

Impact of the Financial Resources Allocated to Education in Each Region on Family Investment in Education at the Compulsory School Level

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Abstract: Compulsory education has a vital role in the process of national development, so financial education funding is a public expense that must be guaranteed and implemented by all regional governments. And family education investment also plays an important role in education as the supplementary funding for every school-age child to receive education. Due to data limitations, the number of studies on the relationship between the two is relatively small, so this paper, based on the micro-database of the China Education and Finance Household Survey (CIEFR-HS), examines in depth the impact of financial education funding on household education inputs during the compulsory education stage, and accordingly makes recommendations for policy targeting. The result reveals that the local financial expenditures on compulsory education have a significant “crowding-in effect” on families’ education investment. The present study provides novel evidence on the relationship between educational investment and household investment and accordingly makes recommendations for policy targeting.

Keywords: financial education funding, compulsory education, family investment in education

1. Introduction

Education is an important way to cultivate talents and the basis for improving the soft power of the country. The report of China’s 20th National Congress emphasized the strategy of developing the country through science and education and made it clear that education plays a major role in building a strong socialist modernized country in an all-round way. This requires government departments to increase financial expenditures on education and ensure financial education funding in all regions. However, in recent years, due to the rapid development of extracurricular training institutions, students and parents have been investing more and more in extracurricular tutoring, a situation that not only intensifies competition among families in terms of educational investment, but also affects educational equity and intensifies the burden of education on families at lower income levels. In response, the State promulgated the “Double Reduction” policy in 2020, aiming to reduce the burden of learning on students in compulsory education, especially the burden of extracurricular training, and to promote equity in education. In implementing this policy, on the one hand, the government needs to strictly regulate all kinds of extracurricular training institutions, and on the other hand, it

also needs to use various methods of data analysis to help clarify the relationship between financial education funding and family education investment in each region, so that financial education funding can be used to alleviate the pressure on family education investment, and thus promote education equity among children from different families in different regions.

2. Literature Review

The study of the relationship between financial education expenditure and family education input is a frequently discussed issue in the field of education economics, and there are a large number of studies on this topic, basically concluding that financial education expenditure affects family education input and further affects education outcomes. Some scholars believe that the increase in financial education expenditure is conducive to the increase in family education investment, and that there is a “complementary” relationship between the two, i.e., financial education expenditure “crowds in” family education investment. Jiang concluded that: in the elementary school stage, the county financial education per capita expenditure of every 1% increase in expenditure, can promote the county’s family education investment growth of about 0.3 percentage points; but in the junior high school stage, the county financial education expenditure of the county’s family education investment impact is less significant [1]. Gong Yuhua, Zhang Jinhua, and Chen Bo’ou argue that there is a clear “complementary” relationship between financial education funding and family education savings, and that the increase in financial education funding prompts parents to increase the amount of money they will invest in their children’s education, which is another form of increasing This is also another form of increase in financial education expenditure, while the family education investment increases [2].

In this regard, there is another part of the study that believes that the increase in financial education expenditure has a counterproductive effect on family education inputs, that is, financial education expenditure “squeezes out” family education inputs, and that the relationship between the two is one of “substitution”. Li Lixing, Zhou Guangsu in the “family borrowing constraints, public education spending and social mobility” that the more financial education spending, the lower the educational input of low-income families, financial education spending to make up for the educational input of low-income families, but for families with higher incomes, the role of financial education spending is not significant [3]. In Jia Nan and Liu Guoshun’s “Whether the equalization of compulsory education can effectively reduce the family out-of-school education expenditure”, out-of-school tutoring is regarded as a representative indicator of the family education input, and the study concludes that the investment of financial education funding is conducive to reducing the participation of students in out-of-school tutoring, i.e., reducing the family education input [4].

Family education input is actually another form of residents’ consumption, and most of the current scholars refer to Keynes’ theories such as the expenditure multiplier effect and national income determination to study the relationship between government financial expenditure and residents’ consumption from a macro perspective. Keynes’s expenditure multiplier effect refers to the changes in public expenditure, resulting in changes in aggregate social demand, thus making the national income increase or decrease, when the government departments to carry out the expenditure, the enterprise or private will be gained from it, so there will be a part of the income will be put into the consumption link again, the other sectors of the income in the process continues to increase, the national income will continue to increase. Other studies also provide evidence on the relationship between financial investment in education and household investment in education, however, as mentioned earlier, the current research does not lead to consistent conclusions [5-10].

