"Two Parents" VS "Single Parent": What Drives Chinese Family Education Expenditure

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Abstract. With the emergence of the "single-parent" social phenomenon, an augmenting number of studies have been carried out on marriage issues. However, few articles focused on the empirical study of the "single-parents" or "two-parent "effect on family education expenditure. Based on data from the China Comprehensive Social Survey in 2015 (CGSS2015), this study examines the impact of the marital status of householders on it. The results of the study are as follows: Firstly, there are differences in education expenditure between "single-parent" and "Two-parent " families. The education expenditure of "two-parent "family is significantly lower than that of "single-parents". The education expenditure of the middle-aged householders in "two-parent" family is significantly higher than that of the middle-aged householder in "single-parents" family; the education expenditure of the young householder in " two-parent " family is lower than that of the young householder in "single-parents" family, which offsets that of the young householder in " two-parent " family. The investment in education is higher than the expenditure on education of the young householders in "single-parents" family, which leads to the fact that the expenditure on family education of the young householder in "two-parent" family is still higher than that of the young householder in "single-parents" family. Second, the expenditure on family education of the level of education of the householder is greater than of the young householder in "single-parents" family. There is a promotive effect whether the whole sample or the sub-sample, the conclusion is very consistent: holding other variables constant, the education acquisition of the householder has a significant positive correlation with the total expenditure on education of the children (logarithm), and the householder with more education acquisition generally pays more attention to the education of the next generation and they spend more on the education of the child.

Keywords: "Two-parent" or "Single-parents" effect; family education expenditure; correlation analysis; variance inflation factor; multiple regression.

1. Introduction

Whether in developed or developing countries, education has traditionally been a matter of national future. Since the implementation of the "Compulsory Education Law of the People's Republic of China" in April 1986, China's education construction has been continuously promoted, the system has been continuously improved, and the quality has been continuously improved. The report of the 18th National Congress of the Communist Party of China also stated that "education is the foundation of national rejuvenation and social progress" and "adhere to the priority development of education". This shows the significance of education for our country.

1.1 Research Backgrounds and Significance

1.1.1 Research Background

In today's society, parents generally place great importance on their children's education. They often start to enroll their children in various tutoring classes from preschool, and never let their children loose on the starting line. This phenomenon reflects that more and more people realize that education is not only a pure consumption activity, but also an investment, which has long-term significance for the progress of individuals and society. For society, the progress of education is an important way to improve production efficiency and then social productivity; for families, education is an important means to increase future family income, improve future living standards, and improve future social status. There are increasingly single parents in the society, and they have also attracted more and more attention from government, academics and the media. According to data provided by the CGSS2015 database, 21.89% of household heads are single parents, and single parents account for 20.76% of household heads under 50 years old. These lone parents are more

stressful and difficult to care for and educate their children than their parents. From this perspective, this article focuses on the analysis of educational expenditures in "head single" and "parent-to-parent" households.

1.1.2 Research Significance

Because education is under a significant positive effect on the future of society, families, and individuals, a systematic study of education expenditures by different families is of great theoretical and practical significance. This study focuses on the marital status of heads of households in "single-parents" or "parents-to-parents" families, and studies household education expenditures in China.

First, the theoretical significance is mainly reflected in two aspects: On the one hand, theoretically understanding the marital status of heads of households in "single-parents" or "both parents" and the current status and new developments in China's research on family education expenditures have consolidated Theoretical basis. Secondly, starting from the analysis of the data, it shows the changes in the overall education expenditure and its internal structure in China. Explore the factors that affect family education expenditure from the micro-level of the family and make a reasonable explanation for it. On the other hand, although the economic development levels and socio-cultural forms of countries and regions are diverse, this study hopes to explore the impact of social and economic changes, educational changes, and the family itself on family education expenditures in the future. Analogous studies provide a useful research paradigm.

