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Let's Talk with Your Kids: Children's Involvement in Intra-household Decision-Making and Their Education Attainment - Evidence from Indonesia

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Abstract

Many studies on the determinants of children's education attainment have found that characteristics of child, parents' background and family income are the most important factors. However, the current research shows the importance of intra-household decision-making on children's education attainment. This study aims to analyze the impact of children's involvement in intra-household decision-making on their education attainment. We then separate the decision-making on children's schooling choices into two types: authoritarian (decided by parent only) and democratic (children's involvement). This study uses three waves of 2000, 2007, and 2014 IFLS dataset to examine whether a democratic choice results in the best outcome for children's future education attainment. Applying econometric estimations, this study confirms that the democratic type of decision-making on children's education choices has a higher impact on children's education attainment compared to the authoritarian type of decision-making. When children are active in decision-making regarding school choice, then their education attainment will increase around 0.728 years. In addition, giving girls greater rights to be actively involved in household decision-making related to their education choice will result in a higher education attainment than the same treatment applied to boys. This study suggests that parents should hear children's voices in deciding their education choice.

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1. INTRODUCTION

"Education is the most powerful weapon which you can use to change the world" (Nelson Mandela, 1918-2003)

Research on determinant factors of children's educational outcomes has attracted a lot of attention both in economics and in social sciences. Many studies show that parental educational level and family income are important predictors of children's education attainment (Becker, 1964; Leibowits, 1974; Becker and Tomes, 1986; Teachman, 1987; Behrman and Rosenzweig, 2005; Davis-Kean, 2005). D'Addio (2007) argued that the parent endows genetics and also allocates specific resources to their children such as economic resources, and human capital investment. The differences in allocation of parents' resources to their children will cause differences in the level of attainment of children in the future (Bloome, 2015).

A family, especially a parent, therefore, plays a central role in children's human capital investment. Conventional wisdom perceived that parents are always trying to provide the best for their children (Becker, 1981; Becker and Tomes, 1986; Behrman et al., 1999), so that they sometimes have a dominant role in the decisions regarding their children's schooling. Recent literature, however, has shown that resource allocation policy and decision-making within a family can also highly affect the quality of a child's education outcome. Fleisher (1977) and Rangel (2006) show the importance of intra-household decision-making on children's education attainment. For instance, Rangel (2006) shows that a family with a mother who has significant control over household decision tends to have a higher education attainment for their children, especially for girls' education.

Recent changes in environment, culture, and information have changed intra-household decision-making from a traditional type of household decision-making (parent-centered decision-making) to a more democratic type of decision-making that allows all family members to actively discuss household issues (Behrman, 1997; Lundberg et al., 2007). The United Nation Convention on the Rights of the Child (1989), ratified by the Indonesian Government through Presidential Decree No. 36 (1990), stated in articles 12 & 13 that the child who is capable of forming his or her own views has the right to express those views freely and the child shall have the right to freedom of expression.[1] In the case of education, an intense discussion between a parent and child(ren)—on the best educational path that the child should take—would probably have significant impact on the children's educational outcome. This is because a parent would optimally invest on the quantity and quality of their children's education, while the children would be fully responsible for the decision made by both parties (D'Addio, 2007).

[1] This convention has been enacted by Law No. 35/2014 about a child's protection.

Based on the fact that intra-household decision-making may be an important factor in predictors of children's education attainment, this study aims at empirically analyzing the impact of children's involvement in household decision-making on their education attainment in Indonesia using three waves of Indonesian Family Life Survey data (2000, 2007 and 2014). We separate the decision-making regarding children's schooling choices into two types: an authoritarian decision (decided by parent only) and a democratic choice (children's involvement in decision-making about their education). Does democratic decision-making result in the best outcome in relation to children's future education attainment? If democratic decision-making resulted in the best outcome, then this would provide valuable empirical evidence that a parent should consider the voice of the child within family decision-making. The structure of the paper is as follows: the second section provides a brief review of the theoretical framework, while the third section describes the research methodology. The fourth section analyzes the main findings. Finally, the last section deals with conclusions.

2. THEORETICAL FRAMEWORK

This study uses a model of a collective household that maximizes a family utility function subject to the family income (Chiappori, 1992; Browning and Chiappori, 1998). The utility of family is a combination of both a parent's and child's utility under the assumption that a household consists of two parents and one child (Lundberg et al., 2007). Parents' decisions are unitary models with the assumption that they share the same preference and/or decision or only one parent makes the decision. Both parents' and child's utility function consist of a commodity bundle, a quantity of children within family, and a quality of children (Becker, 1981).

The utility function of a family is a combined utility of parents and their children $U=g(U_c,U_p)$ where $U_c=U_c(x,n,q)$, $U_p=U_p(x,n,q)$, and $U_c \neq U_p$. The cooperative outcome is the solution to:

$$\max U = \alpha\, U_c\,(x,n,q) + (1-\alpha) U_p\,(x,n,q) \tag{1}$$

subject to the budget constraint:

$$p_x x + p_n n + p_q q = y \tag{2}$$

where U is a family utility consisting of child utility (U_c) and parents utility (U_p), while ***x*** is a commodity consumption bundle for all members of the family, ***n*** describes the number of children in the family, and ***q*** is usually the quality of child in the family that refers to a child's education attainment. The family income (y) is distributed into household consumption, expenditures for each child, and investment on child's education. And α is the share of child utility in the family utility. This optimization results in standard demand functions for consumption goods, quantity of child and quality of child (for a formal proof, see Browning and Chiappori, 1998). These

functions depend on the price of education, wages, household resources, the distribution of power, and household characteristics (observable and unobservable) (Mazzocco, 2007).

