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Quang Vang Dang

PhD in Economics, Academician,
Dean of Faculty of Economics,
Ho Chi Minh University of Technology
and Education, Ho Chi Minh City,
Vietnam;

ORCID: [0000-0002-9468-2318](https://orcid.org/0000-0002-9468-2318)

Quoc Duy Vuong

PhD in Economics, Academician,
Associate Professor,
Can Tho University, Can Tho City,
Vietnam;

e-mail: vgduy@ctu.edu.vn

ORCID: [0000-0001-9652-4850](https://orcid.org/0000-0001-9652-4850)

(Corresponding author)

DETERMINANTS OF HOUSEHOLDS' EDUCATIONAL EXPENDITURE IN THE MEKONG DELTA OF VIETNAM

ABSTRACT

This study investigates the determinants of households' educational expenditure in the Mekong Delta through the Viet Nam Living Standard Survey (VHLSS) data in 2022. The Tobit model is used to identify factors that may influence and explain the households' expenditure on education in the Mekong Delta. The findings found that eight factors have a statistically significant impact of 1% to 10% on the households' educational expenditure. They include 06 factors (age of household head, ethnicity of household head, household's size, place of residence, households with additional studying members and household's average income) which positively impact on the households' educational consumption and the other factors (educational level of household head and participation in local government) which have negative impacts on the educational consumption of the households. Given findings enable us to propose various suggestions to optimize the investment and expenditure for the education of households in the Mekong Delta.

Keywords: educational expenditure, households, Tobit model, Vietnam

JEL Classification: G21, I15, M12

INTRODUCTION

Education is considered the top national policy of every country. It not only assesses the level of knowledge but also is a decisive factor in the level of development of a country in the conditions of world integration, plays an important role in promoting social development, reducing poverty and contributing to economic growth.

Vietnam, like other countries, considers education as the top national policy and always makes special investments in the cause of educational development. Becker (1993) argued that a good education creates advantages for individuals in many aspects of life such as increased productivity, and access to technology, and is a factor affecting higher income levels. The more the economy develops, the quality of people's living standards is improving. According to Mr. Nguyen Van Ngu, Director General of the Department of Planning and Finance, the Ministry of Education and Training affirmed that in the past 12 years (from 2011 to 2022), the State gradually increased investment in education and training more than 13% up to 20% of the total state budget expenditure. With the above rate of budget expenditure on education, Vietnam is among the countries with the highest rate of expenditure on education in the world.

Mekong Delta with a total area of 40,548.2 km² with a total population of 17,330,900 people in the region (GSO, 2021). This is a key economic, cultural and political region in the South of the country, connecting with Ho Chi Minh City and the Southeast. This region is considered not only a significant international maritime and air traffic but also a favourable point for accessing domestic, regional and international tourism markets. However, in recent years, the development of the region, in general, has shown signs of slowing down, especially so far, the Mekong Delta is still a "low-lying area" in terms of living standards and education. A region that is considered rich in potential has 5 things compared to the whole country: the poorest, the lowest level of education, the poorest transport infrastructure and the worst social security. Therefore, it is significant

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to investigate the issues of this region to help develop inclusively and sustainably, especially in education. Thus, it is quite vital to investigate the determinants of household expenditure on education in the Mekong Delta.

LITERATURE REVIEW

Academic research on education spending has attracted the attention of researchers and policymakers around the world. The next section provides an overview of studies that are related to education spending.

Firstly, a study by Karaaslan and Tekmanli (2022) on the household's expenditure on Education in the case of Turkey. By using "the data set obtained from the 2019 Household Budget Survey published by the Turkish Statistical Institute (TURK-STAT) that was analyzed with the Heckman sample selection model. The findings found that the head of the household is male in a family and his age, and being married had a negative effect on education expenditures. Education expenses were positively affected by household income, population, the number of technological devices, and the employment of the head of the family. In addition, the structure of the household, the presence of individuals who smoke, go to the cinema and do sports also affected household education expenditures" (Acar, Elif & Gunalp, Burak & Cilasun, Seyit, 2016).

