SMERU

Working Paper

Daniel Suryadarma

Asep Suryahadi

Sudarno Sumarto

Causes of Low Secondary School Enrollment in Indonesia

August 2006

For further information, please contact SMERU, Phone: 62-21-31936336; Fax: 62-21-31930850; E-mail: smeru@smeru.or.id; Web: www.smeru.or.id

Causes of Low Secondary School Enrollment in Indonesia

Daniel Suryadarma

Asep Suryahadi

Sudarno Sumarto

SMERU Research Institute

August 2006

Suryadarma, Daniel

Causes of Low Secondary School Enrollment in Indonesia/Daniel Suryadarma, Asep Suryahadi, Sudarno Sumarto -- Jakarta: SMERU Research Institute, 2006 --

ii, 37 p. ; 31 cm. -- (SMERU Working Paper, August 2006). --

ISBN 979-3872-26-8

1. School enrollment
2. Access to education

I. Suryahadi, Asep
II. Sumarto, Sudarno

371.219/DDC 21

The SMERU Research Institute, August 2006

TABLE OF CONTENTS

Causes of Low Secondary School Enrollment in Indonesia

Daniel Suryadarma, Asep Suryahadi, Sudarno Sumarto
SMERU Research Institute
August 2006

ABSTRACT

In this study we investigate the causes of low secondary school enrollment in Indonesia despite near universal primary school attendance. We then find that attrition during the transition between primary and junior secondary education levels is the main cause. We investigate the causes of attrition using a longitudinal household survey dataset. Firstly, household welfare level is a significant determinant of the low enrollment. Secondly, children from Muslim families have a significantly lower probability of continuing to the secondary level. Thirdly, children in areas with relatively abundant employment opportunities have a higher probability of giving up schooling. Fourthly, girls have a significantly lower chance of continuing. The policy implications of our results point to, among other things, the need for refocusing government education spending and scholarship programs to target those who go missing from the education system after completing primary education.

Keywords: education, determinants, secondary school, enrollment, Indonesia.
JEL Classification: I21, I28, J16, Z12.

I. INTRODUCTION

After achieving the universal primary education target in 1988 (Government of Indonesia 1998), Indonesia made the efforts to extend its universal education attainment to the secondary level, which, have stagnated. The government aims at 2008 as the year in which the country will achieve its universal nine-year education target. However, using the data we calculate from Susenas (National Socioeconomic Survey), we find that the net enrollment rate at the junior secondary level in 2004 was 65%, only 10 percentage points higher than that a decade earlier, while only 46% of the working age population had attained at least a junior secondary education.

In this paper, we firstly investigate the level at which most of the primary school graduates leave school. This is important since there may be differences between the causes for dropping out while in junior secondary school and those for not enrolling in junior secondary school at all. Secondly, after determining the level where most dropouts occur, we investigate the causes using a panel dataset that enables us to get unbiased results.

Our paper is different from other studies on education in Indonesia because we focus on the instance where most dropouts occur, as opposed to generalizing within a certain age range or including every child in the primary or secondary education level. Therefore, our results are relevant to determining the causes of dropouts and, subsequently, finding ways to reduce them where they occur the most.

We organize the rest of this paper as follows: Section II introduces the Indonesian school system; Section III provides an overview of selected studies from other countries and Indonesia; Section IV describes the data used in this paper; Section V discusses the school completion rates in Indonesia; Section VI lays out the model and explanation of

variables; Section VII provides the descriptive results; Section VIII discusses the regression results; and Section IX concludes and provides policy implications.

II. THE INDONESIAN SCHOOL SYSTEM

This section explains the main characteristics of the Indonesian primary and secondary school systems. Both levels have a very similar system and management scheme, while the tertiary level is regulated differently. There are 12 grades in total from the primary and secondary levels, where the primary level is made up of the first six grades and the secondary level is divided into junior and senior secondary levels, comprised of three grades each. Under normal circumstances, a child starts the first grade of primary school at around six years of age and graduates from senior secondary school when he or she is around 18 years of age.

Similar to most countries, there are public and private schools in Indonesia. Both types of schools follow the national curriculum developed by the Department of National Education. Some private schools, however, especially those in large urban centers, provide extra courses or more comprehensive materials to their students in addition to those in the national curriculum.

In addition to the private-public difference, there are also Islamic schools, called *Madrasah*. Different from regular schools, *Madrasah* follow the curriculum developed by the Department of Religious Affairs and, as the name suggests, use Islam as the curriculum's foundation. Similar to regular schools, there are also public and private *Madrasah*.[1] The majority are private. In addition to private *Madrasah*, there are also private schools based on various religions such as Christianity, Buddhism, Islam, and Hinduism. The main difference between these religion-based private schools and

[1]There are no public schools based on any other religion. All public non-*Madrasah* schools are secular schools, where religion is taught as one of the subjects but is not the foundation of the curriculum.

Madrasah is that they follow the national curriculum, with additional courses emphasizing religious studies.

Every student, including those enrolled in *Madrasah*, must sit a national examination, called UAN (*Ujian Akhir Nasional*, National Final Examination),[2] at the end of each secondary school level. Entrance to higher levels, for example, from junior secondary to senior secondary, requires a student to have successfully passed UAN. UAN is designed by the Department of National Education and tests students on three subjects: *Bahasa Indonesia*, English, and mathematics/economics. From a quality control standpoint, UAN is the filter that differentiates students who are capable of continuing to the next level and those who are not. Meanwhile, students at the primary level also sit a final examination at the end of the sixth grade. However, the examination, and therefore the success rate, is designed by each individual school.[3]

[2]UAN replaced the old final examination scheme, called *Ebtanas*, in 2002 and there are significant characteristic differences between them. See section VI for explanation on *Ebtanas*.

[3]This will change in 2008, when primary school students would also be required to sit an UAN.

III. LITERATURE REVIEW

Given the wealth of research that has been done on the determinants of school enrollment, we focus our literature review on newer publications, especially those using data from the developing countries. A literature review written by Glewwe and Kremer (2005) covers most of the studies regarding school enrollment. We make every attempt, however, to include school enrollment studies that use Indonesian data.

There are many demand-side factors that influence enrollment. The most obvious one is household welfare, where children from poor households drop out because their parents have no means to pay for education, especially in developing countries where there is limited public spending to cover the expenses. Another factor found to be playing an important role is the education level of parents, where children from more educated parents are much less likely to drop out. Furthermore, it has been widely acknowledged that the expected future returns to education compared to the costs of education also determine school enrollment. Finally, there is an indication of gender discrimination in school participation in some developing countries.

