BASIC EDUCATION DEVELOPMENT IN RURAL LAO PDR: ISSUES AND PROSPECTS

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1. INTRODUCTION

Most less developed countries have devoted substantial proportions of their resources to the expansion of education, especially for the primary level. Education is universally recognized as to be associated not only with large economic returns but also with many social returns including lower fertility and infant mortality, better child health and education, and reductions in gender and ethnic inequality. It is argued that in an early stage of a country's economic and educational development, school access is likely to depend more heavily on those factors that encourage initial (timely) attendance and retention. At later stages of educational development, when most children completed basic schoolings, factors enhancing school quality becomes central elements of development plan.

In the case of Lao PDR[1] where primary school enrolment is not yet universal, for policy implications in the educational sector to be more effective in terms of both efficiency and equity, it is necessary to have a solid understanding of the process by which some children are sent to school and others are not. This paper attempts to understand the current patterns and trends in basic education in rural Lao PDR, and examines the socioeconomic factors which influence the school access, from a regional difference perspective.

To date, empirical studies that try to explain access to education among different groups in Lao PDR are still very limited. A past study done by King and van de Walle (2007) examine school enrolment from a poverty perspective. They explore the differences in school enrolment for children aged 6 to 16 by urban/rural, boy/girl and *Lao*-Tai-Kai and other. In this paper, we further analyze the determinants of school enrolment differences among children standard aged 6 to 10 in rural areas by using the same source, the so-called LECS 3, with the different approaches. We reconsider the subdivision of ethnic

[1] The official name is Lao People's Democratic Republic. We define 'Lao' as the country and language, and italic '*Lao*' as the major population group.

affiliation[2] and newly add parental educational levels and occupations in the analysis. The newly proposed division of 'high enrolment rate group' and 'low enrolment rate group' shows a number of differences in determining access to schools[3].

The paper begins with an overview of trends in educational achievements in Section 2, focusing on three major issues of education progress over time, current enrolment and supply factor across region, gender and ethnic affiliation. Section 3 briefly presents the literature review and the empirical models, and outlines the data description for the analysis. Section 4 tries to explain the determinants of school enrolment by running multivariate regressions of the probability of school attendance against individual, household, school and village-level characteristics. Section 5 offers some concluding remarks.

2. BUILDING AN EDUCATION FURURE

2.1 EDUCATION PROGRESS

Overall, education is among the better performing sectors in Lao PDR over the past few decades. The most priority of policy interventions for education sector is "equitable access". Net enrolment rate in primary schools rose from 58% in 1991 to 89% in 2008 upon the education reforms since the early 1990s, driven strongly by increased female enrolment. The large improvement was achieved by '*Lao*' and 'Tai-Kai'. In recent years, the gender inequality in urban areas was disappeared. In opposite, there are still signs of divergence among gender and different ethnic groups in rural areas. The progress is somehow slowing down during the past few years due to the insufficient supply against a rapid growth of school age population. At these rates the MDG targets look beyond reach. The overview of current patterns and trends in education is well-profiled in King and van de Walle (2007), Ministry of Education (2005) and World Bank (2008)[4].

[2] Lao PDR is a very ethnically diverse country (49 different subgroups), especially in the north and the western (NSC, 2004). In view of this diversity, we subdivide the geographical and gender groups by ethno-linguistic affiliation – 'Lao', the majority group accounting for 55% of the population, and 'ethnics', which includes the Tai-Kadai (10%), Mon-Khmer (23%), Tibeto-Burman (3%), Hmong-Mien (9%). We exclude other smaller groups (1%) from the analysis.

[3] We subdivide all rural areas of 18 provinces into 'High enrolment rate group' and 'Low enrolment rate group' based on the comparison after running several regressions. Simply 'High group' include eight provinces of Luangprabang (North); Xiengkhuang, Vientiane Capital, Vientiane, Borikhamxay, Khammuane, Xaysomboun SR (Central); and Champasack (South). Simply 'Low group' include ten provinces of Phongsaly, Luangnamtha, Oudomxay, Bokeo, Huaphanh, Xayabury (North); Savannakhet (Central); and Saravane, Sekong and Attapeu (South).

[4] Although compulsory education of primary cycle has not been accomplished yet, a ninth grade will be added to lower secondary education from school year 2010/11. Thus, the basic education system will become 5+4+3, instead of 5+3+3 (MOE, 2005).

Before 1989, Lao PDR had only a few private schools operating without authorization. The government decided to encourage the creation and expansion of private schools in order to take some of the pressure off the public sector in 1990. The share of private schools in pre-primary level has increased steadily from 12% in 1993 to 26% in 2005. In recent years, private higher education has developed dramatically and occupies 31% of the total enrolment in 2005. On the other hand, it is of particular concern that contributions from private schools in the primary and secondary levels are only 2% of the total enrolment in both levels.

