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**Working Paper**

## Migration, transfers and child labor

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Arbeiten aus dem



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# OSTEUROPA-INSTITUT REGENSBURG

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## **Migration, Transfers and Child Labor**

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## **Abstract**

We examine agricultural child labor in the context of emigration, transfers, and the ability to hire outside labor. We start by developing a theoretical background based on Basu and Van, (1998), Basu, (1999) and Epstein and Kahana (2008) and show how hiring labor from outside the household and transfers to the household might induce a reduction in children's working hours. Analysis using Living Standards Measurement Survey (LSMS) data on the Kagera region in Tanzania lend support to the hypothesis that both emigration and remittances reduce child labor.

*Keywords:* child labor, emigration, transfers, Tanzania

*JEL classification:* D62, F22, I30, J13, J20, J24, O15



## **1 Background**

According to the International Labor Organization (ILO), about 218 million children between the ages of 5 and 14 are working in developing countries, with 8.4 million involved in especially hazardous work including prostitution, soldiering, forced and bonded labor, and other illicit activities. The negative implications of even the less hazardous occupations on human capital accumulation, child and adult health and future outcomes such as labor market performance and intergenerational poverty traps is well documented (Basu, 1999; Basu and Chau, 2008; Edmond, 2008).

The literature explaining child labor incidence in developing countries centers around (i) the need to employ children to meet the family's very basic subsistence requirements (Basu and Van, 1998; Basu, 1999), (ii) a response to the absence of credit markets (Baland and Robinson, 2000; Ranjan, 1999, 2001), and (iii) low returns to education (Bacolod and Ranjan, 2006). Policy proposals emanating from this literature include the banning of child labor by developing countries and banning the import of products made with child labor by developed countries, improving credit markets, imposing minimum wage restrictions and providing income support to households. No single approach has managed to provide a tangible solution to the problem.

Recent research has extended the stylized gamut of explanations and policy recommendations in innovative directions. Taking as a starting point the view that child labor is a result of excess labor supply and subsistence constraints (Basu and Van, 1998), Epstein and Kahana (2008) show that reducing the amount of labor available via out-migration may enable children to stop working. The wage increase emanating from the fall in labor supply may also make it possible for parents in households without emigrants to withdraw their children from the labor force. This model provides a powerful new solution to the child labor problem by encouraging adult family members to emigrate.

Much of the literature implicitly examines urban or at least nonagricultural activities and policies. However children have traditionally been an important part of farm work life. Moreover, there is evidence that many children worldwide and the majority of working children in Africa are employed on the farm, and missing or imperfect labor markets lead to child labor persistence even among the wealthiest land owners (Bhalotra and Heady, 2003; Bhalotra, 2003). While not necessarily exploitative, agricultural child labor certainly interferes with childhood development, in particular, schooling, employment and marital status later in life (Beegle et al, 2008). Our simple household level model captures some of the agricultural peculiarities within which child labor takes place. Our results indicate that emigration and private transfers reduce child labor.



## 2 The model

### 2.1 Without Migration

A child works for a fraction  $e \in [0, 1]$  of the work day on the farm. We assume that an unskilled adult and a child are perfect substitutes in production, subject to an adult equivalence correction of  $\gamma$ ,  $0 < \gamma < 1$  (Basu and Van, 1998; Ranjan, 1999; Epstein and Kahana, 2008). The child has negligible bargaining power in the household, and thus the parents, who both have the same preferences, decide whether to send their children to work. Parents are altruistically concerned with their children's welfare. Household preferences are given by a Stone–Geary utility function (Basu and Van, 1998; Epstein and Kahana, 2008),

$$U(c, e) = \begin{cases} (c - s)(1 - e) & \text{if } c \geq s \\ c - s, & \text{if } c < s \end{cases}, \quad (1)$$

where  $c$  is household consumption and  $s > 0$  is a parameter capturing a family's needed level of consumption – only after achieving  $s$  can the family think about children's education. Consumption is equally divided among all household members. It is clear that if  $s$  is sufficiently high (as under severe poverty) there will be full child labor,  $e=1$ .

