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Testing the "Wealth Paradox" on the Incidence of Child Labor: A Case Study in Cambodia

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1. Introduction

Child labor has obtained increasing interest as a research subject since the mid-1990s. One of the factors for this is the growing concern over reducing poverty among those who are the most vulnerable to exogenous shock, particularly working children. Another factor is the recognition of the importance of human capital accumulation as a source of development, and the incidence child labor as a major impediment to economic development.

In their seminal paper, Basu and Van [1998] proposed the "Luxury Axiom," which states that poverty is the fundamental determinant of child labor, and a number of subsequent studies support this hypothesis (Basu and Tzannatos [2003]).

On the other hand, there is a study that failed to uncover a positive relationship between poverty and child labor (Nielsen [1998] in Zambia, Ray [2000] in Pakistan).

Other counter examples are proposed by Bhalotra and Heady [2003], Canagarajah and Coulombe [1997], Edmonds and Turk [2002], and Kanbargi and Kulkarni [1991].

Using data from Pakistan and Ghana, the study by Bhalotra and Heady [2003] on the "Wealth Paradox" found that greater poverty does not lead to greater child labor. They proposed an interesting analysis of the Wealth Paradox as the mere effects of farm size on child labor. The hypothesis was based on their remarkable observation that children from land rich households are more often found in work than children from land poor households. We term this phenomenon the Wealth Paradox. Its basic theoretical model is derived from the example of a peasant household in an economy with imperfect markets for labor, land, and credit, which allows two periods to capture the impact of child work in period 1 on productivity in period 2. This model simply signifies that the ownership of productive assets, especially land, can affect child labor in various ways: (i) the effect arrives through both the gain in work experience and the possible decrease in educational attainment because this can have negative wealth effects, with large land holdings generating a higher income, making it easier for households to forgo the income that child labor yields, and (ii) the capital market imperfection that results in lower interest rates for households, which can offer land as collateral and reinforce the wealth effect, allowing large landowners to borrow more to meet insurance needs or finance their children's education.

On the contrary, Basu et al. [2007] argue that the missing ingredient is an explicit modeling of the labor market and develop a model that suggests an inverted-U relationship between land holdings and child labor. Moreover, they find empirical evidence to support the hypothesis derived from the theoretical model.

Edmonds and Turk [2002], and Canarajah and Coulombe [1997] found that households that started their own business were more likely to send their children to work in Vietnam and Ghana, respectively.

Although this does not mean that poverty is not a determinant of child labor, it suggests that the households with their own businesses have a greater opportunity to use child labor, like a farm household with large land.

Kanbargi and Kulkarni [1991] found that in India, raising a larger number of cattle caused a higher incidence of child labor. The World Bank [2005] employed the Cambodia Child Labor Survey 2001 and did not show significant negative or positive relationships between child labor and wealth (Appendix L, M, and N).

This paper examines whether or not the Wealth Paradox coincides with the evidence in rural Cambodia. Therefore, it is worth exploring the hypothesis that greater wealth leads to child labor in the context of Cambodia.

Rural Cambodia is characterized by poverty and a high incidence of child labor. In addition, the major assets of farm households in the rice growing area are land or livestock; therefore, it is from these that we can obtain more reliable information than any other asset. Therefore, rural Cambodia, particularly its rice growing area, is suitable for conducting a case study to test the Wealth Paradox, or the abovementioned hypothesis.

In Cambodia, many households used to live below the poverty line[1]. Although there has been a significant 12 percentage point decrease in poverty over the last decade, the number of poor people has not dropped in real term because population growth has enabled an increase in the actual number of poor people[2]. In particular, the poverty incidence in rural areas is still high: 38 percent in terms of a head count ratio using the ordinary poverty line.

The results of the Cambodia Child Labour Survey 2001/2002 (CCLS, 2001/2002) estimated that there were approximately 1.5 million children aged 5–14 who could be considered "working children," which is approximately 44.8 percent of the children in this age group. This ratio is considerably high as compared to other developing countries. Moreover, approximately 84.4 percent of the working children are found in rural areas where the households depend mainly on rice farming.

We have observed that most people living in rural Cambodia consider their livestock as wealth, since for most rural farmers who possess only a small size of farmland—0.35 hectares on average—self-sufficiency in rice production is not possible (APDA, 2007); therefore, rural farmers tend to accumulate their savings in the form of livestock, particularly cattle. While raising cattle plays an important role in

[1] The Cambodia Socio-Economic Survey 1993/94 (CSES, 1993/94) highlighted a high incidence of poverty at 39 percent of the total population. The latest CSES-2003/04 shows that the poverty rate has dropped to 35 percent.

