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Impact of Remittances on Child Labor in Ghana

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George Joseph and Sonia Plaza

Abstract

In this paper, we investigate the impact of remittances on child labor in Ghana using the most recent nationally representative household survey (GLSS V). In particular, the paper examines whether international remittance receiving households behave differently from domestic remittance receiving households and households that do not receive remittances with regard to the decision on sending their children to work. We also estimate whether remittances have an effect on the number of hours worked a year by children. In our estimation, we treat households' remittance status as endogenous by using as instruments, religious and ethnic remittance network variables constructed at the district level. We find that regardless of the source of remittances, belonging to a remittance receiving household reduces the probability of children participating in the labor market by around two percent. International remittances unambiguously reduce child labor; belonging to an international remittance receiving household reduces the probability of child labor by six percent. On the other hand, domestic remittances seem to have no statistically significant effect on the decision to send children to work. With regard to the number of hours of work undertaken by children, we find that children belonging to international remittance receiving households tend to work fewer hours than those who belong to households that do not receive remittances. Children belonging to domestic remittance receiving households tend to work more hours. Overall, our results confirm that international remittances have a positive impact on reducing child labor while domestic remittances are part of a broader strategy of household coping mechanism.

Impact of Remittances on Child Labor in Ghana

I. Introduction

Recent decades have witnessed large scale increase in the migration of people within and across national boundaries. Migration, whether internal and international, can generate considerable welfare gains for the migrants, their families and both the destination and the source economies. Many studies agreed that the remittances are primarily used for household expenditures, such as the construction of homes and consumption (Black et al., 2003; Martinez Pizarro and Villa, 2005). These transfers have consequences at both the household level and at the level of the economy as a whole, affecting macroeconomic management, labor force participation, education and health outcomes, income distribution and patterns of household expenditure (Page and Plaza, 2006). There is a substantial body of empirical evidence suggesting that remittances sent by migrants have a significant effect in reducing poverty, improving education attainments and health status in the recipient countries (see Adams, 2005; Hildebrandt and McKenzie, 2005; Woodruff and Zenteno, 2007).[1] However, there is a scarcity of rigorous empirical evidence on how remittances affect the labor market behavior of members in the recipient households. This is particularly relevant in the case of children who are engaged in child labor which inhibit the accumulation of human capital in the early years affecting future earnings later. Similar to cash transfer programs, remittances can reduce household budget constraints thus enabling households to send their children to school rather than work. Also it is expected that remittances reduce the dependence of households on the earnings from child work leading to a reduction in the number of hours worked by children.

However, it is important to distinguish between households receiving remittances from domestic (internal migration) and those receiving remittances from international migrants since the magnitude and impact of international remittances are typically larger. Even among international migrants, there are significant differences between remittances received from migrants in OECD countries (South-North) and remittances received from

[1] For an overview on the literature on the effects of migration and remittances on source country communities see Katseli et al. (2006) or López-Córdova and Olmedo (2006). Adams (2008)

migrants in African or other developing countries (South-South). Moreover, as many previous studies have pointed out, international migrants in general and OECD migrants in particular (and hence their migrant sending households) belong to the more educated and economically better off sections of the society. This leads to encounter endogeneity and selection bias while estimating the impact of remittances on recipient households as remittance recipient households would have been better off even without remittances. Therefore, in order to delineate the effect of remittances, especially international remittances on child labor, it is important to control for the endogeneity of remittance receiving status in empirical research.

A review of the literature on child labor points out three main reasons why children are sent to work (Edmonds, 2008). First, as highlighted in several studies, poverty at the household level and availability of economic opportunities tend to aggravate child labor. (Basu and Van, 1998, Basu, 1999, Bhalotra and Heady, 2003, Ersado, 2005) Second, it is argued that households make decisions on schooling versus child labor based on the relative return to child time in schooling. Education of children not only entails monetary expenses but also has the opportunity cost of time which could be utilized for work (in the formal or informal sector) or home production. Moreover in most developing countries like Ghana, return to human capital acquired through formal education is often lower than the return from alternative uses of time wherein children are likely to develop skills and experience in specific trades and occupations (Bacolod and Ranjan, 2006). From the perspective of household level decision making, expenditure on children's education is an intra-household public good with uncertain future returns while wage income from child labor is a sure return with the additional benefit of providing children with some occupation specific skills. Thus in the presence of binding resource constraint, households are more likely to under invest in education and send children to work. Third, parental decisions and preferences play a key role in child time allocation decisions (Basu and Van 1998). In many developing countries, where parents are less educated or even illiterate, they tend to show a lower preference for providing education to children. In many societies, traditional social norms and values affect parental preferences towards educating children especially females which can contribute to increased child labor.

Most of the previous studies on the impact of remittances on household welfare focus on the differences in marginal budget shares on consumption, investment, housing education and health between remittance receiving and remittance non receiving households (Adams, 2008), often concluding that remittances do not have a differential impact on human capital investments like education when compared to other sources of income. However a simple analysis of the share of total expenditure on education is inappropriate to measure the differential impact of remittance income in countries like Ghana where most of the education is provided by the government and religious schools at a negligible cost.