Parents work full time on the farm and their contribution to household farm production is normalized to one. Household profit from working on the farm equals  $p(1 + \gamma e)$ , where  $p$  is the profit per unit of adult time and  $\gamma e$  is the equivalent adult time worked by the child. Assume the household receives transfers,  $T$ . The household maximizes utility,  $U$ , with respect to  $e \in [0, 1]$  subject to the budget constraint,<sup>1</sup>

$$c = p(1 + \gamma e) + T \quad (2)$$

Maximizing utility given the budget constraint, we find,<sup>2</sup>

$$e^* = \frac{(\gamma - 1)p - T + s}{2p\gamma} \quad (3)$$

Thus,

$$\frac{de^*}{dp} = \frac{T - s}{2\gamma p^2} \quad (4)$$

<sup>1</sup> For simplicity, we assume children allocate their time to either schooling or work and the only cost of schooling is children's foregone earnings.

<sup>2</sup> Second order conditions are satisfied.

Here we see that there are two effects of increased household profits,  $p$ , per unit of time: (1) the opportunity cost of schooling rises; (2) the option of going to school becomes more realistic since the household has more funds. Thus, the effect an increase in the profit per unit of time is ambiguous.

Increased transfers to a household decreases child labor,

$$\frac{de^*}{dT} = -\frac{1}{2\gamma p} < 0 \quad (5)$$

## 2.2 With Migration

We now consider the child labor decision when a parent emigrates in response to higher wages elsewhere. Households may employ hired labor to replace the emigrating adult on the farm – after all, farm work needs to get done. Doing so increases the income of the farm (assuming the cost is lower than the benefit); however, it imposes a cost to the family members of having to supervise a stranger. Denote the time worked by the hired hand as  $f$  ( $0 \leq f \leq 1$ ) and the cost of the hired hand as  $d$ . The decision to emigrate must take into consideration possible increased remittances and decreased other transfers, disutility household members experience from having hired labor – an outsider – in the household, and the disutility from migrating. The decision to migrate also affects the time the child works on the farm. The utility of the household with an emigrating parent is,

$$U_I(c, e) = \begin{cases} a(c-s)(1-e-f) & \text{if } c \geq s \\ a(c-s) & \text{if } c < s \end{cases} \quad (6)$$

The constant  $0 < a \leq 1$  represents a disutility from migration and hiring outside labor. The budget constraint becomes,

$$c = p(\gamma e + f) - d f + R \quad (7)$$

The gain for the household from the hired hand equals  $(p-d)f$ ; the family also receives transfers at a level  $R$ . These transfers are a function of the wage the migrant obtains, that is,  $R(w)$ , since they include all the transfers the household obtains – the remittances the migrant sends home and other transfers ( $T$ ). Note that as a migrant earns more and sends more remittances, the household may obtain fewer transfers from other places.

The household needs to make four decisions: emigrate or not, time the hired hand will be employed, the amount of remittances, and the time the child will work on the farm. We calculate the optimal time the household employs the hired hand and then calculate the optimal time for the child to work. The optimal time employing a worker equals,

$$f^* = \frac{s + p - R - 2ep - d(1 - e)}{2(p - d)} \quad (8)$$

Note that  $p > d$ .

And,

$$e^* = \frac{d f + p - 2 f p - R + s}{2 p} \quad (9)$$

Notice that increasing the amount of time the hired hand works decreases child labor,

$$\frac{de^*}{df} = -\frac{d - 2p}{2p} < 0$$

Substituting (8) into (6) and (7) and calculating the optimal time the child works we obtain the equilibrium,

$$e^{**} = \frac{s + d - p - R}{d} \quad (10)$$

Thus increasing transfers decreases child labor,

$$\frac{de^{**}}{dR} < 0 \quad (11)$$

Increasing the wages of a migrant will have the following effect,

$$\frac{de^{**}}{dw} = \frac{\partial e^{**}}{\partial R} \frac{\partial R}{\partial w} \quad (12)$$

From (11) increasing transfers decreases child labor. Increasing wages may decrease the total amount of transfers from other sources but it is likely that total transfers (remittances and other transfers) will increase. If this is the case than migrant wage decreases child labor.