To date, the public spending on education in Lao PDR as a share of GDP and a share of total government spending are still low by international and regional standards[5]. Public expenditure on education in Lao PDR collapsed with the Asian financial crisis in 1997/98. By 2005, the levels have nearly recovered to that that of 1995, both in relation to 2.3% of GDP and as 11.7% of total public spending. This recovery relates largely to inputs from international development partners and does not imply any improvement in the share of domestic funding or in the ratio of recurrent to investment budget. Educational spending per student is also extremely low. Although primary schooling takes up the largest proportion of spending, this proportion has been gradually declining since 1994/95, while the budget spent on upper secondary and higher education has been increasing. This trend benefits the non-poor (who are more likely to attend tertiary education) and stands in contrast to the declared policy focus on achieving universal primary education (World Bank, 2007).

2.2 CURRENT ENROLMENT

The main reason why a child in school age had never been to school is surveyed in NSC (2004). Overall, the lack of educational resource supplies (school is too far and no teacher supplies) is one of the biggest constraints, especially in low enrolment provinces. Although small ratio of villages is without a primary school, the shortage is that less than half of them offer the full five grades program. The parental preferences in schooling measured by “too young” and “no interest” recorded at 50% and 25%, respectively. One-half of parents that answered “too young” are children who have aged eight or more.

[5] The public expenditure on education of Asia-Pacific 21 developing countries’ average stands about 4.7% of GDP and 16.2% of total government expenditure. Lao PDR invests about US$9.9 per student in the primary cycle, US$13.7 in lower secondary, US$22.7 in upper secondary, US$173.3 in teacher education, and US$122.7 in higher education in 2004. This finding suggests that there is ample scope for a better redistribution of resources (World Bank, 2007).

Moreover, the reason “no interest” is likely to reflect the internalization of some other potential reasons. On the other hand, it is surprisingly that “had to work” and “too expensive” added up only at 4%. Since private schools are very rare, the proportion of tuition fees in public schools is less than 5% of total school cost.

The cost of uniforms occupied one-half of total school cost that households spent in rural areas. The cost of Textbooks and other education materials ranked at 23%, which is the second highest item. Most of students walk to school and come back home for lunch that resulted in a low share of food and transportation cost. However, the characteristics of farmer households in Lao PDR remain predominantly subsistent, labor intensive, and short of irrigated land and productive assets. Although rice is the main product of agricultural outputs, only one-third of its production is for market. The expenditures on education that household spent for a child is a heavy burden, when we compare to a low level of per capita income of rural farmers. Therefore, Policy makers should be directed at increasing the enrolment rates of children by finding ways to relax the monetary constraint faced by farmers.

Enrolment by Different Groups

Based on the LECS 3 data, the net enrolment rates for children in the official primary school group (aged 6 to 10) was on average at 72% in 2002/03, of which the rates were roughly 89% vs. 68% in urban and rural areas, respectively. Thus, average masks enormous variance among urban/rural and province. Except for few major cities of Luangprabang, Xayabury and Champasack, children in the Central are more likely to be in school than those in the North and South. For an example, net enrolment rates in five out of seven provinces in the North do not reach 60%.

First ignoring the regional gap, the difference in net enrolment rate between boy and girl (71% vs. 66%) is much smaller than the difference between *Lao* and ethnics (83% vs. 59%). When regional aspect is considered, the gaps are clearly changed between high group and low group. The gender gap only exists in low group, of which the enrolment rates for boy and girl are 84% vs. 82% and 62% vs. 54% in high group and low group, respectively. On the other hand, the ethno-linguistic affiliation gap exists in both groups. The enrolment rates for *Lao* and ethnics are 89% vs. 77% – a 12 percentage point difference in high group and 76% vs. 51% – a 25 percentage point difference in low group. It is worth noting that these numbers mask further disparities among ethnicity subgroups. Enrolment rates for the Tibeto-Burman family are considerably lower than for others. Obviously, in the case of Lao PDR, these imply

that we must pay more attention on ethnic affiliation than gender issue, especially for children who live in low enrolment rate group.

Age at Entry

Overall, the graphs reveal differential patterns among groups that have already been discussed above, but these graphs add another dimension that as many as children enter to the primary cycle later than the official entry age of six years old. It is only by age nine or ten to achieve the maximum enrolment rate at the primary level. Again, the graphs show that children – ethnics and in low group, enter school late than children – *Lao* and in high group, do so. There is a little difference between boy and girl, however.

