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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, 2000) 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.

JEL classification: D62, F22, I30, J13, J20, J24, O15
Keywords: child labor, remittances, emigration, migration

Migration, Transfers and Child Labor

1. Background

According to the International Labor Organization (ILO–IPEC, 2013) about 168 million children between the ages of 5 and 14 are working in developing countries. Asia and the Pacific have the largest numbers (almost 78 million or 9.3% of the child population), but Sub-Saharan Africa continues to be the region with the highest incidence of child labor (59 million, over 21%). There are 13 million (8.8%) children in child labor in Latin America and in the Caribbean and in the Middle East and North Africa there are 9.2 million (8.4%). 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; Edmonds, 2008).

The literature explaining child labor incidence in developing countries centers around (i) the need for child employment 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, 2008). Child labor generally falls with increases in GDP per capita, life expectancy, international trade, educational spending and GDP growth (Saad-Lessler, 2010). Policy proposals include the universal banning of child labor and banning the use, export and imports of products made with child labor, improving credit markets, imposing minimum wage restrictions and providing income support to households. The literature examines other policy instruments including food for education and investment in education (Jafarey and Lahiri, 2005) and, of course, trade sanctions (Jafarey and Lahiri, 2002). 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.

Internationally, many destination countries while providing foreign aid and banning products that use child labor in production, often limit immigration without taking into account the impact of this policy on the survival of families directly affected. Starting with Epstein and Kahana (2008) a literature has developed emphasizing the policy aspects of migration and the frequently accompanying remittances to non-migrants as instruments to reduce child labor. Some emphasize the role of remittances and remittance encouraging strategies on the part of the origin region (Alcaraz, Chiquiar and Salcedo, 2012; Buckley and Hofmann, 2012; Ebeke, 2012); others the effects of emigration (Di Maio and Nandi, 2013; Ebeke, 2010). Domestic migration from one region to another, often face similar political constraints (Epstein, 2013). We need to know the effects of migration and its concomitant implications on child labor.

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). While not

necessarily exploitative, agricultural child labor certainly interferes with childhood development, in particular, schooling, employment and marital status later in life (Beegle, Dehejia, Gatti and Krutikova, 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

We build on the Epstein and Kahana (2008) who model the child labor supply function and examine how to decrease child labor using short-term migration policy. Their model does not explicitly account for the opportunity to migrate, nor do they consider how the migration decision affects the home farm. In our model we incorporate these extra elements. If the farmer migrates someone needs to replace him on the farm; often the family will hire a local worker. Moreover, the migrant's remittances will help pay for the hired help. These extra elements help us better understand what is going on and enable us to bring the model to the data.

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 γ, $0 < \gamma < 1$ (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.

We add to Epstein and Kahana (2008) by considering 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 (Dimova, Gangopadhyay, Michaelowa, and Weber, 2015). 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 $f\ (0 \le f \le 1)$ and the cost of the hired hand as *d*. The decision to emigrate must take into consideration possible increased remittances and decreased other transfers, the 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. Household preferences are given by a Stone–Geary utility function (Basu and Van, 1998; Epstein and Kahana, 2008),

$$U_I(c,e) = \begin{cases} (c-s)(1-e-f) & \text{if } c \ge s \\ c-s & \text{if } c < s \end{cases}. \qquad (1)$$

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 γe is the equivalent adult time worked by the child. Assume the household receives transfers, *R*. The household maximizes utility, U, with respect to $e \in [0,1]$ subject to the budget constraint, The budget constraint becomes,

$$c = p(\gamma e + f) - d\ f + R. \qquad (2)$$

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. 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,

$$f^* = \frac{s + p - R - 2ep - d(1-e)}{2(p-d)}, \tag{3}$$

and,

$$e^* = \frac{d\ f + p - 2\ f\ p - R + s}{2\ p}. \tag{4}$$

Note that $p > d$. Notice that increasing the amount of time the hired hand works decreases child labor, $\frac{de^*}{df} = \frac{d-2p}{2p} < 0$. Substituting (3) into (1) and (2) and calculating the optimal time the child works we obtain the equilibrium,

$$e^{**} = \frac{s + d - p - R}{d}. \tag{5}$$

Thus increasing transfers decreases child labor,

$$\frac{de^{**}}{dR} < 0. \tag{6}$$

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

$$\frac{de^{**}}{dw} = \frac{\partial e^{**}}{\partial R}\frac{\partial R}{\partial w} \quad . \tag{7}$$

