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## The Impact of Bantuan Operasional Sekolah (BOS) Program: School Operational Assistance to the Household Expenditures in Education: A Case Study of Indonesia

Anton Abdul Fatah  
*University of Kentucky*

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**The Impact of the Bantuan Operasional Sekolah (BOS)  
Program: School Operational Assistance to the Household  
Expenditures in Education: A Case Study of Indonesia**

**Anton Abdul Fatah**

Indonesian Fulbright Scholarship Awardee 2014-2016

A capstone project submitted to the faculty of the Martin School of Public Policy and Administration at the University of Kentucky as a final requirement to earn a Master in Public Administration degree with a focus in Education Policy.

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Faculty Advisor:

**Dr. Keith Schnakenberg**

**Dr. Nicolai Petrovsky**

**Martin School of Public Policy and Administration**

**University of Kentucky**

April 2016

*To Bapak Rukana and Mamah Lilis  
For years I've missed them so dearly*

*and*

*To all of my brothers and sister  
Budi, Opik, Ginanjar and Rahmi*

*Lexington, KY,  
April, 2016*

## Executive Summary

The Bantuan Operasional Sekolah (BOS) Program was launched in 2005 as a grant directly from the government to each school's bank account based on the number of the students. The main goal of BOS is to cover school tuition in the public schools, lighten operational expenses in the private schools, and to provide free education for poor students, both in public and private schools. Since the BOS Program has been implemented nationally and the funding is granted based on the number of students, this study hypothesizes that the BOS Program will have an impact on the household expenditure in education. I will evaluate the impact of the BOS Program on the household expenditures in education, since one of the goals of its program is to reduce or eliminate the burden of school tuition for the parents in Indonesia.

This study estimates the impact of the BOS Program on household expenditures for education by using a panel data study with household fixed effects. The data to support this study has been gathered from The Indonesia Family Life Survey (IFLS) wave 2000 and wave 2007/08. This study posits that the determinant factors of household expenditures in education are total household expenditures, family size, parent education, type of school, level of school, and geographic location.

The trend of household education spending in Indonesia increased from 2000 to 2007. The total expenditures rose sharply from average IDR476,420.40 (~US\$40) per year in 2000 to IDR2,454,508.00 (~US\$205) per year in 2007 (with constant IDR 2007 values). The increasing trend for itemized spending, however, varies. The Indonesian household annual education expenditure was increasing after the implementation of the BOS program by IDR2,232,831.8 (~USD180). In addition, the regression result for the impact of the BOS program on itemizes household expenditures in education shows that all items are increasing, while the magnitude varies. Only the tuition fees and special courses are not statistically significant.

## **I. Introduction**

The Government of Indonesia established a funding program called Bantuan Operasional Sekolah (BOS) or School Operational Assistance in July 2005. This program replaced some of the spending on gasoline fuel subsidies, along with other initiatives in health, infrastructure, and direct cash subsidies for people with low income. The BOS program disburses block grants directly to all schools' bank accounts throughout Indonesia based on the number of the students. The students, however, have to be registered to receive specific ID number, which contained other citizenship data such as birth certificate, parents ID, and personal picture. This grant is provided as subsidiary funds to finance the cost of school operations for all public and private schools.

The BOS program was launched as the embodiment of the commitment of the government of Indonesia to establish nine free years of compulsory education (for ages 7-15 years). The purposes of this program are<sup>1</sup>: (1) School tuition exemption for all students of elementary and secondary levels in the public school system related to school operation expenses (outside of school wages and personal expenses); (2) Free school tuition and financial help with school related expenses for all students from poor families, both in public and private schools; and (3) Lighten the expense burden of the operational school expenses for the students in the private school.

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<sup>1</sup> Regulation of the Ministry of Education and Culture 2014 number 161 of Technical Guidelines of School Operational Assistance 2015

## **II. Research Question**

Since the BOS Program has been implemented nationally and the funding is granted based on the number of students, I hypothesize that the BOS Program will have an impact on the household expenditure in education. I will evaluate the impact of the BOS Program on the household expenditures in education, since one of the goals of its program is to reduce or eliminate the burden of school tuition for the parents in Indonesia. The research will be conducted by using a panel data study with a household fixed effect design. The calculation will determine the impact of the BOS program by examining the household education expenditures before and after the implementation of the BOS program, which launched in 2005. The study will not only scrutinize the impact of the BOS program to the total household expenditure on education, but also examine the itemized household school related spending.

## **III. Literature Review**

### **A. Education System and Its Transformation in Indonesia**

Indonesia is the biggest archipelago country in the world, with more than seventeen thousands islands extending 3,100 miles around the belt of equator. In addition, with 255 million residents<sup>2</sup>, Indonesia currently has the fourth largest population in the world. This geographic and demographic profile became a massive

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<sup>2</sup> Indonesia Statistic Bureau (2015)

challenge for Indonesia in establishing their education system, especially to manage the disparities of education quality throughout the country. The Minister of Education of Indonesia in his presentation on December 1<sup>st</sup>, 2014 to all Head of Education Agencies from all 351 cities and regencies reported that in 2014 Indonesia has 148,061 elementary schools, 36,210 lower and upper secondary schools, and 25,580 lower and upper secondary vocational schools.

Based on Law 20/2003<sup>3</sup>, the education system in Indonesia consist of formal, non-formal and informal education. Formal education consists of early childhood education, primary (six years) and secondary education, which is divided into junior high school (three years) and senior high school or senior vocational high school (both are three years). At the end of each stage of schooling (primary and secondary), there are mandatory national examinations as a standardized test for students to continue to the upper phase of education. The first nine years of schooling (primary and junior high school) are compulsory in Indonesia. The next level of formal education is tertiary education, which consists of the undergraduate level through bachelor degree program or college diploma programs and continues until graduate school (master and doctoral degree). The formal education is administered by two ministers: (1) Ministry of Education and Culture and (2) Ministry of Religious Affairs. They are responsible for regulating the curriculum, reporting management and funding (supported by national and local government budget).