The quality of child is a function of price of consumption goods, price of raising children, price of education investment, income of household (wage rate) and the value of children within family. The mathematical function of child quality is as follows:

$$q^* = f(p_x^*, p_n^*, p_q^*, y^*, \alpha^*) \quad (3)$$

This study assumes that α as the value of a child within the family corresponds with the bargaining power of a child in intra-household decision-making. A higher value of α means a higher bargaining power or a higher involvement of the child in household decision-making. Related to intra-household decision-making and bargaining power within family, Baumrind (1966 & 1967) classified three parenting styles: 1) authoritarian parenting is extremely strict and expects orders to be obeyed; 2) permissive parenting is an opposite of authoritarian parenting that is extremely responsive to a child's needs; 3) authoritative parenting is a combination between authoritarian and permissive parenting that is a combination between expectations and warmth. According to this classification, we then have:

a. If α is 0, this means an authoritarian decision regarding the child's education, entirely decided by the parents (authoritarian parenting);
b. If α is between 1 and 0, this means a democratic decision regarding the child's education, where a child is involved in household decision-making as it relates to schooling choice (authoritative parenting).

By borrowing the idea developed by Browning and Chiappori (1998) and Mazzocco (2007), Eq. 3 theoretically describes that the relationship between the children's bargaining power and the quality of children (reflected in children's educational attainment) is positively correlated.

A family can maximize their utility by involving children in household decision-making. This means there is communication between parents and children, and in the long run, there will be strong bonding with family that might increase family satisfaction. Related to educational attainment, involving children in household decision-making regarding their educational choice might motivate children to try their best in school. This is because they might psychologically feel they are getting full support from their parents; therefore, they will maximize their efforts in school (Smart and Pascarella, 1986; Papalia, 2004).

3. RESEARCH METHODOLOGY

We develop an econometric model to estimate the impact of child involvement in household decision-making on their educational attainment. The econometric model refers to Eq.3 as well as other literature related to children's education attainment. Many studies show that family income, household characteristics (both children and parents), and environment characteristics such as ethnicity, religious affiliation and residential area are important factors influencing children's educational attainment (Becker, 1964; Leibowitz, 1974; Becker, 1981; Becker and Tomes, 1986; Behrman and Rosenzweig, 2005; Davis-Kean, 2005; Mazzocco, 2007). The econometric models are shown as follows:

$$q_{it} = \beta_0 + \beta_1 dm_{it-1} + \beta_2 C_{it-1} + \beta_3 P_{it-1} + \beta_4 E_{it-1} + \epsilon_i \quad (4)$$

where ***i*** is a child; ***t*** is a time period either 2007 or 2014; ***t-1*** is a lag time period either 2000 or 2007; q is the education attainment (years of schooling), which measures child quality, dm is the decision-making on the children's education. This study separates the decision-making regarding children's schooling choices into two types: authoritarian (decided by parent only) and democratic (children's involvement in decision on educational choices); C is a vector of child background variables (age, number of siblings, cognitive abilities, others); P is a vector of parents'/family background variables (age of the head of household, parents education, families income and others); ***E*** is a vector of environmental characteristics including residential area, ethnicity, religion, and distance from village to education and transportation facilities; lastly, ϵ is a random error term. Table 1 shows the operational definitions of the variables.

This study uses three waves (2000, 2007 and 2014) of the Indonesian Family Life Survey (IFLS) data to measure the impact of intra-household decision-making and education attainment in Indonesia. The IFLS consists of five waves (1993, 1997, 2000, 2007 and 2014). However, this study uses only the three last waves due to the fact that the information on intra-household decision-making is only available in IFLS3, 4, and 5.[2] The IFLS is a longitudinal survey in which the household sample for the first wave is the primary determinant of the sample in subsequent waves. The IFLS1 sampling scheme was stratified into provinces, and then randomly sampled within provinces, covering thirteen major provinces where approximately 83 percent of the population resides.[3]

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[2] IFLS1 and IFLS2 were a collaborative effort of RAND and the Demographic Institute of the Universitas Indonesia. IFLS3 and IFLS4 were a collaborative effort of RAND and the Center for Population and Policy Studies (CPPS) of the University of Gadjah Mada, while IFLS5 was collaboration between RAND and Survey Meter.

[3] The provinces are North Sumatera, West Sumatera, South Sumatera, DKI Jakarta, West Java, Central Java, DI Yogjakarta, East Java, Bali, West Nusa Tenggara, South Kalimantan, and South Sulawesi. The IFLS survey collects data on individual respondents, their households, activities, and community facilities.