Among the studies in African countries, Handa (2002) looks at the determinants of primary school enrollment in rural Mozambique and finds that demand-side intervention—such as ensuring that parents are literate and increasing income—has a large impact on a child's enrollment compared with supply-side intervention. This is similar to the finding of Burke and Beegle (2003) in Tanzania, who use the number of hours of attending school as the dependent variable. They find that policies that would increase school attendance are those that affect demand for labor within the household.

Meanwhile, Gang and Zimmermann (2000) extend the well-known intergenerational relationship of education—for example, OECD (2001), Chevalier

(2004), and Black, Devereux, and Salvanes (2005)—by making a comparison between the education attainment of the children of natives and immigrants in Germany. They first find differences that are attributable to ethnic origins among the immigrants. Furthermore, when making a comparison between immigrants and native Germans, they find that among immigrants, the parents' levels of education do not determine their children's education attainment, while the father's education is a significant variable among native German children.

Regarding the role of religious and ethnic backgrounds in enrollment, Ravallion and Wodon (2000) find that non-Muslim children in Bangladesh have neither a higher probability of schooling nor working. In contrast, Pal (2004) finds that, still in Bangladesh, children from Hindu families have greater likelihood of going to school but there is no difference in the probability of working between Hindu and Muslim children.

Borooah and Iyer (2005) look at the enrollment difference of 6-14 year olds between Hindu and Muslim children and among Hindu children from scheduled and non-scheduled castes. They differentiate the community impact into intra-community and inter-community using the Oaxaca-Blinder decomposition method. Furthermore, they interact the religion and caste characteristics with the community variables. They find that the differences between castes come down to the differences in income and in the psychological effect of the non-scheduled castes due to the discrimination against them. Between the Hindu and Muslim families, however, they find that the difference in enrollment is greater than the difference in income. Furthermore, they find that the interaction terms are considerable when the other control variables are not favorable.

Meanwhile, Lehrer (2005) uses data from the United States to look at the education gap among women with different religious affiliations. She finds that

conservative Protestants attain less schooling, Jews attain more, and Catholics are in the middle. Moreover, having no religious affiliation is negatively associated with educational attainment. In comparison, Hajj and Panizza (2006) investigate whether Muslim women are discriminated against in terms of education attainment using data on Lebanese youth. Specifically, they make a comparison in terms of education gender gaps between Christians and Muslims and find no significant difference between the religions. Furthermore, they find that girls have higher educational attainment than boys do in both religions.

Meanwhile, among the studies looking at the supply-side of education, Filmer (2004) uses data from 21 developing countries and finds that building schools in areas where there had not been any, hence reducing travel time and cost to get to school, would only increase enrollment by a small magnitude. However, Handa (2002) finds that building schools will increase female enrollment among poorer households more than that among richer households.

The earliest paper on school enrollment in Indonesia we could find is Chernichovsky and Meesook (1985), who relate enrollment to household socioeconomic characteristics and school availability using Susenas 1978 and Fasdes (Village Facilities Census) 1976/1977. They find that beyond the primary level, enrollment is mainly determined by demand, specifically household income and attitude towards education, although school availability also has a positive effect. They also find that the reason for girls to have less schooling during the 1970s was because of the low returns to girls' education. Meanwhile, Pradhan (1998) investigates the causes of enrollment and delayed enrollment among children between 13 and 18 years old. Correcting for region-specific

factors, he finds that parents' education has a positive and significant effect on enrollment, with the effect stronger on boys than girls.

In contrast, Filmer (2000) and Kevane and Levine (2000) measure the influence of gender on enrollment and find very little gender discrimination in households when deciding to send children to school. They find a very small gap at the secondary level and no gap at all at the primary level.

In terms of the effect of public spending on education, van de Walle (1992) looks at the change in enrollment between 1978 and 1987. She finds that the increase in enrollment during the period was due to the standard-of-living increases among households, efficient public spending that benefited the poor, especially public spending on primary education, and an improving taste for education. Sparrow et al (2001) confirm that spending on primary education is pro-poor. However, public spending on secondary education is not pro-poor simply because secondary education is attended mostly by children from non-poor households.

Similarly, Sayed (1996) calculates the amount of public spending and determines the factors necessary to make every child have at least nine years of education. She states that parents' decision to send their children to a secondary school depends not only on the usual factors, such as income constraints and returns to secondary education, but also on the children's academic ability and prospect of continuing to tertiary education. Using three scenarios, she calculates that the additional public spending necessary to achieve universal nine years of education by 2010 is around $7.6 to $15 billion.

Meanwhile, Pitt, Rosenzweig, and Gibbons (1993) look at the impact of school placement on enrollment using a panel dataset that includes fixed effects. They find that increasing school supply has very small but significant impact on the enrollment of 10-14

year olds and no impact on the enrollment of 15-19 year olds. Similarly, Duflo (2001) estimates the impact of a colossal school construction program in Indonesia that took place between 1973 and 1980, when the government built around 60,000 primary schools. She finds that, on average, the program increased a child's education attainment by 3.4%, or 0.27 additional year of schooling from an average of 7.98 years, with higher impact in poor areas.

In the mean time, Gertler, Levine, and Ames (2003) investigate the impact of parental death on a child's school enrollment using conditional logit and propensity score matching techniques. They find that a child who experienced parental death is twice as likely to drop out. Furthermore, they find that the impact is highest among children in the transition between education levels. However, they find no gender bias in the impact of parental death, although a female first-born child has a larger propensity to drop out than does a male first-born child. Finally, they find no statistically significant difference between losing a mother or a father.

Regarding the trade-off between education and work, Federman and Levine (2003) look at the impact of industrialization on secondary school enrollment. They argue that industrialization may impact enrollment through changing the returns to education and increasing opportunity costs to parents for sending their children to school. They do not find a conclusive relationship between the two, where industrialization is associated with increased junior secondary enrollment overall, but is also associated with a decrease in enrollment among girls when they live with females who are working in the manufacturing sector.

There are several studies that look at the impact of the Indonesian crisis in 1997/1998 on school enrollment. Cameron (2001) uses a panel dataset from 100 villages

in Indonesia and finds only small reduction in school attendance during the crisis, which immediately rebounded after the crisis. In contrast, Frankenberger et al (1999) use IFLS2 and IFLS2+ and find that school attendance rates decreased significantly due to both dropouts and delayed enrollment. They also find that the effect is larger in rural areas. In addition, using the same dataset, Thomas et al (2004) find that poor households tend to protect the education of older children at the expense of young children.

