more likely to create a high-quality family learning environment for their children. For example, parents will buy enough books, visit museums and art galleries with their children, and cultivate children's interests and skills.

From the perspective of family income representing family economic capital, families with higher incomes can invest more funds in the education of the next generation after meeting basic living needs. Families with high capital can seek various channels for further education by replacing cultural capital with economic capital and trying to let their children enter famous schools. On the contrary, disadvantaged families at the bottom of society can only passively obtain educational opportunities^[15]. The proportion of family income spent on education can indicate how "willing" parents are to spend money on their kids' schooling. The study finds that low-income families are willing to invest more in education, which reflects that low-income families attach great importance to education and hope to achieve social mobility through education.

4.2 Financial Subsidies for Students' Families in High School can Make Up for the Deficiency of Educational Resources

The education expenditure of high school students becomes a large expenditure for the family. The reason is that high school is an optional educational level in China, and teenagers in high school face highly competitive college entrance examinations, so the family's education expenditure is mainly tuition fees and extracurricular studies. The proportion of family education expenditure for primary school students is the smallest. The reason why primary school students' education expenditure is lower than other schooling stages is that government has financial subsidies to make free compulsory education available in primary school.

4.3 Suggestions for Optimizing Educational Resources

"China's Education Modernization 2035" mentioned that the three key development objectives for China in 2035 are to widely popularize high-quality preschool education, implement high-quality and balanced compulsory education, and achieve universal high school education.^[16] In this regard, the Chinese government should strive to solve the "Matthew Effect" in education expenditure, and the Chinese government and families should make use of family capital to play a positive role in education investment. Firstly, the government has a preferential policy of giving education subsidies to low-income families of high school students and has extensively established cultural venues such as museums, libraries, and cultural palaces that are free to the public, to make up for the lack of family economic and cultural capital. Secondly, with the transformation

and upgrading of China's industrial structure, the demand for human capital is also gradually increasing. Therefore, it is far from enough to implement nine-year compulsory education. It is feasible and necessary to extend compulsory education to high school^[17]. By extending the years of compulsory education, families of high school students can reduce their education expenditure. Thirdly, the crowding-in effect of public education financial investment on family education spending should be utilized by the government. The local government will increase the financial allocation per student, which will lead to a higher proportion of family education expenditure^[18]. That is to say, the investment in public education finance makes the family's expenditure on tuition fees transformed into more suitable and high-quality educational resources.

5 Conclusion

According to this study, the parental education level significantly influences how much money Chinese households spend on their children's education, from preschool through high school. Yet, the proportion of education costs to family income is not significantly impacted by the educational attainment of the parents. Family income has a strong positive impact on educational spending, but it has a significant negative impact on how much of a share of family income is spent on education. It demonstrates how wealthy families devote more financial and cultural resources to their kids' schooling. Therefore, children are more likely to achieve higher academic achievements. Education expenditure that plays a channel role in the intergenerational transmission of family capital lead to stage solidification and educational inequality, which has appeared as the "Matthew Effect" in education expenditure. In addition, low-income families are more willing to invest in education. There are significant differences in the education expenditure of families of students at different schooling stages. Among these stages, the family education expenditure of high school students is a large expenditure of the family.

This study reveals that insufficient educational resources available to families become barriers to class mobility. Education in China stresses fairness—every citizen has educational opportunities, so the Chinese government should take responsibility for education equity and social fairness. The Chinese government should provide preferential policies for education subsidies for low-income high school student families, establish free cultural venues, and include high schools in free compulsory education. In addition, the crowding-in effect of public education financial investment on family education spending must be actively utilized to persuade families to spend money on their kids' education. Education is a systematic project. It is very important and challenging to create a fair education ecology.

It should be noted that since this study uses data from the 2018 CFPS, its sample capacity is still limited compared to China's huge educated population. What's more, China's family education expenditures are divided into two parts: on-school education expenditures and out-of-school education expenditures. This study does not analyze these two parts separately, and there may be deviations in the estimation of education expenditure in different school stages. In the future, the variables of education expenditure can be further refined, which is conducive to in-depth research on this topic.

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