[2] Based on the author's calculation using independent data from CSES1993 and CSES2004, the poor population has increased from 4,157,192 in 1993 to 4,703,697 in 2004, while the poverty ratio fell from 39 percent in 1993 to 35 percent in 2004.(Nitional Institute of Statistics, Cambodia Inter-censal Population Survey, 2004)

coping with external shocks, it requires a great deal of family labor time, and children are considered to be best suited for this type of work.

Therefore, in this paper, we consider not only land but also cattle as important sources of wealth for rural households.

This paper is organized as follows. Section 2 describes the land and labor markets and characteristics of our study area's sample households. Then, we employ the IV Tobit model to test the hypothesis using the household data we collected in four villages located in rain fed rice growing areas. We present empirical evidence in Section 3 and the final section concludes the paper.

2. Characteristics of Markets and Households in the Study Area

In an attempt to assess the socioeconomy of rural Cambodia, we conducted a field survey, which was financially supported by JSPS and GSICS, Kobe University, in four villages in Kampong Spueu and Takeo Provinces. These four villages were randomly selected among those targeted by the Rural Development and Resettlement Project (RDRP), which was jointly implemented by JICA and the Cambodian Government. One of the reasons for which the project area selection included the two provinces of Kompong Speu and Takeo was the relatively short distance—50 to 100 km—and easy access to the project area, which could be reached by car within 1–2 hours by traveling on National roads Nos. 3 and 4 (RDP, 2004).

The survey was conducted in September 2006 during a lean farming season. We employed a random sampling method to select the sample from the village household list. The total sample size is 168 households, consisting of 46 households in Kan Damra (KM), 41 in Prey Changva (PC), 45 in Kol Korm (KK), and 36 in Trapeang Kroloung (TK). Prior to conducting the village survey, informal discussions were held with staff from the Ministry of Rural Development and UNDP and the four village chiefs. The research also employed semi-structured interviews consisting of qualitative and quantitative questions to obtain background information and the specific characteristics of the households at the individual level. This constitutes the primary field survey data[3] on a socioeconomic household comprising several modules such as the farming system, household consumption, migrations, agricultural child labor, child health, and social capital. There were a total of 214 children aged 5–14 years in the 168 households that were interviewed, which breaks down to 107 females and 107 males.

The backgrounds of the children in our study indicate that the majority of them neither apply pesticides nor operate machinery. Out of the total number of children in our sample, 99 are non-working and 115 are working. The study adopts the definition of a working child outlined in ILO's convention No.

[3] The field survey was conducted from September 15 to October 4, 2006, under the financial support of the project of the New Initiative toward Global Academic Collaboration, Graduate School of International Cooperation Studies, Kobe University. The survey team consisted of several doctoral students including the author of this paper.

138. In this context, any child involved in agricultural activities for even 1 hour in a 7 day period is regarded as a working child.

The four villages are located in the rain fed rice growing area where the paddy is the main crop and vegetable growing provides a supplementary income source. The average yields are low (1.5t/ha ~ 2.5 t/ha) and unstable under rain fed conditions. Only village KK is partially irrigated.

The farmers plant paddies in the rainy season, and some farmers plant vegetables in the early dry season. As mentioned above, productivity is low and production is unstable. In addition, the farms are small, and family labor is relatively abundant (see Table 1).

Table 1. Basic Characteristics of the Villages Surveyed

	Kampong Speu Province		Takeo Province	
Villages	KM	PC	KK	TK
Characteristics				
Number of Households in the Sample	46	41	45	36
Farming Households (%)	95.6	95.1	95.5	88.8
Arable Land (m^2)	11,049	6,111	7,160	5,508
Irrigated Land (%)	n.a	n.a	30	n.a
Household Member (person)	4.50	4.85	4.62	5.28
Household Income (Riels/year)	2,646,799	2,177,413	3,116,004	3,304,018
Agricultural Income (Riels/year)	967,365	760,108	1,636,040	759,952
Non-agricultural Income (Riels/year)	950,456.5	875,019	979,009	1,996,209
Remittance & Others (Riels/year)	728,978	542,286	500,956	547,758
Per Capita Income (Riels/year)	588,178	448,951	674,460	625,761
Households below the Poverty Line (%)	63.04	80.49	57.78	61.11
Household Owned Cattle (head), Including Calves	2.26	2.05	3.22	1.75
Family Labor (person)	2.98	2.68	2.64	2.89
Yield of Paddy (ton/ha)	1.97	2.69	2.34	2.14

Source: Rural Household Survey 2006

Therefore, farmers do not use capital intensive technology like tractors and threshing machines; rather, they use labor intensive technology, such as cattle for cultivation and hand-operated threshers for threshing.