Furthermore, Hapuarachchi (2020) studied the determinants of household expenditure on Education both public and private expenses in the Negombo D.S. Division. The data used in the paper was gathered by the questionnaire focused on group interviews and observations of 100 households. "The multiple regression model and the descriptive analysis method were applied to establish relationships between determinants and household expenditure on education. The findings of the study indicated that household income and the number of schoolchildren have a significant effect on household expenditure on education. Moreover, the paper found that the household head's level of education has an increasingly positive and significant effect on expenditure on education. On the contrary, the head's age was a negative determinant of the household expenditure on education. According to the findings educated household heads to prefer to invest more in their children's education" (Hapuarachchi et al., 2020).

In addition, Ebaidalla (2018) investigated the household Education Expenditure "... in Sudan using the National Baseline Household Survey (NBHS) data (2009) for national, urban and rural levels. By utilising the Tobit model, the findings found that household income, head education, head age, household size, number of school-age children and residing in urban areas are the most significant factors affecting education expenditure. Interestingly, the results show that the income elasticity of education in the urban sample model is greater than that of the rural model, implying that households residing in urban areas are likely to spend more on education. In addition, the effect of household income is found to be positive and significant in the highest income quintile. Overall, the results revealed that households with higher income, whose heads are educated and reside in urban areas tend to spend more on education compared to poor and rural households" (Ebaidalla M. Ebaidalla, 2018).

In particular, educational expenditure studies in Vietnam have been conducted in both regional and provincial cases. For the former, Ngoan et al. (2021) conducted a study on determinants of household expenditure on education through the Vietnam Household Living Standard Survey 2018 in 11 cities and provinces in the Red River Delta. By using the Tobit censorship regression, the findings showed that the average share of education expenditure is about 4-7% of total household expenditure. By level of education, the average spending on higher education is the highest. Factors significantly influencing people's educational expenditures are household income and head characteristics (education attainment and gender), education subsidies, tutoring, place to live. The research provides scientific pieces of evidence for policy-makers who plan to develop and train human resources in the region in the future. For the latter, Chinh and An (2017) studied on the determinants affecting households' expenditure on Education in Tra Vinh province through the data of 200 farmers collected from the interviews. By utilising the Heckman Model, the findings indicated that ethnicity, tuition fees, household poverty status, asset value and distance to schools are significantly affecting educational expenditure. In addition, other variables such as tuition fees, extra classes, total schooling members, and households' income also affected the amount of education investment.

In short, various studies that are conducted in different countries and different methods have been clearly referred to. However, up to now, there is no study that has been conducted in the Mekong Delta (MD) of Vietnam. Therefore, it is very significant to study the given issues for the following contributions. Firstly, the determinants of educational expenditure have not received much attention, be it theoretical or empirical in the MD of Vietnam. Moreover, the topic is important and lacks the presence of empirical evidence. The present paper is a modest attempt to fill the gap in the literature. Secondly, the paper focuses on the demand for education, which has received little attention in the MD of Vietnam rather than the supply of education. Lastly, this paper focuses on household educational expenditure rather than educational attainment.

AIMS AND OBJECTIVES

The main purpose of the article is to determine the determinants of household expenditures on education in the Mekong Delta using the data of the Vietnamese Standard of Living Survey. To achieve the goal, the article solves the following tasks:

- apply the Tobit model to identify factors that may influence and explain household spending on education in the Mekong Delta;
- identify factors that have a statistically significant impact on household spending on education;
- identify factors that negatively affect the educational expenditure of households.

METHODS

Data and Variables

Data used in the paper comes from the Vietnam Households Living Standard Survey (VHLSS) in 2020 conducted by the General Statistics Office of Vietnam. This is a survey conducted every 2 years nationwide by the method of direct interviews with householders and key officials of the commune. The 2020 Population Living Standards Survey (PLSS) data was released in 2022, so PLSS 2020 is the latest set of data to date. The survey collected information in 4 periods, one quarter each from Q1 to Q4 2020. PLSS 2020 was implemented nationwide with a sample size of 46,995 households in 3133 communes/wards, representing the whole country, regions, rural-urban areas and provinces/centrally run cities. be investigated for income, expenditure and other matters. The survey was conducted to systematically monitor and monitor the living standards of the Vietnamese population.