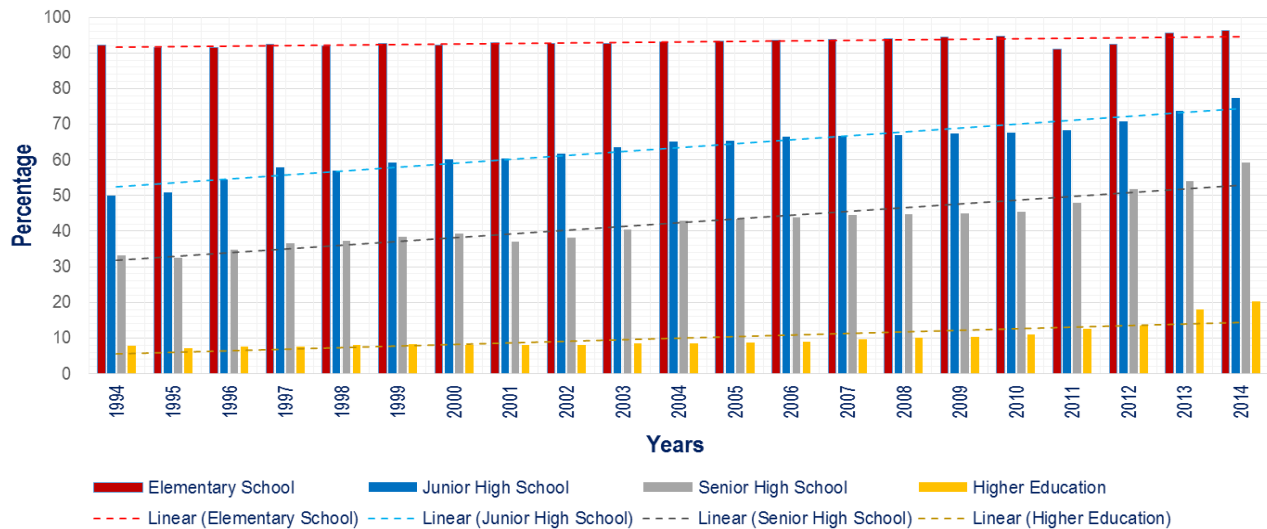
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<sup>3</sup> Law 20/2003 regulates the national education system of Indonesia.

Non-formal education operates through open school program, especially targeted toward youths who are not able to pursue the formal education. An open school program is administered by registered training institutions and community learning centers. The programs of non-formal education include: (1) children playing group, which is equivalent to early childhood education; (2) Package A, which is equivalency program to primary education; and (3) Package B and Package C, which are equivalencies to secondary education. Package A, B, and C are also implementing the national examination as a requirement to receive certificate of completion. Lastly, informal education is conducted through homeschooling and other independent learning activities.

School enrollment in Indonesia has been on a positive trend. According to the World Bank data, elementary school enrollment is above 95% of all children in the relevant age group, up from about 80% in the 1980s. Secondary school enrollment is still much lower, but it is increasing at a faster rate, as Figure 1 indicates.

**Figure I. Trend of Net Enrolment Rate in Indonesia from 1994 to 2014**



Data Source: Author analysis based on data from the Indonesia Statistic Bureau



The positive enrollment trends indicate that the education policies in Indonesia have become government priorities, especially since political reform in 1998. The remain serious concerns, however, the OECD's PISA<sup>4</sup> tests revealed that students in Indonesia perform below the average<sup>5</sup> of OECD countries in all three subjects (reading, science, and math). In addition, the mapping initiative by the Ministry of Education to 40,000 schools in 2012 shows that 75% of schools in Indonesia do not fulfill the minimum standard education facilities requirement.<sup>6</sup> Finally, the national average score of teacher competency test in 2012 was 44.5, far below the required 70.

## **B. Indonesia Education Reform and BOS Program**

Indonesia's decentralization and reform initiative began in the early 2000s. In addition to the compulsory education, Indonesia's fourth constitutional amendment in 2002 mandates that at a minimum, 20% of the government budget needs to be allocated to the education sector. This requirement led to an enormous increase of public expenditure on education over the decade (World Bank, 2013). Another law that was enacted related to the education reform is the "law of teacher and lecturer" (No. 14/2005). This law introduced a certification system for teachers in primary and secondary schools. The main requirements to obtain the certification are having a four-year diploma or an undergraduate degree and teaching for a minimum 24 hours a week. In addition, teachers

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<sup>4</sup> Programme for International Student Assessment (PISA) is conducted by OECD as a triennial worldwide survey to 15-year-old students to measure the quality of education systems. The last PISA survey was performed in 2012 with sixty-five countries participated.

<sup>5</sup> <http://gpseducation.oecd.org/>

<sup>6</sup> Presentation of Minister of Education, December 1<sup>st</sup>, 2014

have to pursue the mandatory training course and to pass competency testing. The certification status will allow teachers to receive a standardized public official professional allowance. The reform of education also includes a curriculum reform. Starting with an expert panel study in 2002, the government enacted government regulation number 19/2005, which regulates the Indonesian education national standard. The critical change brought in with the new curriculum is the opportunity for the school and local government to add or expand the national curriculum as long as their enrichments do not contradict the national standard. In addition, this new curriculum demand teachers' creativity in delivering the material to their students.

An integral part of the education reform package is the Bantuan Operasional Sekolah (BOS) Program, which I analyze in this Capstone. The program was launched in 2005 as a grant directly from the government to each school's bank account based on the number of the students. The main goal of BOS is to cover school tuition in the public schools, lighten operational expenses in the private schools, and to provide free education for poor students, both in public and private schools. This fund is intended for the school's operational cost, including the cost of new student registration, textbooks, stationary, test expenses, and teacher development programs.

During the first implementation of BOS in July 2005, the amount of BOS allocation per student per year was IDR235,000 ( $\approx$ US\$20) for elementary school students and IDR324,500 ( $\approx$ US\$27) for junior high school students. The total number of recipients during this period was about 39.6 million students (SMERU, 2006), and consisted of all students in public, private, general, religious, and special needs schools. The BOS amount

in 2014 increased significantly, which was IDR580,000 (≈US\$48) per year for elementary school students and IDR710,000 (≈US\$61) per year for junior high school students. The BOS allocation spending accounted for about 10% of the total public education budget.

The previous studies related to the BOS Program are mostly associated with its impact on the school dropout number (Kharisma, 2013), student attainment and learning quality (Utami, 2007; Amaluddin, 2012; Virgiani, 2009; Friandi, 2013; Ahmad, 2014; Nugraha, 2012), and relation to accountability and school management (Bruns et al., 2011; Ridha, 2010; Indrawuri, 2013; Akbar, 2010; Widaningsih, 2011; Sutomo, 2011; Nugroho et al., 2013; Regina, 2015; Sthevany, 2009; and Hamidi, 2012).

A comprehensive report from the World Bank in 2014 titled “Assessing the Role of the School Operational Grant Program (BOS) in Improving Education Outcomes in Indonesia” provides a wide-ranging evaluation of a decade of the BOS program implementation. The report presents the detail of the BOS program and also is an assessment of the effects of BOS on household education spending and participation. Their finding emphasizes that after the BOS program, the trend in household spending is increased in primary school students, while junior high students are decreased. The poorest students receive more benefits from the BOS program, since their trends are slightly more decreasing compared to the all average student. In addition, the trends of the household spending of student that attend public and private schools differ. In addition, this report scrutinizes the composition of spending, which is divided into fees, uniform, material and transport. They found that the trend of the fees spending is

decreasing on both primary and junior high school, while other segments are increasing in both group.