Table 1. Definition of Variables

Dependent variable	Description of Variables	Hypothesis
1. Child's education (q)	Child's years of schooling.	
Explanatory variable		
Children Involvement in Household Decision Making		
1. Children involvement in decision-making on children's education (decided by both parents and children or only by children) (democratic)	Dummy (1 if children involvement in decision-making on children's education, 0 if not).	+
Characteristics of Child		
2. Child's Cognitive Ability	Child's cognitive ability in analysis and math.	+
3. Age of Child (Year)	Age of child in years	+
4. Sex (1=girl; 0=otherwise)	Dummy (1 if girl and 0 if otherwise).	-
5. Status of Child (1= step/adopted child; 0=otherwise)	Dummy (1 if child is adopted or step children, 0 if otherwise).	-
6. Birth Order	Birth Order of Child	-
7. Schooling Status in 2007 or 2014 (1= still in school; 0=otherwise)	Dummy (1 if the child still in school; 0 if otherwise).	+
Characteristics of Family		
8. Age of household's head	The age of household's head and household's head age square.	+
9. Mother's education	Mother's years of schooling.	+
10. Father's education	Father's years of schooling.	+
11. Number of sibling	Number of siblings both of real sibling and adopted/step siblings.	-
12. Log Total Expenditure for Education	Log total expenditure for education.	+
Characteristics of Environment		
13. Residential area (1=Rural; 0=Urban)	Dummy (1 if living in rural, 0 if living in urban).	-
14. Ethnicity (1= non Java; 0=Java)	Dummy (1 if non Java, 0 if Java). Java is the majority ethnic in Indonesia.	-
15. Religion (1=non Moslem; 0=Moslem)	Dummy (1 if non Moslem, 0 if Moslem). Moslem is the majority religious in Indonesia.	+
16. Distance from village to Senior High School	Distance from village to Senior High School in hours.	-
17. Distance from village to Bus Terminal (in hours)	Distance from village to Bus Terminal in hours.	-

Source: Authors

We will then estimate two econometric models. The first model uses the education attainment (years of schooling) of 2007 as a dependent variable, while explanatory variables are drawn from the IFLS 2000 dataset. The second model uses the education attainment (years of schooling) of 2014 as a dependent variable, while explanatory variables are drawn from the IFLS 2007 dataset. Estimating two econometric models with two different pairs of datasets allows us to observe a consistent and robust relationship between a child's involvement in household decision-making and a child's education attainment. This study limits observations to children with ages ranging from 11-18 years old and unmarried status. We assume that children below 11-18 years old would not have the ability to properly discuss the issue with their parents, and parents may also not consider younger children's voices in household

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The IFLS dataset contains uniquely detailed information on the households' demographics, economic characteristics, consumption behaviors, health status, and access to community facilities and social safety nets. The first wave of IFLS conducted in 1993 interviewed 7,224 households. The second wave of IFLS was conducted in 1997, interviewing 7,698 households. Around 11.4 percent of those households were split-off households. When the IFLS3 was conducted in 2000, the number of split-off households (including those that split in 1997 and 1998) accounted for around 25 percent of all households interviewed. IFLS4 interviewed 13,995 households divided into 6,596 original IFLS1 households, 4,033 old split-off households and 4,015 new split-off households.

decision-making. Table 2 shows the summary statistics including the mean and standard deviation of each variable.

We then estimate econometrically the relationship between type of intra-household decision-making in child's schooling choices and his/her education attainment. In order to check the consistency and robustness of results, this study estimates several models using different control variables (different model specification) and subsets of the sample. This study splits the sample into five categories: 1) all samples, 2) boys, 3) girls, 4) age 11-14 and 5) age 15-18. Splitting the sample allows us to examine whether the relationship between type of decision-making and education outcome are consistent. Moreover, this also enables us to observe whether the impacts are different for each category of sample; for instance, the impact of democratic decision-making on child's school choice may be different among boys and girls. This is because in a patriarchal society, there is a cultural norm that parents should significantly control girls in their decision-making. Girls are then less independent than boys. Furthermore, the purpose of splitting sample by age is to examine whether there are different impacts of education attainment for each age category. This is following the fact that in the pre-teenager period, parents significantly exert control because children may be considered unable to determine the best choice for their education. As they increase in age, parents gradually trust and listen to children's voice and involve their children in intra-household decision-making.