Substituting (10) into (8) the optimal time the hired worker is employed equals,

$$f^{**} = \frac{d(3 + R - s) - (1 + p)(p + R - s)}{2d(d - p)} \quad (13)$$

We can see an increase in transfers,  $R$ , (and in wages if increasing  $w$  leads to a net increase in  $R$ ) may increase or decrease the amount of time the hired hand is employed.

### 3 Empirical model

Our theory tells us that child labor depends on migrants' wages, transfers, hired labor, and, of course, other household characteristics and farm characteristics that have effect on productivity and profits on the farm. Unfortunately in our data we have no information on wages received by emigrants. As we know that emigration is a positive function of destination wages, we proxy the migrants' wages with the number of migrants from the household.

$$Child\ labor = \alpha_0 + \alpha_1 Migration + \alpha_2 Transfers + \alpha_3 HiredLabor + \alpha_4 Z_1 + \varepsilon \quad (16)$$

The migration variable also captures the loss of migrant's labor by the family, as well the disutility faced by the family because of emigrating household members. Transfers ( $R$ ) capture the income effect produced by the all private transfers received by the family in the reference period. The null hypothesis is that migration and transfers, as well as hired laborers, have a negative impact on child labor supply ( $\alpha_1 < 0, \alpha_2 < 0, \alpha_3 < 0$ ).

Our model also indicates that hired labor is a positive function of transfers and migration (which is a proxy for emigrant wages):

$$Hired\ laborers = \delta_0 + \delta_1 Migrants + \delta_2 Transfers + \delta_3 Z_2 + u \quad (17)$$

Similarly, transfers are a function of migration and can be either positively or negatively related to the number of migrants,

$$Transfers = \beta_0 + \beta_1 Migration + \beta_2 Z_3 + \eta \quad (18)$$

Migration is presented in reduced form as,

$$Migration = \gamma_0 + \gamma_1 Z_4 + v \quad (19)$$

Equations 16 – 19 represent a fully recursive system. The Breusch-Pagan test confirms that the variance-covariance residual matrix for these equations is diagonal, thus giving empirical support to our presumption from our theoretical model that the system is recursive. Each equation is therefore estimated separately by OLS, which is the best linear unbiased estimator in this case (Johnson, 1984; Wooldridge, 2002).

We estimate the system of equations 16 – 19 with and without controlling for yearly and village fixed effects. We control for head of household, household structure, wealth and other household and farm characteristics, which are fairly stylized in the child (and other agricultural) labor, migration and transfers literatures and which we assume exogenous. When we implement our estimation we choose identical  $Z_i$ 's for every equation. A description of the variables is in Table 1.

## 4 Data and descriptive statistics

We use 1991 – 1994 Living Standards Measurement Survey (LSMS) data on the Kagera region in Tanzania, available from the World Bank. It consists of a panel of close to 800 rural households for each year. Our analysis is restricted to the data on migration, transfers, hired labor and child labor included in the 1992 – 1994 panels. We are able to track emigrants between any two consecutive cross-sections and information on migrants is therefore not available in the first cross-sectional survey for 1991. After accounting for missing observations, we are left with a sample of 2213 observations.

Approximately 98% of households were engaged in agricultural production during the preceding year; for half, agriculture is the primary mode of subsistence. In close to half of the households at least one family member migrated between 1991 and 1994, and almost 83% of the households have received transfers at least occasionally.<sup>3</sup> The majority of children who work, work on farms and less than 2% of all children in the sample supply any off-farm labor.