Several reasons can be pointed out why remittance income received by households have a differential impact on the education of children and hence on child labor when compared to other sources of household income like wages, salaries and agricultural income. As already mentioned, remittance receiving households are likely to belong to higher income quintiles which would lead to higher household expenditure on most categories of expenditure including education. For poorer households, remittances represent a stable source of income unaffected by localized weather and labor market shocks. This enables them to be less dependent on their children as an additional source of income. Also, anecdotal evidence suggests that along with migration, there exists a transfer of values across societies such that households with international migrants or urban migrants tend to ascribe greater importance to educate their younger relatives. Above all, existence of better prospects of future income through migration, may lead to a 'brain gain' effect which provides an incentive for remittance receiving households to invest in children's education and keep them away from child labor.

The paper makes the following innovative contributions. First, to the best of our knowledge, this is the first study that attempts to examine separately the differential impact of internal and international remittances on child labor. We investigate whether remittance receiving status of households has an impact on two related aspects of the labor market behavior of children, namely, the decision of households to send children to work and on the decision on the number of hours the children choose to work a year. We further provide a descriptive account of the differential outcomes in households receiving remittances from OECD and African countries. Second, it is difficult and often

confounding to examine the impact of migration and remittances simultaneously using cross section data because not all households that receive remittances have a migrant and not all migrants send remittances to their households. Keeping this in mind, we focus our attention only on remittance receiving households regardless of whether there is a migrant or not. Third, the present study is the first of its kind that attempts to estimate the impact of remittances on child labor while controlling for endogeneity and selection bias using nationally representative data from an African country. We utilize the Ghana Living Standard Measurement Survey (GLSS V) consisting of 8668 households which has collected detailed information on households receiving remittances and the sources of remittances.

Our investigation based on descriptive statistics indicates that there is significant difference between domestic remittance receiving households and international remittance receiving households and hence asserts the need to address endogeniety concerns in empirical investigation. Keeping this in mind, we estimated a series of bivariate probit and treatment effects models that are meant to correct for endogeneity on the decision to send children to work as well as the number of hours children are made to work. Our results indicate that, international remittances unambiguously reduce child labor. However, domestic remittance receiving status does not have a significant effect on child labor. Overall, our results confirm that international remittances have a positive impact on the labor market behavior of children while domestic remittances are part of a broader strategy of household coping mechanism. Our estimates of the endogeneity corrected regressions on the number of hours worked also confirm our findings. Children belonging to international remittance receiving households tend to work fewer hours while children belonging to domestic remittance receiving households tend to work more hours a year

The paper is organized as follows. In the second section, we briefly survey the existing literature on labor market participation and child labor in the context of migration and remittances to situate the contribution of this paper to the literature. The third section presents some stylized facts about labor market participation and child labor in Ghana according to GLSS V at the level of geographical regions and consumption quintiles,, disaggregated at level of gender. Empirical strategy intended to control for

endogeniety and econometric specifications are discussed in the fourth section followed by a short description of data .The fifth section discusses the results and the sixth section concludes.

II. Related Literature

II.1 Impact of Remittances on Labor Market Behavior and Education

This section looks at the growing body of evidence on how migration and remittances impact economic development and poverty reduction. Many studies agree that remittances are primarily used for household expenditures, such as the construction of homes and consumption. (Black, 2003; Martinez Pizarro and Villa 2005). These transfers have consequences at both the household level and at the level of the economy as a whole, affecting macroeconomic management, labor force participation, education and health outcomes, income distribution and patterns of household expenditures. Remittances can contribute to reducing liquidity problems that are present in developing countries. It can be expected that recipient families will expand their consumption of leisure and their investment in the human capital of their children (Acosta, 2006).

a) Link between remittances and working decision

Since the seminal work of Becker (1982) allocation of time for work and leisure in households have received considerable attention in economics. However, the impact of remittances on the allocation of work and leisure has been left rather unexplored. There are two strands of the literature trying to explain the effect of remittances on labor markets in developing countries suggesting contrary outcomes. On the one hand, remittances by relaxing household level economic constraints facilitate new entrepreneurial ventures leading to increased labor force participation. On the other hand, remittances can reduce labor supply by increasing reservation wages of remaining household members. Various theories have been advanced to explain the reduction in labor supply as result of receiving income transfers like remittances. First, it has been suggested that remittances can have a disincentive effect leading to reduced labor market participation of the household members remaining at home. This is explained using the income- leisure trade off where in leisure is treated as a normal good. Increase in income