Table 2. Summary Statistics

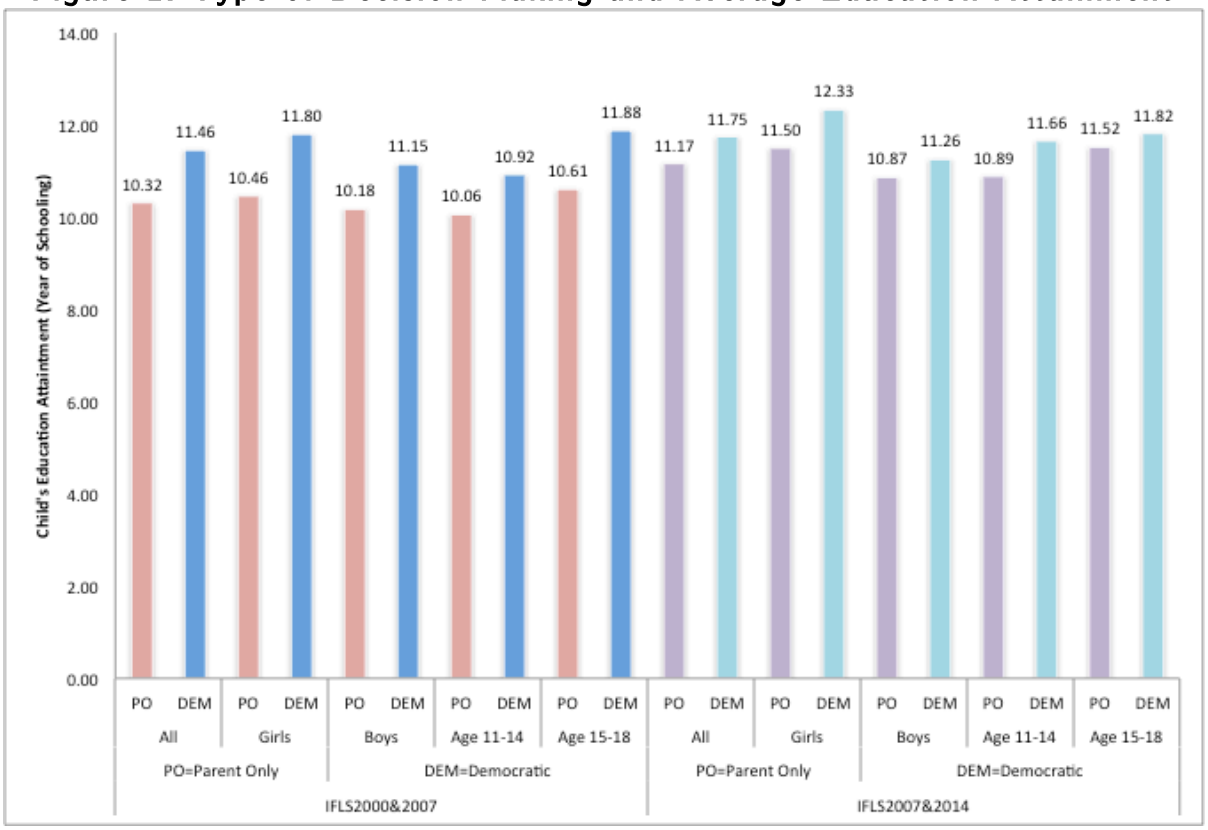
Variable	Data Description (IFLS 2000-2007)					Data Description (IFLS 2007-2014)				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
Child's Education Attainment (Years of Schooling)	3,757	10.450	3.278	0	18	2,985	11.211	2.903	1	18
Democratic Decision (1=child's involvement in decision of school choice; 0=otherwise)	3,757	0.118	0.323	0	1	2,985	0.075	0.263	0	1
Characteristics of Child										
Child's Cognitive Ability	3,757	63.941	26.549	0	100	2,985	76.162	23.375	0	107
Age of Child (Year)	3,757	14.392	2.254	11	18	2,985	14.252	2.229	11	18
Sex (1=girl; 0=otherwise)	3,757	0.479	0.500	0	1	2,985	0.470	0.499	0	1
Status of Child (1= step/adopted child; 0=otherwise)	3,757	0.022	0.147	0	1	2,985	0.030	0.171	0	1
Birth Order	3,757	1.885	1.062	1	8	2,985	2.839	1.841	1	14
Schooling Status in 2014 (1= still in school; 0=otherwise)	3,757	0.131	0.337	0	1	2,972	0.199	0.399	0	1
Characteristics of Family										
Age of Household's Head	3,757	46.184	8.100	25	83	2,985	46.521	7.720	30	80
Mother's Education (Years of Schooling)	3,757	5.091	3.964	0	17	2,985	6.347	4.259	0	18
Father's Education (Years of Schooling)	3,757	6.353	4.325	0	18	2,985	7.329	4.472	0	18
Number of Siblings	3,757	4.003	1.764	1	11	2,985	3.810	1.768	1	11
Log Total Education Expenditure	3,574	11.064	1.158	5.81	15.09	2,850	12.091	1.043	7.42	15.26
Characteristics of Environment										
Residential area (1=Rural; 0=Urban)	3,757	0.542	0.498	0	1	2,985	0.517	0.500	0	1
Ethnicity (1= non Java; 0=Java)	3,757	0.596	0.491	0	1	2,985	0.618	0.486	0	1
Religion (1=non Moslem; 0=Moslem)	3,757	0.117	0.321	0	1	2,985	0.136	0.343	0	1
Distance from village to Senior High School (in hours)	3,547	0.353	0.251	0.02	1.50	2,976	0.736	0.487	0.02	2.02
Distance from Village Bus to Terminal (in hours)	3,529	0.229	0.419	0	4	2,586	0.398	1.128	0	10.25

Source: Authors' calculation

4. ANALYSIS OF RESULTS

This section firstly discusses the stylized facts of decision-making and years of schooling. Figure 1 shows average years of schooling by age and gender based on types of decision-making (PO: parent only/authoritarian type; DEM: child's involvement in decision-making/democratic type). The results reveal that democratic decision-making results in a higher education outcome compared to authoritarian decision-making. These results are consistent with the theoretical framework above. Moreover, girls have a slightly longer period of schooling than boys in both types of decision-making. Under democratic decision-making, the average education attainment of girls is 12.33 years compared to that of boys with only 11.26 years in 2014. Even though, there is an improvement in years of schooling during 2007-2014 in both girls and boys, the gap in education outcome between them is widening. The gap in 2007 was around 0.65 years, while in 2014 the gap is around 1.07 years. This is because more girls are actively enrolling in schooling than boys. The Central Bureau of Statistics (BPS) also confirmed that by 2014, school participation of girls aged 13-15 is 95.27%, while that of boys is only 93.66%.