Striking differences by groups and shocking numbers are the very low enrolment of children age 6 and 7. Overall, only four out of ten children aged 6 in rural areas attended school (71% for high group vs. 27% for low group). With respect to gender issue, girls aged 6 both in high group and low group are even more likely to entry school than boys (60% vs. 56% in high group and 28% vs. 26% in low group). In terms of ethnic affiliation, *Lao* children aged 6 in both groups significantly entry school timely than ethnic children (68% vs. 49% and 40% vs. 22% for high and low group, respectively). The higher the age, the smaller the gaps among different groups. With respect to gender issue, girls aged 10 both in high group and low group are, by contrast, less likely to enroll in school than boys (95% vs. 97% in high group and 72% vs. 82% in low group). In terms of ethnic affiliation, *Lao* children aged 10 in both groups are significantly enrolled in school timely than ethnic children (98% vs. 94% and 92% vs. 70% for high and low group, respectively). According to King and van de Walle (2007), the average age at which children start school has declined remarkably over time. In 2002/03, nearly 80% of children aged 10 entered school by age 8 as compared with just slightly more than 20% for those aged 18. Similarly, the analysis indicates a clear reduction for all groups even over a short space of time.

2.3 SCHOOL SUPPLY

An important determinant of whether a student goes to school is the availability of schools within a reasonable distance from the household. Besides, other supply factors are also viewed to influence that decision such as the pupil-teacher ratio, teachers' educational attainment and work experience, the availability of textbooks, lunch program, and the physical condition of school buildings

(Hanushek, 1995). In this subsection, we simply describe the level of school inputs, since Lao PDR does not yet have in place a national assessment system of quality education such as student performance, quality of teachers' work and other learning indicators.

Nationally, about 80% of the populations of Lao PDR live in a village with a primary school in 2002/03. Less than half of them could offer full five grades of the primary cycle. This varies largely across region and province. Children who live in a village without a complete primary school have to continue to further grade of the study in a near village with a complete primary school faraway. Moreover, 10 provinces out of 18 provinces do not have private schools at all. 51 out of 76 private schools (or 67%) are concentrated in Vientiane capital.

Regarding to the infrastructure characteristics of the primary schools between urban and rural areas, the difference is much smaller with respect to classrooms with blackboards, functioning roofs and library, much greater with respect to availability of electricity, student toilet and rooms for teachers including the principal. Another issue is the severe undersupply of teachers in rural areas. This deployment issue is partly a result of a quota system that requires newly trained teachers to return to their home district, thus restricting mobility and the capacity of the school system to balance teacher supply (ADB, 2000). In many cases, non-official teachers who have completed a teacher training course are employed by the villagers. They receive only benefits from local community based income in cash and others in kind such as rice.

On average, the pupil-teacher ratio for primary schools nationally is around 30 and the difference among groups is not large. *Lao* children are taught predominantly by *Lao* teachers, while a much smaller proportion of children are taught by local teachers, especially in remote areas. These are because local teachers are more likely to stay on and know the local language and customs. The typical primary (official) teacher has 13 years of teaching experience with a lower secondary certification plus formal teacher training (8+3 years). Although primary teachers earn only $39 per month including various supplements, absenteeism is not a problem in Lao PDR (World Bank, 2008).

3. LITERATURE REVIEW ON SCHOOL ATTENDANCE AND DATA

Based on household survey data from developing countries, an enormous number of studies showed that family background or socioeconomic status, measured by parental education, household

resources and resources in the community, is an important determinant of children's education. Children schooling outcomes may measure by current school enrollment or years of schooling attainment. Examples of these studies include Rosenzweig and Wolpin (1982) for India, Behrman and Wolfe (1984) for Nicaragua, Birdsall (1985) for Brazil, Hossain (1989) for Bangladesh, Singh (1992) for Brazil, Deolalikar (1993) for Indonesia, Glewwe and Jacoby (1994) for Ghana, Singh and Santiago (1997) for Mexico, Sawada and Lokshin (2001) for Pakistan, and Handa et al. (2004) for Mozambique.

The estimations of the determinants of children's welfare are guided by the familiar New Households Economics model of household decision-making as pioneered work by works of Gary S. Becker, and the extensions to the model well-described by Strauss and Thomas (1995). What deters school enrolment differences among children? Many past studies have found that the characteristics of children – age and gender; household-level variables – e.g. family income and size, age composition of household members, ethnic affiliation, and parental schooling and work specific; village-level variables such as urban/rural residence by province; and school-level variables – e.g. distance to school, teachers' characteristics and building facilities. In general, family background effects tend to dominate the school effects (Glewwe, 2002).

