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## **The Earning Power of Mothers and Children's Time Allocation in Lao PDR**

By Sevinc Rende<sup>1</sup>

### **Abstract**

In this paper I explore the relationship between a mother's contribution to household income and her children's work and school outcomes. Using household data from Lao PDR, I find that as a mother's share of total household earnings increases, her children shift time away from school and wage work to work under parental control. The findings demonstrate that a mother's short-term needs and interests may not always align with her children's long-term interests, and work may become a contested terrain between mothers and children.

*Keywords:* child work, gender, Lao PDR

### **Introduction**

Feminist scholars have opened up the 'black box' of the household to better understand how the effects of opportunities and constraints vary among household members. An important advance has been the emphasis given to the role of mothers in improving their children's wellbeing outcomes. Evidence, however, has revealed unexpected puzzles in the relationship between a mother's earnings and her children's wellbeing outcomes. On the one hand, child welfare improves as a mother's contribution to household resources increases (Thomas, 1997). On the other hand, children's schooling may suffer when a mother's work shifts from non-market to market settings (Levison, Moe, & Marie Knaul, 2001). Understanding the relationship between mothers' work and children's time allocation between school and work is more than a scholarly puzzle, it is essential to the design of social policies that seek to improve the welfare of women and children living in the developing countries.

In this article, I explore the relationship between a mother's share of household income and her children's work and school outcomes. Conceptually, I draw on the dynamic between income and substitution effects: increases in the earning power of a mother may push her children to school through the income effect or, conversely, may pull her children to work through the substitution effect. Empirically, I seek to understand the relationship between a mother's share of total household earnings and her children's school and work outcomes, using a dataset from Lao PDR. As we shall see, as a mother's share of household earnings increases, her children shift time away from school and wage work to work under parental control. The results suggest that in the short term household controlled work may become contested terrain between a mother and her children.

I begin with a review of the relevant literature on the allocation of work between mothers and children, setting the conceptual framework. I then describe the country context focusing on key indicators. Section 4 introduces the data and presents summary statistics. I then discuss my empirical strategy and the results, focusing on gender-based differences. In the conclusion, I very briefly discuss some implications of the results and propose future research directions.

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## **Relevant Literature**

Feminist economists and anthropologists were among the first to draw attention to an increase in children being deployed to work along with their mothers in the aftermath of neo-liberal policies (Benería, 1992; Elson, 1982; Townsend, 1993). Research has shown that unexpected income shocks have led families to increase their reliance on the contributions of children to household resources, and working mothers sometimes find employment for their children (Brewis & Lee, 2010; DeGraff & Levison, 2009; Guarcello, Mealli, & Rosati, 2010; Self, 2011). Consider the case of micro-credit recipient households: alleviating credit constraints has helped many poor households and women in these households to improve their level of consumption, yet evidence indicates that mothers receiving micro-credits frequently resort to deploying the labor of their children as substitutes (Hazarika & Sarangi, 2008; Shimamura & Lastarria-Cornhiel, 2010).

A careful analysis of the allocation of work between mothers and children is required, because in addition to mothers caring for their children, mothers are also the primary household member who would control (and benefit from) the work of children. Anthropological research has demonstrated that children's work reduces the work load of adults, and particularly that of mothers (Bradley, 1993; Punch, 2003). Often children, especially girls, act as care takers with substantial care responsibilities for young, disabled, ill, or elderly household members, thus freeing the mothers' time (Evans, 2010; Hames & Draper, 2004). In some cases children supply non-market work to adults at the expense of their schooling (Amin, Quayes, & Rives, 2006; Assaad, Levison, & Zibani, 2010; Cockburn & Dostie, 2007). For example, research on natural resources and children's school attendance from Malawi finds that having more adult women in the household available for firewood collection increases the probability of girls' school attendance (Nankhuni & Findeis, 2004).

Why do we observe such intra-generational conflict between a mother's work and her children's schooling? One explanation is the different directions of income and substitution effects on labor decisions. A mother's earnings may create an income effect which benefits her children's school outcomes. On the other hand, if the substitution effect dominates, then it is likely that a mother's time commitment to market-work will reduce her children's schooling by allocating more children's time from school to work under parental control. The direction of the relationship between a mother's market-based contribution to household resources and her children's work and school outcomes therefore arises as an empirical problem. The following section explores this relationship in the context of Lao PDR.