transfers like remittances reduce labor force participation of the members by increasing the reservation wage of members in the receiving households (Danziger et al., (1981), Bertrand et al. (2003), Joulfaian and Wilhelm (1994), Imbens et al. (2001), Rosenzweig (1980) and Schultz (1990)) Second, in remittance receiving households, the absence of a household member due to migration might require other remaining members to substitute for the tasks he/she had been engaged in leading to labor substitution effect. In a situation where a household is involved in non market production of goods and services for the household, the absence of a household member due to migration increases the marginal productivity of the other household members left behind. If the marginal productivity is more than the prevailing market wage, there will be a withdrawal from labor market. ((Browning and Chiappori, 1998; Browning et al. (1994) and Lundberg and Pollak, (1996)). [2]A third possibility is highlighted in the recent literature is the education effect. Remittances by alleviating the financial constraints enable households to invest in human capital of their children expecting higher future returns. This is further accentuated by the 'brain gain effect' where the possibility of future migration and higher earnings might motivate households and individuals to invest time and effort in education. Both these together constitute the education effect which may lead to withdrawal from the labor market of the younger cohort for attending educational institutions.[3] It is the labor substitution effect and the education effect on the labor participation that can explain the reduction in child labor due to income transfers like remittances. In principle, remittances can be considered as an exogenous source of income for the household. Therefore, if schooling and leisure are normal goods, as income increases due to remittance transfers demand for both schooling and leisure will increase and consequently supply of child work will fall. [4] If net expected returns to schooling are greater than to child work, increase in household income due to remittances may also encourage schooling and reduce child work by relaxing household credit

[2] This is a standard finding in models of intra household specialization. See for example, (Browning and Chiappori, 1998; Browning et al.(1994) or Lundberg and Pollak, (1996).

[4] See, for example, Fallon and Tzannatos (1998) and ILO (1996).

constraints.[5]. As exemplified in the literature on 'brain gain', since migrant households with relatively increased access to external markets for labor due to community and network effects, they are encouraged to educate their children if the external labor markets are rewarding more education.

There exists considerable amount of empirical evidence on how remittances alter the labor market behavior of adult members in the recipient households. In one of the early papers using data on Nicaragua, Funkhouser (1992) found that remittances have a negative effect on female labor market participation. In a recent study using panel data Funkhouser (2006) finds that international migration reduce labor force participation in Philipines. Rodriguez and Tiongson (2001) had similar results for Philippines and attribute their results to higher leisure consumption by household members who stay back home. But most of the earlier work, failed to account for the possible endogeneity and selection issues due to the presence of unobservable variables that simultaneously determine labor market participation and the receipt of remittances. Using instrumental variable strategy to control for endogeniety, Acosta (2006) found that among remittance receiving people in El Salvador, only women tended to reduce their labor supply, mostly due to the preference for leisure and to some extent as a part of labor substitution to facilitate intra household specialization. He also finds that remittance receiving households do not invest more in children's education when compared to others. In their paper on the differential impact of remittances on different types of work, Amuedo-Dorantes and Pozo (2006) found that remittances tended to reduce labor supply of women in rural areas and informal sector. On the other hand, labor participation rates of men remained unaffected but shifted more towards informal employment. There are several other studies on the impact of remittances on labor supply which include Itzigsohn (1995) in the Caribbean Basin. Rodriguez and Tiongson (2001) and Cabegin (2006) in Philipines , Sadiqi and Ennaji (2004) in Morocco and Kim (2007) in Jamaica,

[5] See Bhalotra and Heady (1998), Canagarajah and Coulombe (1997), De Tray (1983), Levison and Moe (1998), Mergos (1992), Mueller (1984) and Rosenzweig and Evenson (1977). Further evidence of a high elasticity of child work relative to its returns is provided by the market for child work literature. Bhalotra and Heady (1998), Mergos (1992), Rosenzweig (1981) and Skoufias (1994) all find a significant and strong positive relationship between child market wage rates and child work participation.

Loshkin and Glimskaya (2008)) in Nepal and Gorlich, Mahmoud and Trebesch (2008) in Moldova. The common finding of all these studies is that migration and remittances result in a decline in the labor force participation of household members left behind, in particular, of females and youth. Braga(2009) using data from Albania found that remittances have different effects for men and women depending on the age group. Inactivity is lower for people aged between 25 and 33 years. Loshkin and Glimskaya (2008) finds some evidence for labor substitution in Nepal for women when the men migrate while Gorlich, Mahmoud and Trebesch (2008) finds that in Moldova most of labor market inactivity can be explained by labor substitution and education effects. In a latest paper Cox-Edwards and Rodriguez-Oreggia (2009) found limited evidence that persistent remittances had effects on labor force participation in Mexico using data from the Migration Module applied to the National Quarterly Employment Survey in 2002. Their findings suggest that the flow of persistent remittances replaces lost income with no significant surplus to alter labor supply price.

b) Link between remittances and credit constraint

To the best of our knowledge, there is limited direct evidence on the impact of remittances on child labor by relaxing the economic constraints of households. Therefore, we focus on the indirect impact of remittances on schooling and hence a possible reduction in child labor. Empirical evidence on the impact of remittances on education is rather mixed. A few empirical studies have found positive linkages between migration, and remittances and education or health outcomes. Rapoport and Docquier (2005) report that remittances can have positive effects on the educational attainment of children from households with migrant members. Hanson and Woodruff (2002) writing on Mexico find that children in households with a migrant family member completed more years of schooling which is higher than the educational attainment of children in non remittance receiving households. Cox Edwards and Ureta (2003), find that in households in El Salvador with at least one family member living abroad, remittances significantly contributed to a reduction in dropouts. When Dean Yang (2003) while analyzing the impact of remittances on Filipino households found that "a rise in remittances of 10 percent of initial income will increase the fraction of children, aged 17 to 21, attending school, by more than 10 percentage points."