Second, the practical significance of macro and micro: From a macro perspective, by studying the impact of various factors on education expenditure, we can propose some reasonable policy recommendations, such as adjusting the distribution of education resources in various regions and adjusting the income of related industries. This promotes educational equity and optimizes the distribution of educational resources. From a micro level perspective, investigating the influence factors of household heads' marital status on family education expenditure in "single-parents" or "both parents" families can guide household consumption and investment decisions. There have been many studies on the impact of parents' expenses on children's schooling. Because the research methods adopted by us and the channels for data acquisition are very atypical, the research conclusions are also different. Based on the summary of previous studies, this study intends to select 16 important factors among the eight major categories of related factors, and use correlation analysis, multiple regression analysis, and ordered logit regression methods to explore the specific factors that affect household education expenditures.

1.2 Research Purpose

Existing studies have confirmed the influence of many factors on household education expenditure and household education investment decisions from the perspective of quantitative analysis. However, different research sources use different data sources. At the same time, the definition of family education expenditure must be dissimilar, so that the research conclusions obtained from the analysis are also very different. However, with the development of social economy and the improvement of people's scientific and cultural quality, the degree of impact of the factors that the scholars paid attention to on family education expenditure is likely to have changed quietly. Therefore, the main research purpose of this book is to systematically explore which factors will have a decisive effect on parents' expenditure on children's education under so many influencing factors. How much influence do these factors have? What effect does the marriage status of heads of households on "single-parents" or "both parents" have on family education expenditure? This is the aim of this article.

2. Variable Selection, Data Sources and Descriptive Statistics

2.1 Selection of Variables

2.1.1 Dependent Variable

Total family education expenditure (lneduexp). This article uses the logarithm of family education expenditure to measure the investment in family education. China's urban household education expenditures are mainly used in three areas: (1) books, tuition and fees, school accommodation, meals, transportation and other expenses to meet basic education needs. (2) School selection fees, borrowing fees, etc. to obtain quality education resources. (3) The tuition and interest classes invested to further enhance the children's various qualities. Family children, education expenditure (yuan), continuous variables, logarithmic processing, data sourced from CGSS2015 item E76. "How much is the child's education expenditure and other education and training expenditure in the family expenditure situation of your family in 2014?" The sub-item e767 is calculated as: family education expenditure = children's education expenditure + other education and training expenditure.

2.1.2 Independent Variables

This article first sets out the influencing factors on education expenditure, cost, and investment in existing research, and summarizes 19 key factors. Among the 19 variables selected, after correlation and collinearity tests, 16 variables are retained and shared. There are 8 categories, which are the heterogeneity of head of households, living conditions, economic conditions, economic burden, investment situation, family size, patriarchal preference and interview locations.

2.2 Data Sources

This study utilizes data from the 2015 Chinese General Social Survey (CGSS) cross-section survey. The survey was undertaken by the Survey and Data Center of Renmin University of China. The survey covers 22 provinces, 4 autonomous regions, and 4 municipalities (excluding Tibet Autonomous Region and Hong Kong, Macao, and Taiwan regions) in the country. Multi-level stratified sampling was adopted in sampling: a district (county), street (town), neighborhood committee (village committee) and households, and a sample survey was conducted on adults in most provinces in mainland China. The 10,968 valid questionnaires from the survey data in 2015 totaled 10,968 samples, of which the key variables related to household education expenditure were in the energy module of Part E. This study excluded samples with missing or outliers on relevant core variables (such as selecting "not applicable", "don't know", "don't understand", etc.), and deleted samples less than the legal marriage age (male age Under the age of 22, and women under the age of 20). At the same time, considering that in most Chinese households, sole heads of households over 50 years old are mainly widowed, rather than choosing singles, so a sample of heads of households over 50 years old was deleted. The 2015 survey data retained 6,594 valid samples.

2.3 Descriptive Statistics

The following is a descriptive statistics of the main variables in the uncut sample. It can be seen that the standard deviation of education expenditure is 95746.8. The minimum value is 0, and the maximum value is $1.00e + 07$. It is sufficient to see that the family education expenditure in China is very different. For the educational status of the head of household, the standard deviation is 3.124, the minimum value is 0, and the maximum value is 13, indicating that the education level of the head of household is uneven. The average household head's marital status is .781, the standard deviation is .413, the minimum value is 0, and the maximum value is 1, indicating that as many as 21.9% of the heads of households belong to the type of "single-parents". Further specific details are shown in Table 1 below.