Figure 1. Type of Decision-Making and Average Education Attainment



Source: Authors' calculation.

4.1 Children's Involvement in Intra-household Decision-Making and Education Attainment

Our econometric estimations confirm that type of intra-household decision-making regarding child's school choice is significantly and consistently related to his/her future education outcome. All estimations in the period of 2000-2007 and 2007-2014 confirmed that democratic decision-making in children's education choices results in a higher impact on children's education attainment compared to an authoritarian type of decision-making. The results are consistent across all specifications and both periods. Tables 3 and 4 show that by controlling with characteristics of children, involving children in decision-making on school choice will increase the child's education attainment by 0.728 years (2007) and 0.385 years (2014). This implies that the distribution of power within the household has to affect the children's education attainment in the household. More child bargaining power is associated with a higher education attainment.

This study also reveals the interesting finding that children's involvement in their school choice impacts differently on their future education attainment depending on gender and age group. In the period 2000-2007, girls who are involved in deciding their school choices have a better future education attainment compared those who are passively in the school decision process. After controlling for characteristics of children, parents and environment, the difference in education outcomes among them is around 0.56 years (Table 3 of Model 3 and 4). In the case of boys, there is a statistically significant difference in education outcomes between boys with and without active participation in the schooling decision; after controlling for all characteristics, this study, however, could not find a significant relationship between type of decision-making and education outcome (Table 3 of Model 5 and 6). Moreover, model 3 and 5 also confirm that girls will perform better in school than boys when both of them are actively involved in their school decision-making. The difference in education outcome between girls and boys is 0.279 years. This may be because the parents/families thought that if girls have a better education, they will find it easier to get a better job as well as a better marriage partner. Moreover, there is then also a fact that girls are more obedient and serious in learning than boys.

The impact of authoritative parenting (children's involvement in school choice) at age 15-18 is higher than that at age 11-14. This is because 15-18 years old are teenagers who already have enough ability to make decisions, be responsible and know consequences of their decisions; therefore, involving them in decision-making related to their school choice will motivate them to be responsible and try at their best efforts in schooling. In the period 2007-2014, the relationship between child involvement in household decision-making and education outcome is consistent with that in the period 2000-2007, although some of the relationships are statistically insignificant.

Table 3. Regression Results from the IFLS 2000-2007

Variables (Explanatory Variables in 2000)	Dependent Variable: Child's Education Attainment (Years of Schooling) in 2007									
	All Sample		Girls		Boys		Age 11-14		Age 15-18	
	1	2	3	4	5	6	7	8	9	10
Democratic Decision (1=child's involvement in decision of school choice; 0=otherwise)	0.728***	0.417***	0.877***	0.561***	0.598***	0.299	0.409**	0.315*	0.965***	0.476***
	(5.18)	(3.41)	(4.63)	(3.57)	(2.91)	(1.63)	(2.28)	(1.80)	(4.71)	(2.89)
Characteristics of Child										
Child's Cognitive Ability	0.045***	0.024***	0.046***	0.026***	0.044***	0.022***	0.048***	0.026***	0.044***	0.023***
	(21.96)	(11.61)	(16.25)	(8.75)	(14.65)	(7.70)	(15.18)	(6.88)	(16.44)	(9.40)
Age of Child (Year)	0.327***	0.210***	0.380***	0.251***	0.277***	0.173***	0.245***	0.262***	0.026	0.023
	(14.80)	(9.91)	(12.01)	(8.17)	(8.88)	(5.88)	(4.36)	(4.89)	(0.37)	(0.38)
Sex (1=girl; 0=otherwise)	0.425***	0.436***					0.247**	0.327***	0.629***	0.543***
	(4.55)	(5.24)					(2.05)	(2.92)	(4.39)	(4.39)
Status of Child (1= step/adopted child; 0=otherwise)	-0.369	-0.206	-0.378	-0.125	-0.258	-0.377	-0.722*	-0.167	0.200	-0.262
	(-1.16)	(-0.79)	(-1.07)	(-0.47)	(-0.44)	(-0.76)	(-1.72)	(-0.43)	(0.44)	(-0.77)
Birth Order	-0.126***	-0.021	-0.112*	-0.011	-0.140**	-0.020	-0.092	0.001	-0.156**	-0.023
	(-2.76)	(-0.44)	(-1.75)	(-0.18)	(-2.16)	(-0.28)	(-1.56)	(0.02)	(-2.25)	(-0.33)
Schooling Status in 2014 (1= still in school; 0=otherwise)	2.705***	1.302***	2.833***	1.317***	2.594***	1.286***	2.515***	1.345***	3.502***	1.525***
	(24.39)	(10.47)	(17.70)	(6.97)	(16.72)	(7.85)	(20.61)	(10.00)	(13.94)	(5.14)
Characteristics of Family										
Age of Household's Head		0.026***		0.027***		0.025***		0.013*		0.041***
		(4.69)		(3.55)		(3.09)		(1.70)		(4.74)
Mother's Education (Years of Schooling)		0.101***		0.151***		0.0544***		0.0784***		0.125***
		(6.88)		(7.33)		(2.63)		(3.87)		(5.91)
Father's Education (Years of Schooling)		0.128***		0.0961***		0.158***		0.130***		0.121***
		(9.27)		(4.80)		(8.50)		(6.86)		(6.12)
Number of Siblings		-0.236***		-0.237***		-0.235***		-0.200***		-0.260***
		(-8.17)		(-6.13)		(-5.52)		(-4.80)		(-6.39)
Log Total Education Expenditure		0.751***		0.649***		0.845***		0.623***		0.863***
		(16.83)		(10.39)		(13.72)		(10.29)		(12.92)
Characteristics of Environment										
Residential area (1=Rural; 0=Urban)		-0.023		-0.058		0.011		0.040		-0.095
		(-0.24)		(-0.42)		(0.08)		(0.30)		(-0.66)
Ethnicity (1= non Java; 0=Java)		0.130		0.211*		0.065		0.143		0.090
		(1.45)		(1.66)		(0.51)		(1.19)		(0.68)
Religion (1=non Moslem; 0=Moslem)		0.598***		0.559***		0.600***		0.574***		0.603***
		(4.37)		(2.70)		(3.36)		(3.17)		(3.01)
Distance from village to Senior High School (in hours)		-0.286*		-0.446**		-0.118		-0.311		-0.243
		(-1.81)		(-2.12)		(-0.51)		(-1.49)		(-1.03)
Distance from Village to Bus Terminal (in hours)		-0.026		-0.022		-0.032		0.054		-0.291
		(-0.20)		(-0.12)		(-0.17)		(0.34)		(-1.49)
Observations	3757	3169	1798	1533	1959	1636	1961	1678	1796	1491
Adjusted R-squared	0.241	0.444	0.271	0.459	0.210	0.429	0.259	0.402	0.228	0.473
F-Statistic	193.8	161.8	137.9	91.30	93.19	85.84	110.0	75.69	97.01	94.76