Lopez Cordova (2004) uses a cross-section of all Mexican municipalities (over 2400) in the year 2000 to look at the impact of migration on education and health outcomes. He finds that as the proportion of households receiving remittances rises in a community, developmental outcomes improve. "If the fraction of remittance-receiving households increased by five-percentage points, starting from zero, infant mortality falls by almost five percent, children's school attendance rises by more than 3 percent, while illiteracy drops by 34 percent."

Hanson and Woodruff (2003), Cox Edwards and Ureta (2003), Mansuri (2006) and Yang (2008) provide evidence for a positive effect of migration and remittances on child schooling using data from Mexico, El Salvador, Pakistan and the Philippines respectively. Contrarily, Acosta's (2006) study on El Salvador concludes that remittance recipients do not seem to invest more in children's human capital than non-recipients. For Mexico, McKenzie and Rapoport (2006) and McKenzie (2005) and Boucher et al. (2005) provide some evidence that migration might even discourage educational attainment. They argue that most Mexican migrants in the U.S. tend to work in low skilled jobs, so that young Mexicans have little incentives to invest in higher education. Given the increased prospects for employment for the low-skilled in the USA, returns to education are ultimately higher in Mexico – an assumption which is confirmed by the empirical results of Chiquiar and Hanson (2005).

Amuedo-Dorantes (2008) separate the migration effect from the remittances effect. They found that in Haiti remittances raise school attendance for all children in some communities, regardless of whether they have household members abroad or not, while , in other communities, the effect is found only among children living in households that do not experience any family out-migration.

II.1. Remittances and Child Labor

Child labor has become an important topic in international policy making. Within the context of increasing trends in migration and remittances, it becomes very relevant to assess their impact on the decision of households to send their children to work and the number of hours children are made to work. There are few theoretical and empirical studies on the impact of remittances and child education/labor choices. In one of the first

seminal theoretical papers on the linkage between low income and child labor, Basu and Van (1998) shows that the decision for a child to work is made by the household to help ensure the household's survival. But when household decision making is coupled with perfect substitutability between adult and child labor, economies may have more than one type of equilibrium where when the wages are low children tend to work to support the household and when wages are higher, and children do not work. Since this paper, recent research has emerged in the context of migration, remittances and child labor. Epstein and Kahama (2008) find that the remittances sent by emigrating parents may enable the children and other members of the household to stop working. Dimova, Epstein and Gang (2008) using the Living Standards Measurement Survey data from the Kangera region in Tanzania pooled for the years 1991, 1992, 1993, 1994 and 2004 in a recursive simultaneous equation model of migration, remittances and child labor supply found that both migration and remittances decrease the supply of child labor by the household. Milgan and Bohara (2007) analyze the effects of international remittance and non remittance income on educational achievement (educational attainment) and the amount of child labor (the number of hours the child works) using Heckman's two-step procedure for Nepal. The model estimates the effects of different kinds of income on both child labor and educational attainment using data from 2003 Nepal Living Standards Survey. They find that remittance from international sources and non-remittance income contribute positively and significantly to child welfare in Nepal, but the effect of remittances is small when compared to other sources of income. Mansuri(2006) finds that remittances sent by temporary migrants have a positive effect of child schooling especially for female children. Gonzale-Koning and Wodon (2007) develop a Stackelberg-type model wherein the family members who remain at home develop gratitude towards the migrant when receiving remittances and reciprocate by choosing to invest more in children because the education acquired by the children will benefit the migrant upon his/her return. The authors tested this model using data from the Republic of Congo. They found that for rural girls; remittances had a statistically significant and positive impact on schooling.

III. Child Labor in Ghana

This paper seeks to improve the empirical understanding of the impact of remittances on child labor in Ghana and hence some background of the problem of child labor in the context of Ghana is in order. *For the purposes of this paper, child labor is defined as any work performed for a market wage that prevents children from attending or participating effectively in school or is performed by children under hazardous conditions which place their health and development physically, intellectually or morally at risk.* However, it needs to be noted that in Ghana, as in most other developing countries children in rural households traditionally help out in the fields or home as part of the household duties without a market wage. Hence the estimates that are presented in the paper can be considered as a lower bound on the extent of child labor in Ghana. Also not all the participation in the household based or to some extent market based activities prevents children from attending school although it is highly likely that it will impede their performance in school.