There is abundant evidence that examined school enrolment choice in developing countries, and the empirical model in this study is basically followed to the past researches which mentioned above.
The primary school enrolment choice (probability to attend school) model is specified respectively as following:

$$EN_i = \alpha_0 + \alpha_1 Sch_{jk} + \alpha_2 HR_i + \beta_i C_i + \gamma X_i + u_i$$

Dependent variable: EN=1 if child ever enrolled school and 0 otherwise. Exogenous household variables: Sch=educational levels of parents; HR=household resources: namely per capita consumption, family size, family structure and ethnic minorities; C=child characteristics: namely gender and child age; X= village characteristics: school availability and regional dummy variables, and u=a residual error. The estimation Methods for the equation is Probit Model (binary choices), which will be transformed to marginal effects. Huber-White consistent standard errors and covariance is applied to correct for heteroskedasticity.

This study employs an unusually rich set of nationally household survey data, the so-called Lao Expenditure and Consumption Survey 3 in 2002/03 (LECS 3). It is the first household survey that

provides detailed information on the educational sector. Totally, 5,042 rural children aged 6 to 10 from the whole country are used for the analysis and half of them are girls. 68% of children have attended school and the rests have never been to school. The samples are also classified into two categories of high enrolment rate group and low enrolment rate group.

4. ESTIMATION RESULTS

4.1 FULL SAMPLE RESULTS

The estimates of the models for the total sample of children aged 6 to 10 confirm the age progression in enrolment in all categories. Enrolment rates peak at age 10, which are much later than the official starting age of six. There is no sign of the difference in delayed enrolment rate between boy and girl, but a large difference across *Lao* and other ethnic subgroups. These results are consistent with King and van de Walle (2007). We confirm that girls are less likely to be enrolled than boys but with a relatively small percentage point by 5% (as compared to 9% of the previous study), and that this disparity only exists among ethnic subgroups. In other word, there is no gender disadvantage across *Lao* group. This new finding comes out because we move Tai-Kadai out from *Lao*-Tai Kadai to other ethnic subgroups. Although seven minorities of Tai-Kadai is also classified as *Lao* Loum, but each of them have their own language and traditions which largely differs from Lao. As we can observe that Tai-Kadai children are less likely to be enrolled than *Lao* children, particularly for girls. All other ethnic subgroups also face disadvantage in access to schools, and the greatest obstacle is for Tibeto-Burman children. For an example, a Tibeto-Burman girl is significantly less likely to attend school than a *Lao* girl by 48%.

Wealthier household is associated with a higher schooling probability, because it measures the ability to pay schooling costs and/or its desire to have more educated children. However, the income effect is not strong in the case of rural Lao PDR. Increasing log (per capita consumption) by one unit adds only 10% to the chance of a child going to school. It is of interest in this context to refer back to reasons why not sending a child to school. It is rare (less than 4%) that parent cite that a child had to work or school cost was too expensive. Besides, it can be said that the government has been able to reduce tuition fee for households successfully as it comprises only a very small share of education expenditures (7% in urban areas and 3% in rural areas). Thus, living standards are seen to be less central to achieving universal primary school enrolments.

The proportion of household members who are young is associated with the schooling of any one child. It reflects the effect of schooling costs on households with more children, as well as the trade-off that some parents make between having more children and investing more per child. In particular, our estimations show that the more school-aged children 6 to 14, whether boys or girls, a household has relative to the number of its adults, the less likely is any child to be enrolled in school. Unlike the previous study, we find that family size does matter for enrolment. An increase in family size would -