In Table 2 we provide some descriptive statistics for the entire pooled sample for 1992 – 1994 that we use in our regression analysis. Columns 1 and 2 compare the sample of households that supply child labor with the sample of households that do not supply child labor; Columns 3 and 4 compare households who hired labor and households who did not hire labor; Columns 5 and 6 compare households who received transfers with households who did not receive transfers and Columns 7 and 8 compare the households from which at least one member migrated during the reference period with those from which nobody migrated.

The descriptive statistics indicate that the probability of households' not supplying child labor increases with transfers received and the amount of labor hired. We do not observe a significant impact of the number of migrants on the probability of child labor at the household level. In addition, we see that the presence of children of both sexes in both the less than 10 and 10 – 15 age groups increases the supply of child labor, while the presence of elderly people in the household decreases it. As expected, larger families are more likely to supply child labor.

The statistics also indicate that larger land sizes (shambas owned), farm capital (farm assets, that is machinery, animals used for production, etc.) availability and non-farm assets and non-farm labor opportunities in the form of a family business have a slight positive correlation with the supply of child labor on the farm. Looking at the characteristics of households who produce migrants and receive monetary transfers, we see that both of these characteristics are in general associated with higher levels of human and/or physical capital of the household. For instance, we observe that higher education levels increase the probability of emigrating and the amount of transfers received. Furthermore, larger family wealth in the form of durable assets has a strong association

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<sup>3</sup> We are not able to distinguish between remittances received from migrants and other private transfers received. Hence, we focus the total value of transfers received by the household, which is consistent with our theoretical model. Restricting transfer information to only that received by migrants' families did not change our results. We use information on transfers received by both migrant and non-migrant families.

with both the probability of migration and the receipt of transfers and the same is true for the availability of a family business. At the same time, while larger land sizes, trade ownership and larger farm assets value are slightly positively associated with the probability of receiving transfers, there is no clear-cut association between these forms of wealth and migration. If anything, these forms of wealth are slightly negatively associated with the probability of migration. Hired labor is a positive function of migration and transfers. It is also a positive function of the education of the head of households, the land and capital endowments of the farm.

## 5 Empirical results

Table 3 highlights the results from our empirical analyses. The first four columns of table 3 show the respective child labor, hired labor, transfer and migration results without controlling for year and village fixed effects, while in the last four columns we highlight the corresponding fixed effect estimates.

In table 3 we see that the signs of both the migration and transfers variables are negative and significant, providing support for our main hypothesis that migration and transfers reduce the supply of child labor by the households. However, the hired labor variable is not significant at any conventional level. Our estimates also confirm the finding of the agricultural child labor literature that larger land ownership is positively correlated with higher levels of child labor on the farm and the same is true the use of fertilizers. By contrast, off-farm employment opportunities in the form of trade and business decrease the supply of child labor. Trivially, larger household sizes and proportions of children in the households are positively related to higher levels of child labor supply.

There is no direct impact of migration or transfers on hired labor. However, wealthier households, namely those having higher levels of human capital, land, farm and non-farm assets or business, as well as those able to afford fertilizers, are also able to hire more labor in the outside market.

The results also indicate that households with younger heads are more likely to undertake migration. In addition, the ownership of land, activity in trade, and owning a business, all decrease the production of migrants by the household. This is consistent with the evidence on out-migration from rural areas in developing countries (Lucas, 1997). The same is true for farm characteristics, such as farm assets and the use of fertilizers that improve the productivity on the farm. However, the ownership of non-farm durable assets stimulates emigration. Finally, higher youth dependency rates reduce migration, while higher old age dependency rates increase migration.

The results on transfers are less clear-cut, and do not provide support to either of the usual tests in the transfers' literature, namely altruism or exchange (Cox, 1987). However, it appears that better off households (e.g. those owning a business) are less likely to receive transfers. Interestingly, the presence of young girls reduces the probability of receipt of private transfers by the households.