## **Country Context**

Lao PDR is a Southeast Asian country landlocked between Vietnam, China, Cambodia, Thailand and Myanmar. With an annual population growth of 2.4%, its population is estimated to be around 6.3 million, and its population density is characterized as low in comparison to its neighboring countries. The geographic dispersion of ethnic groups is another factor that shapes its population dynamics: the number of distinct ethnic categories may be as high as seventy-five and ethnic minorities constitute approximately 40% of the population, concentrated in the northern highlands (Ducourtieux, Laffort, & Sacklokham, 2005; Evrard & Goudineau, 2004). Some 67% of the population is rural and Lao PDR is classified as a low income country, with a per capita income of \$460 in 2005, and \$1130 in 2011 in current U.S. dollars. Annual GNI growth increased from 3.0% in 2000 to 6.8% in 2011, and annual inflation in the country was

recorded at 7.6% in 2011. Agriculture accounts for approximately one-third of national output with its relative weight in the economy declining; in 2000, agriculture accounted for almost half, 45.2%, of the national output.<sup>2</sup> As part of its rural development program, the State has undertaken significant land reforms, consolidating secure land tenure in order to enhance productivity (Lestrelin, 2010).

Demographic indicators show a life expectancy for women as 68.4 and 65.7 for men, and a total fertility rate of about 2.7. While women's literacy rate is low, 63.2%, for age 15 and above, women's labor market participation rate is around 74.6%, mainly because of the agrarian economy. Lao PDR ranks 138 among 187 countries<sup>3</sup> in the 2011 Human Development Index, while the Gender-Inequality Index ranks the country at 107 out of 146 countries. The Education for All (EFA) Global Monitoring Index for Lao PDR is valued at 0.76<sup>4</sup>, partly due to high levels of illiteracy among the adult population and partly due to gender disparities in schooling. This gap is slowly disappearing at the country level: the ratio of girls to boys in primary and secondary schooling was recorded at 81% in the year 2000, it increased to 89% by 2010.

### **Data and Descriptive Statistics**

The dataset comes from the nationally representative second wave UNICEF Multiple Indicator Cluster Survey (MICS), covering 18 provinces in three regions, North, South and Central. In addition to health modules for children 0-5 years of age and for women 15-49, the survey included a module for educational attainment and work activities of children 5-15 years old with questions on school attendance, grade level attained, and participation in market and non-market work activities. Also included are the number of hours spent in these work activities during the week prior to the survey. In addition to the population specific modules, a special module inquired about household land holdings and the occupation and education level of household members. Four questions focus on the main and secondary sources of household income. The first two questions are about the type of income-generating activity with possible answers as husbandry, agriculture, salary, wage, irregular. The latter two are about the household member who earns the income, with possible answers as father, mother, children and others.

I restricted the sample to nuclear family households to exclude the variations in the economic relations within extended families and to rule out the possibility of late school enrolment. As a result, the working sample comprises 8011 children between 9 to 14 years of age living with two parents, and boys and girls represent 51% and 49% of the sample, respectively. The environment and implications of different types of children's work depend primarily on the party controlling the child's efforts (Abebe & Bessell, 2011). For this reason, I divided the sample into four groups, based on the work participation and hours. The cut-off point of 14 hours/week is derived from ILO Convention No. 138, which allows for work of up to 14 hours for children. Accordingly, the first group is comprised of children who attend school and did not perform more than 14 hours of work during the week prior to the survey. The second group of children are those who do not attend school, but work for a third party and children who attend school, but work for a third party whose work hours exceeded 14 hours in the previous week. This group of children is labeled as "non-household employed". The third group of children is

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<sup>2</sup> Source: <http://data.worldbank.org/>

<sup>3</sup> Source: <http://hdr.undp.org/en/>

<sup>4</sup> Source: <http://www.unesco.org/new/en/education/themes/leading-the-international-agenda/efareport/statistics/efa-development-index/>

similar to those in the second group, but in their case, the children are reported to work on a family farm or under household control and their efforts produce income. These children are categorized as “household employed”. The fourth group, “domestic work” category, consists of children who perform domestic work without attending school, or children who attend school but perform more than 14 hours/week of domestic work.

Table 1 summarizes the selected indicators for each category. The mean years of schooling of the parents of children attending school, 5.1 and 3.4 years for fathers and mothers respectively, are significantly higher than those of the parents of children in the other groups. Of children who are employed by non-household parties, parental education levels are the lowest recorded, 2.8 years of schooling for fathers, and 1.5 years of schooling for mothers.