Regarding to the literature review discussed in the previous section," the dependent variable in our analysis is household education expenditure on education. The dependent variable is explained by a vector of explanatory variables, which include household income and socioeconomic characteristics. The socio-economic characteristics include a set of variables that are hypothesized to influence household education expenditure such as household size, education level of head of household, gender, age of the head of household, marital status and dummy variables indicating region of residence, and occupation. Regional and seasonal factors are also considered" (Ebaidalla M. Ebaidalla, 2018).

Analytical Techniques

To reach the given objective, this paper uses the Tobit model, which is the appropriate technique to estimate household expenditure with zero observations (Tobin, 1958). That is, due to not all the households spend on educational services, numerous zero observations will exist in the data and we are facing the so-called censored sample problem (Czarnitzki and Stadtmann (2022). "The Tobit model was originally developed by Tobin (1958) to accommodate censoring in the dependent variable. This model also mitigates the bias associated with assuming a linear functional form in the presence of such censoring. The Tobit model considers that all zeros are attributable to standard corner solutions. Negative values of the dependent variable are assumed to exist but are considered to be unobservable and bunched at zero. Based on Tobin's model, it is assumed that a latent variable that measures the consumer's propensity to spend money on education (y_h) is related to the vector of explanatory variables (X_h) and undetectable influences, as specified in the following" (Ebaidalla M. Ebaidalla, 2018):

$$Y_i^* = X_i\beta + \varepsilon_i \quad (1)$$

"It is assumed that a household spends (y_i^*) on education if the latent variable (y_h^*) is positive. In contrast to the observed expenditure of household h (y_h), the value of the unobservable value (y_h^*) can be negative. Negative values of the latent variable imply that households will not spend any money on education" (Ebaidalla M. Ebaidalla, 2018):

$$Y^n = Y_k^* \text{ if } Y_k^* > 0$$

$$Y^n = 0 \text{ if } Y_k^* \leq 0$$

"The conventional estimators for these types of models are based on maximum likelihood estimation (MLE). The MLE produces consistent estimates of the parameters of the Tobit model, under appropriate assumptions such as homoscedasticity and normality of the error terms. The likelihood function consists of two parts: the product of probabilities

that households do not spend any money on education ($\Pr(Y_h=0)$) and the product of the probabilities that households spend Y_h^* on education ($\Pr(Y_h=Y_h^*)$)" (Ebaidalla M. Ebaidalla, 2018):

$$L(\beta, \alpha) = \prod_{censored} \Pr(Y_k = 0) \prod_{uncensored} \Pr(Y_k = Y_k^*) \quad (2)$$

"Assuming standard normal distribution errors (ϵ_h), the likelihood function of the censored model can be rewritten using a probability density function (ϕ) and cumulative distribution function (Φ) of the standard normal distribution as (Tobin, 1958)" (Ebaidalla M. Ebaidalla, 2018):

$$L(\beta, \alpha) = \prod_{censored} \phi\left(\frac{0 - X_k\beta}{\delta}\right) \prod_{censored} \frac{1}{\alpha} \phi\left(\frac{X_k - X_k\beta}{\delta}\right) \quad (3)$$

"Equation (3) will be estimated via maximum likelihood (ML). The estimation is run for different samples, namely full, urban and rural household samples, as well as for different household income groups" (Ebaidalla M. Ebaidalla, 2018).

RESULTS

General information on the households in the Mekong Delta

Table 1 illustrates the general characteristics of surveyed households in the study. The householders with primary school diplomas accounted for the highest proportion with 39.27% (748 households), householders who had never attended school or did not have any qualifications accounted for 15.64%, householders with lower secondary school diplomas accounted for 28.56% and householders with upper secondary school diplomas accounted for 12.55%. In contrast, the percentage of heads of households achieving higher degrees such as college, university and postgraduate is only 3.93% of householders.

In short, it is significant to conclude that by the end of 2022, the education level of the household head in the Mekong Delta is still low, which has directly affected the income and education level of other family members.