From (6) 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 wages decrease child labor.

Substituting (5) into (3) the optimal time the hired worker is employed equals,

$$f^{**} = \frac{d\left(3+R-s\right)-(1+p)(p+R-s)}{2d(d-p)}. \qquad (8)$$

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 and farm characteristics (*Z*) that have effect on productivity and profits of 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.

$$Child\,labor = \alpha_0 + \alpha_1 Migration + \alpha_2 Transfers + \alpha_3 HiredLabor + \alpha_4 Z_1 + \varepsilon. \qquad (9)$$

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. Our model tells us 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 in equation (8) that what happens to hired labor is a ambiguous with respect to changes in transfers and migration (which is a proxy for emigrant wages):

$$HiredLabor = \delta_0 + \delta_1 Migration + \delta_2 Transfers + \delta_3 Z_2 + u. \qquad (10)$$

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

$$Tranfers = \beta_0 + \beta_1 Migration + \beta_2 Z_3 + \eta \,. \quad (11)$$

Migration is presented in reduced form as,

$$Migration = \gamma_0 + \gamma_1 Z_4 + \nu \,. \quad (12)$$

The first equation in the system (12) is clearly identified and can be estimated by OLS. Without further exclusion restrictions, the remaining equations are not identified. However, under the assumption of pairwise uncorrelated structural errors or a diagonal variance-covariance residual matrix,

$$Cov(u_g, u_h) = 0, \; g \neq h \,, \quad (13)$$

each is identified.

Equations 9-12 define a fully recursive system which can be consistently estimated by OLS (Wooldridge, 2002, pp. 228). The Breusch-Pagan test (Table 1) 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).

INSERT Table 1 here.

We estimate the system of equations 9-12 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 2.

INSERT Table 2 here.

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 and most children who work, work on farms with less than 2% supplying off-farm labor. 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. Unfortunately, we are cannot 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. We use information on transfers received by both migrant and non-migrant families, and restricting transfer information to only that received by migrants' families did not change our results.

INSERT Table 3 here.

In Table 3 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 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 4 highlights the results from our empirical analyses. The first four columns 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.

INSERT Table 4 here.

In table 4 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 emigration by household members. 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).

7. Robustness Checks

Our empirical model in Section 3 follows the theoretical model in Section 2. The empirical part sets up a recursive system and then estimates it using OLS techniques. We carry out the Breusch-Pagan test, which confirms that the residuals from our four regressions are not correlated and justifies the appropriateness of our empirical methodology, which is a direct follow up on our theoretical model.

To confirm the absence of endogeneity over and above that inferred by the Breusch-Pagan test, we run further robustness checks, treating migration, transfers and hired labor as endogenous in the child labor equation and performing relevant diagnostic checks. The reason is that although the recursive model is a direct follow up to our theoretical model, one could always suspect that there may be an omitted feedback from child labor into either migration, or transfers, or hired labor. While it is very difficult to come up with instruments that are clearly correlated with migration, transfers and hired labor, but do not directly affect child labor, the econometrics literature provides us with an easy solution. In keeping with Angrist and Krueger (2001), we use as instruments for hired labor, migration and transfers, the means of these variables across clusters and years. We also experimented with other potential instruments such as the lagged variables of migration, transfers and hired labor, though a potential problem here is serial correlation if for example migrants come from the same families or transfers are received by the same families. An additional advantage of using the group means as instruments is that they address the issue of measurement error bias (Angrist and Krueger, 2001). We further experimented with additional instrumental variables, such as either agricultural or non-agricultural shocks, but these specifications did not significantly affect our estimates. For the

final presentation, we choose a specification including the shocks, as it leads to a better fit of the first stage equations and slightly better results for the identification tests.