Meanwhile, Levine and Ames (2003) look at whether the crisis impacted girls and boys differently in several aspects, one of which is school enrollment. Similar to Cameron (2001), they find that both genders are well protected. In addition, in areas where the crisis had less effect, girls' school attainment was higher than boys'.

The government's school scholarship program launched during the crisis may have contributed to the relatively small reduction in school attendance, especially at the junior secondary level. Cameron (2002) uses a matching technique and finds that the scholarship program reduced the dropout rate by 3 percentage points at the junior secondary level but had no impact at the primary or senior secondary level.

Hardjono (2004) looks at the influence of poverty on school dropouts in two provinces in Indonesia, Bali and West Nusa Tenggara. She states that one of the causes of the very high primary school completion rates among Balinese children is the culture of prioritizing education among the Balinese. In contrast, a relatively higher proportion of children do not finish primary school in West Nusa Tenggara, caused by, among other things, the low regard for education among parents. Non-continuation to junior secondary school in both provinces, meanwhile, is mostly caused by the inability to pay, particularly for transportation costs, and the inadequate capacity in the junior secondary schools.

Finally, Jones (2003) conducts qualitative interviews in several provinces in Indonesia and finds three reasons for unequal opportunity for schooling in Indonesia. First, children from poor families have no means to pay for transportation costs. This is accompanied by the fact that children can be an extra income earner for their family. Hence, economic condition plays a crucial role. Second, there is still relatively low recognition among parents in some parts of the country regarding the importance of education. Third, cultural factors also play an important role. For example, the Madurese tribe in Pontianak traditionally arrange their daughters to be married as soon as they finish primary school. Similarly, Suryadarma et al (2006) find that the junior secondary net enrollment rate of Bugis children in 2004 was only 61%, significantly lower than the enrollment rate of children from Javanese and Chinese backgrounds that reached 70% and 71% respectively.

IV. DATA

We use three Indonesian household surveys in this paper: Susenas, Sakernas (National Labor Force Survey), and IFLS (Indonesian Family Life Survey). In addition, we use Podes (Village Potential) dataset to construct the data on school and teacher availability and other community fixed effects variables. IFLS is a panel household survey managed by RAND. Meanwhile, Susenas, Podes, and Sakernas are conducted by Statistics Indonesia (BPS), the government's statistical agency.

IFLS has three main survey rounds: 1993 (IFLS1), 1997 (IFLS2), and 2000 (IFLS3). In addition, there is a special survey conducted in 1998 (IFLS2+) to assess the impact of the economic crisis on households. IFLS has a panel observation of 6,564 households that were interviewed in all three main survey rounds. They are sampled from 13 provinces in Indonesia. The sample is representative of the provinces as more than 80% of Indonesians live in these provinces. IFLS is the only longitudinal household level dataset in Indonesia with adequately detailed characteristics covering a sufficiently long period suitable for the purpose of this study. This paper uses IFLS1 and IFLS2 but not IFLS3 because it was collected after the economic crisis, which may introduce a bias in our estimation results.

Susenas is a repeated cross-section and nationally representative household survey that has two main components. The first one is Core Susenas, which collects basic socio-demographic information on households and individuals and is conducted annually. The second component, Module Susenas, gathers detailed information on households. There are three different modules—consumption, health, and education—which are conducted alternately every year, so each module is conducted triennially. The Core covers about 200,000 households and 800,000 individuals, while the Module covers

a sub-sample of about 65,000 households. We use Core Susenas 2004 to construct the figures in Section V.

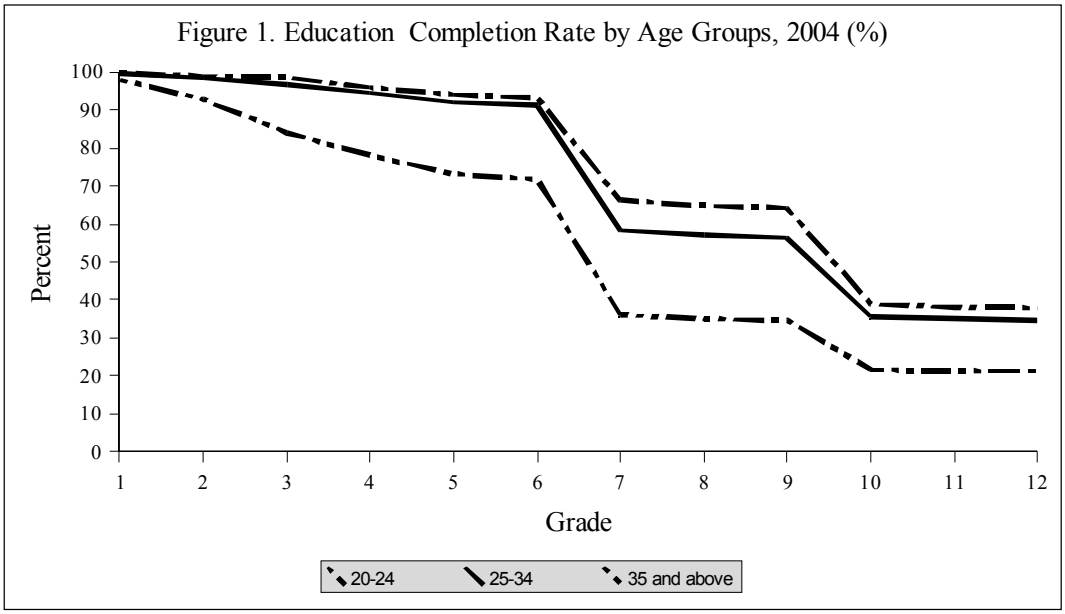
Sakernas is an annual, nationally representative, repeated cross-section labor force survey that collects activity data of individuals in the sampled households, although the depth of its representativeness varies by year. Every year, Sakernas has an average of around 200,000 observations on individuals at or above 15 years of age, the labor force age threshold that is used in Indonesia. In this paper we use Sakernas 1993 to calculate the urban-rural unemployment rate at the district level.

Lastly, Podes is a complete enumeration of all villages in Indonesia. It is conducted three times every decade and is usually done before a census. It collects information on the characteristics of each village (i.e. land size, population, and water supply) and the available infrastructure in that village (i.e. number of schools, hospitals, doctors, markets, transportation modes, and financial institutions). The Podes that we use is Podes 1993, which contains the data on 65,060 villages.