Several previous studies can inform the pattern of child labor in Ghana and set a background to data analysis using the most recently available GLSSV. According to the data from the National Child Labor Survey (NCLS) conducted by the Ghana Statistical Service in 2001 and to the data from ILO –IPEC – Ghana Child Labor Country Brief, the following are some important facts on child labor in Ghana at the turn of the millennium.: About 10.9 per cent (0.57 million) of children ages 5-14 participate in the labor force and do not attend school. The percentage is slightly higher for boys (11.2 per cent) than for girls (10.5 per cent). Children in rural areas are more likely than those in urban areas to work without attending school (15.4 vs. 2.9 per cent). The gender gap between working children who do not attend school is slightly higher in urban areas (2.2 percentage points, i.e. boys: 1.8 vs. girls: 4.0 per cent) than in rural areas (1.4 percentage points, i.e. boys: 16.0 vs. girls: 14.6 per cent). There are also differences in child labor participation across the different quintiles of the sample. Children from poorer households are almost four times as likely to engage in child labor as are children from wealthy households. Children coming from the poorest households are more likely to be engaged in the labor force without attending school than children in households with the highest levels of per

capita expenditure (19.2 vs. 3.3 per cent). Seven out of ten working children aged 5-14 years are employed in the agricultural sector, 6.4 per cent are employed in the industrial sector and the remaining 22.6 per cent work in services. It is to be noted that girls are more likely than boys to be employed in services (32.5 vs. 13.6 per cent) and less likely to work in the agricultural sector (59.5 vs. 81.5 per cent).

III.1 Characteristics of households

The child labor data for this study uses the Ghana Living Standards Measurement Survey (GLSS 5) in 2005. As shown in Table 1, according to our sample, on average nearly 33 % of household receive remittances (from persons who migrated internally or internationally) with significant differences between urban and rural areas. The fraction of households receiving international remittances is higher in urban areas than in rural areas.

Table 1. Characteristics of all households

	Remittance Receiving Status of Households					
	National	None	Domestic	International	OECD	Africa
Urban	43.20%	43.20%	35.60%	66.90%	74.70%	33.70%
Years of education of hh head	5.97	6.19	4.74	8.01	8.66	5.23
Household size	4.01	4.15	3.78	3.55	3.46	3.92
Number of males above age 15	0.88	0.93	0.83	0.69	0.64	0.88
Number of children below age 5	0.63	0.67	0.59	0.41	0.4	0.48
Proportion of HH in each category	100.00%	67.20%	24.90%	8.00%	6.50%	1.50%
Number of HH	8687	5,835	2,181	671	549	122

We first look at some general characteristics of remittance receiving households and remittance non receiving households based on GLSS V data. As seen in Table 1, OECD remittance receiving households are predominantly urban with a smaller household size and dependent children. Households that receive international remittances have higher years of education than households that receive domestic remittances or do not receive remittances at all. The head of the household of international remittances receiving households have 8.6 years of education compared to households that do not

receive remittances at all that only have 5.6 years of education Also, international remittance receiving households have higher level of education participation measured as higher number of tertiary educated in the household than non receiving remittance household and domestic receiving households. International remittance receiving households, especially the households that receive remittances from OECD countries in general belong to upper consumption quintiles. Two striking facts emerge from the summary statistics above. First, there exists significant difference between domestic and international remittance receiving households in terms of welfare and human capital outcomes. Second, international remittance receiving households cannot be treated as a homogenous category as typically done in several academic and policy discussions; The differences in consumption and human capital accumulation between OECD remittance receiving households and households receiving remittances from Africa is remarkable. Households receiving remittances from Africa are mkore comparable to domestic remittance receiving households.

Table 2. Characteristics of households with child labor

	Remittance Receiving Status of Households					
	National	None	Domestic	International	OECD	Africa
Urban	12.2%	12.3%	11.0%	19.6%	43.3%	2.8%
Years of education of hh head	2.7	2.8	2.5	2.3	2.9	1.9
Household size	7.3	7.4	7.2	7.3	6.4	8.0
Number of males above age 15	2.1	2.1	2.0	2.7	2.8	2.6
Number of children below age 5	1.2	1.3	1.1	1.0	0.3	1.5
Proportion of HH in each category	100.0%	73.7%	23.8%	2.5%	1.0%	1.5%

For comparative purposes, in Table 2, we present some summary statistics of variables for households with at least one child between the age of 7 and 14, are engaged in child labor. As expected, the incidence of child labor is lower in international remittance receiving households especially those receiving remittances from OECD countries. It is interesting to note that even among OECD remittance receiving households and African remittance receiving households, the incidence of child labor is higher in the lower consumption quintiles further confirming the general finding that it is

economic deprivation that is the primary reason for child labor in Ghana. A comparison between the characteristics of households in Table 1 and Table 2 shows that households with child labor are typically more rural and poorer, regardless of the remittance receiving status of the household. Further, in households with child labor, all human capital variables indicating the educational attainment of the household head and other members are remarkably lower when compared to the national average in the relevant categories of interest. This is particularly true even in households receiving remittances from OECD countries as well, supporting the hypothesis that educational attainment of the household head and other members has an important role in sending children to school rather than to work.