Another study from Idzalika (2015) conducted a research on household expenditure and the BOS program with the data from IFLS in 2000 and 2007. She mentioned on page one on her abstract that “the share of household spending in education is the significant predictor for the children year of schooling, graduation probability, drop out probability and child labor probability.” In addition, on her model of the share of educational expenditures, she included the following variables: log total household expenditure, year of schooling, rural and urban, number of children, gender, other assistances, 2007 marginal effect, and BOS as a dummy variable. She found that “the BOS program does not seem to have strong effect on the educational share.”

### **C. Household Expenditures in Education**

Several factors determine household expenditures on education. Akita et al. (1999), Kanellopoulos and Psacharopoulos (1998) and Tilak (2002) emphasize that the household characteristics such as household income and parent education are important as the determinant factors of household expenditures on education. In addition, there are substantial disparities among households based on the type of school (public or private school) (Tilak, 2002). Lastly, he found that government expenditures and household expenditures do not substitute each other, instead they complement each other.

Akita et al. (1999) emphasize that in Indonesia, the mean household expenditure in urban areas was approximately twice as large as in the rural areas. This finding is in

line with the study in Bolivia by Kanellopoulos and Psacharopoulos (1998) which found that the gap of expenditures is very significant based on the location of the household - cities, small towns and villages. In addition to the geographic location, the other determinant of household expenditures in Indonesia is the family size (Akita et al. 1999). In addition, food consumption is the biggest proportion of household expenditures (Agustian & Ilham, 2008 and Bahrin et al, 2014) and this consumption pattern is related to its price fluctuation (Frankenberg et al. 1999).

Studying Indonesia, Lanjouw et al. (2001: 1) found that: "... the marginal incidence of spending in both junior and senior secondary schooling is more progressive than what static analysis would suggest, consistent with a process of "early capture" by the non-poor of education spending." Another finding, however, emphasizes that since the initiative of decentralization of education in Indonesia, household expenditures on children's education are high and increasing (Kristiansen, 2006).

## **IV. Research Design**

### **A. Data Explanations**

The data to support this study has been gathered from The Indonesia Family Life Survey (IFLS), which was conducted by RAND Corporation in collaboration with several research centers at Indonesian universities. Until now, there have been four waves on IFLS panel data sets, which are 1993/1994, 1997/1998, 2000 and 2007/2008. The IFLS dataset contains information from over 30,000 individuals living in 13 of the 27 provinces in Indonesia.

The goal of my study is to compare expenditures of households with at least one child in school before and after the creation of the BOS program, which happened in 2005. Therefore, I use the 2000 and 2007/08 waves of the IFLS. From these two waves, I selected households with at least one child enrolled as a student in the elementary school or junior high school in both waves of the survey. The children can be different, as long as they are dependent on their families during those two periods. 2,100 households from the two waves fulfill my selection criteria.

The data on education spending is taken from the Book V database of IFLS. Education spending not only contains total schooling expenses, but also contains itemized expenditures, which are registration fees, tuition fees, exam fees, book and writing supply, uniforms and sport, transportation cost, housing and food spending, special courses, and other education related spending. Since the children and the number of children might be different for each family on two periods of panel datasets (2000 and 2007), the average amount of education spending is generated for each family. This average amount is not only for the total expenses but also for the itemized expenditures of education spending. I converted all monetary figures into constant 2007 Indonesian Rupiahs.

Other data are taken away from the other books of IFLS database<sup>7</sup>. The data that will be taken from this source are children's education level, children's school types, household geographic locations (rural or urban), household size, household expenditures

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<sup>7</sup> IFLS database consists of many books (varies every wave), which are arranged based on the questionnaires of the survey. The database can be accessed through <http://www.rand.org/labor/FLS/IFLS/access.html>

total, parent (mother and father) education, official poor letter status acceptance<sup>8</sup>, and children's scholarship status.

## **B. Causal Identification Strategy and Methodology**

I estimate the impact of the BOS Program on household expenditures for education by using a panel data study with household fixed effects. Panel data allows the study to control for unobservable or unmeasurable variables that do not change over the duration of the study. This accounts for an important share of the heterogeneity between households. Using two waves of the survey allows me to compare household expenditures before and after the implementation of the BOS program. In addition, this paper argues that the panel data on the used resources includes variables at different levels of analysis (i.e. type of school, location).

On the other hand, this paper posits that by using the fixed effects method, it will allow for analysis of the impact of variables that differ over time. In this case, several explanatory variables such as household income, family size and food price index vary over time. In addition, each entity has its own individual characteristics that may or may not influence the predictor variables, such as parent education and type of school. The other consideration that this paper argues is that the unobservable factors on the panel data are time-invariant; therefore, the fixed effects regression will eliminate omitted variable bias.

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<sup>8</sup> Poor letter status (*Surat Keterangan Tidak Mampu*) is granted for low income household by the governmental village chief. This official letter will allow these household to receive several beneficial governmental program such as a direct cash grant, rice allowance, poor student scholarship, and low cost health services at public hospitals.

Since the BOS Program has been implemented nationally and the funding is granted based on the number of students (per pupil), this paper hypothesizes that the BOS Program will have an impact on household expenditure for education. This study posits that the determinant factors of household expenditures in education are total household expenditures<sup>9</sup>, family size<sup>10</sup>, parent education<sup>11</sup>, type of school<sup>12</sup>, level of school<sup>13</sup>, and geographic location<sup>14</sup>. In addition, the variable bias of the impact of the BOS program emerges from another government program called the Indonesian Direct Cash Transfer Program to Poor Families. Since this program is specifically intended for the households under the poverty line, the additional impact of this program only influences household expenditures in education for impoverished families. Based on this situation, the cash assistance recipient status will be controlled on this model. Furthermore, student from families with poor letter certificates will gain more benefits, such as additional scholarships from schools and other beneficiaries; for, this will be added as another control variable on this study. Lastly, the main explanatory variable on this research is the BOS program as a dummy variable.