Table 1: The Probability of Attending School for rural Children 6-10, 2002/03

Variable	All	Boy	Girl	*Lao*	Ethnics
Child Characteristics					
Gender (Boy =1, Girl = 0)	0.0496***			-0.0126	0.0992***
	(3.66)			(0.95)	(5.06)
Age 7	0.1870***	0.1991***	0.1698***	0.0965***	0.2301***
	(13.03)	(11.77)	(7.08)	(8.54)	(9.25)
Age 8	0.2610***	0.2530***	0.2609***	0.1333***	0.3322***
	(21.03)	(16.49)	(12.85)	(11.04)	(15.66)
Age 9	0.3063***	0.3083***	0.2966***	0.1512***	0.3984***
	(27.95)	(21.93)	(16.71)	(12.18)	(22.37)
Age 10	0.3322***	0.3243***	0.3346***	0.1627***	0.4382***
	(31.40)	(23.48)	(19.92)	(12.49)	(26.92)
Household Characteristics					
Log of per capita consumption	0.1081***	0.1009***	0.1079***	0.0754***	0.0879***
	(6.30)	(4.25)	(4.31)	(4.31)	(3.59)
Family Size	-0.0236***	-0.0226***	-0.0250***	-0.0123***	-0.0279***
	(6.77)	(4.67)	(4.88)	(3.31)	(5.85)
Share of Children aged 0 to 5	-0.0927	-0.0188	-0.1426	-0.0991	-0.1511
	(1.35)	(0.21)	(1.35)	(1.38)	(1.55)
Share of Children aged 6 to 14	-0.1903***	-0.2679***	-0.1106	-0.1774***	-0.1883**
	(3.00)	(3.19)	(1.16)	(2.72)	(2.06)
Tai-Kadai	-0.0482*	-0.0023	-0.1062***		
	(1.87)	(0.07)	(2.71)		
Mon-Khmer	-0.1294***	-0.0964***	-0.1720***		
	(5.77)	(3.15)	(5.34)		
Tibeto-Burman	-0.3804***	-0.2896***	-0.4765***		
	(7.48)	(3.92)	(7.40)		
Hmong-Mien	-0.1638***	-0.0734	-0.2748***		
	(4.54)	(1.58)	(5.30)		
Father Characteristics					
Some Primary	0.0492***	0.478**	0.0442	-0.0048	0.0911***
	(2.70)	(1.99)	(1.59)	(0.20)	(3.66)
Completed Primary	0.1235***	0.1233***	0.1205***	0.0372*	0.1925***
	(6.66)	(4.97)	(4.38)	(1.68)	(7.51)
Lower Secondary or Higher	0.1460***	0.1656***	0.1108***	0.0446**	0.2368***
	(7.21)	(6.99)	(3.27)	(1.96)	(7.95)
Non-Farm	0.0546***	0.0164	0.0964***	0.0158	0.1019***
	(2.86)	(0.63)	(3.53)	(0.94)	(3.54)
Age	-0.0043***	-0.0055***	-0.0031	-0.0009	-0.0057
	(3.28)	(3.15)	(1.60)	(0.66)	(2.98)
Mother Characteristics					
Some Primary	0.0572***	0.0288	0.0915***	0.0459***	0.0868***
	(3.27)	(1.19)	(3.64)	(2.76)	(3.52)

Table 1 (Con'd)	All	Boy	Girl	*Lao*	Ethnics
Completed Primary	0.0748***	0.0631**	0.0937***	0.0582***	0.1186***
	(3.50)	(2.17)	(3.04)	(3.15)	(3.58)
Lower Secondary or Higher	0.1115***	0.0604	0.1844***	0.0776***	0.1604***
	(3.68)	(1.32)	(5.41)	(4.98)	(2.86)
Non-Farm	0.0338*	0.0296	0.0412	-0.0226	0.1128***
	(1.66)	(1.07)	(1.38)	(1.14)	(3.77)
Age	0.0054***	0.0296***	0.0055**	0.0023	0.0062***
	(3.41)	(2.79)	(2.40)	(1.40)	(2.71)
School in Village					
Complete Primary	0.1161***	0.0702**	0.1633***	0.0471**	0.1681***
	(5.58)	(2.43)	(5.45)	(2.19)	(5.52)
Some Primary	0.0298	0.0138	0.0461	0.0122	0.0501*
	(1.48)	(0.50)	(1.55)	(0.60)	(1.72)
Village Characteristics					
North					
Phongsaly	-0.2178*	-0.2580	-0.2216		-0.4241**
	(1.85)	(1.50)	(1.34)		(2.56)
Luangnamtha	-0.4034***	-0.4276***	-0.4142***		-0.5078***
	(3.65)	(2.57)	(2.82)		(3.96)
Oudomxay	-0.2965***	-0.2796	-0.3540**		-0.3610**
	(2.56)	(1.62)	(2.30)		(2.02)
Bokeo	-0.2778**	-0.3158*	-0.2745*		-0.3559**
	(2.38)	(1.83)	(1.70)		(1.96)
Luangprabang	-0.0990	-0.1403	-0.0992	0.0982***	-0.2169
	(0.95)	(0.90)	(0.67)	(7.46)	(1.07)
Huaphanh	-0.2951***	-0.2984*	-0.3239**	-0.1455*	-0.3495*
	(2.68)	(1.82)	(2.16)	(1.79)	(1.88)
Xayabury	-0.2241**	-0.1582	-0.3250**	0.0098	-0.3775**
	(1.97)	(0.99)	(2.10)	(0.23)	(2.18)
Center					
Xiengkhuang	-0.0873	-0.1842	-0.0288	-0.0043	-0.1425
	(0.83)	(1.11)	(0.21)	(0.09)	(0.69)
Vientiane	-0.0133	-0.0683	0.0206	0.0359	-0.0707
	(0.14)	(0.46)	(0.16)	(0.93)	(0.34)
Borikhamxay	-0.0700	-0.0583	-0.1288	0.0606**	-0.1533
	(0.66)	(0.39)	(0.81)	(2.12)	(0.74)
Khammuane	-0.1239	-0.0897	-0.2085	-0.0043	-0.1532
	(1.16)	(0.61)	(1.33)	(0.10)	(0.74)
Savannakhet	-0.3184***	-0.3260**	-0.3601**	-0.1660**	-0.3998**
	(2.88)	(2.01)	(2.39)	(2.28)	(2.38)
Xaysomboun	-0.1297	-0.1830	-0.0803	-0.0311	-0.1855
	(1.11)	(1.06)	(0.48)	(0.49)	(0.87)
South					
Saravane	-0.4188***	-0.4197***	-0.4592***	-0.1660**	-0.4956***
	(3.94)	(2.63)	(3.32)	(2.28)	(3.73)
Sekong	-0.3175***	-0.2851	-0.3843**		-0.3873**
	(2.67)	(1.61)	(2.45)		(2.26)
Champasack	-0.1160	-0.0971	-0.1913	-0.0042	0.0013
	(1.07)	(0.64)	(1.20)	(0.10)	(0.01)
Attapeu	-0.3585***	-0.3469**	-0.4188***	-0.1407*	-0.4287***
	(3.14)	(2.03)	(2.83)	(1.80)	(2.72)
Observations	5,042	2,568	2,474	1,947	3,095
Pseduo R^2	0.302	0.306	0.316	0.288	0.260