In Ghana, as in most developing countries children tend to be attending school, or engaged in child labor or remain idle (neither attending school nor engaged in child labor). In several cases, children are found to be attending school and also engaged in child labor which affects their performance at school. But this is obviously a better outcome than a one where children are engaged only in child labor and do not attend school at all. But in such cases where children attend school and are engaged in child labor, the number of hours they spend on work has a bearing on their educational achievements. Table 3 shows the distribution of households with children in these various categories on the basis of the remittance receiving status of the household

Table 3. Child Labor at the Household Level

	Remittance Receiving Status of Households					
	National	None	Domestic	International	OECD	Africa
All households	100.00%	67.20%	24.90%	8.00%	6.50%	1.50%
HH with children aged 7-15	51.99%	52.85%	51.35%	46.50%	44.63%	54.92%
HH with child labor	14.28%	15.11%	14.55%	5.13%	2.45%	14.93%
HH with children who only work	9.17%	9.86%	9.20%	2.24%	0.82%	7.46%
HH with children who go to school and work	6.29%	6.45%	6.61%	3.53%	1.63%	10.45%
HH with children who go to school only	88.06%	87.97%	86.43%	94.87%	95.51%	92.54%
HH with idle children	18.38%	18.55%	19.64%	12.18%	12.24%	11.94%

Around 52 percent of all households have at least one child in the age group of 7 and 14. Of this, 14.28 percent of households have at least one child engaged in child labor. International remittance receiving status has a positive effect on child labor as evident from the proportion of children who attend school only and from the proportion of children who work and go to school. As noted earlier, OECD remittance receiving households are better off in terms of lower child labor and increased school attendance. In domestic remittance receiving households, children who only work and do not attend school are higher than the national average. In households that receive remittances from Africa, this is lower than the national average by almost 2.5 percentage points thought it is still significantly more when compared to households receiving remittances from OECD countries

III. 2 Child Labor in Ghana-geographical distribution, gender and sector

Table 4 presents the sample means of some of key variables in the Ghanaian data disaggregated across regions. The involvement of children in production differs from region to region and from sector to sector in Ghana. In Table 5, we present the proportion of children engaged in various categories of schooling and work in the seven ecological zones in Ghana. First, the labor force participation rates of Ghanaian children are much higher in rural areas. As seen from the table, child labor is the highest in the regional of Rural Savannah followed by rural Forest. Second, the picture is reversed with regards to children engaged in work and do not go to school, with a much higher percentage in Urban Savannah. Thirdly, the largest percentage of idle children is in rural Savannah.

Table 4. Distribution of child labor, by locality

	Attend school	Idle children	Child labor	Child labor and school	Child labor only
National	83.68%	11.27%	9.90%	4.84%	5.05%
Accra	90.95%	8.66%	0.68%	0.30%	0.39%
Urban Coastal	94.22%	5.58%	4.01%	3.81%	0.20%
Urban Forest	92.63%	6.66%	4.48%	3.76%	0.72%
Urban Savannah	84.69%	11.29%	4.01%	0.00%	4.01%
Rural Coastal	88.40%	9.86%	5.89%	4.15%	1.74%
Rural Forest	90.83%	7.46%	8.55%	6.84%	1.71%
Rural Savannah	62.23%	21.50%	22.71%	6.45%	16.26%
Total	7,184	1,113	1,046	448	598

Male children are more likely than females to be engaged in child labor. Of all the children who are working, 56.21 percent are males and 43.79 percent are females. There are differences between child labor in urban and rural areas. Most of the child labor is concentrated in the rural areas with 92.16 percent of all working children found in rural areas. Table 5 also shows the industrial composition of economically active children. Most of the working children are engaged in the agricultural sector followed by manufacturing and trading Most of the children who are working are either with no formal education or who have not completed primary school.

Table 5. Child labor by industry and education

Male	56.21%
Female	43.79%
Urban	7.84%
Rural	92.16%
Agriculture	92.35%
Manufacturing	3.25%
Construction	0.29%
Trading	3.92%
Other Services	0.19%
Total child workers	1,046

III. 3 Child Labor in Ghana-age groups and gender

The age composition of working children reveals the patterns of labor requirement as well as the possible impact on human capital accumulation. If the working children belong more to a younger cohort, it can either lead to reduced school enrolment or delayed enrolment. If the working children are of an older age group, this could also signal possibility of school dropout.

Table 6. Child labor by age groups, gender and sector

Age groups	Rural	Urban	Male	Female	Total
7-11	11.88%	2.77%	10.11%	7.63%	8.90%
11-13	17.68%	4.14%	13.34%	12.48%	12.91%
13-15	10.30%	3.07%	8.27%	6.78%	7.56%
Total	13.41%	3.29%	10.71%	9.05%	9.90%
Number of working children	964	82	588	458	1,046
Number of all children	5,807	3,088	4,537	4,358	8,895

Source: *World Bank staff estimates*
Note:

Child labor rates are higher for the 11-13 age group (12.91%) of which 17.68% are children in rural areas while only 4.14 % of this age group work in urban areas. One possible explanation for a marked increase in child labor for this age group could be explained by primary incompletion as well as late enrolment in Junior Secondary School. It seems than in Ghana, the opportunity costs of schooling are larger for males than for females because the value of male labor is greater. Thus, we expect boys to be less likely to remain in school than girls. In all age groups, proportion of working children is more among males. However, even for female children, it is the 11-13 age groups that has the highest proportion of child labor.

III. 4.1 Child Labor and remittance recipient status by consumption quintiles

In many cases, children who are engaged in child labor tend to attend school as well which is a better outcome than only child labor and no school attendance. Remittances often help households to afford the educational expenses of children as well as reduce the dependence on their earnings Table 7 shows the proportion of working children who attend school and Table 8 shows the proportion of working children who do not attend school on the basis of the remittance receiving status of the household and consumption quintiles.