Table 1. General information on households in Mekong Delta 2022. (Source: gathered from VHLSS 2022)			
Variables	Observations	Percentage (%)	Cumulative percentage (%)
1. Educational level			
No diploma or schooling	295	15.67	15.67
Primary school	745	39.59	55.26
Secondary school	535	28.43	83.69
High school	233	12.38	96.07
College, University and Postgraduate	74	3.93	100
2. Gender			
Male	1.360	72.26	72.26
Female	522	27.74	100
3. Age			
Below working ages	0	0	0
Within working ages	1.578	83.85	83.88
Outside working ages	307	16.15	100

In addition, It is widely accepted that gender differentiation is also predicted to impact important household decisions. In fact, the majority of householders in the Mekong Delta are male with a rate of 72.26%, while only 27.74% are female. The given data imply that the role of women is still quite weak compared to that of men in the household. Furthermore, the age of the surveyed householders is mostly distributed in the age group of 18-64 (accounting for 83.88%), the age group under 17 and over 65 years old accounts for 0% and 16.12% respectively. Such distribution may influence on the family decision-making of the households in the area.

Statistics of variables in the model

Table 2 illustrates the statistical values of variables used in the study model. The table shows that the average education level of householders in the Mekong Delta is 7 years of schooling. The average age of householders is 52 years. In addition, 72.33% of male households interviewed indicated that the trend was consistent with the previous analysis. Furthermore, the average income of surveyed households is VND 87,932 million/household/year. Such income implies that the income of people in the Mekong Delta is still low and there is a huge gap between rich and poor, which is reflected in the standard deviation in average income. Other variables such as participation in extra learning with a mean value of 0.1658 (16.58%) indicate that learners in the region have very little interest in further education. The average value of the subsidy variable was 0.1271 (12.71%), indicating that the rate of scholarship grants or exemptions for people in the region is very low.

Table 2. Statistical variables in the model. (Source: gathered from VHLSS 2022)

Variables	Observation	Average	SD	Min	Max
Gender (1: Male; 0: Female)	1.882	0.7223	0.4478	0	1
Age of household's head	1.882	51.8756	13.5294	18	94
Educational level of the household's head	1.882	7.3840	3.4915	1	12
Income (1000đ)	1.882	78.078	127.250	5.340	487356.4
Family size	1.882	3.7900	1.5228	1	13
Extra schooling (1: yes; 0: No)	1.882	0.1658	0.3721	0	1
Subsidized (1: Yes; 0: No)	1.882	270	0.3331	0	1
Residence (1: Urban; 0: Rural)	1.882	0.2449	0.4279	0	1
Ethnic (1: Vietnamese; 0: Others)	1.882	0.9181	0.2743	0	1
Governmental staff (1: Yes; 0: No)	1.882	0.0925	0.2926	0	1

Residency may also affect participation in educational services and the cost of education. As previously analyzed, the majority of farmers in the Mekong Delta reside in rural areas with 0.7551 (or 75.51%) and only 0.2449 (24.49%) residing in urban areas, which can also affect the education and education costs. In addition, the findings show that the percentage of Vietnamese householders is very high in the dataset, for example, 91.81%. The average income of households is about 78 million VND, of which the difference between the lowest and highest income ranges quite sharply from 5.4 million to about 480 million VND. Finally, the percentage of householders attending the governmental offices was very low at 0.0925 (or 9.25%). This can also affect the attendance of family members and the cost of education.

Overall, given the relatively large sample size and carefully collected variables, the estimation model is also expected to be statistically significant in identifying factors influencing household education expenditure in the Mekong Delta. Then, the targeted objectives of the paper are primarily obtained by the use of the Tobit regression model.

Findings from the Tobit regression model

The findings of the determinants of household education expenditure in the Mekong Delta are illustrated in Table 3. In particular, there are 08 variables that have an impact on spending on education of households in a given area, including the age of households' heads, education level of households' heads, average income of household members, family size (number of members in household), households with members attending additional education, residence of the household, ethnic attributes of the household and participation in local government office by the household members.

Firstly, the result of estimating the age coefficient of the households' head bearing a negative sign means that the positive impact of expenditure on education (Karaaslan and Tekmanli, 2022) and statistically significant at 1% indicates that under the condition that other factors do not change, if the age of the head of household increases by 1 year, the household's expenditure on education decreases by 106 thousand VND. The results imply that the younger the household owner, the higher the expenditure on education because when the age of the household head is relatively low, the more correct and informed the view of education (Hone and Marisennayya, 2019), Maritim (2017), Anyabolu (2019).

Secondly, the attribute of the family represented by the size of the family positively affects the expenditure on education at a meaningful level of 1%. When the number of family members increases to one person, ceteris paribus, the household's

annual education expenditure will increase to about 1.78 million VND. Since the number of family members increases meaning that the learning needs of members increase leading to an increase in spending on education. The results of this study are consistent with the research of Andreou (2012), Choudhury (2011), Wongmonta (2023), and Anyabolu (2019).