**Table 1: Descriptive Statistics**

	School (N = 3517)		Non-Household Employment (N = 495)		Household Employment N = (2431)		Domestic Work (N = 1568)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
<b>Child Related</b>								
Sex(=1 Female)	0.454	0.498	0.446	0.497	0.435	0.496	0.661	0.473
Age	9.945	2.118	8.770	2.131	11.152	2.094	10.433	2.427
Student (=1)	1.000	0.000	0.000	0.000	0.907	0.291	0.148	0.355
<b>Parent Related</b>								
Father's Age	42.978	9.661	41.353	10.038	44.176	9.843	42.516	10.840
Mother's Age	37.802	8.217	36.525	8.750	39.177	8.351	37.707	9.501
Father's Schooling	5.122	3.471	2.847	3.015	4.445	3.332	2.947	3.072
Mother's Schooling	3.434	3.310	1.552	2.472	2.728	2.967	1.553	2.510
Mother's EPI	0.401	0.220	0.409	0.207	0.415	0.218	0.416	0.212
Diff. Father - Mother Age	5.126	6.475	4.897	7.114	5.042	6.517	4.992	7.199
Diff. Father - Mother Schooling Year	1.711	3.158	1.240	2.913	1.713	3.297	1.395	2.748
<b>Household Related</b>								
No. of children, 7-14	2.474	1.117	2.727	1.325	2.578	1.128	2.460	1.165
No. of children, 0-6	1.134	1.131	1.584	1.270	1.256	1.181	1.495	1.264
Household size	7.076	2.453	7.943	3.170	7.375	2.422	7.364	2.748
Water in Dwelling(=1)	0.336	0.472	0.114	0.318	0.235	0.424	0.128	0.335
Land (in acre)	1.267	1.386	1.209	1.082	1.419	1.503	1.309	1.278
Paddy Rice(=1)	0.610	0.488	0.519	0.500	0.683	0.465	0.533	0.499
Upland Rice(=1)	0.341	0.474	0.597	0.491	0.405	0.491	0.554	0.497
Irrigated Rice(=1)	0.145	0.352	0.092	0.289	0.186	0.389	0.098	0.297
No. of cattle	2.539	4.323	2.441	3.272	3.233	4.793	2.428	3.896
Urban(1), Rural(2)	1.606	0.489	1.894	0.309	1.715	0.452	1.847	0.360
Wealth Quintile 1-5	3.136	1.348	2.463	1.415	3.171	1.421	2.578	1.432
<b>Community Related</b>								
GINI Land	0.332	0.093	0.315	0.088	0.343	0.096	0.311	0.088
Months of rice shortage	3.704	1.427	4.173	1.106	3.927	1.320	4.164	1.232

The literature on the economics of child labor has shown that the household's productive assets play a role in children's work and school outcomes (Bhalotra, 2007). In Lao PDR, livestock is a labor-intensive asset, especially for households located in upland regions (Millar & Photakoun, 2008). The sample statistics show that the average number of cattle in working children's households is slightly higher compared to children attending school. Paddy-rice is cultivated widely, another labor intensive activity, but the prevalence of irrigated rice exhibits differences across school-work categories; 19% of the households in which children are working for household income production reported cultivation of irrigated rice, whereas irrigated rice cultivation was reported in only 9% of households in which children work for a non-household employer.

One caveat in interpreting the survey is the lack of any information on income, consumption expenditures or wages at the individual or household level. Not being able to control for the effect of household income on school-work outcomes creates a bias toward the influence of parental education: in addition to affecting the value placed on education for their children, parental education may also reflect parental income generating capacity. The wealth index, which ranks the households by quintiles captures the living standards of a household based on an inventory of durable assets and characteristics of the dwelling. On average, children who attend school tend to live in better-off households than the children in other groups.

Only 13% of children who perform substantial amounts of domestic work live in households with piped water, slightly higher than the percentage reported in the households of children employed by third parties, 11%. The number of siblings between 0 to 6 years of age may be another source of demand for children's labor: having additional siblings may send an older child to work for third parties to supplement household resources. Demand for the older child's work at home is also expected to increase, as younger siblings require more care. The number of younger siblings between 0 and 6 years of age is higher for children who are sent out to work for other employers and for children doing domestic work at home, compared to children in other groups.

Community level factors, such as the availability of and access to schools or to health clinics, are not included in the survey, but proxy indicators to reflect land inequality and poverty levels among the communities can be derived from the survey data. The GINI coefficient<sup>5</sup> takes into account inequality in land holdings across communities, but excludes landless households. The average number of months that a community experienced a shortage of rice, on the other hand, can be expected to reflect the relative poverty level across communities. The sample statistics show that community level land inequality is highest for children working for their own households, and children working for third party employment tend to work in communities with longer spans of rice shortage.