V. SCHOOL COMPLETION RATES IN INDONESIA

Prior to determining the causes of low secondary school enrollment, we first ascertain at which level children leave school by looking at the completion rate at each grade. In addition to looking at the completion rates of the younger generation, it is useful to look at the completion rates of the older age groups to see whether there has been any improvement over the years. Figure 1 compares the completion rates between three age groups using Susenas 2004. As we mentioned in Section II, in Indonesia primary school is from grades 1 to 6, junior secondary school is from grades 7 to 9, and senior secondary school is from grades 10 to 12.

Figure 1. Education Completion Rate by Age Groups, 2004 (%)



The top line in Figure 1 is the completion rate of the 20-to-24-year-old age group, which represents the current generation's education attainment, while the middle and bottom lines represent the 25-to-34 and 35+ age groups respectively. The common trend of all three lines is that there is a larger drop between levels than within levels. In

the 20-to-24 age group, while 93.3% of those who enrolled in primary school graduate from it, only 66.3% managed to finish the seventh grade. Similarly, only a very small percentage of those who enrolled in junior secondary school did not graduate from it. However, quite a large proportion of junior secondary graduates did not continue to senior secondary school. Again, nearly all of those who enrolled in senior secondary school finished it.

Meanwhile, from the comparison between age groups, it is clear that the school completion rates have been improving. The proportion of individuals who finished primary school increases from 71.7% among the 35+ age group to 93.3% among the youngest cohort. This shows the huge success of putting children through primary school.

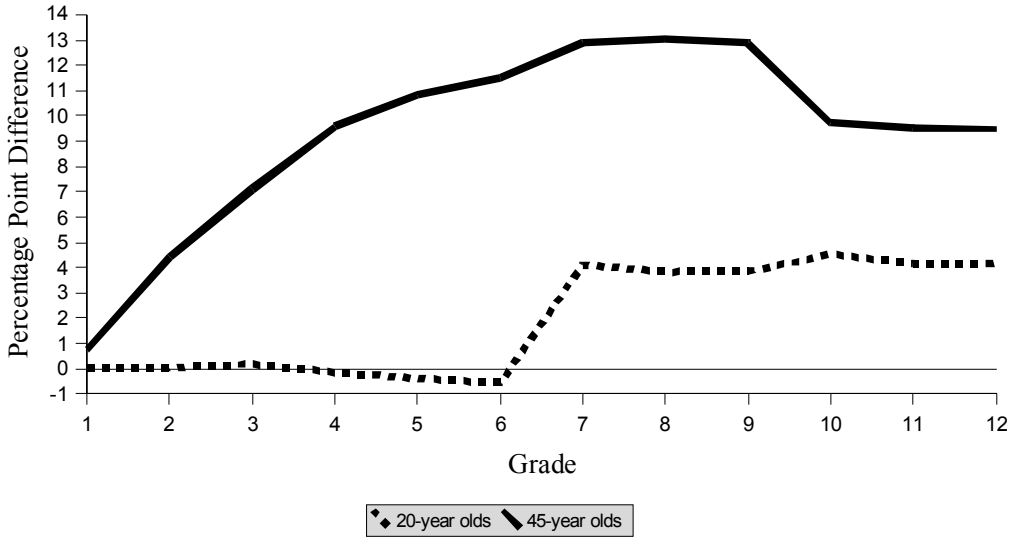
In terms of continuation to junior secondary school, there is also some improvement, with the slope of the line connecting the sixth to the seventh grade level in the youngest age group lower than those of the older age groups. Overall, the largest improvement in the youngest age group compared with the oldest age group is in the continuation to and graduation from junior secondary school.

In contrast, there is much less improvement in the continuation to senior secondary school. In terms of completion rate, the proportion of individuals who continue to and graduate from senior secondary school is relatively stagnant between the 20-to-24 and 25-to-34 age groups. Furthermore, the proportionate attrition rate in the junior – senior secondary transition of the youngest age group, 39.4%, is higher than that of the oldest age group, 37.4%.

Meanwhile, Figure 2 shows the difference in between-gender completion rates for 20- and 45-year-olds. The former age represents the current generation and the latter

represents the older generation. In the way we arrange the figure, a positive difference indicates that males have higher completion rate than females do at a particular grade.

Figure 2. The Difference in Completion Rates Between Genders (Male - Female), 2004



Among the 45-year-olds, the male-female difference is already large from the second grade, where males have a 4.4-percentage-point higher completion rate, considering that there is only a 0.8- percentage-point gender disparity at the first grade. The difference then follows an increasing trend, and by the sixth grade reaches 11.5 percentage points. The disparity keeps increasing up to the eighth grade, to 13.1 percentage points, before dropping to 9.7 percentage points at the 10th grade. This shows larger attrition among boys during transition to senior secondary school compared with girls. The gap stays relatively constant afterwards and hits 9.5 percentage points at grade 12.

One generation later, the trend is very different. Although differences still exist, the improvement is quite apparent. The highest gender disparity in completion

rates among the 20-year-olds is 4.5 percentage points, while it is 13.1 percentage points among the 45-year-olds.

In the current generation, more boys left school starting in the fourth grade than did girls, resulting in a 0.6-percentage-point higher completion rate for girls by the sixth grade. However, more girls did not continue to junior secondary school. The seventh-grade completion rate of males is 67.8%, while it is 63.7% among females. After the spike during the transition, the difference decreases slightly during junior secondary school. In contrast, in the transition to senior secondary school, more females did not continue, increasing the difference to 4.5 percentage points at grade 10. By the end of grade 12, however, the male-female disparity in completion rate is 4.2 percentage points.

Since Figure 1 shows that most children leave school between levels, we now have the evidence that the low junior secondary enrollment is caused by students not continuing after finishing primary school as opposed to leaving while being enrolled in junior secondary school. In the following sections, we focus on investigating the causes of dropping out at the transition phase, specifically at the transition between primary and junior secondary levels.

VI. THE MODEL

Since we focus on the transition between primary and junior secondary schools, we limit our dataset to children who have graduated from primary school. Then, we differentiate them based on whether they continue to junior secondary school or not. Therefore, in IFLS1 we keep only the children who are still in school and are in the third to the sixth grade in 1993. Then, from IFLS2 we match the same children and keep those who have graduated from primary school by 1997.

We use the standard reduced-form probit model shown in equation (1):

$$E_{ijk} = f (X_i, Y_j, Z_k, \mu) \quad (1)$$

where E_{ijk} is the continuation status of child *i* who is living in household *j* in district *k*. E_{ijk} = 1 if the child continues to junior secondary school and zero if otherwise. Meanwhile, μ is the error term. We estimate our model using probit and we adjust the standard errors for heteroskedasticity clustered at district level.