Note: These are run as dprobits. Robust |Z| statistics are in parentheses.

Table 2: The Probability of Attending School for "High Group" and "Low Group" of rural Children 6-10, 2002/03

Variable	All		Boy		Girl		*Lao*		Ethnics	
	High	Low	High	Low	High	Low	High	Low	High	Low
Child Characteristics										
Gender (Boy =1, Girl = 0)	0.0092	0.0884***					-0.0139	0.0023	0.0475*	0.1209***
	(0.68)	(4.32)					(1.04)	(0.08)	(1.89)	(4.92)
Age 7	0.1023***	0.2445***	0.1029***	0.2771***	0.0916***	0.1942***	0.0542***	0.1815***	0.1582***	0.2384***
	(8.89)	(9.24)	(6.69)	(9.13)	(5.96)	(4.38)	(4.95)	(7.40)	(7.00)	(6.47)
Age 8	0.1272***	0.3623***	0.1302***	0.3558***	0.1146***	0.3509***	0.0811***	0.2355***	0.1763***	0.3861***
	(11.04)	(16.56)	(8.38)	(13.67)	(7.00)	(9.54)	(6.52)	(10.54)	(8.29)	(12.49)
Age 9	0.1638***	0.4146***	0.1675***	0.4289***	0.1445***	0.3731***	0.0948***	0.2635***	0.2454***	0.4526***
	(14.28)	(21.79)	(10.06)	(19.66)	(9.22)	(10.78)	(7.34)	(11.86)	(12.83)	(16.87)
Age 10	0.1799***	0.4566***	0.1826***	0.4501***	0.1618***	0.4524***	0.1086***	0.2808***	0.2638***	0.5090***
	(14.99)	(26.07)	(10.98)	(21.39)	(9.32)	(14.99)	(7.39)	(12.71)	(14.07)	(20.92)
Household Characteristics										
Log of per capita consumption	0.0843***	0.1137***	0.0764***	0.1142***	0.0867***	0.1059***	0.0800***	0.0729**	0.0618**	0.1192***
	(5.24)	(4.47)	(3.26)	(3.20)	(4.08)	(2.90)	(4.61)	(2.13)	(2.29)	(3.90)
Family Size	-0.0166***	-0.0266***	-0.0154***	-0.0282***	-0.0175***	-0.0248***	-0.0118***	-0.0163**	-0.0191***	-0.0288***
	(4.75)	(5.33)	(3.00)	(3.99)	(3.82)	(3.46)	(3.29)	(2.21)	(3.17)	(5.04)
Share of Children aged 0 to 5	-0.1178*	-0.0943	-0.0094	-0.0343	-0.2082**	-0.1211	-0.0759	-0.2632*	-0.1882	-0.0792
	(1.78)	(0.91)	(0.11)	(0.25)	(2.24)	(0.79)	(1.19)	(1.67)	(1.53)	(0.65)
Share of Children aged 6 to 14	-0.1385**	-0.2101**	-0.1144	-0.3742**	-0.1555*	-0.0814	-0.1377**	-0.2503*	-0.1066	-0.1492
	(2.07)	(2.29)	(1.23)	(3.06)	(1.75)	(0.59)	(2.12)	(1.88)	(0.87)	(1.36)
Tai-Kadai	-0.0049	-0.0057	-0.0093	0.0394	-0.0264	-0.0446				
	(0.22)	(0.17)	(0.33)	(0.90)	(0.77)	(0.91)				
Mon-Khmer	-0.0561***	-0.1281***	-0.0488*	-0.1050***	-0.0659**	-0.1504***				
	(2.69)	(4.38)	(1.72)	(2.56)	(2.23)	(3.67)				
Tibeto-Burman		-0.2979***		-0.2556***		-0.3381***				
		(7.30)		(4.14)		(6.48)				
Hmong-Mien	-0.0778***	-0.1161**	-0.0443	-0.1059	-0.1114**	-0.1284**				
	(2.63)	(2.52)	(1.23)	(1.54)	(2.37)	(2.07)				
Father Characteristics										
Some Primary	0.0076	0.0792***	0.0178	0.0782**	-0.0091	0.0790*	0.0189	-0.0765	0.0045	0.1379***
	(0.39)	(2.87)	(0.70)	(2.13)	(0.33)	(1.93)	(0.96)	(1.40)	(0.14)	(4.48)