The farmers are raising more or less two heads of cattle for cultivation and saving.

Agricultural productivity is low and the local job opportunities are limited. Therefore, more than half of the households are living below the poverty line.

The socioeconomies of KM, KK and TK villages are better off compared to PC village. Approximately 30 percent of the arable land in KK village is irrigated from the reservoir, which has the capacity to provide water to farmers to produce the main crop for both seasons; thus, this is the area where

vegetables and fruits are largely grown. KM village is observed to have a superior land quality and larger farm size as compared to the other surveyed areas.

Basu et al. postulate that under some assumptions, if the labor market is perfect, child labor falls as the amount of owned land area rises, while if the labor market is imperfect in the sense that owner operators cannot find hired labor, the inverted-U relationship between child labor and owned land area emerges. Therefore, labor market imperfection is a major cause of the incidence of child labor. However, according to our interviews with farmers, they can easily find hired laborers at market wages, though a number of farmers use exchange labor instead of hired labor because the latter is costlier. This implies that the labor market is not imperfect in the sense of Basu et al.

Bhalotra and Heady derive the implication that credit and land and labor market imperfection play an important role in the incidence of child labor from the theoretical model, and explore this role in determining the level of child labor used.

They argue that the impact of land size on child labor depends on the dominant market imperfection, though land size has a negative impact on child labor through an increase in the consumption level (income effect on child schooling), whether the markets are perfect or imperfect. If both the land and labor markets are imperfect, households with agricultural land will have incentive to use child labor because they will not find hired labor and borrowers for their land. If the other conditions are equal, as the land size is larger, this incentive is stronger such that the land size has a positive impact on the incidence of child labor. In addition, if the credit market is imperfect, land has a collateral effect and the credit constraints are weaker. If so, the households that hold a larger land size can more easily obtain consumption credit. Hence, ceteris paribus, if the credit market is imperfect, land size has a negative effect on child labor through an increase of consumption (income effect of child schooling).

Therefore, if the positive effects caused by land and labor market imperfections dominate negative income effects, land size has a positive effect on child labor; however, if the latter dominates the former, land size has a negative effect on child labor. Moreover, if the positive and negative effects of land size offset one another, the total effect is zero.

In our study area, the credit market is considered not to be perfectly competitive because formal or informal credit arrangements are devised to cope with the problems caused by uncertain agricultural production, information asymmetry between a lender and borrower, and moral hazard. These arrangements include micro-credit with collateral, group lending, quasi-credit, or gift exchange between relatives or friends (Table 2, Panel A). If the credit market is perfectly competitive and smoothly functioning, such arrangements need not appear.

Table 2. Credit, Land, and Labor Markets in the Study Area

Panel A. Credit Market: Source of loan and interest rate

Village	KM		KK		PC		TK	
Source of Loan	Interest Rate (%)	No. of Contracts	Interest Rate (%)	No. of Contracts	Interest Rate (%)	No. of Contracts	Interest Rate (%)	No. of Contract
Micro Finance								
with Collateral	3%/m*	28	3~4%/m	19	3%/m	4	3%/m	12
Without Collateral		0		0	10%/y	3		0
Group Lending		0		0		0	1.6%/m	5
Relatives, Friends, and Neighbors	0	11	0	15	0	22	0	4
							3.5%/m	3
							2.5%/m	1
Others								
Trader	35%/y*	1	6.25%/m	1				
			6.7%/cs*	1				
Money Lender					10%	1		
					5%/m	5		
Government					10%/m	1		
					3.5%/m	1	3%/m	1
Total Number		40		36		37		26

Panel B. Land Tenancy Market

Village	KM	KK	PC	TK
Type of Contract	Land Rent	No. of Contracts		
Share Tenancy	50%–50%	1	4	0	1
	60%–40%	1	0	0	0
Land Pawning		0	0	1	0
Leasehold		0	0	0	0