I plan to estimate the following model explaining household expenditures on education, with a test of the impact of the BOS Program:

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<sup>9</sup> Akita et al., 1999; Kanellopoulos and Psacharopoulos, 1998; and Tilak, 2002, Agustian & Ilham, 2008; Bahrin et al, 2014; and Frankenberg et al. 1999

<sup>10</sup> Akita et al. 1999

<sup>11</sup> Akita et al., 1999; Kanellopoulos and Psacharopoulos, 1998; and Tilak, 2002

<sup>12</sup> Tilak, 2002

<sup>13</sup> Tilak, 2002

<sup>14</sup> Akita et al., 1999 and Kanellopoulos and Psacharopoulos, 1998



$$Y_{it} = a + \beta_1 BOS_{it} + \beta_2 Household\ Expenditure_{it} + \beta_3 Family\ Size_{it} + \beta_4 Direct\ Cash\ Transfer\ Program_{it} + \beta_5 Mother\ Education_{it} + \beta_6 Father\ Education_{it} + \beta_7 Type\ of\ School_{it} + \beta_8 Level\ of\ School_{it} + \beta_9 Additional\ Scholarship_{it} + \beta_{10} Geographic\ Location_{it} + \varepsilon_{it}$$

Where:

$Y_{ict}$	=	Outcome (household expenditure in education, total and itemized expenses)
$a$	=	The baseline or considered part of the intercept
$\beta$	=	The variable coefficients
$\mu$	=	The fixed effect
$\varepsilon$	=	Error term / the random variation at each point in time
$t$ and $i$	=	Time and individual subscripts respectively

The dependent variable for this study is the household expenditure in education, which is the total average per child expense related to their education in Indonesian Rupiah constant value 2007. In addition to the total expenditures, the itemized expenses, which are stated above, will be measured as the dependent variables. The purpose of this measurement is to examine the impact of the BOS program, not only on the total expenditures but also, scrutinize the changing trend of itemized school spending. For this reason, the regression result table will show each itemized expense as a responding variable.

The BOS Program is a dummy variable which will be '1' (one) after the implementation in 2005, and '0' zero, otherwise (before 2005). Household expenditure is monthly household total expenditure in Indonesia Rupiah (IDR). Household size is the total number of family member. The Direct Cash Transfer Program is the status of the recipient of cash assistance of the family, which are 'received', 'not received', and 'don't know'. Parent education is the highest education degree completed by the father and mother in the household. The categories in this variable are not attending or not finishing

the primary school, elementary school, junior high – general, junior high – vocational, senior high – general, senior high – vocational, adult education A, adult education B, adult education C, open university, pesantren (Islamic boarding school), school for the disabled, college D1, D2, D3, bachelor degree, master degree, doctoral degree, Islamic elementary school (madrasah ibtidaiyah), Islamic junior high school (madrasah tsanawiyah), Islamic senior high school (madrasah aliyah), and don't know.

The variable of type of school is the type of school that their children attended, which are public non-religious, public religious, private non-religious, private Islam, private Catholic, private Protestant and others, and other. The variable level of school is the level of school attended by the household children, which are elementary, junior high general, junior high vocational, school for disabled, religious elementary school, and religious junior high school. The scholarship recipient variable is a dummy variable based on the status of recipient of additional scholarship from the school or other institution. The measurements<sup>15</sup> are '1' (one) if the children receives the scholarship and '3' (three) otherwise. Geographic location is a dummy variable of the location of the family housing, '1' (one) if the location in the urban area, and '2' (two) otherwise or for a rural area.

The first strategy in implementing this method is to arrange the panel data to be suitable with the requirement of the panel data fixed effect method. The data will be arranged in one big table, which will be organized by each individual household with the corresponding year's data. After finishing this stage, I estimate my models using Stata

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<sup>15</sup> The values for the dummy variables of scholarship recipient status and geographic location are followed the value on the IFLS database and its book manual standard.

software and test the relationships between the explanatory variables (especially the BOS program) and household expenditures on education. Next, I will present the main findings of the study, especially the impact of the BOS program on household expenditures in education.

## V. Empirical Result And Discussion

### A. Household Education Expenditure Trend

The descriptive statistics of household education spending in Indonesia from the sample on this research is presented as follows. The complete descriptive statistic for all variables is presented at the appendix of this study.

**Tabel 2 Summary Statistic of the Household Education Expenditure**

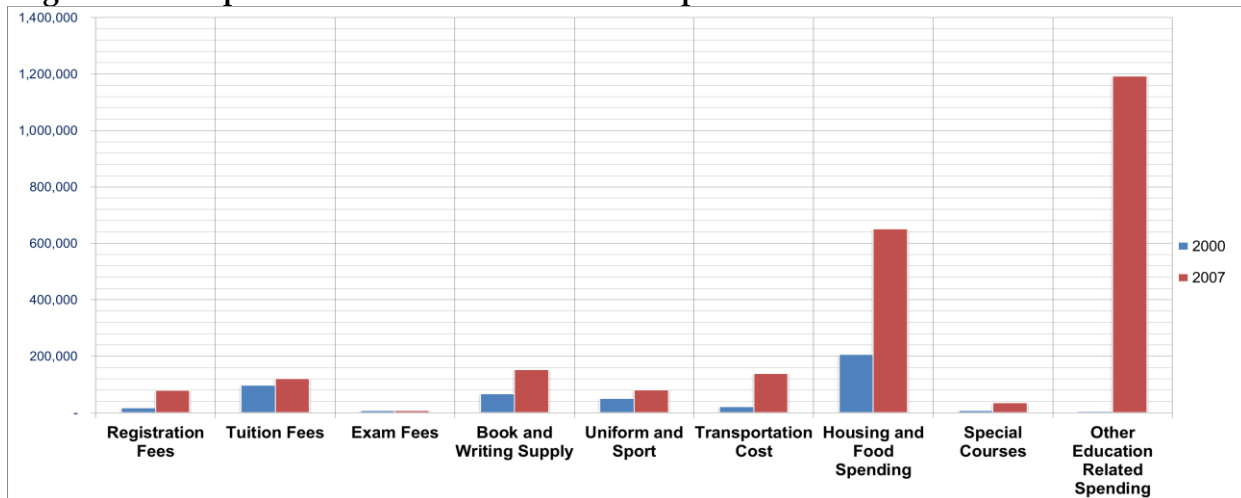
Expenditures	Year	Mean	Std. Dev.	Min	Max
Registration Fees	2000	17,156.16	68,653.74	0	1,380,000.00
	2007	79,297.90	261,976.00	0	3,500,000.00
Tuition Fees	2000	96,502.51	1,616,703.00	0	73,600,000.00
	2007	120,014.40	431,775.40	0	13,800,000.00
Exam Fees	2000	6,729.05	16,025.00	0	220,800.00
	2007	7,420.71	34,048.81	0	600,000.00
Book and Writing Supply	2000	67,037.33	91,735.14	0	1,840,000.00
	2007	151,758.10	192,056.00	0	4,000,000.00
Uniform and Sport	2000	50,181.06	68,728.52	0	920,000.00
	2007	79,912.14	109,788.20	0	1,200,000.00
Transportation Cost	2000	20,940.21	86,902.66	0	1,324,800.00
	2007	138,174.70	383,779.50	0	6,500,000.00
Housing and Food Spending	2000	206,569.90	237,878.80	0	2,392,000.00
	2007	651,421.10	569,220.90	0	6,000,000.00
Special Courses	2000	6,882.13	46,570.97	0	662,400.00
	2007	34,188.00	188,084.80	0	4,800,000.00
Other Education Related Spending	2000	4,422.09	38,581.59	0	1,324,800.00
	2007	1,192,321.00	1,294,752.00	0	23,500,000.00
<b>Total Education Expenditures</b>	<b>2000</b>	<b>476,420.40</b>	<b>1,673,485.00</b>	<b>0</b>	<b>74,000,000.00</b>
	<b>2007</b>	<b>2,454,508.00</b>	<b>2,502,014.00</b>	<b>0</b>	<b>47,000,000.00</b>