Note: t-statistics are in parentheses: ***p<0.01, **p<0.05, *p<0.1.

Source: Authors' estimation.

These results are consistent with the theoretical framework presented in the previous section in which children's involvement in deciding their choice of education positively affects their future educational attainment. This is because involving children in intra-household decision-making maximizes the family utility in which a democratic or joint decision, meaning a discussion between parents and children, increases a family's bonding and children's motivation to try their best in school (Smart and Pascarella,

1986; Papalia, 2004). The degree of children's involvement depends on the value of children within the family utility function (α). A higher value of α means a higher bargaining power or a higher involvement in intra-household decision power. This study uses integer data of $\alpha \in \{0,1\}$ due to the unavailability of continuous data for α. We therefore cannot assess the continuous impact of increasing children's involvement in intra-household decision-making on future education attainment.

Table 4. Regression Results from the IFLS 2007-2014

Variables (Explanatory Variables in 2007)	Dependent Variable: Child's Education Attainment (Years of Schooling) in 2014									
	All Sample		Girls		Boys		Age 11-14		Age 15-18	
	1	2	3	4	5	6	7	8	9	10
Democratic Decision (1=child's involvement in decision of school choice; 0=otherwise)	0.385**	0.0590	0.577**	0.239	0.203	-0.104	0.437*	0.152	0.398	0.167
	(2.09)	(0.35)	(2.21)	(1.07)	(0.80)	(-0.41)	(1.89)	(0.66)	(1.45)	(0.69)
Characteristics of Child										
Child's Cognitive Ability	0.035***	0.018***	0.034***	0.018***	0.035***	0.019***	0.034***	0.018***	0.034***	0.017***
	(13.88)	(7.35)	(9.21)	(5.31)	(10.47)	(5.30)	(9.95)	(5.25)	(9.66)	(4.95)
Age of Child (Year)	0.322***	0.229***	0.401***	0.267***	0.254***	0.192***	0.398***	0.359***	0.119	0.004
	(13.32)	(9.36)	(11.63)	(7.58)	(7.52)	(5.64)	(7.15)	(6.42)	(1.60)	(0.06)
Sex (1=girl; 0=otherwise)	0.678***	0.599***					0.480***	0.543***	0.941***	0.649***
	(7.09)	(6.81)					(4.24)	(4.98)	(5.85)	(4.62)
Status of Child (1= step/adopted child; 0=otherwise)	-0.641**	-0.403	-0.205	-0.031	-1.046***	-0.752**	-0.814**	-0.501	-0.453	-0.254
	(-2.41)	(-1.53)	(-0.50)	(-0.08)	(-3.07)	(-2.19)	(-2.41)	(-1.37)	(-1.04)	(-0.71)
Birth Order	-0.080***	0.022	-0.042	0.019	-0.117***	0.023	-0.100***	0.017	-0.067	0.030
	(-2.78)	(0.68)	(-0.99)	(0.41)	(-3.01)	(0.51)	(-2.80)	(0.38)	(-1.55)	(0.67)
Schooling Status in 2014 (1= still in school; 0=otherwise)	2.046***	0.971***	2.196***	0.995***	1.908***	0.923***	1.859***	1.014***	3.067***	1.587***
	(20.24)	(8.42)	(16.96)	(6.46)	(12.63)	(5.53)	(16.75)	(7.97)	(14.43)	(6.31)
Characteristics of Family										
Age of Household's Head		0.039***		0.030***		0.046***		0.027***		0.047***
		(5.79)		(3.16)		(4.89)		(3.00)		(4.65)
Mother's Education (Years of Schooling)		0.087***		0.094***		0.077***		0.076***		0.099***
		(5.75)		(4.69)		(3.43)		(3.90)		(4.41)
Father's Education (Years of Schooling)		0.117***		0.114***		0.122***		0.114***		0.117***
		(8.22)		(6.17)		(5.63)		(6.27)		(5.40)
Number of Siblings		-0.230***		-0.160***		-0.293***		-0.214***		-0.217***
		(-6.35)		(-2.99)		(-6.03)		(-4.36)		(-4.16)
Log Total Education Expenditure		0.761***		0.784***		0.745***		0.492***		1.047***
		(15.48)		(10.87)		(11.13)		(8.01)		(13.46)
Characteristics of Environment										
Residential area (1=Rural; 0=Urban)		0.035		-0.081		0.144		-0.040		0.187
		(0.38)		(-0.63)		(1.07)		(-0.34)		(1.28)
Ethnicity (1= non Java; 0=Java)		0.107		0.119		0.0726		0.220*		-0.0678
		(1.14)		(0.91)		(0.55)		(1.90)		(-0.46)
Religion (1=non Moslem; 0=Moslem)		0.537***		0.409**		0.634***		0.212		0.953***
		(3.99)		(2.04)		(3.49)		(1.28)		(4.52)
Distance from village to Senior High School (in hours)		-0.107		-0.0790		-0.128		-0.226*		0.0371
		(-1.15)		(-0.58)		(-0.99)		(-1.91)		(0.26)
Distance from Village to Bus Terminal (in hours)		-0.045		-0.014		-0.071		-0.091*		0.031
		(-1.17)		(-0.29)		(-1.22)		(-1.65)		(0.59)
Observations	2972	2442	1400	1152	1572	1290	1639	1343	1333	1099
Adjusted R-squared	0.194	0.410	0.201	0.429	0.174	0.382	0.226	0.382	0.165	0.443
F-Statistic	116.1	104.6	78.56	59.34	56.12	52.99	69.34	53.40	61.18	54.97

Note: t-statistics are in parentheses: ***p<0.01, **p<0.05, *p<0.1.

Source: Authors' estimation.