Table 3. Findings from Tobit Regression Model. Notes: *, **, *** and ^{ns} are correspondingly significant at 10%, 5% and 1% and not significant. (Source: gathered from VHLSS 2022)

Variables	Coefficients	Standard error	P-value
Constants	-5.606,062***	1.367,494	0.000
Gender (1: Male; 0: Female)	686,263 ^{ns}	510,186	0.179
Age of households' head	-106,009***	16,846	0.000
Educational level of households' head	-146,605**	62,183	0.018
Average income	0,017***	0,003	0.000
Family size	1.780,529***	153,201	0.000
Extra Schooling (1: Yes; 0: No)	7.371,111***	528,041	0.000
Subsidized (1: Yes; 0: No)	-90,649 ^{ns}	648,390	0.889
Residence (1: Urban; 0: Rural)	879,592 [†]	491,279	0.074
Ethnic (1: Vietnamese; 0: Others)	1.220,903	800,887	0.128
Working for governmental office (1: Yes; 0: No)	-1.257,426***	751,475	0.000
Log-likelihood			-11281,166
LR chi2 (10)			509,28
Prob>Chi2			0,022
Observations			1.882

Thirdly, extra schooling of household membership is positively significantly affecting educational expenditure at 1 percentage significant level. The findings imply that having one more family member in extra schooling leads to higher expenditure for the households, *ceteris paribus*. Even though the extra schooling leads to both an increase in educational expenditure in general and also increases in the general expenses of the households, this activity of the households is quite necessary and significantly considered within all educational levels. The findings confirmed the previous studies of Andreou (2012), Choudhury (2011), Adama et al., (2015) và Tansel and Bircan (2006), Reham Rizk and John Owusu-Afriyie (2014).

Fourthly, the income of households positively affects the educational expenditure of the given households at a 1% significant level. As expected, the number of rich household members enrolled on schools is relatively higher than those of poor ones. It is widely accepted that in rich households, the owners are well-equipped in the educational and occupational environments, thus there is much more money spent on their family members compared to their counterparts. These findings are similar to those in the studies of Adama et al (2015), Tansel and Bircan (2006), and Donkoh and Amikuzuno (2011).

Fifthly, the educational level of household heads is negatively influencing education expenditure at a 5% significant level. This implies that the year of schooling increases in 1 year, then the educational expenditure decreases in the amount of 143 thousand dong, other factors constants. The rational explanation is that since the household's educational level was well improved, the decision on education expenditures is precisely considered. This finding is confirmed by the studies of Andreou (2012), Choudhury (2011), BAYAR and İLHAN (2016), and Demiroglari and Gürler, (2020).

Sixthly, the residential variables positively impact household education expenditure in the Mekong Delta at meaningful levels of 5%. The findings indicate that when householders reside in urban areas and belong to the Vietnamese ethnic group, they tend to spend more on education, while other factors remain constant. The rational explanation for these variables is that households living in urban areas often have more access to academic-related information systems, so their ability to spend a lot on education can also be affected. This study supports the results of Andreou (2012), Choudhury (2011), Phon (2018), and Lakshmanasamy (2021).

Lastly, the variable of attending local government is statistically affecting the educational expenditure (Mun Tsang and Henry M. Levin, 1983) at a 1% significant level. This explains that the households that have members working for governmental offices may have much more information on economics in general and education in particular. The households may

actively classify the obtained information from society and choose the appropriate one for their family members. As a result, households with members working for local government tend to spend less on education than households without people working for local government.

CONCLUSIONS AND DISCUSSION

This paper investigates the factors affecting household education expenditure in the Mekong Delta through the 2022 Vietnam Population Living Standards Survey data. The main source of data in this research paper is data collected from the Vietnam Households Living Standard Survey (VHLSS) in 2022 conducted by the General Statistics Office of Vietnam. This is a survey conducted every 2 years nationwide by the method of direct interviews with householders and key officials of the commune. The survey was conducted to systematically monitor and monitor the living standards of the Vietnamese population; monitor and evaluate the implementation of the Comprehensive Strategy on Poverty Reduction and Growth; contribute to evaluating the results of the implementation of the Millennium Development Goals and the Socio-Economic Development Goals of Viet Nam.