Panel C. Labor Market: Hired labor and exchange labor

Village	KM	KK	PC	TK	Total
	No. of Households				
Hired Labor	12	9	15	1	37
Exchange Labor	25	12	9	20	66

Source: Rural Household Survey 2006

* m means month, y means year, and cs means crop season

The labor market in our study area is also considered to differ from a perfectly competitive market. The farmers in the study area tend to use exchange labor rather than hired labor, as shown in Table 2, Panel B, although they can easily find hired laborers. This is because the market wage rates are higher than the cost of exchange labor, which must be equivalent to the cost of family labor exchanged for exchange labor[4]. This fact implies that the market wage is higher than the imputed cost of family labor and suggests that a labor surplus exists in our study area.

[4] From our interview with farmers.

In the study area, the land tenancy market is characterized by the predominance of the share tenancy contract. Moreover, there are only a few tenancy transactions (Table 2, Panel C). The fact that share tenancy is the predominant form of land tenancy, and the personal relation between a landowner and tenant is an important determinant of the contract form, suggests that the land tenancy market is considered to be imperfect. If the land tenancy market is perfect, the share tenancy contract is not chosen by a land owner and tenant and a contract need not be made between relatives (Otsuka, Chuma, and Hayami [1992], Sadoulet, Fukui, and de Janvry [1997]).

All of these facts imply that the assumptions of market imperfections in our study area are realistic.

Table 3 presents the characteristics of child labor in the sample households. The children are involved in various tasks in economic activities such as rice farming and cattle raising, as well as in domestic affairs.

The figure shows that the frequency of working for female child, 64 percent is higher than that of male child,51 percent. This is because female children are more frequently engaged in helping parents with home affairs and taking care of younger children.

Table 3. Child Labor, Age, Land Size, and Gender in the Study Villages

Villages	KM	KK	PC	TK
Number of Children, 5–15 years old	41	66	64	58
Age of Working for the First Time	10	9.75	9.3	8.6
Working Hours in the Past 7 Days				
Average	13	10	6.4	7.3
Age				
Younger than 10 Years Old	2.8	0.6	0	1.2
10 and Older	18.5	17.2	5.7	10.3
Land Size				
< 7000 m^2	19	13.6	8	16.6
7000 m^2 □	21.5	16	9	3.7
Gender				
Male Children	15.7	10	5.8	6.8
Female Children	9.5	10.6	7.1	8.3
Working Hours in the Agricultural Peak Season				
Average*	3.2	2.4	2.5	2.7
Age*				
Younger than 10 Years Old	0.6	0	0.5	0.3
10 and Older	4.8	3.8	3.1	4
Land Size**				
Less than 7000 m^2	139.5	122	176.5	133
7000 m^2 or more	118	167	125	61

Source: Rural Household Survey 2006

* Working hours in the agricultural peak season per day

** Working hours in the agricultural season per year

The average working hours are approximately 8 per week for males and 9.3 per week for females. Thus, the working hours of female children are greater than those of male children.

We cannot find a significantly positive or negative relationship between land size and child labor hours in the busy farming season; however, we can observe a positive relation between the number of cattle and child labor hours in the previous week before the time when the interview was conducted, during a lean farming season.

Working hours depend on a child's age. Table 3 indicates that the working hours of children below 10 years of age are much shorter than those of children over 10. This suggests that the labor of younger children is less substitutable with adult labor in a farming operation.

3. Testing the Wealth Paradox Hypothesis

1) Analytical Framework of the Incidence of Child Labor

To lay out the basic theoretical framework of the incidence of child labor, we invoke the model of Bhalotra and Heady because the assumptions about the land, labor, and credit markets and imperfect substitutability of child and adult labor in their model are relevant to our study area, as demonstrated in the previous section.

Bhalotra and Heady design a model of the peasant household in an economy with missing markets for labor, land, and credit. Allowing two periods enables us to capture the impact of child work in period 1 on productivity in period 2. This effect arises through both the gain in work experience and possible lowering of educational attainment. The model specifies the effects of farm size on child labor, which, in addition to a wealth effect, includes substitution effects arising from market imperfections.

However, our analytical framework differs on the following points.

The labor market in our study area differs from the assumption of Bhalotra and Heady on the point that the labor market is assumed to be imperfect because farmers use exchange labor rather than hired labor, though they can hire wage laborers.

Moreover, the land tenancy market is also assumed to be imperfect because the share tenancy contract is the predominant form of the land tenancy contract, and in all cases, the contract is made between relatives.