X_i contains individual child variables: age, working status, and gender. Furthermore, since ability may play an important role in determining continuation to junior secondary school, we include *Ebtanas* score as the proxy for ability. Prior to 2002, before it was replaced by UAN, *Ebtanas* at the primary level consisted of five subjects: mathematics, Indonesian language, natural science, social science, and moral studies. Every subject is evaluated on a 0-to-10 scale. Therefore, the maximum score in *Ebtanas* is 50. *Ebtanas* is a good proxy for child ability because it was a standardized examination designed by the Department of National Education, hence it is nationally comparable, and its sole purpose was to compare school quality; it did not determine whether a child

passed primary school or not.[4] Lastly, we include a proxy of whether the child has failed a grade at the primary level, as it may also play a role in the decision to continue schooling.

Meanwhile, Y_j consists of household variables. Since Indonesia is a predominantly Muslim country, we use a dummy variable for Muslim as our religion indicator. However, IFLS does not record a family's ethnic background. Therefore, we cannot include such information in our estimation.

We use log per capita monthly expenditure as a measure of household welfare. However, given the relatively large differences in living costs between regions in Indonesia (Arndt and Sundrum 1975; Asra 1999), we deflate the expenditure data using a poverty line calculation methodology introduced in Pradhan et al (2001). The methodology ensures that the differences in between-region poverty line solely reflect price differences.[5] By deflating the expenditure data with the poverty lines, we arrive at the purchasing power parity level of expenditure.

Finally, Z_k consists of community fixed effects variables at the district urban-rural level, which we include to take into account community differences in the sample. In addition to rural and off-Java dummy variables, we include availability of several infrastructures, such as public transportation and fresh-food markets. In addition, we include the number of junior secondary schools and the student-teacher ratio at the district level as indicators of the supply of education. Finally, we include unemployment rate as a measure of work opportunities.

[4]This was determined by each individual school, based on examination scores throughout the school year and teachers' assessment on the student.

[5]Hence, the expenditure data is not in monetary units but in poverty line units. For example, a household whose per capita monthly expenditure is twice above the poverty line would have a nationally comparable expenditure level of 2. We use the 1993 poverty lines, listed in Appendix 1.

The full variable description is in Appendix 2, while each variable's mean and standard deviation are in Appendix 3.

VII. DESCRIPTIVE RESULTS

From IFLS1 we have the data on 1352 children who were between the third and sixth grades in 1993, and from IFLS2 we find 2363 children who had graduated from primary school by 1997. There are 900 children who were observed in both survey years. After merging IFLS with Podes and Sakernas, the final observation is 874 children, out of which 75 children discontinued schooling. This means the dropout rate during transition is 8.5%.[6] Table 1 describes the reasons given by the parents as to why these children did not continue to junior secondary school.

Table 1. Stated Reasons for Not Continuing to Junior Secondary School

Reason	Percent
Work	6.7
Cannot afford	70.7
Too far	4.0
Not accepted	4.0
Does not want to continue	5.3
Others	9.3
Total	100

Source: IFLS2.

At 71%, cost is the most cited reason for dropping out. Similarly, a further 7% admit that the child has to work and 4% give distance as the cause of not continuing. The main weakness of these reasons, however, is that they were supplied by the respondents; therefore, some subjectivity may have played a part in deciding the responses. Furthermore, since the question asked in the questionnaire is in a closed form, the parents may have been tempted to give the most normal reason: inability to pay for the education.

[6]This almost equals the dropout rate for the whole primary level calculated by Suryahadi, Priyambada, and Sumarto (2005) using a household panel data from 100 villages in Indonesia.

Nevertheless, we can verify the extent of truth inherent in these responses using the data on household income and work status of each household member collected in IFLS. Moreover, based on Podes, we can see the density of junior secondary schools in the district where the children lived. Table 2 compares the children who dropped out of school with those who continued to junior secondary level based on the other reasons for dropping out given in Table 1.

Out of the five respondent households who say that work caused a child to discontinue, there is only one household whose child is actually working. In contrast, out of all the children who are working in the sample, 92% of them are still in school. This supports the finding of Suryahadi, Priyambada, and Sumarto (2005), who find that, in certain circumstances, working may actually help children pay for their schooling.

Table 2. Characteristics Comparison between Continuing and Discontinuing Children to the Junior Secondary Level

	Continue	Do Not Continue	Mean Difference
Log real per capita monthly household expenditure	0.74	0.19	0.55 *
Log real per capita monthly food expenditure	-0.02	-0.33	0.31 *
Average *Ebtanas* score	32.14	27.71	4.43 *
Share of females (%)	53.51	64.00	-10.49 *
Share of Muslims (%)	87.30	97.30	-10.00 *
Average number of JSS in district	144.49	135.32	9.17

Note: * significant at 5%.

Looking at the initial general household welfare as a whole (1993), we find that the log real per capita monthly expenditure of the households where the dropouts lived is lower than that of households whose children continued; and the difference is statistically significant. To have further evidence, we compare the food expenditure of the two household types and find that there is still a statistically significant difference

between the two. Therefore, the ability to pay may, indeed, be a significant cause for not continuing to junior secondary school.

Meanwhile, making a comparison between the *Ebtanas* scores of the two groups of children, we find that those who do not continue have significantly lower scores. We also make comparisons of the share of females and Muslims between the non-continuing and continuing children. Out of those who continued, 54% are females and 87% are Muslims, while among those who left school, 64% are females and 97% are Muslims. Mean tests show that both differences are statistically significant. However, the districts where the dropouts lived do not have a significantly lower density of junior secondary schools.

VIII. REGRESSION RESULTS

Table 3 provides the estimation results. We find that among the individual characteristics, only gender and the *Ebtanas* score have significant coefficients. A one standard deviation increase in the *Ebtanas* score, which measures individual ability, would increase a child's probability of continuing to junior secondary school by 2.5 percentage points. Meanwhile, being a female negatively influences one's probability of continuing, where girls have a 2.7-percentage-point lower probability of continuing. This indicates that there is still a gender disparity in education beyond the primary level, which is also shown in Figure 2.

Similarly, age and work status also have negative coefficients, but none is statistically significant. This confirms a large body of work that finds that working is not always detrimental to a child's education in developing countries, including Indonesia (Suryahadi, Priyambada, and Sumarto 2005).

Encouragingly, failing a grade at the primary level does not significantly reduce a child's probability of continuing to junior secondary school. This means that once a child manages to graduate from primary school, his or her past failures are not considered in the decision to continue to junior secondary school.