*\*Total Observations: 2100 households*

The table shows that the trend of household education spending in Indonesia increased from 2000 to 2007. The total expenditures rose sharply from average IDR476,420.40 (~US\$40) per year in 2000 to IDR2,454,508.00 (~US\$205) per year in 2007. This tendency is in line with the finding from the World Bank report in 2014<sup>16</sup> which stated that trend of household spending was increasing from 2002 to 2013. The increase of per student spending is not only on upper and middle group families but also for the children from the poorest group. Idzalika (2015) also provides a similar fact that in terms of share from total household expenditure, educational spending slightly increased around 10% from 2000 to 2007.

The increasing trend for itemized spending, however, varies. Figure III, included below, shows the mean comparison of the itemized spending of household education expenditures from 2000 to 2007.

**Figure III. Comparison of Itemized Household Expenditures for Education in 2000 and 2007**



<sup>16</sup> The report of World Bank (2014) uses three-yearly panel data education module survey combined with annual panel data consumption module survey. In addition to the trend of household education spending, the report presented that nationally, the share proportion of the household spending comparing to the government spending were slightly stable at on average about 19%. Average share of total household consumption required to enroll all children in primary and junior secondary school were more fluctuated in the poorest group, while the trend for the wealthiest are decreasing in the last decade.

## B. Impact of BOS Program on Household Total Expenditure on Education

The regression result with panel data study through the household fixed effect design is presented in Table IV as follows.

**Tabel IV Regression Result for the BOS and Statistically Significant Control Variables<sup>17</sup>**

	Education Expenditure Total
<b>The BOS Program</b>	<b>2,232,831.8<sup>***</sup></b> <b>(314,526.7)</b>
Mother Education (college/associate degree)	-1,778,932.2* (819,014.6)
Father Education (Open University <sup>18</sup> )	4,563,081.8* (2,028,857.5)
Father Education (Doctoral Degree)	45,407,489.7 <sup>***</sup> (3,080,203.7)
Type of School (Private Catholic)	-1,795,276.5* (838,989.0)
Type of School (Other)	6,016,271.4 <sup>**</sup> (1,975,832.7)
School Scholarship	159,571.7 <sup>**</sup> (57,408.5)
Constant	459,029.7 (757,632.5)
Observations	2,100 Households
R <sup>2</sup>	0.412

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001

From the regression result on table IV, the Indonesian household annual education expenditure was increasing after the implementation of the BOS program by IDR2,232,831.8 (~USD180). This finding is interesting since the purpose of the BOS program is to provide tuition exemption for all students and financial help for poor

<sup>17</sup> This table only provides the BOS Program as the main focus on this research and several variables which are statistically significant. The comparison group for mother and father education is no school attainment. The comparison for type of school is public school. The comparison for type of school is public elementary school.

<sup>18</sup> Open University or *Universitas Terbuka* (UT) in Bahasa language is a state university in Indonesia. In their website, the description of UT is as follows: “*UT implementing distance learning system and open. The term distance learning means not done face to face, but using the media, both print media (modules) and non-print (audio / video, computer / internet, radio and television). Meaning open is no age restriction, the diploma, apprenticeship, registration time, and frequency of exams. Boundaries are only that every student must have graduated from UT secondary education (high school or its equivalent).*”

students. In addition, this finding is in line with the World Bank report<sup>19</sup> which stated that household spending has increased 46% in ten years since the introduction of the BOS program. Moreover, the finding from World Bank (2014) shows that even though the amount value increased, the proportions of household expenditure from 2001 to 2010 rose sharply by more than three times, while the proportion of the public expenditures on education is decreasing.

### C. Impact of BOS Program on Itemizes Household Expenditures on Education

The regression result with panel data study through the household fixed effect design is presented on the table V as follows.

**Tabel V Regression Result for the BOS to the Itemizes Household Expenditures in Education**

	Dependent Variables Itemizes Household Expenditures in Education								
	Registration Fees	Tuition Fees	Exam Fees	Book and Writing Supplies	Uniform and Sports	Transportation Cost	Housing and Food	Special Courses	Other School Related Expenses
The BOS Program	88,032.1** (2.95)	101,358.9 (0.53)	11,494.0** (2.75)	60,406.4** (2.76)	59,278.6*** (4.21)	85,186.3* (2.01)	519,033.8*** (7.97)	15,164.3 (0.69)	1,292,877.4*** (9.55)
Observations	2,100 Households								
R2	0.412								

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001

In general, the regression result for the impact of the BOS program on itemizes household expenditures in education shows that all items are increasing, while the magnitude varies. Only the tuition fees and special courses are not statistically significant.

<sup>19</sup> World Bank, 2014

Figure I on page 4 clearly shows that the education policy in Indonesia, including the implementation of the BOS program, succeeds to increase enrolment rate<sup>20</sup>. Household expenditures on education, however, are not become lesser. Education regulation loopholes related to the voluntary contributions is the main contributor to this situation. Rosser and Joshi (2013) emphasize that the school committees<sup>21</sup> in Indonesia tend to defend rather than eliminate school fees. The impact of this situation makes parent bear the decided voluntary contributions and pay other fees, such as for class room facilities. Moreover, Suparlan (2009) emphasize that in poor communities, school principals are more dominant than school committee in deciding the school budget. Rosser and Joshi (2013) also emphasize that in addition to the voluntary contribution, the informal fees *have also persisted*, such as obligatory school study tours or required books from the school book store or school teacher association.

## **Limitation**

This study uses only two wave panel data, which are 2000 and 2007/2008, because of the data availability limitation. The new wave of IFLS data will be published on summer 2016. The research model on this study will be more robust if it is included additional observation years of panel data. Another consideration for future study is to implement this model to other panel data series, such as the Indonesian National Socioeconomic Survey (SUSENAS).

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<sup>20</sup> World Bank emphasize that after the BOS program implementation, poor children enrolment rate increase by 26%

<sup>21</sup> School committees is parent representatives in the school, which are participate in school decision-making, including the decision of school's budget resources and allocation, including ensure transparency and accountability in school management.