Table 2 (Con'd)	All		Boy		Girl		*Lao*		Ethnics	
	High	Low	High	Low	High	Low	High	Low	High	Low
Completed Primary	0.0458**	0.1911***	0.0352	0.2067***	0.0461*	0.1752***	0.0306	0.0340	0.0688**	0.2646***
	(2.43)	(6.70)	(1.37)	(5.40)	(1.85)	(4.19)	(1.43)	(0.71)	(2.16)	(8.03)
Lower Secondary or Higher	0.0513**	0.2341***	0.0749***	0.2413***	0.0060	0.2245***	0.0269	0.0764*	0.0951***	0.3244***
	(2.45)	(7.37)	(3.09)	(6.12)	(0.17)	(4.51)	(1.18)	(1.64)	(2.65)	(8.10)
Non-Farm	0.0266	0.0612**	-0.0316	0.0619	0.0749***	0.0534	0.0097	0.0355	0.0494	0.0892**
	(1.46)	(2.04)	(1.13)	(1.57)	(3.40)	(1.17)	(0.56)	(1.01)	(1.42)	(2.31)
Age	-0.0027**	-0.0048**	-0.0035*	-0.0054**	-0.0015	-0.0045	-0.0024*	0.0022	-0.0025	-0.0064***
	(2.00)	(2.50)	(1.91)	(2.08)	(0.82)	(1.56)	(1.72)	(0.83)	(1.01)	(2.67)
Mother Characteristics										
Some Primary	0.0227	0.0821***	-0.0047	0.0525	0.0522**	0.1133***	0.0202	0.0855**	0.0315	0.1208***
	(1.33)	(3.08)	(0.18)	(1.41)	(2.55)	(2.96)	(1.18)	(2.45)	(1.06)	(3.86)
Completed Primary	0.0611***	0.0872**	0.0614**	0.0543	0.0610***	0.1304***	0.0309*	0.1234***	0.1252***	0.1059***
	(3.48)	(2.57)	(2.55)	(1.14)	(2.66)	(2.66)	(1.66)	(3.57)	(4.23)	(2.35)
Lower Secondary or Higher	0.0669***	0.1436***	0.0158	0.1196*	0.1078***	0.1872***	0.0401**	0.1433***	0.1437***	0.1491**
	(2.80)	(2.89)	(0.34)	(1.76)	(6.69)	(2.63)	(2.16)	(4.65)	(3.20)	(1.97)
Non-Farm	0.0238	0.0544*	0.0426**	0.0199	-0.0015	0.0869**	0.0029	-0.0358	0.0695*	0.1561***
	(1.25)	(1.76)	(1.97)	(0.45)	(0.05)	(2.02)	(0.17)	(0.86)	(1.91)	(4.26)
Age	0.0029**	0.0059***	0.0045**	0.0048	0.0013	0.0080**	0.0021	0.0006	0.0036	0.0061**
	(1.80)	(2.57)	(1.97)	(1.50)	(0.58)	(2.44)	(1.21)	(0.19)	(1.20)	(2.16)
School in Village										
Complete Primary	0.0125	0.2043***	0.0095	0.1410***	0.0199	0.2656***	0.0042	0.1887***	0.0544	0.1992***
	(0.56)	(6.90)	(0.33)	(3.33)	(0.64)	(6.35)	(0.21)	(3.83)	(1.30)	(5.38)
Some Primary	0.0055	0.0440	0.0131	0.0146	0.0013	0.0742*	0.0017	0.0321	0.0262	0.0383
	(0.26)	(1.52)	(0.47)	(0.36)	(0.04)	(1.79)	(0.09)	(0.70)	(0.64)	(1.15)
Observations	2,097	2,942	1,070	1,496	1,027	1,446	1,072	875	1,028	2,067
Pseduo R^2	0.246	0.266	0.249	0.281	0.281	0.260	0.254	0.267	0.216	0.223

Note: These are run as dprobits. Robust |Z| statistics are in parentheses.

reduce a probability of school attendance by roughly 2%. With respect to parental characteristics, we find that parental education attainment variables are related positively with a child's enrolment. The estimated coefficients of parental education increase as the educational level rises. Both paternal and maternal educations have a stronger impact for children of ethnic subgroups. Moreover, fathers and mothers who work in non-farm activities are more likely to send their children to school, while the age of them do not appear to have any strong impact on schooling decision.