Among the household characteristics, coming from a Muslim family strongly reduces one's chance of going to junior secondary school by 3 percentage points. This indicates that religious background plays a significant role in determining one's education attainment. However, further research is necessary to sufficiently pinpoint religion's exact influence. Furthermore, it would be interesting to see the impact of religion on the gender gap in school continuation. However, we do not have enough observations to conduct this exercise.

Table 3. Determinants of Continuation to Junior Secondary School

	Coefficient	Standard Error	Marginal Effects (dF/dx)
Individual Characteristics			
Female	-0.26511 *	0.14	-0.01722
Work	-0.16765	0.49	-0.01289
Age	-0.08071	0.07	-0.00532
Ebtanas score	0.06709 **	0.02	0.00442
Failed grade	0.24643	0.22	0.01359
Household Characteristics			
Muslim	-0.75526 *	0.34	-0.03035
Female-headed	0.70801 **	0.26	0.02722
Father is highly educated	0.97180 **	0.29	0.05162
Mother is highly educated	0.16100	0.33	0.00975
High dependency ratio	-0.32402	0.38	-0.02824
Own a farm business	0.14175	0.18	0.00888
Own a non-farm business	0.04709	0.18	0.00306
Log real monthly per capita expenditure	0.16399 *	0.08	0.01081
Community Characteristics			
Rural	-0.17546	0.32	-0.01174
Off-Java	0.12328	0.19	0.00790
Public transportation	0.50548	0.93	0.03331
Market	-0.23907	0.75	-0.01576
Unemployment rate	10.38873 *	4.75	0.68467
Education facilities			
Number JSS	0.00243 **	0.00	0.00016
Student – teacher ratio at JSS	-0.02729	0.04	-0.00180
Constant	0.21265	1.68	
Observation	874		
Pseudo R2	0.23		
Log likelihood	-197.66		

Note: All community characteristics and education facilities are at district urban-rural level, except the rural and off-Java binary variables which are at household level.
The standard error is adjusted for heteroskedasticity and clustered at district level.
** = significant at 1%; * = significant at 5%.

Regarding parental education, only the father's education level is statistically significant, where a child whose father has at least nine years of education has a 5-percentage-point higher probability of continuing. The mother's education level is not significant although the sign is also positive. Regardless of whether this is caused by

relatively high regard for education among highly educated fathers or due to genetics, our results once again prove the existence of an intergenerational link of education attainment.

Meanwhile, after controlling for household consumption expenditure, living in a female-headed household does not decrease the probability of continuing; in fact, it increases the probability by 2.7 percentage points. Furthermore, a child in a household with a high dependency ratio does not have a significantly lower chance of continuing, although the coefficient is negative. Meanwhile, similar to the insignificance of a child's work status, living in a family that owns either a farm or non-farm business does not significantly impact the probability of continuing to junior secondary school. However, the two coefficients have positive signs.

Lastly, household expenditure also has a positive and statistically significant coefficient, confirming the results from Tables 1 and 2. Therefore, the inability to pay for education is one of the significant reasons for not continuing school. While this has been widely recognized during the Indonesian crisis, which caused the government to provide school scholarships to students, the current scholarship scheme designed for primary and junior secondary schools is only available to children who are already enrolled in schools with no specific mention regarding those already out of school.[7] A way to solve this problem is providing cash incentives to families on the condition that the child continues schooling. Latin American countries have enacted such conditional cash transfer programs (Rawlings 2004) and their experience can be used to design a similar program in Indonesia.

[7]The scholarship program, called School Operational Assistance, delegates the authority to determine beneficiaries to school administrators, which means that children who have left school have virtually no chance to receive the scholarship. See Department of National Education (2006) for more information on the program and Hastuti et al (2006) for an evaluation of the program.

Among the community characteristics, the only significant variable is the unemployment rate, which has a positive sign. A one standard deviation increase in unemployment rate will increase a child's probability of continuing to junior secondary school by 1.8 percentage points. This result shows that, indeed, more adult job availability—indicated by a reduction in unemployment rate—would reduce one's probability of continuing to junior secondary school.

The positive association between community-level employment opportunity and child labor also exists in other developing countries, for example in Brazil (Parikh and Sadoulet 2005) and Pakistan (Bhalotra 2003), although the effect in Pakistan is only significant for girls' work status. Furthermore, it is also known to cause some senior secondary students in developed countries to drop out (Eckstein and Wolpin 1999). However, our results show that adult employment opportunity also influences children as young as 12 years old not only to work part time but also even to leave school altogether. A probable explanation, which we cannot test using our dataset, is the low expected returns of secondary level education among parents relative to both direct and opportunity costs of continuing. Ascertaining the reasons for this phenomenon will be crucial in future studies.

Finally, from the two school availability variables, both have the expected signs, where more junior secondary schools would increase enrollment, as is the case with lower student-teacher ratio. However, the coefficients are small and only the number of junior secondary schools is statistically significant. A one standard deviation increase in the number of schools would increase the continuation probability by 1.2 percentage points.

XI. CONCLUSION

We find that in Indonesia the highest number of dropouts occurs during the transition between school levels. In this paper, we focus on finding out the factors that cause the non-continuation to junior secondary school among primary school graduates. There are some results worth reiterating.

Firstly, we find that consumption expenditure, as a proxy for welfare, significantly affects the probability of continuing. Secondly, we find that the individual variables that directly influence the chances of continuing are the child's ability, measured by their performance in the primary school national final examination, and the child's gender, where girls have a lower probability of continuing. Thirdly, the results show that religious background plays a significant role, where children from Muslim families have a significantly lower probability of continuing.

Fourthly, we find that building more schools increases children's probability of continuing to secondary school. Finally, among the community variables, we find that a higher employment opportunity in a community negatively impacts children's continuation to junior secondary school.

Given the results, there are several policies that the government could take to help the efforts to achieve universal junior secondary education. Firstly, the government has to alter the scholarship targeting scheme should they want to reach children who do not continue to junior secondary school after completing primary school. Another policy that could be taken regarding this issue is to increase the opportunity cost of not going to school by providing cash subsidies directly to families on the condition that their children are enrolled in a junior secondary school.

Secondly, given the significant role of religious background in affecting the taste for education, there may be a need to enact policies targeting families from specific religious backgrounds, for example, a specifically targeted campaign to promote the importance of education.

Thirdly, combining all the above-mentioned demand-side interventions, with building more junior secondary schools in carefully chosen locations and equipping them with an adequate number of teachers of sufficient quality, is still very important.