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## APPENDIX

### Regression Result of the Impact of the BOS Program to the Household Expenditures in Education

*\*Constant Indonesia Rupiah in 2007  
1 USD = ~IDR12,000*

	Education Expenditure Total	Registration Fees	Tuition Fees	Exam Fees	Book and Writing Supplies	Uniform and Sports	Transporta- tion Cost	Housing and Food	Special Courses	Other School Related Expenses
BOS	2,232,831.8*** (7.10)	88,032.1** (2.95)	101,358.9 (0.53)	11,494.0** (2.75)	60,406.4** (2.76)	59,278.6*** (4.21)	85,186.3* (2.01)	519,033.8*** (7.97)	15,164.3 (0.69)	1,292,877.4*** (9.55)
Monthly Consumption on Food and Non Food	0.00259 (1.06)	0.000131 (0.56)	-0.000486 (-0.33)	0.0000498 (1.53)	0.000292 (1.71)	0.0000912 (0.83)	-0.000341 (-1.03)	0.00188*** (3.72)	0.000185 (1.08)	0.000782 (0.74)
Household Size	-66,790.1 (-1.28)	-11,852.4* (-2.39)	15,847.9 (0.50)	-157.6 (-0.23)	-1,679.2 (-0.46)	-4,569.7 (-1.95)	699.2 (0.10)	-18,292.0 (-1.69)	-2,485.3 (-0.68)	-44,301.0* (-1.97)
Cash Assistance=0 (N/A)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)
Cash Assistance=1 (Yes)	-98,472.3 (-0.22)	-16,469.8 (-0.38)	-58,111.6 (-0.21)	-13169.2* (-2.19)	29,410.0 (0.93)	-8,519.1 (-0.42)	-45,201.7 (-0.74)	118,365.1 (1.26)	16,380.5 (0.52)	-121,156.5 (-0.62)
Cash Assistance=3 (No)	-121,774.9 (-0.39)	-1,686.6 (-0.06)	-61,947.3 (-0.32)	-11,283.4** (-2.70)	28,958.3 (1.32)	-24,616.2 (-1.74)	48,499.6 (1.14)	-71,099.3 (-1.09)	11,549.2 (0.53)	-40,149.1 (-0.30)
<i>Type of School</i>										
Public non-religious	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)
Public religious	124,008.6 (0.28)	22,665.7 (0.54)	8,906.4 (0.03)	-1,291.4 (-0.22)	18,250.6 (0.60)	9,447.0 (0.48)	8,954.2 (0.15)	-71,444.7 (-0.78)	-12,922.4 (-0.42)	141,443.2 (0.75)
Private non-religious	-381,318.2 (-1.00)	2,761.3 (0.08)	-94,990.5 (-0.41)	-3,982.4 (-0.79)	-87,998.4*** (-3.33)	-13,650.7 (-0.80)	113,293.1* (2.22)	-87,172.8 (-1.11)	-3,713.2 (-0.14)	-205,864.6 (-1.26)
Private Islam	-130,914.2 (-0.48)	-351.5 (-0.01)	-57,824.1 (-0.35)	839.9 (0.23)	-30,463.6 (-1.61)	-12,954.6 (-1.06)	-5,020.0 (-0.14)	-85,819.7 (-1.52)	-16,651.5 (-0.88)	77,331.0 (0.66)
Private Catholic	-1,795,276.5* (-2.14)	-136,627.0 (-1.72)	-160,690.9 (-0.32)	-22,257.7* (-2.00)	966.9 (0.02)	-38,615.2 (-1.03)	-127,735.1 (-1.13)	-251,984.8 (-1.45)	-91,897.9 (-1.57)	-966,434.8** (-2.67)
Private Protestant	-61,196.6 (-0.07)	38,086.7 (0.48)	53,165.9 (0.10)	14,627.8 (1.32)	20,458.0 (0.35)	9,714.9 (0.26)	126,854.3 (1.13)	-123,568.4 (-0.71)	-59,438.6 (-1.02)	-141,097.1 (-0.39)
Other	6,016,271.4** (3.04)	-686,010.2*** (-3.66)	647,573.7 (0.54)	-36,184.8 (-1.38)	51,694.3 (0.38)	-335,242.4*** (-3.79)	-413,931.5 (-1.56)	1,594,557.5*** (3.90)	-164,756.7 (-1.20)	5,358,571.4*** (6.30)