I measure a mother's share in household income by creating an index, Earning Power Index (EPI), using two questions in the special module: "who is in the household the primary source of income?" and "who is in the household secondary source of income?" Possible answers are father only, mother only, children or others. The index is similar to the index that measures the effectiveness of women's political presence in the South East Asian village councils (Agarwal, 2010). The EPI assigns weights to the contribution of mother to the household main and secondary sources of income compared with the contribution of the other

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<sup>5</sup> The GINI coefficient measures the extent to which to the subject of measurement, such as income, land, consumption, deviates away from perfectly equal distribution.

household members. If a mother did not contribute at all, the index is assigned the value 0, if mother contributed to household income along with father and children, the index is assigned 0.3, and lastly if mother and father are reported as the only sources of income, the EPI is assigned by 0.5. In cases where the mother is the sole provider of household income, the index has a value of 1. I subsequently normalized the index for main and secondary sources of income to 0-1 interval, with “no contribution” at 0 and “only source of income” at 1 (See Technical Appendix).

Table 1 summarizes that the EPI is slightly higher for children working under parental control. Categorized according to the source of income and by region, Table 2 shows that the highest value of the EPI is found in households in which “cash crop” is reported as the main source of income in urban areas of the North region. The lowest value of the index is in households whose livelihoods depend on “vegetable/husbandry” in the rural South region and “daily labor” in the rural areas of the Central region.

**Table 2: Regional Distribution of the EPI**

Main Source of Income	Urban			Rural		
	North	Central	South	North	Central	South
Rice	0.44	0.42	0.44	0.47	0.42	0.42
Veg/Husbandry	0.32	0.38	0.33	0.47	0.48	0.13
Cash crop	0.31	0.50	0.49	0.44	0.42	0.46
Daily labor	0.43	0.43	0.42	0.25	0.16	0.38
Private business	0.45	0.38	0.44	0.35	0.43	0.42
Salary	0.48	0.40	0.42	0.36	0.45	0.39

### Empirical Strategy

Drawing on the conceptual framework which emphasized the income and substitution effects, I would like to test the association between a mother’s EPI (EPI), her contributions to household income and the school-work outcomes of her children, after controlling for other factors that may be influential. I include land holdings of the household and cultivation of irrigated rice. Land creates a wealth effect, but also causes an increased demand for household labor, an effect which is similar to irrigated rice cultivation. Also included are the variables capturing household demographic composition: younger siblings separated by age, between 0 and 2, and between 3 and 6 years of age, considering the different levels of care work required by each age group. Number of siblings, boys and girls from 7 to 14 years of age, are among control variables to measure the level of sibling competition for household resources and opportunities. Age of mother and father and parental years of schooling are included to control for parental background. To control for household income, I include the household’s placement in the wealth index distribution, derived from household durable goods and dwelling conditions. The GINI coefficient for land holdings and average months of rice shortage are expected to measure the community level inequality and poverty capturing the structural constraints which may be imposed on children’s time allocation

For empirical work, I will use a multinomial probit model (MNP) expressing the work-schooling outcomes. The advantage of employing MNP over its close alternative multinomial logit model is that the latter assumes independence of irrelevant alternatives. The assumption is

such that removing one of the outcome states will not change the probability of choosing any of the remaining alternatives. This assumption, however, is difficult to justify. The outcomes, school attendance, working under household control for market work or performing domestic work, are expected to be closely related decisions. The reduced form of the model has then the following form:

$$p(y_i=j|X)=f(\text{Mother's EPI, variables on child, parental, household, community characteristics})$$

where  $j = 1, 2, 3, 4$  corresponds to school (base category), market work for a non-household party, market work under household control and domestic work at home, conditioned on the independent control variables, such as child, parental and household characteristics, and community related variables (See Technical Appendix).

## **Results**

Given that the work expected of girls and boys may differ, the results are reported separately in Tables 3 and 4. The coefficients in multinomial outcomes are difficult to interpret, but the signs and statistical significance of the coefficients give us an idea about the time allocation of children between school (base category) and work outcomes.