These results are consistent with Baumrind (1966) and Papalia (2004). If parents apply authoritative parenting or raise children with a rational and democratic

approach, they will have a positive impact on the development of mentality and self-concept in children. Authoritative parenting is the way that parents raise children by involving children or listening to the opinions of children to know what they need, give protection, educate the children, and affect the children's behavior in their daily life (Baumrind, 1966). On the other hand, authoritarian parenting is characterized by high demands (very high expectation) and low responsiveness (very little feedback and nurturance from children). Under authoritarian parenting, children have less involvement in the intra-household decision-making process.

Children's involvement in intra-household decision-making as one example of authoritative parenting might influence the future education attainment of the children. Their involvement may have an impact on the release of the child's potential to the fullest. Children who are able to decide on their own choice of school/education are identified as the children that have a more mature and positive self-concept. According to Smart and Pascarella (1986), the children who have a mature and positive self-concept know their capabilities, interests and understand the direction of their life, including the capability to decide the best school/education for them. Thus, these children will be responsible for the decisions they take (Papalia, 2004).

The regression results in Table 4 show that the effect of involvement of children in decision-making regarding the choice of education in 2007 against educational attainment of children in 2014 has a result that is not statistically significant. This may be due to the limited number of respondents involved in school decision choice in 2007. However, our study still shows a positive and consistent relationship between a type of decision-making and an educational attainment of children in 2014. This study then suggests that an involvement of children in the discussion and decision-making process regarding their education choices cannot be ignored by parents as democratic decision-making results in a better future education attainment compared to that with an authoritarian type of decision-making.

4.2 Characteristics of Children and Education Attainment

The characteristics of children such as cognitive ability, age and gender are highly associated with future education attainment. It is not surprising that children's cognitive ability is a positive and significant factor where education attainment will increase with an increase in cognitive ability. There are other capabilities that could affect education attainment in addition to cognitive abilities, such as emotional ability, and motivation of the children to learn (Pajares, 1996); however, the education system in Indonesia places great weight on cognitive development compared to other abilities. Therefore, children's cognitive ability will significantly affect future education attainment. Both estimations in Table 3 and 4 confirm that the cognitive ability of children is statistically significant.

The birth order of the children is also a crucial factor in determining their education attainment, even though not all coefficients are significant in all estimations. The regression results indicate a negative relationship between a child's birth order and education outcome. These results are consistent with research by Ermisch and Francesconi (2001) which states that the family prefers their first child's education. There may be the family's expectation and hope that the first child will be the breadwinner and help parents in the future more than younger children. Another interesting finding is that adopted/step children are unfortunate compared to biological children. Adopted/step children have a lower education attainment than biological children. This might indicate that adopted/step children are not as well treated as biological children, or that parents might prioritize the education of biological children. Adopted/step children might not get the same rights in education opportunities. Parents who are divorced and remarried give less attention to their children's education. Therefore, the educational attainment of children living with stepfamily is lower than children living with immediate family (Ermisch and Francesconi, 2001).