	Education Expenditure Total	Registration Fees	Tuition Fees	Exam Fees	Book and Writing Supplies	Uniform and Sports	Transporta- tion Cost	Housing and Food	Special Courses	Other School Related Expenses
<i>Mother Education</i>										
No/Not yet in school	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)
Elementary school	116,134.7 (0.18)	-21,058.4 (-0.35)	-32,255.8 (-0.08)	-11,004.4 (-1.31)	-76,812.0 (-1.75)	11,216.3 (0.40)	182,091.9* (2.15)	-109,873.0 (-0.84)	17,992.2 (0.41)	155,837.9 (0.57)
Junior high - general	-149,852.6 (-0.23)	-67,288.2 (-1.07)	-71,917.8 (-0.18)	-10,730.6 (-1.22)	-103,562.4* (-2.26)	-13,922.7 (-0.47)	219,757.8* (2.47)	-93,070.3 (-0.68)	13,962.2 (0.30)	-23,080.5 (-0.08)
Junior high - vocational	-915,617.1 (-1.08)	-118,343.1 (-1.47)	-162,443.5 (-0.32)	-17,865.7 (-1.59)	-137,516.7* (-2.34)	-12,061.4 (-0.32)	214,710.9 (1.89)	-342,257.4 (-1.95)	-29,543.4 (-0.50)	-310,296.7 (-0.85)
Senior high - general	-621,035.6 (-0.89)	-184,378.0** (-2.79)	-136,217.3 (-0.32)	-4,743.4 (-0.51)	-121,302.1* (-2.51)	24,326.8 (0.78)	186,026.7* (1.99)	-115,858.2 (-0.80)	-27,687.2 (-0.57)	-241,202.9 (-0.80)
Senior high - vocational	-826,952.0 (-1.16)	-13,225.0 (-0.20)	-130,335.0 (-0.30)	-5,914.2 (-0.63)	-151,632.1** (-3.07)	-11,351.8 (-0.36)	112,711.4 (1.18)	-233,313.1 (-1.59)	-64,565.9 (-1.31)	-329,326.4 (-1.08)
Adult Education A	-232,175.9 (-0.15)	-31,122.2 (-0.22)	-41,415.5 (-0.05)	-10,858.1 (-0.54)	-253,081.7* (-2.42)	-45,683.7 (-0.68)	36,064.4 (0.18)	-85,499.8 (-0.27)	24,811.5 (0.24)	174,609.3 (0.27)
Adult Education B	-2,137,573.1 (-1.24)	-85,236.5 (-0.52)	-24,716.5 (-0.02)	-2,985.4 (-0.13)	-143,594.5 (-1.20)	661.3 (0.01)	67,084.6 (0.29)	-625,809.3 (-1.75)	-205,057.6 (-1.71)	-1,117,919.3 (-1.51)
Islamic Boarding School	-495,026.8 (-0.41)	-53,825.9 (-0.46)	-21,118.9 (-0.03)	-4,316.5 (-0.27)	-625,462.6*** (-7.37)	43,468.9 (0.79)	281,687.8 (1.72)	-299,190.7 (-1.18)	-9,319.4 (-0.11)	193,050.6 (0.37)
College - Associate Degree	-1,778,932.2* (-2.17)	-102,434.0 (-1.32)	-236,535.9 (-0.48)	-11,552.6 (-1.06)	-216,593.5*** (-3.80)	-22,522.9 (-0.61)	-11,679.9 (-0.11)	-399,420.9* (-2.36)	-68,136.8 (-1.20)	-710,055.9* (-2.01)
Bachelor Degree	-707,753.7 (-0.84)	-117,646.5 (-1.47)	-53,080.5 (-0.10)	-8,050.9 (-0.72)	-211,043.1*** (-3.60)	-35,665.2 (-0.94)	129,626.7 (1.14)	-112,162.6 (-0.64)	-40,560.0 (-0.69)	-259,171.5 (-0.71)
Master Degree	1,843,027.7 (0.85)	-295,690.0 (-1.43)	349,302.2 (0.26)	-3,704.1 (-0.13)	-218,065.6 (-1.44)	-68,060.7 (-0.70)	295,724.3 (1.01)	774,000.3 (1.72)	-56,088.0 (-0.37)	1,065,609.4 (1.14)
Islamic Elementary School	369,739.2 (0.51)	-19,911.0 (-0.29)	-45,101.7 (-0.10)	-14,878.6 (-1.56)	-68,792.3 (-1.38)	30,133.6 (0.94)	231,318.0* (2.39)	-5,436.3 (-0.04)	-6,860.1 (-0.14)	269,267.5 (0.87)
Islamic Junior High School	-339,967.5 (-0.45)	-36,293.9 (-0.50)	-72,791.8 (-0.16)	-11,500.3 (-1.14)	-142,841.2** (-2.71)	12,249.3 (0.36)	194,475.8 (1.91)	-218,057.0 (-1.39)	-22,260.6 (-0.42)	-42,947.6 (-0.13)
Islamic Senior High School	-908,713.0 (-0.89)	-126,793.8 (-1.30)	-91,146.2 (-0.15)	-7,625.2 (-0.56)	-212,431.6** (-2.98)	-54,650.5 (-1.19)	161,970.0 (1.18)	-153,765.3 (-0.72)	-69,131.9 (-0.97)	-355,138.4 (-0.80)
Other	-1,359,458.7 (-0.47)	-184,596.2 (-0.67)	-315,550.4 (-0.18)	231,200.8*** (6.04)	-125,806.0 (-0.63)	-216,234.1 (-1.67)	87,569.9 (0.23)	-371,869.1 (-0.62)	-70,393.2 (-0.35)	-393,780.4 (-0.32)
Kindergarten	-141,709.0 (-0.23)	-29,926.6 (-0.52)	-21,539.3 (-0.06)	-1,307.1 (-0.16)	-84,117.6* (-2.00)	9,551.0 (0.35)	161,333.1* (1.98)	-144,589.5 (-1.15)	-2,392.7 (-0.06)	-28,720.3 (-0.11)