Turning now to the school availability, complete primary schools have a strong effect on whether children are enrolled in school in all categories. Its effect is highly positive for girls and ethnic subgroups by about 16%. In addition, the set of provincial dummy variables will capture the geographical variation and heterogeneity, including an area's ability to supply schools and the local demand for an educated labor force. By setting urban area of Vientiane capital to be the reference, it is so hard to believe that the findings of the previous study that the school enrolments of 8 urban provinces and 4 rural provinces are statistically significant better off than the capital. In our case, by setting rural area of Vientiane capital to be the reference, the results indicated clearly that the school enrolments of 10 rural provinces (of which we later show as low enrolment rate group) are significantly worse off than the capital. Children who live in these regions are less likely to be enrolled in school by roughly 20% to 40% relative to children in the capital. The remainder estimates of 7 rural provinces also show negative signs, though not statistically significant (of which we later show as high enrolment rate group).

4.2 HIGH AND LOW ENROLMENT RATE GROUP

In this subsection, we focus on the results for high and low enrolment rate group. We find some more striking and important differences between these two groups, especially for *Lao* and (non-*Lao*) ethnic subgroups. For all children, enrolment peaks at age 10 relative to the official entry age of six, but it is the case for only 18% in high group as compared with 46% in low group. We find a much later age of entry into school than the previous study. The pattern of indifference in delayed enrolment rate between boy and girl, but a large difference across *Lao* and other ethnic subgroups remain the same. Interestingly, we find that girls are no less likely to be enrolled than boys in high group. The gender disparity only exists among ethnic subgroups by 5% in high group and 12% in low group. This new finding is very important for policy makers who concern about gender issue on equitable access to schools.

Related to household characteristics of family income, household size, the age proportion of household and ethnic affiliation, most patterns discussed above remain the same, except for that the estimates of each variable are generally lower for high group than those for low group. For an example, increasing log (per capita consumption) by one unit adds 8% and 11% to the probability of a child going to school in high and low group, respectively. These things, again, reflect a number of differences in local economic and social conditions across provinces.

With respect to parental characteristics, we find that parental education attainments are related positively with a child's enrolment in both groups. However, the educations of both father and mother have a much more pronounced and significant effect in low group than in high group. It is of particular interest to observe that having parents with some primary education level can increase the probability of sending a child to school in low group, while this is not so in the case of high group. This new finding gives very important information for policy makers to plan for the appropriate level of adult literacy/education campaign in each area. In addition, related to the school supply, complete primary schools have a very strong effect on whether children are enrolled in school in low group, but not in high group. Children who live in a village with a complete primary school in low group are more likely to be enrolled in school by 20% than those do not.

5. Conclusions

Over the past few decades, Lao PDR has achieved steady progress in educational outcomes across the different groups of the population. According to recent educational statistics, the net enrolment rate of children aged 6 to 10 has improved highly from 86.4% in 2006/07 to 89.2% in 2007/08. However, significant challenges still lie ahead. First, the size of the population of school age continues to rise, requiring a continued expansion in the number of school supplies, especially complete primary schools. The number of children aged 6 has grown by about 5% over the period of 2006-2008. Second, past progress has been mostly about increasing access to education and much less about improving quality of education. The challenge is to enroll children in school timely and to keep them in school long enough. Only 113,132 children out of 151,185 populations aged 6 or 75% have been enrolled in school timely in 2007/08. While the drop out rate of grade 1 has been reduced to about 11%, the grade repetition rate remains very high about 32% as compared to 7% and 4% for grade 5, respectively.

As discussed earlier, this study shows that educational progress in rural Lao PDR has not been equal across groups. We find significant disparities according to a child's residence (high group vs. low group) and ethno-linguistic affiliation. In general, gender and income attributes are less important issues. In particular, rural ethnic subgroups in low enrolment rate provinces have lagged farthest behind other groups. In explaining enrolments, we find that parental schoolings and the supply of complete primary schools are helpful factors to increase the probability of a child to be enrolled in school. These findings imply that policy interventions to achieve universal primary education should be carefully tailored to the specific obstacles and needs facing each group.

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