These policies do not require a large amount of additional funding relative to the government's current education outlays. However, the government should start refocusing its spending and scholarship programs to target those who go missing from the education system after finishing primary school. Should the government enact the necessary policies, then its goal of achieving universal junior secondary school enrollment may not be too far away.

LIST OF REFERENCES

Arndt, H.W. and R.M. Sundrum (1975) 'Regional Price Disparities.' *Bulletin of Indonesian Economic Studies* 11(2), 30-68

Asra, Abuzar (1999) 'Urban-Rural Differences in Costs of Living and Their Impact on Poverty Measures.' *Bulletin of Indonesian Economic Studies* 35(3), 51-69

Bhalotra, Sonia (2003) 'Is Child Work Necessary?' *Discussion Paper* No. 03/554. Bristol: Department of Economics, University of Bristol

Black, Sandra E., Paul J. Devereux, and Kjell G. Salvanes (2005) 'Why the Apple Doesn't Fall Far: Understanding Intergenerational Transmission of Human Capital.' *The American Economic Review* 95(1), 437-449

Borooah, Vani K. and Sriya Iyer (2005) 'Vidya, Veda, and Varna: The Influence of Religion and Caste on Education in Rural India.' *The Journal of Development Studies* 41(8), 1369-1404

Burke, Kathleen and Kathleen Beegle (2003) 'Why Children Aren't Attending School: The Case of Northwestern Tanzania.' *Journal of African Economies* 13(2), 333-355

Cameron, Lisa A. (2001) 'The Impact of the Indonesian Financial Crisis on Children: An Analysis Using the 100 Villages Survey.' *Bulletin of Indonesian Economic Studies* 37(1), 43-64

Cameron, Lisa A. (2002) 'Did Social Safety Net Scholarships Reduce Drop-Out Rates during the Indonesian Economic Crisis?' Policy Research Working Paper 2800. Washington DC: World Bank

Chernichovsky, Dov and Oey Astra Meesook (1985) 'School Enrollment in Indonesia.' Staff Working Paper 746. Washington DC: World Bank

Chevalier, Arnaud (2004) 'Parental Education and Child's Education: A Natural Experiment.' IZA Discussion Paper Series No. 1153. Bonn: Institute for the Study of Labor

Department of National Education (2006) *Buku Panduan Bantuan Operasional Sekolah* [School Operational Assistance Guidebook]. Jakarta: Government of Indonesia

Duflo, Esther (2001) 'Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from An Unusual Policy Experiment.' *The American Economic Review* 91(4), 795-813

Eckstein, Zvi and Kenneth I. Wolpin (1999) 'Why Youths Drop out of High School: The Impact of Preferences, Opportunities, and Abilities.' *Econometrica* 67(6), 1295-1339

Federman, Maya and David I. Levine (2003) 'Does Industrialization = "Development"? The Effects of Industrialization on School Enrollment and Youth Employment in Indonesia.' CIDER Working Paper No. C03-132. Berkeley CA: University of California

Filmer, Deon (2000) 'The Structure of Social Disparities in Education: Gender and Wealth.' Policy Research Working Paper 2268. Washington DC: World Bank

Filmer, Deon (2004) 'If You Build It, Will They Come? School Availability and School Enrollment in 21 Poor Countries.' Policy Research Working Paper 3340. Washington DC: World Bank

Frankenberger, Elizabeth, Kathleen Beegle, Duncan Thomas, and Wayan Suriastini (1999) 'Health, Education, and the Economic Crisis in Indonesia.' Paper presented at the 1999 Population Association of America meetings, New York NY

Gang, Ira N. and Klaus F. Zimmermann (2000) 'Is Child Like Parent? Educational Attainment and Ethnic Origin.' *Journal of Human Resources* 35(3), 550-569

Gertler, Paul, David I. Levine, and Minnie Ames (2003) 'Schooling and Parental Death.' CIDER Working Paper No. C03-128. Berkeley CA: University of California

Glewwe, Paul and Michael Kremer (2005) 'Schools, Teachers, and Education Outcomes in Developing Countries.' Second draft of chapter for *Handbook on the Economics of Education*

Government of Indonesia (1998) *Petunjuk Pelaksanaan Wajib Belajar Pendidikan Dasar Sembilan Tahun* [Guidance on the Implementation of Compulsory Nine-year Basic Education]. Jakarta: Government of Indonesia

Hajj, Mandana and Ugo Panizza (2006) 'Religion and Education Gender Gap: Are Muslims Different?' POLIS Working Paper No. 70. Alessandria: Universita' del Piemonte Orientale "Amedeo Avogadro"

Handa, Sudhanshu (2002) 'Raising Primary School Enrolment in Developing Countries: The Relative Importance of Supply and Demand.' *Journal of Development Economics* 69(1), 103-128

Hardjono, Joan (2004) *The Integration of Poverty Considerations into the Nine-year Basic Education Program in Bali and West Nusa Tenggara*. Unpublished report for the Asian Development Bank, Manila

Hastuti, Syaikhu Usman, Nina Toyamah, Bambang Sulaksono, Sri Budiyati, Wenefrida Dwi Widyanti, Meuthia Rosfadhila, R. Justin Sodo, and Sami Bazzi (2006) 'A Rapid Appraisal of the PKPS-BBM (Compensation Program for Reduced Subsidies on Fuel) Education Sector School Operational Assistance (BOS) Program 2005.' Research Report. Jakarta: SMERU Research Institute

Jones, Gavin. (2003) 'Pengamatan Cepat SMERU tentang Permasalahan Pendidikan dan Program JPS, Beasiswa, dan DBO di Empat Provinsi' [SMERU Rapid Assessment on Education Problems and Social Safety Net, Scholarship, and Operational Subsidy Programs in Four Provinces]. Jakarta: SMERU Research Institute

Kevane, Michael and David Levine (2000) 'The Changing Status of Daughters in Indonesia.' Mimeo. Santa Clara CA: Santa Clara University

Lehrer, Evelyn (2005) 'Religious Affiliation and Participation as Determinants of Women's Educational Attainment and Wages.' IZA Discussion Paper Series No. 1725. Bonn: The Institute for the Study of Labor

Levine, David I. and Minnie Ames (2003) 'Gender Bias and The Indonesian Financial Crisis: Were Girls Hit Hardest?' CIDER Working Paper No. C03-130. Berkeley CA: University of California

OECD (2001) *Knowledge and Skills for Life: First Results from the OECD PISA 2000*. Paris: Organisation for Economic Cooperation and Development