The results from both the IV estimations and the diagnostic tests are highlighted in the Appendix. In Table A1 we see that the coefficients of the instrumented child labor equation are consistent with those in the recursive model. The only slight difference is that compared to the recursive model specification, the transfer variable loses its significance, while the hired labor variable becomes significant at the 10% level. However, both the Wu-Hausman and Durbin-Wu-Hausman tests confirm that migration, hired labor and transfers are exogenous in the child labor equation, thus providing further support to our baseline recursive model estimation. The diagnostic tests related to the first stage equation confirm the validity of the instruments used, and are presented in Table A2.

INSERT Tables A1and A2 here.

7. 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 an alternative solution.

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. Our model builds on the Epstein and Kahana (2008) story of child labor and adult temporary migration policy by

specifically modeling the migration decision as well as the adjustments the family makes because of the loss of the migrant's farm labor. We bring data to the model.

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 hired 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.

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	Child labor	Remittances	Hired labor	Migrants
Child labor	1.0000			
Remittances	0.0024	1.0000		
Hired labor	0.0000	0.0155	1.0000	
Migrants	0.0000	0.0000	0.0003	1.0000

Breusch-Pagan test of independence: chi2(6)=0.543=0.9973

Table 1. Correlation matrix of residuals

Variable	Description
Child labor	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 migrant remittances 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 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. Description of the variables used

	Children in HH worked		HH hired non-family labor		HH received transfers		Someone in HH migrated	
Variable	**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. Descriptive household (HH) statistics

	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* (00.1585)	-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)
Rsq	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.

Table 4. Regression results: OLS

Appendix

	Child labor
Hired Labor	-0.0106*
	(0.0057)
Transfers	0.1727
	(0.6522)
Migrants	-1.3990**
	(0.6385)
Pfage10	0.8726
	(1.4178)
Pmage10	2.7059**
	(1.1316)
Pfage15	23.4563***
	(1.5256)
Pmage15	14.7826***
	(1.3054)
Pfage60	0.3169
	(1.3615)
Pmage60	-0.3325
	(1.5584)
Headedu	-3.3183**
	(1.3457)
Headage	-0.0349*
	(0.0218)
Hhsize	0.9729***
	(0.2005)
Shambown	0.5654***
	(0.1822)
Durval	0.1550*
	(0.0878)
Fasset	0.2924
	(0.5420)
Usedfertil	8.7912***
	(1.6338)
Trade	-1.7107*
	(0.9457)
Business	-2.3037***
	(0.6002)
Constant	-2.1203*
	(1.2201)
Rsq	0.2320
N Obs.	2213

Table A.1. IV estimates of the child labor equation

Test of endogeneity of migrants, transfers and hired labor

Ho: Regressors are exogenous	
Wu-Hausman F test:	1.12255 (F(3,2191) P-value=0.33858
Durbin-Wu-Hausman chi-sq test	3.39625 Chi-sq(3) P-value=0.33447

Weak identification test (Cragg-Donald Wald F-statistic): 25.094

Stock-Yogo weak ID test critical values	
5% maximal IV relative bias	12.20
10% maximal IV relative bias	7.77
20% maximal IV relative bias	5.35
30% maximal IV relative bias	4.40

First stage diagnostics

Variable	**Partial R2**	**F(6, 2191)**	**P-value**
Migrants	0.1122	46.15	0.000000
Transfers	0.0711	27.94	0.000000
Hired labor	0.0714	28.09	0.000000

Table A2. Diagnostic tests