In sum, our results indicate that adult emigration and the receipt of private transfers may provide a powerful child labor alleviating mechanism. The links between migration, transfers, hired labor and child labor are complex as is the impact of various forms of human and physical capital on each of these variables. For instance, assets that improve the productivity on the farm reduce the probability of migration, but also increase the supply of child labor on the farm. At the same time, higher levels of human capital and the development of off-farm labor opportunities, e.g. a family business, turn out to be powerful additional solutions to the agricultural child labor issue, which, as witnessed by the growing literature on child welfare in agricultural economies, has severe negative implications for education and labor market performance later in life (Beegle et al, 2008).

## **6 Concluding remarks**

Development policy offers several different solutions to the child labor problem, including banning either child labor or the import of products made by child labor, improving credit markets, imposing minimum wage restrictions or providing income support to households. As no single traditional approach has managed to provide a tangible conclusion to the child labor debate, we search for alternative solutions.

We start with a heuristic theoretical model of child labor, migration, transfers and hired labor and show that migration, transfers and the ability of households to substitute for child labor with hired labor, can reduce the supply of child labor by the household.

We examine this with the use of rich and high quality data on rural households from the Kagera region in Tanzania. The results from our empirical estimations support the hypotheses emanating from our theoretical model. We find migration and transfers can reduce the supply of child labor by an average household.

We also observe that households with better human capital characteristics are more likely to both produce migrants and hire labor. At the same time, land ownership has a negative impact on migration and a positive impact on child labor, while the ownership of a business reduces both the probability of migrating and the supply of child labor. In other words, human capital development and the development of off-farm activities in the form of a functioning adult off-farm labor market and entrepreneurship appear to offer important complementarities to migration and the coping mechanisms of households.

Migration has famously been an escape valve in classic development models, though not without negative implications for both sending and receiving areas. Here we see that migration can provide other important short-run and long-run benefits- reducing child labor and increasing schooling. This is true whether the migration is rural-to-urban or otherwise domestic or international. Migration restrictions, whether domestic or international, hurt children and where there is a positive link between schooling and well-being and growth, hurt the economy over the long haul. Migration can bring net gains to both sending and receiving areas.



Table 1: **Description of the variables used**

<b>Variable</b>	<b>Description</b>
Child labor	The weekly labor supply of children of less than 15 years of age in hours
Transfers	Total value of transfers received by the household during the preceding 6 months (includes remittances by migrants and other transfers)
Migrants	Total number of household members who migrated during 1991-1994
Pfage10	Proportion of females of less than 10 years of age
Pmage10	Proportion of males of less than 10 years of age
Pfage15	Proportion of females of 10-15 years of age
Pmage15	Proportion of males of 10-15
Pfage59	Proportion of females 16-59 years of age
Pfage60	Proportion of females of 60 and more years of age
Pmage60	Proportion of males of 60 and more years of age
Headedu	Dummy=1 if the head of household has any post primary education
Headage	Age of the head of household
Hhsize	Household size
Shambown	Number of shambas owned by the household
Durval	Total present resale value of durables
Fasset	Total present resale value of farm assets (machinery, animals used for production, etc.)
Hiredlabor	Dummy=1 if the household hired any laborers
Usedfertil	Dummy=1 if the household used any fertilizer during the planting season
Trade	Dummy=1 if the household owns a trade
Business	Dummy=1 if the household owns a business