Pal, Sarmistha (2004) 'How Much of the Gender Difference in Child School Enrolment Can Be Explained? Evidence from Rural India.' *Bulletin of Economic Research* 56(2), 133-158

Parikh, Anokhi and Elisabeth Sadoulet (2005) 'The Effect of Parents' Occupation on Child Labor and School Attendance in Brazil.' CUDARE Working Papers 1000. Berkeley, CA: University of California

Pitt, Mark M., Mark R. Rosenzweig, and Donna M. Gibbons (1993) 'The Determinants and Consequences of the Placement of Government Programs in Indonesia.' *The World Bank Economic Review* 7(3), 319-348

Pradhan, Menno (1998) 'Enrolment and Delayed Enrolment of Secondary School Age Children in Indonesia.' *Oxford Bulletin of Economics and Statistics* 60(4), 413-430

Pradhan, Menno, Asep Suryahadi, Sudarno Sumarto, and Lant Pritchett (2001) 'Eating Like Which 'Joneses'? An Iterative Solution to the Choice of Poverty Line Reference Group.' *Review of Income and Wealth* 47, 473-487

Ravallion, Martin and Quentin Wodon (2000) 'Does Child Labour Displace Schooling? Evidence on Behavioural Responses to an Enrollment Subsidy.' *The Economic Journal* 110(462), 158-175

Rawlings, Laura B. (2004) 'A New Approach to Social Assistance: Latin America's Experience with Conditional Cash Transfer Programs.' Social Protection Discussion Paper Series No. 0416. Washington DC: World Bank

Sayed, Haneen (1996) 'Investing in Junior Secondary Education in Indonesia: Rationale and Public Costs.' *Indonesia Discussion Paper Series* No. 2. Washington DC: World Bank

Sparrow, Robert, Haneen Sayed, Fadia Saadah, Menno Pradhan, and Peter Lanjouw (2001) 'Poverty, Education, and Health in Indonesia: Who Benefits from Public Spending?' Policy Research Working Paper 2739. Washington DC: World Bank

Suryadarma, Daniel, Wenefrida Widyanti, Asep Suryahadi, and Sudarno Sumarto (2006) 'From Access to Income: Regional and Ethnic Inequality in Indonesia.' Working Paper. Jakarta: SMERU Research Institute

Suryahadi, Asep, Agus Priyambada, and Sudarno Sumarto (2005) 'Poverty, School and Work: Children during the Economic Crisis in Indonesia.' *Development and Change* 36(2), 351-373

Thomas, Duncan, Kathleen Beegle, Elizabeth Frankenberger, Bondan Sikoki, John Strauss, and Graciela Teruel (2004) 'Education in a Crisis.' *Journal of Development Economics* 74(1), 53-85

Van de Walle, Dominique (1992) 'The Distribution of the Benefits from Social Services in Indonesia, 1978-87.' Policy Research Working Paper WPS871. Washington DC: World Bank

Appendix 1. 1993 Poverty Line in Indonesia
(Rupiah per Capita Monthly Household Expenditure)

Province	Urban	Rural
Aceh	21811.61	20666.96
North Sumatra	22480.67	20055.96
West Sumatra	21167.83	19466.19
Riau	27528.81	24376.06
Jambi	26901.74	24309.30
South Sumatra	22205.48	20748.02
Bengkulu	24001.84	21753.05
Lampung	25243.27	22334.85
Jakarta	28391.50	-
West Java	29873.17	27221.12
Central Java	25054.97	23125.06
Yogyakarta	26982.42	24262.16
East Java	25158.81	23678.11
Bali	30438.88	29384.03
West Nusa Tenggara	23679.20	22852.42
East Nusa Tenggara	29444.26	27243.92
West Kalimantan	29565.27	27856.20
Central Kalimantan	29478.38	26414.62
South Kalimantan	26961.47	25724.14
East Kalimantan	30313.11	29337.17
North Sulawesi	22230.30	20884.65
Central Sulawesi	20818.42	19678.48
South Sulawesi	25073.43	22053.44
Southeast Sulawesi	24217.55	22442.11
Maluku	28001.67	27285.81
Papua	28197.64	30951.88

Appendix 2. Description of the Explanatory Variables

Individual	
Female	A dummy that equals 1 if the child is a female
Work	A dummy that equals 1 if the child is working
Age	Age in years
Ebtanas score	*Ebtanas* score, minimum 10, maximum 50
Failed grade	A dummy that equals 1 if the child has failed a grade at least once at the primary level
Household	
Muslim	A dummy that equals 1 if the household is Muslim
Female-headed	A dummy that equals 1 if the household is headed by a female
Father is highly educated	A dummy that equals 1 if the father's education is nine years or more
Mother is highly educated	A dummy that equals 1 if the mother's education is nine years or more
High dependency ratio	A dummy that equals 1 if more than 50% of household members are <15 years old
Log real monthly per capita expenditure	Log of total monthly per capita household expenditure, deflated to reflect similar purchasing power across regions
Community Characteristics	
Rural	A dummy that equals 1 if the household lives in a rural district
Off-Java	A dummy that equals 1 if the household lives in a district outside Java
Public transportation	Share of villages with public transportation
Market	Share of villages with a permanent market in the district.
Unemployment rate	Unemployment rate at the district level
Education facilities	
Number JSS	Number of junior secondary schools (public, private, *Madrasah*) in district
Student–teacher ratio at JSS	Total number of students divided by total number of teachers in district

Appendix 3. Mean and Standard Deviation of the Variables

Variable	Mean	Std. Dev.
in_school (dependent variable)	0.915	0.280
Individual		
Female	0.544	0.498
Work	0.015	0.121
Age	9.319	0.916
Ebtanas score	31.751	5.635
Failed grade	0.113	0.316
Household		
Muslim	0.876	0.330
Female-headed	0.075	0.264
Father is highly educated	0.328	0.470
Mother is highly educated	0.217	0.413
High dependency ratio	0.043	0.203
Own a farm business	0.304	0.460
Own a non-farm business	0.340	0.474
Log real monthly per capita expenditure	0.699	1.122
Community Characteristics		
Rural	0.468	0.499
Off-Java	0.378	0.485
Public transportation	0.907	0.114
Market	0.276	0.197
Unemployment rate	0.032	0.027
Education facilities		
Number JSS	103.509	95.972
Student–teacher ratio at JSS	15.504	3.125

Note: Individual and household variables are taken from IFLS1. Community variables and education facilities are taken from Podes 1993, except the unemployment rate taken from Sakernas 1993.