Table 1. Descriptive statistics of the main variables

Variable	Number of samples	Mean	Standard deviation	Minimum value	Maximum value
id	10968	9406.535	5101.11	1	18195
s41	10968	15.193	8.914	1	31
s42	10968	42.667	27.176	1	89
s43	10968	70.788	38.683	1	134
s44	10968	174.397	108.446	1	370
s45	10968	244.551	140.737	1	487
birthofyear	10968	1964.603	16.898	1920	1997
familyinc	10967	66321.3	284000	0	1.00e+07
familysize	10968	2.888	1.489	0	50
houseno	10968	1.103	1.131	0	96
minorchildno	10968	.401	.718	0	6
ask99	10968	3.523	1.69	1	6
eduexp	10968	2040.477	95746.8	-3	1.00e+07
familyexp	3653	35729.77	240000	-3	1.00e+07
lneduexp	10968	1.067	2.829	0	16.118
lnfamilyexp	10968	2.779	4.5	0	16.118
work	10968	.572	.495	0	1
invest	10968	1.015	.177	0	5
gender	10968	.532	.499	0	1
nationanlity	10968	.921	.27	0	1
religion	10968	.454	.498	0	1
education	10949	3.88	3.124	0	13
maritalstatus	10968	.781	.413	0	1
partymember	10968	0	0	0	0
SES	10968	.714	.548	0	2
edumisallocation	10968	.09	.32	0	2
young	10968	.22	.414	0	1
mid	10968	.381	.486	0	1
old	10968	.399	.49	0	1
hukou	10947	.33	.47	0	1
maleosratio	9506	.567	.39	0	1
lnfamilyinc	9857	10.509	1.148	5.298	16.118

3. Analysis of Influencing Factors of Household Education Expenditure

3.1 Correlation Tests

Total household expenditure has the most significant impact on education expenditure, at 0.619. The aggregate household expenditure, head of household work, year of birth, number of members under the age of 18 in the household, and number of households all have significant effects on education expenditure, all ranging from 0.1 to 0.2.

The results show that several variables that have a significant effect on education expenditure are directly or indirectly closely related to "expenditure". The positive correlation between total household expenditure and education expenditure is consistent with common sense, but a problem emerged in further research: In general terms, total household income has a large impact on total household expenditure, but total household income is related to total household expenditure. Sex is not high, we speculate that this is due to the consumption habits of Chinese people who like to save money, so in general, the above situation is in line with actual conditions.

The least impact on education expenditure is the gender of the head of household, which is only 0.009, which are also consistent with the current situation of equality between men and women in today's society.

3.2 Model Settings

The multiple regression model is set as follows:

$$
\begin{aligned}
Inedu\exp_i = {} & \beta_0 + \beta_1 gender + \beta_2 nationality + \beta_3 religion + \beta_4 education \\
& + \beta_5 maritalstatus + \beta_6 SES_i + \beta_7 hukou_i + \beta_8 houseno_i + \beta_9 \ln familyinc_i \\
& + \beta_{10} work_i + \beta_{11} \ln family\exp_i + \beta_{12} \min orchildno_i + \beta_{13} invest_i \\
& + \beta_{14} familysize_i + \beta_{15} maleosratio_i + \beta_{16} s42_i + \varepsilon_i
\end{aligned}
\tag{1}
$$

Where i is the individual.

3.3 Multiple Collinearity Test

After excluding the elderly sample and doing the correlation test, family education expenditure was subjected to multiple regression on 18 variables, and then the variance expansion factor analysis was performed. The results are presented in table 3 below. Depending on the general consensus in academia, variables with a variance expansion factor greater than 10 and variables with a high correlation coefficient were deleted, and then multiple regression and variance expansion factor analysis were performed again (see Table 2 for results).