**Table 3: Time Allocation of Boys\***

	Basic Model				Full Model							
	Non Household Employment		Household Employment		Domestic Work		Non Household Employment		Household Employment		Domestic Work	
	Coeff.	Std.Err.	Coeff.	Std.Err.	Coeff.	Std.Err.	Coeff.	Std.Err.	Coeff.	Std.Err.	Coeff.	Std.Err.
Age	-1.589*	0.208	0.183	0.146	-0.683*	0.146	-1.585*	0.209	0.181	0.146	-0.677*	0.146
Age^2	0.073*	0.010	0.002	0.007	0.039*	0.007	0.073*	0.010	0.002	0.007	0.039*	0.007
Father's age	0.001	0.007	0.000	0.005	-0.009†	0.005	0.000	0.007	-0.001	0.005	-0.009†	0.005
Mother's age	-0.012	0.009	-0.004	0.007	-0.004	0.006	-0.009	0.009	-0.002	0.007	-0.002	0.006
Father Schooling (Yrs.)	-0.085*	0.020	-0.012	0.014	-0.060*	0.013	-0.083*	0.020	-0.010	0.014	-0.057*	0.013
Mother Schooling (Yrs.)	-0.066*	0.023	0.004	0.016	-0.063*	0.016	-0.061*	0.023	0.006	0.016	-0.060*	0.016
Mother's EPI	0.421	0.284	0.310	0.225	0.427**	0.212	0.366	0.284	0.274	0.225	0.384†	0.212
Children (Age 0-2)	0.163**	0.073	0.033	0.066	0.042	0.062	0.162**	0.073	0.033†	0.067	0.039	0.062
Children (Age 3-6)	0.038	0.062	0.099**	0.050	0.161*	0.047	0.037	0.062	0.097†	0.050	0.157*	0.047
Sisters (Age 7-14)	0.172*	0.066	0.104†	0.058	-0.034	0.050	0.181*	0.066	0.110	0.057	-0.031	0.050
Brothers (Age 7-14)	0.184*	0.058	0.013	0.045	0.012	0.044	0.186*	0.058	0.013	0.045	0.010	0.044
Irrigated. Rice(=1)	-0.288	0.186	0.207†	0.115	-0.145	0.155	-0.258	0.185	0.209†	0.116	-0.102	0.157
Number Cattle	0.001	0.014	0.022**	0.009	0.003	0.012	0.011	0.014	0.023**	0.009	0.014	0.012
Water in dwelling(=1)	-0.239	0.179	-0.157	0.109	-	0.103	-0.206	0.178	-0.146	0.108	-0.182†	0.103
Land (in acr.)	-0.166*	0.056	-0.026	0.033	-0.051	0.033	-0.181*	0.057	-0.038	0.034	-0.049	0.034
Gini (Land)	1.318**	0.552	1.960*	0.485	0.746†	0.446	1.436**	0.558	2.074*	0.484	0.838†	0.446
Months Rice Short.	0.103**	0.041	0.069**	0.031	0.073**	0.030	0.097**	0.041	0.066**	0.031	0.067**	0.030
Wealth Index 2 <sup>nd</sup> Q									-		-	
Wealth Index 3 <sup>rd</sup> Q									0.327**	0.129	0.283**	0.117
Wealth Index 4 <sup>th</sup> Q									-0.424*	0.132	-0.462*	0.121
Wealth Index 5 <sup>th</sup> Q									-		-	
Ethnicity(=Phoutai)	0.108	0.190	0.189	0.151	0.138	0.139	0.125	0.191	0.214	0.150	0.129	0.140
Ethnicity(=Kammu)	0.524*	0.174	0.465*	0.158	0.637*	0.137	0.422**	0.182	0.405**	0.161	0.526*	0.140
Ethnicity(=Hmong)	0.446**	0.211	0.489**	0.190	0.674*	0.166	0.417†	0.214	0.511*	0.192	0.601*	0.170

Ethnicity(=Leu)	-0.061	0.289	0.332	0.214	0.218	0.199	0.012	0.289	0.383†	0.214	0.262	0.199
Ethnicity(=Katang)	0.635**	0.269	-0.056	0.219	0.530*	0.202	0.659**	0.267	0.008	0.221	0.513**	0.206
Ethnicity(=Others)	0.458*	0.152	0.244†	0.127	0.064	0.117	0.425*	0.153	0.252†	0.130	0.006	0.121
Rural(vs Urban)	0.627*	0.167	0.473*	0.111	0.362*	0.102	0.609*	0.166	0.466*	0.111	0.347*	0.102
Region(Central vs North)	-0.097	0.138	0.341*	0.116	0.005	0.105	-0.028	0.142	0.386*	0.117	0.073	0.108
Region(South vs North)	-0.038	0.149	0.471*	0.119	0.507*	0.111	0.037	0.156	0.511*	0.124	0.605*	0.115
Intercept	5.868	1.092	-4.255	0.830	2.021	0.793	6.131	1.103	-4.050	0.834	2.240	0.797
(N =4062)	Log-likelihood= -30183.129, $\chi^2 = 937.785$											
*Exponentiated coefficients; † p<.10, ** p<.05, * p<.01; Base Category: School												
Log-likelihood=-30071.356, $\chi^2 = 981.28$												