3. Method

This paper will take the data from Peking University's China Education Finance Household Survey as the basis to empirically study the impact of financial education funding on household education investment from a micro perspective. In order to achieve the purpose of accurate results and diversified research content, the study will focus on the differences in education investment of families with different structures and draw empirical conclusions from the perspective of heterogeneity.

3.1. Data Source

The microdata for this paper comes from the China Institute for Educational Finance Research-Household Survey (CIEFR-HS) of Peking University, a nationwide database specializing in household investment in education. The survey has a broad scope, including 29 provinces across the country (except Tibet, Xinjiang, and Hong Kong, Macao, and Taiwan). The sample size is 40,000 households, involving data on 127,012 household members, including 21,000 schoolchildren aged 0-16 and over, 14,000 primary and secondary schoolchildren, and 12,732 and 27,279 households in rural and urban areas respectively. The survey contains information on students' attendance, enrollment choices, household status and household investment in education at all education levels.

This paper also collects the 2017 Statistical Table on the Implementation of Education Expenditures in each province and city, and matches the data on family education inputs in the CIEFR-HS database with the 2017 per capita general public budget education expenditures for education at the county level therein as a proxy variable for the per capita per capita financial education expenditures of the provincial government, to compose the cross-sectional data that meets the requirements of this paper's research.

3.2. Variable Selection and Model Construction

Referring to the existing studies on the factors affecting family education investment, this paper argues that in the compulsory education stage, family education investment is affected by three aspects: the first is the family's resource situation, which is reflected in the family's income and expenditure situation as well as the basic situation of the parents, etc.; the second is the financial education expenditure, which is mainly reflected in the average per capita financial education expenditure; and the third is the level of the economic development of the area belonging to the host county, which not only affects the implementation of education policies, but also influences parents' education philosophy in an invisible way.

Based on the above analysis, this paper takes the family compulsory education investment as the dependent variable, and selects per capita family income, the mother's education level, the number of students in the family, the gender of the students, the performance of the students, the region to which the county belongs to, and the household registration as the explanatory variables to establish a regression model, and the model is as follows:

$$\ln Y = \alpha_0 + \beta_1 \cdot \ln \text{avgstudent} + \gamma \cdot X_i + \varepsilon_i \quad (1)$$

Where: the dependent variable Y is the family's investment in children's education, and the family education investment examined in this paper includes: in-school education expenditure and out-of-school education expenditure. Among them, in-school expenditures include tuition and miscellaneous fees and other in-school expenses; out-of-school expenditures are mainly educational products and services purchased by families, which mainly include the purchase of learning materials and supplies and out-of-school training expenses. The independent variable avgstudent is the total per-pupil

compulsory education expenditure of the provincial government where the household is located, which is the policy variable the present study focuses on, and to avoid heteroskedasticity, it is logarithmically processed, and its coefficient β measures the impact of the government's financial education expenditure on the household's investment in education. The independent variable X_i is the relevant control variables affecting household education investment, including per capita household income, mother's education level, number of students in the household, student gender, student performance, county affiliation, household registration, etc. ε_i is the random interference term. The names of the variables with their corresponding variables are shown in Table 1. Refinement of the model can be obtained:

$$\ln Y = \alpha_0 + \beta_0 \cdot \ln \text{avgstudent} + \beta_1 \ln \text{pincome} + \beta_2 \text{stusize} + \beta_3 \text{mothedu} + \beta_4 \text{gender} + \beta_5 \text{performance} + \beta_6 \text{rural} + \beta_7 \text{region} + \varepsilon_i \quad (2)$$

Table 1: Interpretation and treatment of variables.

nature of variables	variable representation	
explained variable	Y	Investment in family education
	avgstudent	Total per capita expenditure on compulsory education in the province where the household is located
	pincome	Per capita household income
	stusize	Number of pupils in the family
explanatory variable	mothedu	Mother's level of education
	gender	Sex of students
	performance	Student Achievements
	rural	household registration
	region	County-owned area

4. Result

The proxy variable for per-pupil financial education expenditure on compulsory education in the county where the household is located is the per-pupil general public education budget funding for primary and middle schools.

Household education investment = in-school expenditure (children's tuition + school fees) + out-of-school expenditure (out-of-school training + other out-of-school expenditure).

Students' performance is categorized into five grades of excellent, upper-middle, middle, lower-middle, and unclear, quantified as 1, 2, 3, 4, and 5, respectively, according to their performance ranking.

Mother's educational attainment was measured by the number of years of mother's education.