In Bhalotra and Heady's model, the child labor demand function in period 1 derived from the theoretical model can be expressed as the following function of exogenous variables:

$$H_C = h(A_0, K_0, w_{h1}, w_{h2}, r_1, r_2; Z, e) \qquad \text{Eq (1)}$$

where H_C is child labor, A_0 is the farming asset such as owned land and livestock, K_0 is the initial non-farm asset, w_{hi} is the wage rate of hired labor in period i, r_i is the sharing rate in the tenancy contract in period i, Z refers to exogenous household characteristics, and e refers to unobservable characteristics and optimization errors. Following the first order conditions, the demand for current consumption X_1 can be expressed as a function of K_0, A_0, and the input prices. If this demand function is inverted, we can write K_0

as a function X_1. Since the data of K_0 is not easily obtained, we substitute K_0 for X_1 in equation 1 to obtain the following:

$$H_C = h(A_0, X_1, w_{h1}, w_{h2}, r_1, r_2; Z, e) \qquad \text{Eq (2)}$$

Since only a few cases of land tenancy can be observed in our surveyed villages, and the labor market is not perfectly competitive so that adult family labor supply, regardless of whether it is on-farm or off-farm, is not influenced by the market wage due to labor market rationing, as mentioned in Section 2, we omit the variables of land rent and wages from hired labor to obtain the following:

$$H_c = h(A_0, X_1; Z, e) \qquad \text{Eq (3)}$$

We estimate this equation, which includes two key explanatory variables: A_0 (owned land or cattle) and X_1 (consumption), which represents initial wealth A_0 is expected to have a positive effect on child labor through the demand for child labor under the assumption of market imperfections, or a negative effect through the income effect on child schooling, and X_1 is expected to have a negative income effect on child labor.

2) Empirical Model

Due to the limit of the data, we conduct an analysis on the basis of cross-section data.

The dependent variable is hours of child work on the family farm. As there is considerable variation in hours, this measure is preferable to the participation measure used in most of the previous research. Since many children do not participate in farm work, the Tobit estimator is used. This model is an extent modification of Bhalotra and Heady, which focuses on land and liquid assets to examine the Wealth Paradox. In the study area, cattle raising is also a crucial source of income as well as a safety asset. Children contribute to cattle raising by taking the cattle to grasslands and bathing them. Therefore, we regard livestock as another important asset.

The land size (Al), is defined as the area of farm land owned by the household. A quadratic term is included to allow the land size to capture the dominant effect, whether positive or negative.

Livestock (Ac) is defined as the number of cattle owned by a household. We also examine the positive or negative effect of cattle on child labor in the same way as land size.

If decisions about consumption (X_1) and labor supply (for example, H_c) are made simultaneously, X_1 is endogenous in the equation for H_c. Moreover, child labor contributes to the availability of resources for consumption. Therefore, we must examine the endogeneity of this variable. In addition, we use income as a proxy of consumption, because the exact consumption data is not available. This procedure can be justified in the case of poor households because most of the income is spent for consumption.

Similar to Bhalotra and Heady, we test the exogeneity of X_1 using the generalized residual procedure to take account of this problem by using the methodology shown in Smith and Blundel[1986]. It is difficult to find a valid instrument for income in a model of (child) labor supply. In this paper, we use education or occupation as instruments, which are commonly used for income in the wider literature.

As theory and our field observation suggest, family characteristics such as the parents' level of education, family size, family labor endowment, age of the head of household; children's characteristics such as age and gender; village characteristics such as agroecological conditions; and other village specific conditions can affect the incentive to put a child to work. We use the proxy variables for these factors as explanatory variables (for a detailed definition, see Table 4).