4.3 Family Characteristics and Education Attainment

The head of household's age, parents' education, and total education expenditure have a positive impact on education attainment of children. Both parents' education attainment has positive impacts on children's education attainment. One-year increase in father's education attainment is associated with a 0.114-year increase in a child's education attainment (Table 4). However, there are differences in effect between father and mother, where father's education is more influential compared to mother's education. This finding confirms previous studies done by Gang and Zimmerman (2000) and Maralani (2008). Educated parents will pay more attention to their children's education because the parents are well-informed about the benefits of education they have taken.

The impact of family income (proxied by total expenditure on education) has a positive effect on the education attainment of children. This confirms the findings of previous research by Becker and Tomes (1986), Leibowitz (1974), and Haveman and Wolfe (1995). While in Indonesia, a compulsory education (9 years) is free from tuition fees, parents still need to cover some expenditures such as transportation, textbooks, and possibly additional expenditure for courses/tutoring related to their children's education outside of school hours. Therefore, family income is an important factor for children's education attainment. Moreover, the number of siblings in a family negatively affects a child's education attainment. This study confirms previous studies which state that the number of children in a family negatively affects children's education attainment (Maralani, 2004). Children with fewer brothers and sisters obtain more schooling than those with more siblings (Maralani, 2004). This relates to resource allocation within the family. More children means more resources needed to support

child education. A family having more children and limited resources cannot optimally support each child to pursue a higher level of education.

4.4 Environmental Characteristics and Education Attainment

Besides characteristics of children and parents, children's education attainment may be affected by environment characteristics; for instance, children who are living in urban areas with good access to educational facilities will probably have a higher education attainment than those living in rural and remote areas. This study includes five variables: location of residential area, ethnicity, religion, distance from village to Senior High School, and distance from village bus terminal. However, location of residential area is not statistically significant in influencing children's education attainment. This might contradict with Maralani's (2008) findings that the children whose families live in rural areas have lower educational opportunities than children whose families live in urban areas. Moreover, Ermisch and Francesconi (2001) state in their research that ethnic and religious minorities are better in education attainment. This study, however, could not confirm that ethnicity has a strong relationship with educational attainment since most estimations of ethnicity (non-Java ethnic) are insignificant. In terms of religious minorities, this study confirms that the religious minority (non-Moslem) has a better education attainment compared to Moslems. The gap between non-Moslem and Moslem education attainment is quietly stable around 0.54-0.95 years. There is not much improvement in this gap between the two periods of samples.

The distance from the village to the Senior High School and the distance from the village to the bus terminal measured in hours have less affect on educational attainment. Not all estimations are significant and some of the estimations are also inconsistent in their results. Both variables are used as a proxy to illustrate education access and transportation access. Accessible transportation and education facilities should improve educational attainment. According to Table 4 of Model 8, access to transportation and education facilities matters for children under 14 years old.

5. CONCLUDING REMARKS

Many studies have confirmed that children's cognitive ability, parents' characteristics, family income and school environment are important factors in determining children's education attainment. However, the current research shows the importance of intra-household decision-making on children's education attainment. The study aimed to examine the impact of children's involvement in decision-making on their education attainment by using three waves of 2000, 2007 and 2014 IFLS (Indonesian Family Life Survey) data. Our theoretical model predicts that the relationship between the child's bargaining power in intra-household decision-making

and the quality of children (reflected in children's educational attainment) is positively correlated. This is because involving children in household decision-making regarding their educational choice might motivate children to try their best in the school. This study then separates the decision-making of children's schooling choices into two types: authoritarian (decided by parent/authoritarian parenting) and democratic (children's involvement in decision of school choices/authoritative parenting).

Our econometric estimations confirm that the type of decision-making on children's schooling choices has a significant effect on future education attainment. The democratic type of decision-making on children's education choices (authoritative parenting) has a higher impact on children's education attainment compared to the authoritarian type of decision-making. When children are active in intra-household decision-making regarding school choice, then their education attainment will increase around 0.728 years (2007) and 0.385 years (2014). Greater child bargaining power within the family is associated with a higher education attainment. Furthermore, children's education attainment is highly dependant on a child's cognitive ability, birth order, parents' education, number of siblings, family resources allocated to education and religious affiliation.

However, the impact of children's involvement in school choice on their education attainment is different among gender and age groups. After controlling for characteristics of children, parents and environment, girls' education attainment is 0.279 years higher than boys. This means that giving girls more rights to actively be involved in household decision-making related to their education choice will result a higher education attainment than the same treatment applied to boys. Democratic decision-making will result in a better future education attainment when it is applied to children aged 15-18 years old. According to our findings, this study suggests that 1) parents should hear children's voices in deciding their education choice; 2) parents should treat girls more carefully than boys where an authoritative parenting style for girls might have better future consequences; 3) parents should actively engage older teenagers (aged 15-18 years old) in intra-household decision-making where an authoritarian parenting style might adversely affect their future education attainment.

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