	Education Expenditure Total	Registration Fees	Tuition Fees	Exam Fees	Book and Writing Supplies	Uniform and Sports	Transporta- tion Cost	Housing and Food	Special Courses	Other School Related Expenses
<i>Father Education</i>										
No/Not yet in school	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)
Elementary school	-140,230.3 (-0.54)	-16,426.1 (-0.66)	-10,883.4 (-0.07)	-3,056.5 (-0.88)	-8,141.4 (-0.45)	14,464.8 (1.24)	-7,842.8 (-0.22)	-13,536.2 (-0.25)	-9,004.8 (-0.50)	-85,803.7 (-0.76)
Junior high - general	75,841.9 (0.23)	-34,280.3 (-1.09)	10,899.4 (0.05)	-3,914.5 (-0.89)	-32,828.8 (-1.43)	11,416.6 (0.77)	17,799.1 (0.40)	63,879.5 (0.93)	680.9 (0.03)	42,190.1 (0.30)
Junior high - vocational	-28,879.6 (-0.06)	-34,765.8 (-0.75)	12,221.8 (0.04)	4,444.9 (0.69)	12,103.3 (0.36)	31,113.5 (1.43)	-15,755.3 (-0.24)	25,708.3 (0.26)	-60,152.7 (-1.78)	-3,797.7 (-0.02)
Senior high - general	-11,471.0 (-0.03)	-7,225.6 (-0.20)	7,424.3 (0.03)	-856.5 (-0.17)	-9,061.9 (-0.34)	36,510.3* (2.14)	-55,891.1 (-1.09)	35,024.7 (0.44)	-4,113.3 (-0.16)	-13,281.9 (-0.08)
Senior high - vocational	20,691.2 (0.05)	-30,205.5 (-0.83)	25,869.1 (0.11)	-2,989.0 (-0.59)	-1,843.7 (-0.07)	48,299.5** (2.83)	-22,898.0 (-0.45)	-14,199.8 (-0.18)	-37,426.4 (-1.41)	56,085.0 (0.34)
Adult Education A	310,757.8 (0.25)	-34,634.8 (-0.29)	2,591.3 (0.00)	-7,530.2 (-0.46)	9,502.4 (0.11)	38,178.8 (0.68)	-114,567.2 (-0.68)	333,444.9 (1.29)	-16,886.5 (-0.19)	100,659.0 (0.19)
Adult Education B	-2,418,693.4 (-0.88)	-26,932.5 (-0.10)	-275,253.6 (-0.16)	-7,147.4 (-0.20)	-138,573.2 (-0.72)	-390,154.5** (-3.16)	-163,039.7 (-0.44)	-228,278.4 (-0.40)	-38,462.1 (-0.20)	-1,150,851.8 (-0.97)
Open University	4,563,081.8* (2.25)	-82,990.2 (-0.43)	186,421.4 (0.15)	2,672.6 (0.10)	37,397.2 (0.27)	152,612.4 (1.68)	1,546,713.6*** (5.67)	645,004.5 (1.54)	7,426.2 (0.05)	2,067,824.2* (2.37)
Islamic Boarding School	-736,316.4 (-0.87)	-13,599.7 (-0.17)	-59,378.3 (-0.12)	-5,445.9 (-0.49)	-56,250.7 (-0.96)	-20,084.3 (-0.53)	-23,963.7 (-0.21)	-56,670.5 (-0.32)	-79,208.1 (-1.35)	-421,715.3 (-1.16)
Adult Education C	-63,842.7 (-0.03)	-71,922.2 (-0.39)	479,963.4 (0.40)	1,124.2 (0.04)	-32,057.2 (-0.23)	146.2 (0.00)	-129,747.8 (-0.49)	-92,834.7 (-0.23)	-24,377.3 (-0.18)	-194,137.3 (-0.23)
School for the disabled	818,516.9 (0.30)	-174,856.4 (-0.67)	-65,442.8 (-0.04)	76.01 (0.00)	101,939.4 (0.53)	79,531.1 (0.65)	93,879.5 (0.25)	121,974.5 (0.21)	47,060.7 (0.25)	614,354.8 (0.52)
College - Associate Degree	720,107.2 (1.37)	-1,640.0 (-0.03)	139,632.7 (0.44)	-3,067.1 (-0.44)	79,697.9* (2.18)	34,789.9 (1.48)	197,953.9** (2.80)	-20,776.9 (-0.19)	-20,929.9 (-0.57)	314,446.6 (1.39)
Bachelor Degree	-308,037.5 (-0.64)	-82,768.4 (-1.80)	-15,941.2 (-0.05)	-6,075.6 (-0.95)	-8,385.9 (-0.25)	14,635.5 (0.68)	61,758.4 (0.95)	-124,646.4 (-1.24)	-18,651.5 (-0.55)	-127,962.3 (-0.61)
Master Degree	1,477,741.4 (1.27)	100,812.8 (0.92)	-217.4 (-0.00)	-15,120.0 (-0.98)	41,342.0 (0.51)	18,230.5 (0.35)	542,710.0*** (3.48)	-87,379.0 (-0.36)	-40,761.6 (-0.51)	918,124.0 (1.84)
Doctoral Degree	45,407,489.7*** (14.74)	-16,355.4 (-0.06)	13,848,999.3*** (7.41)	-33,024.8 (-0.81)	819,019.8*** (3.82)	239,299.8 (1.73)	4,215,416.6*** (10.18)	3,776,273.1*** (5.92)	-102,249.2 (-0.48)	22,660,110.5*** (17.08)
Islamic Elementary School	-48,654.7 (-0.09)	33,806.2 (0.66)	-7,149.2 (-0.02)	1,868.5 (0.26)	-35,137.6 (-0.94)	4,854.5 (0.20)	10,526.6 (0.15)	34,615.3 (0.31)	-16,611.1 (-0.44)	-75,427.9 (-0.33)
Islamic Junior High School	-757,247.0 (-1.32)	-54,830.5 (-1.01)	-100,022.1 (-0.29)	-5,937.1 (-0.78)	-4,406.7 (-0.11)	20,540.6 (0.80)	-93,342.7 (-1.21)	-127,953.1 (-1.08)	-16,544.6 (-0.41)	-374,750.7 (-1.52)
Islamic Senior High School	406,711.9 (0.65)	-28,847.8 (-0.49)	5,774.6 (0.02)	7,498.7 (0.91)	-29,380.3 (-0.68)	9,440.7 (0.34)	11,478.3 (0.14)	245,915.2 (1.91)	-38,744.0 (-0.89)	223,576.4 (0.83)
Kindergarten	-200,729.9 (-0.74)	-13,225.6 (-0.51)	1,611.3 (0.01)	655.2 (0.18)	-13,323.0 (-0.71)	13,151.7 (1.08)	-26,799.4 (-0.73)	-14,310.5 (-0.25)	-15,018.5 (-0.80)	-133,471.0 (-1.14)

	Education Expenditure Total	Registration Fees	Tuition Fees	Exam Fees	Book and Writing Supplies	Uniform and Sports	Transportation Cost	Housing and Food	Special Courses	Other School Related Expenses
<i>Level of School</i>										
Elementary	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)
Junior high general	-68,607.7 (-0.27)	70,392.0** (2.96)	-20,835.1 (-0.14)	1,023.4 (0.31)	-18,609.4 (-1.07)	166.9 (0.01)	65,225.1 (1.94)	-20,318.4 (-0.39)	-49,564.9** (-2.84)	-96,087.3 (-0.89)
Junior high vocational	1,215,547.7 (0.76)	220,847.0 (1.45)	146,282.3 (0.15)	546.0 (0.03)	-36,715.2 (-0.33)	111,090.6 (1.54)	123,252.0 (0.57)	219,761.3 (0.66)	36,899.2 (0.33)	393,584.5 (0.57)
School for Disabled	-423,104.3 (-0.21)	17,938.1 (0.09)	167,566.8 (0.14)	-9,464.9 (-0.36)	136,952.4 (0.98)	-86,162.2 (-0.96)	-160,505.5 (-0.60)	-306,396.8 (-0.74)	16,788.5 (0.12)	-199,820.7 (-0.23)
Islamic Elementary School	22,142.4 (0.07)	-8,385.9 (-0.27)	66,432.2 (0.34)	-256.0 (-0.06)	10,660.8 (0.47)	7,613.5 (0.52)	911.3 (0.02)	1,814.6 (0.03)	14,310.4 (0.63)	-70,958.5 (-0.50)
Islamic Junior High School	555,226.8 (0.97)	48,250.0 (0.89)	97,983.0 (0.28)	17,547.0* (2.31)	45,074.2 (1.13)	46,362.7 (1.81)	70,060.6 (0.91)	83,499.5 (0.70)	13,841.0 (0.35)	132,608.9 (0.54)
School Scholarship	159,571.7** (2.78)	12,079.8* (2.22)	66,481.4 (1.91)	1,939.9* (2.55)	3,532.3 (0.89)	978.0 (0.38)	10,757.0 (1.39)	6,275.6 (0.53)	1,371.1 (0.34)	56,156.5* (2.27)
Urban	258,891.1 (1.32)	13,680.5 (0.73)	10,928.0 (0.09)	3,474.3 (1.33)	11,207.8 (0.82)	4,609.8 (0.52)	-16,059.6 (-0.61)	45,550.3 (1.12)	23,986.4 (1.76)	161,513.6 (1.91)
Rural	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)
Constant	459,029.7 (0.61)	108,856.4 (1.51)	-130,338.2 (-0.28)	12,004.3 (1.19)	162,806.8** (3.09)	48,294.7 (1.42)	-187,544.8 (-1.84)	381,448.0* (2.43)	18,347.6 (0.35)	45,154.9 (0.14)
Observations	2,100 Households									
R <sup>2</sup>	0.412	0.092	0.036	0.052	0.216	0.093	0.165	0.414	0.042	0.561

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001