**Table 4: Time Allocation of Girls\***

	Basic Model				Full Model							
	Non Household Employment		Household Employment		Domestic Work		Non Household Employment		Household Employment		Domestic Work	
	Coeff.	Std.Err.	Coeff.	Std.Err.	Coeff.	Std.Err.	Coeff.	Std.Err.	Coeff.	Std.Err.	Coeff.	Std.Err.
Age	-1.431*	0.212	0.265†	0.146	-1.363*	0.173	-1.437*	0.212	0.269†	0.147	-1.370*	0.174
Age^2	0.062*	0.010	-0.002	0.007	0.067*	0.008	0.063*	0.010	-0.003	0.007	0.068*	0.008
Father's age	-0.003	0.007	0.002	0.006	0.004	0.006	-0.003	0.007	0.002	0.006	0.004	0.006
Mother's age	-0.011	0.009	-0.003	0.007	0.018**	0.007	-0.010	0.009	-0.003	0.007	-	0.007
Father Schooling (Yrs.)	-0.074*	0.019	-0.009	0.014	-0.112*	0.018	-0.073*	0.019	-0.007	0.014	-0.107*	0.018
Mother Schooling (Yrs.)	-0.024	0.023	-0.026†	0.015	-0.095*	0.023	-0.023	0.023	-0.026†	0.015	-0.096*	0.023
Mother's EPI	-0.194	0.285	0.646*	0.211	0.613**	0.249	-0.247	0.283	0.637*	0.212	0.588**	0.248
Children (Age 0-2)	0.041	0.072	-0.047	0.064	-0.030	0.072	0.047	0.072	-0.045	0.064	-0.032	0.071
Children (Age 3-6)	0.000	0.057	0.120**	0.049	0.071	0.057	-0.006	0.057	0.117**	0.048	0.070	0.056
Sisters (Age 7-14)	0.065	0.068	0.009	0.045	-0.002	0.057	0.057	0.067	0.007	0.045	-0.007	0.056
Brothers (Age 7-14)	0.220*	0.057	0.115**	0.046	0.060	0.058	0.230*	0.057	0.116**	0.046	0.069	0.058
Irrigated. Rice(=1)	0.214	0.184	0.504*	0.121	-0.104	0.125	0.216	0.181	0.500*	0.122	-0.081	0.126
Number Cattle	-0.013	0.013	0.019**	0.009	-0.009	0.010	-0.012	0.013	0.017†	0.010	-0.004	0.010
Water in dwelling(=1)	-0.296**	0.144	-0.324*	0.103	-	0.141	-0.270†	0.146	-0.318*	0.103	-	0.141
Land (in acr.)	0.025	0.044	-0.005	0.030	-0.003	0.040	0.028	0.044	-0.007	0.031	0.004	0.040
Gini (Land)	-0.671	0.612	1.343*	0.456	-0.860	0.536	-0.652	0.620	1.360*	0.457	-0.792	0.538
Months Rice Short.	0.117*	0.040	0.076**	0.030	0.171*	0.039	0.109**	0.040	0.075**	0.030	0.162*	0.039
Wealth Index 2 <sup>nd</sup> Q												
Wealth Index 3 <sup>rd</sup> Q							-0.279†	0.148	0.062	0.128	-	0.135
Wealth Index 4 <sup>th</sup> Q							-0.194	0.157	-0.042	0.131	-	0.137
Wealth Index 5 <sup>th</sup> Q							-	0.409**	-0.158	0.133	-0.402*	0.148
Ethnicity(=Phoutai)	-0.043	0.182	-0.091	0.155	0.032	0.194	-0.090	0.183	-0.096	0.156	-0.013	0.196

Ethnicity(=Kammu)	0.218	0.176	-0.098	0.150	0.145	0.159	0.126	0.180	-0.100	0.154	0.043	0.162
Ethnicity(=Hmong)	0.106	0.226	0.306†	0.169	0.069	0.197	0.012	0.229	0.260	0.172	-0.031	0.200
Ethnicity(=Leu)	-0.307	0.297	0.223	0.219	0.203	0.249	-0.295	0.293	0.228	0.218	0.202	0.248
Ethnicity(=Katang)	0.686†	0.385	0.101	0.246	0.881*	0.241	0.619	0.395	0.122	0.250	0.829*	0.247
Ethnicity(=Others)	0.438*	0.148	-0.036	0.115	0.105	0.136	0.355**	0.149	-0.047	0.118	0.027	0.139
Rural(vs Urban)	0.476*	0.139	0.278*	0.104	0.676*	0.140	0.460*	0.139	0.272*	0.104	0.660*	0.140
Region(Central vs North)	0.195	0.131	0.433*	0.112	-0.086	0.129	0.266**	0.135	0.441*	0.113	-0.021	0.130
Region(South vs North)	0.057	0.141	0.614*	0.117	0.329**	0.130	0.170	0.148	0.630*	0.120	0.427*	0.132
Intercept	6.427	1.160	-4.393	0.825	5.308	0.939	6.643	1.159	-4.384	0.828	5.515	0.938
(N = 3949)	Log-likelihood = -4335.863, $\chi^2 = 879.40$											
*Exponentiated coefficients; † p<.10, ** p<.05, * p<.01; Base Category: School												
Log-likelihood=-4314.650, $\chi^2 = 933.08$												