Table 4. Descriptive Statistics

Variable	Definition	Mean	Std. Dev.
Hours (Past 7 Days)	Hours Worked in the Past 7 Says	8.952	13.107
Age of the Child	Age of the Child (Year)	10.335	2.636
Age of the Child^2	Age of the Child Squared	113.726	53.371
Female Child	= 1 if Female Child, = 0 otherwise	0.503	0.501
Fitted Income□	Fitted Income (Riels)	2647374	1252025
Farmland (m^2)	Farmland Size (m^2)	7062.292	4855.594
Farmland (m^2)^2	Farmland Size Squared	7.33e+07	1.05e+08
Family Size	Family Size (Person)	5.289	1.401
Nb. of labor	Number of family laborer	2.416	0.9686
Age of HH	Age of HH (Year)	41.741	10.212
Female HH	=1 if There is a Female HH	1.234	1.728
Father's Education	Father's Education (Year)	4.959	3.042
Mother's Education	Mother's Education (Year)	4.269	2.606
Mature Cattle	Number of Cattle (Head)	0.746	0.843
Mature Cattle^2	Number of Cattle Squared	1.264	2.481
PC Village Dummy	= 1 if PC Village	0.294	0.457
KM Village Dummy	= 1 if KM Village	0.183	–0.387
KK Village Dummy	= 1 if KK Village	0.299	0.459

The total sample size is 197. It is noted that the full sample size is 214; however, the combined data hired labor leads to a decision to omit some observations due to a lack of complete information.

Source: Rural Household Survey 2006

Note: □Fitted income is the estimated income based on the regression of income on a set of exogenous regressors such as agricultural assets, house price, non-agricultural income, PC, KM, KK villages, and exogenous variables in the structural equation.

3) Results of the Empirical Estimate

Table 5 proffers the results of the Tobit estimation, since the hours that agricultural children worked are censored at zero hours. The result of our estimation is interesting in the sense that it demonstrates the validity of the Wealth Paradox hypothesis; however, only in terms of the number of cattle in each household. As a matter of reality, Cambodia is like many countries in Asia and Africa where children engage in household work for various reasons depending on the season; however, cattle raising is considered to be one of the Wealth Paradox activities whereby farmers intensively employ their own

children since most families consider it as adult labor saving. Therefore, Cambodia is a special case, taking into account the number of cattle in the family to test child labor in the Wealth Paradox. We also run the Tobit regression of the hours children worked conditional on child schooling; however, it is confirmed from our regression that our data do not have such conditioning. Thus, the whole regression could be run by Tobit alone or OLS. We also know that the shape of our data is fitted with Tobit because many children have work hours censored at zero. We prefer to interpret the results for the following.

Number of Cattle

The coefficients for the number of cattle and its square are statistically significant and show the inverted-U relationship between child labor and cattle holding. This relationship indicates that a child will be required to work more as the number of cattle increase up to 3. Therefore, the Wealth Paradox holds for a certain range of cattle holding in the context of rural Cambodia.

Land and Land Size

The coefficient for farmland size and its square are not statistically significant. This implies that the Wealth Paradox is not associated with farmland size in the context of rural Cambodia. This phenomenon may be explained by the fact that farmland size in Cambodia is equally small and distributed.

Other Wealth

Testing the exogeneity of income as a proxy variable of other wealth rejects the null hypothesis. Therefore, we employ instrumental variables to estimate the fitted income. The estimated parameter of fitted income is not statistically significant. This finding suggests that household assets other than the farm asset do not affect child labor.

Other Variables

The coefficient for the age of children and its square are both statistically significant, though they have opposite signs. This implies that children in Cambodia tend to work as child laborers when they are young, and after a certain age, are relocated to another activity, which is not a form of child labor. The parents' education level, family size, and number of adult laborers are not statistically significant. These factors basically signify that all these variables have yet to play a direct role in the determinants of child labor in the rural Cambodian context. In addition, we do not have enough evidence to conclude that these variables have an effect on rural child labor. The coefficient for female HH (female household head) is statistically significant, which might imply that a female household head has a higher degree of altruism toward children. Moreover, there are unobserved village fixed effects on child labor, but these only indicate to us that children in KM and KK villages are more likely to be child laborers.