Household registration is categorized into rural and urban and is represented by the zero-one variable, with 1 representing rural and 0 representing urban.

Considering that there are large differences in economic and social development as well as in the degree of importance attached to education by the government and society in different regions of the country, in order to study the variability of household education investment in different regions, the CIEFR-HS database redistributed the sample by region, specifically dividing it into the Northeast region. The regions to which the counties belonged were categorized as Eastern, Northeastern, Central, and Western, quantified as 1, 2, 3, and 4, respectively, with the Eastern region including Beijing, Tianjin, Shandong, Hebei, Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong, and Hainan; the Central region including Shanxi, Anhui, Hunan, Jiangxi, Henan, and Hubei; the Western region including Inner Mongolia, Guangxi, Yunnan, Chongqing, Sichuan, Ningxia, Guizhou, Shanxi, Gansu, and Qinghai; and the Northeastern region including Inner Mongolia, Guangxi, Yunnan, Chongqing, Sichuan, Ningxia, Guizhou, Gansu, and Qinghai; and the Northeastern region including Northeastern China. Gansu, Qinghai; Northeast region includes: Heilongjiang, Liaoning, Jilin. Descriptive statistics for each variable are presented in Table 2.

Table 2: Descriptive statistics for each variable.

variabilit y	sense	brochur e	average s	standar d deviation	minimu m value	maximu m values
Y	Investmen t in family education	514	9366	14107	0	94180
avgstuden t	Financial expenditure per pupil in primary schools	353	11386	5809	4374	35889

Table 2: (continued).

	Financial expenditure per pupil in lower secondary schools	161	17158	8647	6074	47803
pincome	Per capita household income	514	22779	29338	100	216667
stusize	Number of pupils in the family	514	1.420	0.662	1	4
mothedu	Mother's level of education	514	9.906	3.949	0	18
gender	Sex of students	514	0.511	0.501	0	1
performance	Student Achievements	514	2.533	1.014	1	5
rural	household registration	514	0.329	0.471	0	1
region	County-owned area	514	2.297	1.260	1	4

4.1. Regression Analysis

Table 3 demonstrates the estimation results of the impact of local financial education expenditure on household education investment in the 2017 China Education Finance Household Survey (CIEFR-HS) sample. Compulsory education is divided into elementary school stage and middle school stage, and in order to compare the differences in financial education expenditure on household education inputs at different stages, stage-by-stage heterogeneity analysis is used. Model (1) retains the elementary school sample and model (2) retains the middle school sample. The models all use robust regression, and in order to avoid heteroskedasticity, the variables of county-level financial expenditure on compulsory education, per capita household income and household education investment are treated in logarithmic terms, and there is no multicollinearity among the variables.

For the core explanatory variable of this paper - county-level compulsory education financial investment, in the primary stage of compulsory education, the regression results show that the local compulsory education financial expenditure has a significant “crowding-in effect” on the education investment decision of households, i.e., the growth of the local financial expenditure on education per pupil in the primary stage is conducive to the significant growth of education investment of households. The growth of local per capita education financial expenditure is conducive to the significant growth of household education investment. For every 1 percentage point increase in county-level per capita compulsory education financial investment, it will lead to a 0.28 percentage point increase in the compulsory education investment of families in the county. At the compulsory middle school level, the effect of county-level compulsory education expenditure on household education investment is not significant.

As a control variable, at the elementary school level, the effect of per capita household income on household education input is significant, i.e., every 1 percentage point increase in per capita household income will cause an increase of about 0.45 percentage points in household education input at the elementary school level. However, in the compulsory middle school stage, per capita household income does not have a significant effect on household education investment.

The effects of other control variables on family education input can be observed from models (1) and (2), the mother’s education level has a significant effect on family compulsory education input. In the elementary school stage, every increase of 1 year of mother’s education will lead to a 15.6% increase in household investment in compulsory education. At the lower secondary level, an increase of one year in the mother’s education will lead to an increase of only 7.45% in the household’s investment in compulsory education. It can be seen that the mother’s level of education has a greater impact on the family’s investment in education when the children are in elementary school.