*Note:* all monetary values are in Tanzanian shillings/100000

Table 2: Descriptive household (HH) statistics

Variable	Children in HH worked		HH hired non-family labor		HH received transfers		Someone in HH migrated	
	Yes	No	Yes	No	Yes	No	Yes	No
Migrants	1.0405(1.5486)	1.0588(1.5925)	1.2610 (1.7944)	0.9407 (1.4281)	1.1199(1.5970)	0.7037(1.3712)		
Transfers/10000	1.0682(4.5710)	1.7619(23.0564)	2.5857 (26.8199)	0.7738 (3.9260)				
Hired labor days	28.7486 (183.5348)	35.0470 (217.7048)						
Pfage10	0.2441(0.2307)	0.2326(0.2572)	0.2427 (0.2354)	0.2369 (0.2469)	0.2407 (0.2378)	0.2298 (0.2674)	0.2213 (0.2368)	0.2548 (0.2476)
Pmage10	0.3012(0.2823)	0.2706(0.3073)	0.3145 (0.2942)	0.2735 (0.2934)	0.2905 (0.2965)	0.2720 (0.2830)	0.2774 (0.2974)	0.2963 (0.2912)
Pfage15	0.1990(0.2239)	0.0461(0.1236)	0.1310 (0.1927)	0.1290 (0.2041)	0.1278 (0.1935)	0.1384 (0.2304)	0.1282 (0.1931)	0.1310 (0.2067)
Pmage15	0.2383(0.2506)	0.0812(0.1861)	0.1475 (0.2165)	0.1770 (0.2460)	0.1706 (0.2386)	0.1498 (0.2279)	0.1795 (0.2463)	0.1557 (0.2274)
Pfage60	0.0806(0.1851)	0.1452(0.2926)	0.0994 (0.2289)	0.1153 (0.2483)	0.1108 (0.2399)	0.1060 (0.2523)	0.12256 (0.2612)	0.0984 (0.2226)
Pmage60	0.0749(0.1660)	0.1302(0.2842)	0.0948 (0.2262)	0.1027 (0.2304)	0.1037 (0.2300)	0.0823 (0.2229)	0.1075 (0.2350)	0.0931 (0.2232)
Headedu	0.0579(0.2336)	0.0448(0.2070)	0.0776 (0.2678)	0.0389 (0.1934)	0.0540(0.2260)	0.0423(0.2016)	0.0701(0.2555)	0.0354(0.1849)
Headage	50.3772(15.2974)	48.4930(18.5915)	48.6399 (16.4081)	49.9720 (17.1242)	49.9853(16.9883)	47.2751(16.2635)	50.8919(16.7276)	48.2746(16.9551)
Hhsize	8.2854(3.3465)	6.4402(3.5009)	8.1499 (4.0982)	7.0907 (3.1574)	7.7112(3.6151)	6.1720(2.8105)	8.8161(3.7063)	6.2021(2.8562)
Shambown	2.4152(1.6947)	2.1783(1.5892)	2.8420 (1.9135)	2.6355 (1.4263)	2.3548(1.6757)	2.0794(1.5100)	2.3678(1.6482)	2.2530(1.6534)
Durval/100000	0.5509(5.3662)	0.5808(3.6417)	1.3830 (7.8899)	0.1474 (0.7814)	0.6385(5.1045)	0.2049(0.8037)	0.9001(6.6001)	0.2586(1.2974)
Fasset/100000	0.1205(0.8927)	0.0982(0.7347)	0.2194 (1.4065)	0.0549 (0.1016)	0.1193 (0.0924)	0.0674 (0.1636)	0.1072 (0.3974)	0.1133 (1.0753)
Usedfertil	0.0397(0.1953)	0.0209(0.1432)	0.0549 (0.2279)	0.0191 (0.1369)	0.0322 (0.1765)	0.0265 (0.1607)	0.0341 (0.1816)	0.0285 (0.1665)
Trade	0.0951(0.2935)	0.0956(0.2942)	0.0941 (0.2921)	0.0960 (0.2947)	0.1019(0.3026)	0.0635(0.2442)	0.0882(0.2836)	0.1019(0.3026)
Business	0.3590(0.4799)	0.3904(0.4881)	0.4489 (0.4977)	0.3349 (0.4721)	0.3913(0.4882)	0.2857(0.4524)	0.4076(0.4916)	0.3420(0.4746)
N Observations	1209	1004	747	1466	1835	378	1055	1158