The proxy variable for household income, wealth quintile placement, is included to the model in the second panel. This strategy helps to identify the robustness of the association between children's work-school outcomes and the household's financial resources, independent of parental education. A comparison of the Basic and Full Model panels in Tables 3 and 4 indicates that these estimates reflect the value of schooling for parents. As a consequence, I will discuss only the results in the Full Model panel.

A one year increase in the father's and mother's schooling is likely to send a representative boy to school and prevent him from being employed by a third party or from engaging in domestic work, but parental education does not influence household controlled market work. Similarly, a year increase in the father's schooling shifts the time allocation of a representative girl to school from domestic work and employment for third parties. Unlike the case for boys, maternal education is not statistically significant, shifting time between working for a third parties and school.

A comparison of the statistical influence of household wealth shows that the wealth of the household has more influence on boys' time allocation than for girls. Compared to households in the lowest quintile, the sons of the better-off households are less likely to be working. This does not hold for girls: the time allocation of daughters between school and work under parental control does not change according to the level of household welfare, suggesting that even better-off households prefer to rely on the daughters' work efforts while leaving the sons at school.

As children age, they are more likely to be drawn into work for their own households. The sibling effect seems to depend on the age cohort and sex of the sibling. While an additional sibling between 0 to 2 years of age does not appear to influence the time allocation of the girls in the sample, the representative boy's time shifts away from school to work under third party, perhaps indicative of the economic pressure of a new addition to the family. An additional sibling 3 to 6 years of age increases the likelihood that the reference child's time will shift to work under household control. An additional sister or brother in 7 and 14 age cohort increases the likelihood of the reference boy switching to non-household work. Girls, on the other hand, are more likely to shift their time away from school for both non-household and household controlled work. The ages of the father or mother are not statistically significant in explaining the time allocation of children.

The cultivation of irrigated rice increases the likelihood of parent controlled work for boys but, compared to the case for girls, this relationship is statistically weak. An increase in livestock increases the likelihood that the representative boy will work under household control. For girls, this relationship is not as statistically strong as is the case for boys after controlling for household wealth. A gender-based comparison of the results suggests that gender-based work expectations play an important role in the time use of children. The presence of piped water in the dwelling shifts the time of both boys and girls to school from work. This association between having water in the dwelling and children's time use points to the potential for increased infrastructure investment in Lao PDR to increase children's schooling.

The crux of the analysis is the association between the mother's share in household income, measured by EPI, and the time allocation of her children. The coefficients suggest that increases in a mother's EPI shift the representative boy's time to domestic work, although this association is statistically weak. For the representative girl, an increase in mother's EPI shifts her time away from school to work under parental control. The results suggest that in Lao PDR, while boys substitute for their mothers in domestic work, girls are expected to work along with their mothers in market and non-market settings. The evidence shows that an increase in the mother's share in household finances pulls her children to work, away from school. Note that a mother's higher EPI is associated with the time allocation of her children

in the opposite direction of her level of schooling. Better educated mothers may assign greater value to schooling, yet holding the level of schooling constant, mothers who contribute substantially to household income may opt to educate their children less.

Average months of rice shortage, a proxy variable for poverty at the community level causes both boys and girls to withdraw from schooling. Schooling of girls seems to be more resilient to land inequality, which increases only the likelihood of work under parental control. For boys, community level land inequality shifts time away from school to any kind of work. The results are indicative that the time allocation of boys between school and work activities is more sensitive to inequality and poverty in the community than is the case for girls.

The ethnic diversity in Lao PDR is a factor that should be accounted for in interpreting the variations in economic activity and social conditions (Petit, 2008). The survey data include an abbreviated list of ethnic groups, and the results indicate that compared to the base ethnic category, Lao, differences in boys' time use is more responsive to ethnic differences than is the case for girls. Ethnic Kammu, Hmong and Katang boys are less likely to attend school and more likely to work under third party control, compared to Lao boys. The results are less ethnically sensitive for girls: compared to Lao and other ethnic groups, only ethnic Katang girls are more likely to perform non-market work. That children's time use is not independent of their environment is supported here: children living in the Central and South regions with are more likely to work under parental control, compared to children in the North regions.