Table 7. Child workers who attend school by consumption quintiles and remittance recipient status of the household

	Remittance receiving Status of Households								
	None		Domestic		OECD		Africa		All working children
Consumption Quintiles	Male	Female	Male	Female	Male	Female	Male	Female	
Q1	11.8	11.3	20.8	19.3	7.3	0,0	8.5	20.9	13.5
Q2	11.8	10.1	12.8	7.5	25.7	0.0	27.3	13.4	11.3
Q3	15.7	14	5.1	17.7	8.6	0,0	0,0	0,0	13.5
Q4	7.1	6.6	5.4	10.4	48.1	43.3	0	0,0	7.5
Q5	3.2	2	3.1	5	0,0	0,0	17.8	0,0	3.1
All working children	49.6	43.9	47.3	59.9	89.7	43.3	53.6	34.3	48.9

As seen in Table 8, child workers who attend school are the highest among the OECD remittance receiving households (89.7 percent for males) indicating that remittances help child laborers to have some education at the least. It appears that domestic remittances help female children to attend school though a part of their time is spent for work.

Table 8. Child workers who do not attend school by consumption quintiles and remittance recipient status

Remittance receiving Status of Households									
	None		Domestic		OECD		Africa		
Consumption Quintiles	Male	Female	Male	Female	Male	Female	Male	Female	All working children
Q1	26.9	25.6	32.0	21.0	0.0	0.0	9.7	0.0	25.7
Q2	11.7	13.9	8.1	8.2	0.0	0.0	36.7	41.8	12.0
Q3	6.0	7.3	11.6	4.0	10.3	18.6	0.0	20.0	7.0
Q4	4.4	7.1	1.0	5.0	0.0	38.1	0.0	3.9	4.9
Q5	1.4	2.2	0.0	1.8	0.0	0.0	0.0	0.0	1.5
All working children	50.4	56.1	52.7	40.1	10.3	56.7	46.4	65.7	51.1

As seen in Table 10, child workers who do not attend school are the lowest among male children belonging to OECD remittance receiving households. Also it is interesting to note that among female child workers in African remittance receiving households child labor without school attendance is more prevalent especially among the lower consumption quintiles.

IV. Data and the Empirical Strategy

IV.1. Data

Data for the paper comes from the Ghana Living Standard Measurement Survey (GLSS V) which is of a nationally representative character. The survey conducted from September 2005 to September 2006 has collected information on all aspects of living conditions in Ghana, including income, expenditure, health, education, savings, and credit. For the purposes of this paper, we make use of the information on sources of income which households are receiving of which remittances are an important component. [6] On the basis of the information of the source of remittances to the

[6] GLSS V has a separate migration module which has collected detailed information on migrants and the remittance patterns. Since we think that the data is not reliable and because data is available only for a sub sample of 4000 households, we rely entirely on the main survey.

household, we can identify households receiving remittances from domestic migrants, households receiving remittances from international migrants (Africa, OECD and countries outside Africa), and households which do not receive any remittances. Of the 8687 households in the sample, 2852 or 32.8 percent of households receive some form of remittances either from international or domestic sources. 2181 households (24.9 percent of all households) receive domestic remittances while 549 households (6.5 percent) receive remittances from OECD countries and 122 households (1.5 percent) receive remittances from African countries. It should be borne in mind that we are focusing only on whether the households are receiving remittances from migrants regardless of whether they are members of the household or not. Moreover, there are cases when a household receive remittances from multiple sources like OECD and Africa. Since our focus is largely on the highest economic impact, we have used the following convention.[7] If a household is receiving remittances from domestic and international sources, we treat that household as an international remittance receiving household. In cases where the households are receiving remittances from OECD and Africa, we treat such households as OECD remittance receiving households. Since we have three distinct types of households as described above, for the purposes of our empirical analysis we construct three samples: (1) All households; which includes remittance non-receiving households, and both international and domestic remittance receiving households (8687 households), (2) Domestic sample; which includes remittance non-receiving households, and domestic remittance receiving households (8119 households) and (3) International sample; which includes remittance non-receiving households, and international remittance receiving households (6506 households).[8] This helps us to separately estimate the impact of domestic and international remittances on child labor

Child labor for the purposes of our analysis is defined as children between the age of 7 and below 15 who reported as working for a wage in labor market excluding household and farm activities that are not paid for. Therefore, our definition is a lower bound on the child labor since we do not include children who are engaged in home

[7] Some papers (Adams, 2008) excluded those households that receive remittances from multiple sources.
[8] We are not examining Africa sample and OECD sample separately in our econometric analysis due to sample size limitations though most of the summary statistics presented in the previous section made that distinction among international remittances receiving households.

production or household tasks that are classified as idle children. Also as discussed earlier, many children who are reported to be working are enrolled in school, probably many of them missing classes frequently or are working part time. We also have detailed information on the number of hours children work a year. It is possible that some households would send their children to work only when there is an urgent financial need or during seasons when there is a lot of demand for child labor (planting and harvesting seasons in agriculture, for example). Therefore, apart from examining whether children are sent to work, it is important to analyze the number of hours children are sent to work as well.