Table 3: Regression results: OLS

	No fixed effects				Village and year fixed effects included			
	Child labor	Hired Labor	Transfers	Migrants	Child labor	Hired labor	Transfers	Migrants
Hired Labor	-0.0005 (0.0015)				-0.0000 (0.0015)			
Transfers	-0.0330* (0.0171)	1.8715 (2.4241)			-0.0331* (0.0171)	1.9604 (2.4489)		
Migrants	-0.9901*** (0.2096)	-1.4632 (2.9644)	-0.0160 (0.0261)		-0.8826*** (0.2178)	-2.5870 (3.1179)	-0.0298 (0.0275)	
Pfage10	0.9732 (1.2447)	16.8313 (17.5998)	-0.3133** (0.1548)	-1.0542*** (0.1245)	1.0992 (1.2566)	25.5319 (17.9835)	-0.2538* (0.1585)	-0.8896*** (0.1230)
Pmage10	2.7290*** (1.0454)	16.4857 (14.7813)	-0.1422 (0.1301)	-0.6469*** (0.1055)	3.0095*** (1.0511)	18.0690 (15.0455)	-0.1424 (0.1326)	-0.6094*** (0.1034)
Pfage15	23.4934*** (1.4429)	5.6145 (20.4076)	-0.3807** (0.1795)	-0.6926*** (0.1460)	22.0544*** (1.4766)	11.6795 (21.1407)	-0.3419* (0.1863)	-0.4794*** (0.1459)
Pmage15	15.0916*** (1.2623)	-14.2177 (17.8501)	-0.0605 (0.1571)	-0.4811*** (0.1281)	14.9183*** (1.2764)	-6.7981 (18.2758)	-0.0528 (0.1612)	-0.4351*** (0.1262)
Pfage60	0.0147 (1.3008)	3.8339 (18.3978)	-0.0487 (0.1619)	0.5962*** (0.1318)	0.4958 (1.3194)	13.5143 (18.8899)	-0.0467 (0.1666)	0.6366*** (0.1301)
Pmage60	-0.3921 (1.4944)	-12.9540 (21.1349)	0.1293 (0.1860)	0.6328*** (0.1515)	-0.1460 (1.5163)	0.4627 (21.7107)	0.1602 (0.1914)	0.6247*** (0.1498)
Headedu	-4.1570*** (1.2515)	83.4427*** (17.6101)	0.1287 (0.1550)	0.1237 (0.1267)	-3.0718** (1.2862)	81.0830*** (18.3320)	0.0349 (0.1617)	0.0949 (0.1270)
Headage	-0.0324 (0.0211)	0.0544 (0.2985)	-0.0001 (0.0026)	-0.0078*** (0.0021)	-0.0332 (0.0215)	0.0211 (0.3073)	-0.0019 (0.0027)	-0.0079*** (0.0021)
Hhsize	0.9195 *** (0.1059)	-2.3237 (1.4972)	0.0713*** (0.0131)	0.2775*** (0.0089)	0.9345*** (0.1101)	-2.6070* (1.5754)	0.0735*** (0.0138)	0.2615*** (0.0093)
Shambown	0.5234*** (0.1704)	6.9106*** (2.4053)	0.0017 (0.0212)	-0.0691*** (0.0172)	0.5381*** (0.1887)	7.8345*** (2.6962)	0.0141 (0.0238)	-0.0771*** (0.0186)
Durval	0.0355 (0.0617)	11.2803*** (0.8386)	0.0060 (0.0074)	0.0183*** (0.0060)	0.0108 (0.0623)	10.8786*** (0.8605)	0.0032 (0.0076)	0.0155*** (0.0060)
Fasset	-0.3692 (0.3523)	70.2726*** (4.7521)	-0.0054 (0.0418)	-0.1438*** (0.0341)	-0.3866 (0.3506)	66.2521*** (4.8119)	-0.0055 (0.0424)	-0.1277*** (0.0332)
Usedfertil	8.3645*** (1.5827)	49.6314** (22.3595)	-0.0864 (0.1968)	-0.3021* (0.1608)	9.2954*** (1.6075)	45.1956** (22.9965)	-0.0741 (0.2028)	-0.1742 (0.1592)
Trade	-1.5243* (0.9267)	-12.5452 (13.1061)	-0.0621 (0.1154)	-0.2200** (0.0942)	-1.0684 (0.9415)	-14.1385 (13.4770)	-0.0683 (0.1188)	-0.2472*** (0.0932)
Business	-2.4591*** (0.5779)	14.408* (8.1677)	-0.1373* (0.0718)	-0.1441** (0.0587)	-2.0846*** (0.5983)	9.8862 (8.5643)	-0.1909** (0.0754)	-0.2258*** (0.0590)
Constant	-2.2425* (1.2041)	1.1207 (17.0292)	-0.1545 (0.1499)	0.0901 (0.1225)	0.8316 (2.2231)	-8.8170 (31.8302)	-0.0589 (0.2807)	0.6681*** (0.2200)
Rsqr	0.2515	0.2014	0.0221	0.3284	0.2922	0.2014	0.0221	0.32842
N Obs.	2213	2213	2213	2213	2213	2213	2213	2213