In addition to the mother’s level of education, the number of pupils in the household has a significant positive effect on the household’s investment in education when the children are in elementary school, i.e., a 1% increase in the number of pupils in the household leads to an increase in the household’s investment in compulsory education by 26%; however, a similar effect does not exist for lower secondary school households. Similarly, the urban-rural difference of families also has a significant effect on their compulsory education investment, for the elementary school level, urban families invest about 28% more than rural families in compulsory education for their children; for the middle school level, the effect is raised to 47.7%. It can be found that urban households invest significantly more in education than rural households, and this phenomenon is even more obvious at the junior high school level. Therefore, the financial expenditure on compulsory education will have a more significant “crowding-in effect” on households’ investment in education in urban areas with high-quality education resources, while it will have a less significant “crowding-in effect” in rural areas with weaker education resources. In rural areas, where educational resources are weaker, there

is a less significant “crowding-in effect” or even a “crowding-out effect”. The effects of student gender, student performance and county location on family education investment are not significant.

Table 3: Regression results of compulsory education financial expenditures affecting household investment in education.

variability	elementary school	junior high school
	(1)	(2)
inavgstudent	0.286** (0.124)	0.358 (0.255)
lnpincome	0.452*** (0.0823)	0.120 (0.0897)
mothedu	0.156*** (0.0206)	0.0745** (0.0310)
gender	-0.188 (0.122)	-0.0892 (0.214)
stusize	0.265** (0.106)	-0.212 (0.170)
performance	0.0440 (0.0635)	0.139 (0.105)
rural	-0.282* (0.157)	-0.477* (0.245)
region	0.00820 (0.0544)	0.0660 (0.0892)
Constant	-0.475 (1.392)	3.227 (2.708)
Observation	353	161
R-squared	0.498	0.230

Note. *, < .05, **, < .01, ***, < .001

5. Discussion

Based on the findings, this paper makes the following recommendations for future education policy making:

5.1. Management of Off-campus Institutions

Adhere to the “double reduction” policy and strictly manage off-campus training institutions.

The research in this paper finds that family education inputs have increased along with financial education inputs, which means that the current financial education inputs fail to take into account the dual goals of increasing education inputs and “reducing the burden”. This paper argues that an important way to harmonize the two policy goals is to improve the substitutability of government and family education inputs, and that the implementation of the “double-decrease” policy can solve this problem. On the one hand, the implementation of the “double reduction” policy can solve this problem, because, on the one hand, off-campus training institutions can be strictly regulated, so as to standardize the chaotic phenomenon caused by the rapid expansion of the training market, and enable the public to look at off-campus training in a more rational manner, so as to reduce unnecessary education expenditure. On the other hand, the implementation of the “double-decrease” policy is conducive to the improvement of the school education model, which helps to cultivate all-round development of students, improves the quality of education, and ensures the adequate development of compulsory education, thus realizing a high level of fairness in the results of compulsory education.

5.2. Mode Changing of Financial Investment and New Compensation Mechanism for Compulsory Education

Changing the mode of financial investment in public education and building a diversified compensation mechanism for compulsory education.

Since family education inputs are affected by family conditions such as per capita family income, the mother’s level of education, and the number of students in the family, this requires the government to take family conditions fully into account when promoting the balanced development of compulsory education and to develop a dynamic compulsory education compensation mechanism based on the family’s economic and cultural background. Given that the current per-pupil financial education funding is in the form of targets to schools, local governments can adopt the form of directly distributing education compensation to rural and impoverished families as well as individuals, breaking the singularity of the public education financial investment model and constructing a diversified compensation mechanism for compulsory education.

5.3. Educational Equity

Educational policy level should be tilted to the disadvantaged areas, to enhance the rural areas of the education investment in order to update the backward teaching facilities and equipment, focusing on increasing the construction of information technology, to achieve hardware upgrading. At the same time, the local authorities need to pay teachers’ subsidies on time and in accordance with the provisions of the central government’s policy, and make efforts to strengthen the construction of the teaching force, improve the “soft power” of rural schools, and guarantee the education level of rural students.

6. Conclusion

This paper uses the macro database of China Education Finance Household Survey (CIEFR-HS) and the 2017 Statistical Tables on the Implementation of Education Expenditures by Provinces and Municipalities to conclude that, in the primary stage of compulsory education, the local financial expenditures on compulsory education have a significant “crowding-in effect” on the decision-making of families’ education investment. Moreover, in the lower secondary stage of compulsory education, the financial expenditures at the county level have a significant “crowding-in effect” on

the decision-making of families' education investment. At the lower secondary compulsory education level, the effect of county-level compulsory education expenditure on families' investment in education is not significant. Therefore, when the government formulates and implements education policies, it should pay attention to the impact on families' investment in education and provide correct and reasonable guidance. The government not only needs to strictly manage education and training institutions, but also needs to formulate a diversified compensation mechanism for compulsory education to ensure educational equity.

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