Based on theoretical and practical background, the study used a combination of descriptive and applied statistical methods to achieve the general and specific objectives. The descriptive statistics have outlined general information about the education level of the average head of household, the average number of members for each household, the majority of surveyed households reside in rural areas with over 75% observed and only about 12% of households receive subsidies from education. Besides, sizable gender differences in research observations are also presented. Specifically, male householders accounted for 72.23% while female householders accounted for 27.77%. The main indicators detailed in the descriptive statistics are items related to expenditures in the education of members of each household. Total expenditure on education of households is about 2,549 thousand VND/person/year, of which tuition fees account for about 30% and other expenditures on education account for 29%.

After performing erroneous tests in econometrics, the major model consists of 01 dependent variable (household education expenditure) and 10 independent variables. The findings found that 07 factors had statistically significant impacts on the households' expenditure on education from 1% to 5 % significant level, of which 06 factors (age of head of household, ethnicity of head of household, residence of household, size of household, households with additional members and average household income) positively effect on educational expenditure, while the rest (head of household's education level and participation in union government) have negative impact on households' education expenditure. The results of the study were also critically interpreted and compared with the results of previous studies to highlight the significance of the variables studied.

On the basis of factors affecting expenditure on education, together with other scientists, the following solutions are proposed:

- Income has a positive impact on education expenditure (Gebremariam, et al, 2023), so it is necessary to raise the total household income of households. Although the actual situation shows that the income of people in the Mekong Delta is still low, increasing income is a very difficult problem for people in the region, but it cannot be ignored. Households actively explore creativity in production and business and learn from experienced people to make their family's production activities more efficient. In addition, local authorities need to provide capital and technical support to households when necessary to create a favourable environment for people to work and produce effectively.
- Extra schooling increases spending on education (Jackson et al, 2015), which means contributing to improving learners' qualifications. Therefore, learners, besides self-study, need to attend appropriate extra classes to improve their knowledge. In addition, families need to create favourable conditions for family members to go to school, and guide members to find a quality place suitable for school attendees.
- Education subsidies help disadvantaged families overcome difficulties but increase people's spending on education (Kataoka., et al. 2020). Therefore, local authorities need to pay more attention to the economic and educational situation of households to promptly support households when needed, in addition to improving the value and rate of subsidies for disadvantaged households to become truly meaningful for school attendees, play a part in improving the household's spending burden. The school needs to take care of its students to promptly help and call for help for students to be eligible for learning.

On the other hand, the remaining factors relate to the consciousness of households in raising spending on education. Governments at all levels should regularly communicate widely to all family members about the importance of investing

and spending in education so that members can advocate for each other and educate each other about the importance of education.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

All authors have contributed equally

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Куанг Ванг Данг, Куок Дуй Вуонг

ДЕТЕРМІНАНТИ ВИТРАТ ДОМОГОСПОДАРСТВ НА ОСВІТУ В ДЕЛЬТІ МЕКОНГУ У В'ЄТНАМІ

Це дослідження про детермінанти витрат домогосподарств на освіту в дельті Меконгу за допомогою даних опитування рівня життя В'єтнаму (VHLSS) у 2022 році. Модель Tobit використовується для виявлення факторів, які можуть вплинути й пояснити витрати домогосподарств на освіту в дельті Меконгу. Результати показали, що є вісім факторів,

які мають статистично значущий вплив – від 1% до 10%, на витрати домогосподарств на освіту. Вони включають 6 таких факторів (вік голови домогосподарства, етнічна приналежність голови домогосподарства, розмір домогосподарства, місце проживання, домогосподарства з додатковим навчанням та середній дохід домогосподарства), які позитивно впливають на споживання домогосподарствами освіти, й інші фактори (освітній рівень голови домогосподарства та участь у місцевому самоврядуванні), які негативно впливають на освітні витрати домогосподарств. Отримані дані дозволяють пропонувати різноманітні підходи щодо оптимізації інвестицій та витрат на освіту домогосподарств у дельті Меконгу.

Ключові слова: витрати на освіту, домогосподарства, Tobit-модель, В'єтнам

JEL Класифікація: G21, I15, M12