Table 2. Analysis results of variance expansion factor for 18 variables

Variable	VIF	1/VIF
birthofyear	3.62	0.28
mid	2.91	0.34
education	1.59	0.63
minorchildno	1.56	0.64
lnfamilyinc	1.48	0.68
hukou	1.26	0.80
familysize	1.19	0.84
SES	1.14	0.88
work	1.12	0.89
gender	1.09	0.92
houseno	1.06	0.94
maritalsta~s	1.05	0.95
nationanlity	1.04	0.96
invest	1.04	0.96
s42	1.04	0.96
religion	1.03	0.97
maleosratio	1.01	0.99
lnfamilyexp	1.01	0.99
Mean VIF	1.40	

Table 3. Analysis results of variance expansion factor of 16 variables

Variable	VIF	1/VIF
education	1.50	0.66
lnfamilyinc	1.47	0.68
hukou	1.24	0.81
familysize	1.17	0.85
minorchildno	1.16	0.86
SES	1.14	0.88
work	1.11	0.90
gender	1.08	0.93
houseno	1.06	0.94
maritalsta~s	1.05	0.95
nationanlity	1.04	0.96
s42	1.04	0.97
invest	1.04	0.97
religion	1.02	0.98
maleosratio	1.01	0.99
lnfamilyexp	1.01	0.99
Mean VIF	1.13	

Combining the correlation test and analysis of variance expansion factor, 16 variables were finally selected.

3.4 Multiple Regression Analysis Results

This paper selects the full sample and sub-sample (fresh sample (35 years old and below), middle-aged sample (36-50 years old)) for multiple regression.

3.4.1 All Samples

For the entire sample, the effect of the marriage status of the head of household, the religious beliefs of the head of household, the education level of the head of the household, and the size of the family members on the total educational expenditure (logarithm) of the children of the family are significant, all significantly below 10%. The gender of the head of household, ethnicity, socioeconomic status, number of houses owned, investment status, city visited, household income (logarithmic), working status of the head of household, number of minor children in the household, household expenditure (logarithmic), children The influence of male proportion in the population is not significant. The adjoint probability of the F statistic is lower than 0.010, so the independent variables of the following model have a significant joint effect on household education expenditure (take the log) at a 1% confidence level.

We found the following four conclusions:

(1) With the control of other variables unchanged, the regression coefficient of the head's marital status to family education expenditure is a positive number, between 0.520-0.604, which is consistent with the expected sign, and is significant below the 5% level. Explain that the total cost of education (taken by the logarithm) of the children of "parents" families is 0.520-0.604 units higher than that of "lone parents" families.

(2) In the case of controlling other variables, the regression coefficient of the head's religious beliefs on the total education expenditure of the children of the family (taken as the logarithm) is a positive number between 0.0941 and 0.156, which is consistent with the expected sign. Its impact on the total education expenditure (logarithm) of the children of the family is significant below the 5% level. Heads of households with religious beliefs has a 0.0941-0.156 unit increase in their total education expenditure (logarithm) for their children than the families of head without religious beliefs. Because the heads of households who have spiritual beliefs usually have the same religious

beliefs, their communication will be smoother. Therefore, the children's educational needs will be satisfied through communication, so the education expenditure will increase.

(3) Under the condition that other variables are kept constant, the regression coefficient of the education level of the head of household and the total education expenditure (taken by the logarithm) of the family children is positive, between 0.0359-0.0604, which is consistent with the expected sign. It has a significant impact on the total education expenditure (logarithm) of the children of the family below the 1% level. For each level of education, total education expenditure (logarithm) of the children of the family increases by 0.0359-0.0604 units.

(4) In the case of controlling other variables, the regression coefficient of the size of the family members on the total education expenditure of the children of the family (taken as the logarithm) is positive, between 0.0843-0.139, which is consistent with the expected sign. It has a significant impact on the total education expenditure (logarithm) of the children of the family below the 1% level. For each additional person in the family, the family's total expenditure on children's education (taken in logarithms) increases by 0.0843-0.139 units. Because the number of members of a family reflects the labor force of that family. As a result, the family's affordability for children's education will also be affected. The more family members there are, the more you can afford.

3.4.2 Youth Sample (35 and under)

For the youth sample, the marital status of the head of household, the education level of the head of the household, the number of underage children in the family, and family expenditure have a significant impact on the total education expenditure (logarithm) of the family child, all of which are significant below the 5% level. The influence of head of household gender, ethnicity, religion, socioeconomic status, number of houses owned, investment status, city visited, household income (logarithm), work status of head of household, family size, and male proportion of children were not significant. The adjoint probability of the F statistic is less than 0.010, so the independent variables of the resulting model have a significant joint effect on household education expenditure (take the log) at a 1% confidence level.