Table 5. Tobit Estimate of Hours of Agricultural Child Labor

Explained Variable	Hours Worked in the Past 7 Days				
Explanatory Variables	Coefficient	Unconditional Expected Value	Conditional on Being Uncensored	Probability Uncensored	P-Value
Age of the Child	11.047	5.369	3.930	0.361	0.020
Age of the Child^2	–0.402	–0.196	–0.143	–0.013	0.069
Female Child	6.396	3.106	2.282	0.207	0.006
Fitted Income□	–1.05e–06	–5.11e–07	–3.74e–07	–3.43e–08	0.397
Farmland (m^2)	–0.001	–0.0003	–0.0002	–0.00002	0.363
Farmland (m^2)^2	–1.57e–09	–7.61e–10	–5.57e–10	–5.11e–11	0.959
Family Size	0.224	0.109	0.080	0.007	0.803
Nb. of Labor	–1.372	–0.667	–0.488	–0.045	0.316
Age of HH	0.060	0.029	0.021	0.002	0.686
Female HH	–2.966	–1.442	–1.055	–0.097	0.025
Father's Education	0.269	0.131	0.096	0.009	0.648
Mother's education	0.326	0.158	0.116	0.011	0.556
Cattle	26.545	12.901	9.445	0.867	0.000
Cattle^2	–4.977	–2.419	–1.771	–0.163	0.000
PC Village	3.414	1.737	1.259	0.111	0.346
KR Village	21.218	14.358	10.616	0.555	0.000
KK Village	0.261	0.127	0.093	0.009	0.041
Constant	–80.938	–39.337	–28.798	–2.644	0.092
Number of Obs. = 197	LR Chi^2(18) = 197.01	Prob > Chi^2 = 0.000			
Log Likelihood = –449.972	Pseudo R2 = 0.180				
Obs. Summary: 88 left-censored observations at Hours 07 </= 0					
109 uncensored observations					

Source: Author's calculation

Note: □ Test of exogeneity: the coefficient of the residual of income in the main equation is statistically significant. Therefore, this estimation has employed the instrumented variables. We also perform the colinearity test. All our regressors are freed from the multicolinearity problem. Therefore, our coefficients are suitable for our interpretation.

4. Conclusion

Using the data we collected in a rice growing area of Cambodia, this paper examined the impact of wealth in the form of land, cattle, and others on child labor. For the purpose of our study, after finding evidence to suggest that the land, labor, and credit markets are not perfectly competitive, we examined the Wealth Paradox by applying an analytical method similar to that of Bhalotra and Heady.

The results of our examination do not show that any significant relation between child labor and land size exists, contrary to Bhalotra and Heady, who found a positive relation. Moreover, we determined that the number of cattle held by farmers has an inverted-U shaped relationship with the incidence of child labor, while Bhalotra and Heady did not examine this relation.

Basu et al. examined this relation and uncovered a positively linear relationship between child labor and the number of cattle. They also found an inverted-U shaped relationship between child labor and land size. The inverted-U relationship does not imply that the Wealth Paradox hypothesis is rejected; rather, it suggests that the hypothesis holds for the range of land size less than the turning point.

Thus, our findings differ from the results of previous studies on the point that land holding does not affect the incidence of child labor; however, cattle holding does positively affect it until the turning point.

In addition, we also determined that the household income or liquid asset do not have any significant impact on child labor. This does not support the hypothesis that child labor is caused by poverty. In fact, in our study area, several poor families send their children to school, and the number of relatively rich families who put their children to work is not negligible.

From the abovementioned arguments, we conclude that we cannot support the Luxury Axiom or Wealth Paradox in terms of land holding, but can support the inverted-U relationship hypothesis in terms of cattle in the context of the poor rice growing area in Cambodia.

The turning point beyond which more cattle lead to a decline in child labor occurs at 2.7 heads of mature cattle, which is far above the average number of cattle holding, 0.75 in our survey area. This indicates that if farmers attempt to increase the number of cattle holding, they must also increase child labor. However, child labor may be harmful to child health and education if labor hours are too numerous. According to the estimation by Han [2007] that uses the same data as those in this paper, if the child labor hours for the 10–12 or 13–14 age groups exceed 17 or 21 hours per week, respectively, the increase of child labor will have a negative effect on child health. If we estimate the child labor hours according to the estimation results shown in Table 5, assuming that the household with a male HH in TK village raises two mature cattle, the predicted hours are 20 hours for a 10-year-old male, and 26 hours for a 12-year-old female, respectively. This estimation implies that the increase in the number of cattle may have a negative impact on child health.

In poor rural Cambodia, farmers experience difficulties with the expansion of land size and finding off-farm job opportunities. Raising livestock is one of the feasible ways by which they can increase their household income and cope with risk. However, as mentioned above, the number of cattle and rate of child health have a trade-off relationship if the working hours exceed the threshold hours. Therefore, in order to enhance household welfare in poor rural Cambodia and promote the human capital formation of children, some policies for the development of the labor and credit markets may be indispensable.

In this paper, we did not investigate the data including the farm households with a much larger land size because we could not conduct a field survey in a wider area to collect such data due to the budget and time constraints. This kind of problem related to sample collection may affect the estimation results. Therefore, further investigation will be required in the future.

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