Note: \*\*\*, \*\* and \* indicate significance at the 1%, 5% and 10% level, respectively. The numbers in brackets are standard errors.

## References

- Bacolod, Marigee P. and Ranjan, Priya. "Why Children Work, Attend School, or Stay Idle: The Roles of Ability and Household Wealth." Mimeo, University of California –Irvine, July 2006.
- Baland, Jean-Marie and Robinson, James (2000). "Is Child Labor Inefficient?" *Journal of Political Economy*, vol 108(4), pp. 663-679.
- Basu, Arnab and Chau, Nancy H. (2008). "Child Labor" in Vince Parillo (ed) *Encyclopedia of Social Problems*, Sage Publications, New Jersey.
- Basu, Kaushik and Van, Pham Hoang. "The Economics of Child Labor." *American Economic Review*, June 1998, 88(3), pp. 412-27.
- Basu, Kaushik. "Child Labor: Cause, Consequence, and Cure, with Remarks on International Labor Standards." *Journal of Economic Literature*, September 1999, 37(3), pp. 1083-1119.
- Basu, Kaushik. "The Intriguing Relation Between Adult Minimum Wage and Child Labor." *The Economic Journal*, March 2000, 110(462), pp. C50-C61.
- Beegle, Kathleen, Dehejia Rajeev, Gatti Roberta and Krutikova Sofya (2008). "The consequences of child labor. Evidence from longitudinal data in rural Tanzania". *Policy Research Working Paper Series 4677*, The World Bank.
- Bhalotra, Sonia and Christopher Heady. "Child farm labour. The wealth paradox", *World Bank Economic Review*, 2003, 17(2), pp.197-227.
- Bhalotra, Sonia. "Child labour in Africa", *OECD Social Employment and Migration Working Papers No. 4*.
- Cox, Donald, "Motives for private transfers", *Journal of Political Economy*, 1987, 95, 508-46.
- Edmonds, Eric (2008). Child Labor. *Handbook of Development Economics Volume 4*. Shultz, Paul and Strauss, John (eds.), pp. 3607-3709.
- Epstein. Gil S. and Nava Kahana, "Child Labor and Temporary Emigration" *Economics Letters*, 2008, 99(3), pp. 545-548.
- Lucas, Robert, "Internal Migration in Developing Countries", *Handbook of Population and Family Economics 1B*, Rosenzweig, Mark and Stark, Oded (eds). pp. 721-98.
- Ranjan, Priya. "An Economic Analysis of Child Labor." *Economics Letters*, 1999, 64 (1), pp. 99-105.
- Ranjan, Priya. "Credit Constraints and the Phenomenon of Child Labor." *Journal of Development Economics*, 2001, 64(1), pp .81-102.