3.4.3 Middle-aged Sample (36-50 Years Old)

For the middle-aged sample, the influence of the head's marital status, religious beliefs, head education level, head work and family income (logarithm) on the total education expenditure of the children of the family (logarithm) is significant, all below the 5% level. The impact of the gender, ethnicity, socioeconomic status of the head of household, the number of houses owned, the investment status, the city where the visit is located, the work status of the head of the household, the size of the child, the proportion of male children, the number of underage children in the family, and household expenditure are not significant. The adjoint probability of the F statistic is less than 0.010, so the independent variables of the succeeding model have a significant joint effect on household education expenditure (take the log) at a 1% confidence level.

4. Main Conclusions and Analysis

Comparing the results of multiple regression, the following two conclusions are mainly drawn.

4.1 There is a Difference in Household Education Expenditures between "Parents" and "Single-parents" Household Head

To compare the results of multiple regression, the comparison of results under different samples is discussed below:

(1) Youth heads of household. Controlling other variables, the marriage status of young heads of households has a significant negative correlation with family education expenditure. It shows that the "parents" family has lower total education expenditure (logarithmic) than the "single-parents" family, which means that the "heads of the parents" are significantly lower than those of the "single-parents" Education expenditure of the household where it is located. The main reason is that the average income level of unmarried young heads of households is relatively low, and it is the

beginning or development period of their careers, and they themselves need to invest funds. In the case of relatively small income and relatively high self-expenditure, young lone parents usually have less passive or active educational expenditure on their children.

(2) Middle-aged household heads. With the control of other variables unchanged, the marriage status of heads of households has a significant positive correlation with family education expenditure. It shows that the "parents" family has a higher total education expenditure (logarithmic) than the "single-parents" family, which means that the middle-aged household heads of "parents" have considerably higher education expenditures than the "single-parents". Annual education expenditure of the head of the household. The main reason is that the work of middle-aged household heads has stabilized. The average level of total income is relatively high, and it is a stable period of the cause, and no longer needs high capital investment itself. In the case of relatively large and stable income and relatively small self-expenditure, middle-aged solo parents usually spend more or less on their children's education.

(3) Under the inclusive sample. On the whole, under the control of other variables, the marriage status of heads of households and family education expenditures has a significantly positive correlation, indicating that "parents" families have a higher total education expenditure (logarithmic) than children of single parents. If it is higher, it means that the educational expenditure of the family head of the "parents and parents" is substantially lower than that of the household head of the "single-parent". The main reason is that the educational expenditure of the family headed by the "head of both parents" is lower than that of the "head of the single parents". The education expenditure of the household headed by the head of the household leads to the education expenditure of the "heads-to-head" young household head in the whole society still higher than that of the "lone parent" youth head of the household.

4.2 The Education Level of Household Head has a Promoting Effect on Family Education Expenditure

The conclusion is the same whether it is a full sample or a sub-sample: under the control of other variables, the education level of the head of household and the experience of the family child 's total education expenditure (logarithmic) have a significant positive correlation. It shows that the heads of households with higher education levels generally pay greater attention to their children's education, and their education expenditures will be higher. This is because parents usually require their children to surpass themselves in education level, so they will increase their education expenditures.

5. Policy Recommendations

5.1 From "Single-parents" to "Parents Both"

According to the first conclusion of the previous chapter, "head of both parents" households 'household education expenditures on their children will be significantly higher than those of the" single parents "households. In order to encourage single parents to invest in their children's education, the government can introduce policies to encourage unmarried single parents and divorced single parents to return to marriage and change from "single-parents" to "parents", which will help improve children's family education welfare.

5.2 Improve the Education Level of Young Heads of Households

According to the subsequent conclusion of the previous chapter: the educational level of the head of households and the family education expenditure of the children are significantly positively related. In order to increase the education expenditure of children, the education level of head of households can be increased, but middle-aged heads of households aged 36-50 are older than younger households, and their possibility of receiving reeducation is relatively low. Therefore, the government can provide some on-the-job education opportunities for young heads of households.

Let education expenditure of young heads of households and the education expenditure of children pass on between generations.

Acknowledgements

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