## **Conclusion**

Studies of child labor have tended to focus almost exclusively on household income and opportunity constraints. Previous studies have highlighted household income and demographics, parental background, and distance to school among those factors hampering children's schooling in developing countries. The main insight offered by this paper is that children and their families do not act in isolation while trying to survive in the complex web of relationships between market and non-market settings. The findings indicate that, in the Lao context, increases in a mother's contribution to household earnings compared to that of other household members, may shift her children's time away from school to primarily work under household control, after taking into account household and community level factors. While boys are expected to be substitutes for their mothers by increasing the time they allocate to domestic chores, the girls are expected to work alongside their mothers in both market and non-market settings.

The data limitations do not allow us to elicit causal connections. We cannot determine whether mothers contribute more to household resources because their children are available as substitutes, nor it children are pulled into work because their mothers find them work opportunities? Future studies fully controlled for household income and community level factors may help us to better understand the direction of causality between the earning power of a mother and her children's school-work outcomes. These caveats aside, it is still possible to propose policy interventions. The findings demonstrate that a mother's needs and interests in the short-term may not always align with her children's long-term interests, and work may become contested terrain between mothers and children. In the absence of adequate social and economic support systems and infrastructure, in addition to structural constraints such as inequality and poverty in rural and poor communities, it is unreasonable to expect that mothers who are encouraged to participate in contributing to household resources will always have the capacity to decide in favor of the long-term interest of their children.

## Technical Appendix

### A1. Earning Power Index

The Earning Power Index assigns weights to the contribution of mother to the household main and secondary sources of income compared with the contribution of the other household members. If a mother did not contribute at all, the index is assigned the value 0, if mother contributed to household income along with father and children, the index is assigned 0.3, and lastly if mother and father are reported as the only sources of income, the EPI is assigned by 0.5. In cases where the mother is the sole provider of household income, the index has a value of 1. I subsequently normalized the index for main and secondary sources of income to 0-1 interval, with “no contribution” at 0 and “only source of income” at 1.

$$EPI = \frac{X_i - X_{min}}{X_{max} - X_{min}} \text{ where } X_i = \frac{M_s}{(M_s + F_s + C_s)} = \frac{M_s}{1}$$

with  $M_s = [0, 0.3, 0.5, 1]$  and  $i = 1, 2$  representing main and secondary sources of income.

### A2. Empirical Model

For MNP, a multivariate normal distribution on the latent variable,  $y_{ij}^*$ , is assumed, such that  $y_{ij}^* = x_i' \beta_j + \epsilon_{ij}$

The error term,  $\epsilon_i$ , follows a multinomial normal distribution,  $\epsilon \sim MND(0, \Omega)$  and is correlated across outcomes. Outcome  $j$  is chosen if  $y_{ij}^*$  is the highest for  $j$ , i.e.,

$$y_i = j \text{ if } y_{ij}^* = \begin{cases} j \text{ if } y_{ij}^* = \max(y_{i1}^*, y_{i2}^*, \dots, y_{iM}^*) \\ 0 \text{ otherwise} \end{cases}$$

The probability to choose outcome  $j$  can then be rewritten as

$$p(y_i = j | x_i) = p(y_{ij}^* > y_{i1}^*, \dots, y_{ij}^* > y_{i(j-1)}^*, y_{ij}^* > y_{i(j+1)}^*, \dots, y_{ij}^* > y_{iM}^*)$$

Since the probabilities are expressed in differences, the model requires a base category to be assigned. In the empirical model, “school attendance” is the base category and  $j$  represents “non household employment”, i.e., third party controlled market work, “household employment”, i.e., market-valued work performed under parental control and “domestic work”, parent controlled, non-market work.

The reduced form of the model has then the following form:

$$p(y_i = j | X) = \varphi(\beta_0 + \beta_1 \mathbf{T}_m + \beta_2 \mathbf{X}_c + \beta_3 \mathbf{X}_p + \beta_4 \mathbf{X}_h + \beta_5 \mathbf{X}_e)$$

where  $j = 1, 2, 3, 4$  corresponds to school (base category), market work for a non-household party, market work under household control and domestic work at home, conditioned on the independent variables. The function  $\varphi(\cdot)$  is the MNP link function. The indicator  $\mathbf{T}_m$  represents the main variable of interest, the mother’s EPI, the vector  $\mathbf{X}_c$  includes the child’s characteristics, the vector  $\mathbf{X}_p$  incorporates the parental characteristics,  $\mathbf{X}_h$  and  $\mathbf{X}_e$  capture household and community characteristics, respectively.

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