In our regression, we have used several variables to control of the economic ability, human capital and other physical infrastructure that are likely to affect child labor as well as the remittance receiving status of the household. The location of household in urban or rural areas has a lot of influence on labor market participation and child labor. Most often urban areas are characterized by better access to educational institutions, transport facilities and job opportunities. On the other hand, in rural areas, households are typically engaged in agriculture and related activities which often require seasonal and unskilled labor from children keeping them away from school. In countries where credit constraints hold, holding family income constant, child labor is increasing in family size (as the household has to educate more children). Apart from these, the education of individual, the head of the household and the parents of children are closely related to labor market participation and earning potential on the one hand and the motivation to educate children.

In Table A1,[9] we present the descriptive statistics of the variables we have used in our econometric estimations of the decision to send children to work and the number of hours children work a year in remittance receiving and remittance non-receiving households. It is interesting to note that there is no remarkable difference in the household and individual characteristics between remittance non-receiving households and domestic remittance receiving households. But the international remittance receiving households are typically more urban, more educated, with smaller household size and

[9] In a majority of cases, remittance receiving households have at least one migrant. So in this section, we have used remittance receiving households and migrant households interchangeably.

dependants and less agrarian in character. This further justifies our contention that remittance receiving households, especially the international remittance receiving households are a selected cross section of the society. Many of the household level decision including the decision to send children to work and the number of hours they are made to work are jointly determined with the household's remittance receiving status. This classic problem of endogeniety needs to be controlled for in our econometric estimation.

IV.3. Identification strategy and econometric specifications

IV.3.1General Model

The basic question that the paper attempts to address is whether remittances have an impact on child labor. In this paper, we examine observed market labor supply of households in two complementary ways. First we examine whether remittances have an impact on households decision to send their children to work. However, as we already mentioned, many a times, the impact of remittances can be better measured if we examine the number of hours children are made to work. Therefore, in our econometric specification, the dependent variables are; whether the child is active in the labor market (CHILDLABOR) and the number of hours each child works a year (LHOURS). The equations of substantive interest which we would estimate are:

$$CHILDLABOR_i = \alpha_1 + \beta REMITHH + \delta_1 x_i + \varepsilon_{1i} \qquad \text{(A1)}$$

$$` LHOURS_i = \varpi_1 + \theta_1 REMITHH + \omega_1 x_i + \mu_{1i} \qquad \text{(B1)}$$

CHILDLABOR is a dummy variable which takes the value 1 if the child is active in the labor market and 0 otherwise and LHOURS is the natural logarithm of the number of hours each child worked in the previous year. The explanatory variable of specific interest is REMITHH which is a binary indicator variable that shows whether the individual belongs to a remittance receiving household. We have also included a set of control variables on the demographics, education, characteristics of individuals and households as well as regional fixed effects.

IV.3.2 Endogeniety and instruments

In trying to understand the effect of remittances on household labor supply of children and the number of hours children work a year, a number of econometric concerns arise. The most important issue of econometric concern is the potential endogeniety of remittance receiving status and the labor market variables. We intend to understand whether there exists a systematic difference between remittance receiving and non receiving households in their labor market behavior of children. It is possible that such differences could be due to shocks affecting remittance transfers and labor market behavior alike or could be a reflection of the differences in observable and unobservable characteristics between remittance receiving and non receiving households. Unobserved characteristics such as wealth, social skills or motivation to work might not only have an effect on the likelihood of being in a remittance receiving household but also influence household's decision to send the children to work. Remittance receiving status is potentially endogenous due to reverse causality such that a household member might have migrated and have send remittances just because there are children in the household who needs to be sent to school.

One caveat of our paper is that we lack information regarding the household's situation before they started receiving remittances which makes the reverse causality between migration and poverty impossible to unpack. Anecdotal cases indicate that remittances receiving households have jumped several income quintiles and have improved their standard of living leading to better education for their children and decreased reliance on child labor for subsistance. However, given the limitations of the cross section data we have, we will not be able to capture any information prior to the remittances receiving experience. For this type of analysis, it is important to establish the effect of past poverty on labor market choices of the household and the subsequent effect of remittances receiving households on future labor market outcomes.

Chiswick (1999) argues that selectivity bias applies for economic migrants. According to him, these migrants self-select because they tend to have better education, skills and labor market participation. Our analysis of the data in Section III points to this . Thus, comparing the labor market behavior of remittances receiving households and non

receiving households ignoring the selectivity of economic migrants which is the case for Ghana (for the majority of migrants), may yield a biased estimate of the labor market behavior of children.

There is significant amount of evidence suggesting that migration and remittance decisions are highly correlated with migration and remittance networks but uncorrelated with the individual decision not to work or the household level decision to send their children to work (Woodruff and Zenteno (2003), McKenzie and Rapoport (2006), Mansuri (2006), Munshi (2003),). In our formulation, we have constructed remittance network variables in the following manner. Since religion and ethnicity are important forms of socio-economic associations in Ghana, we have constructed our network variables on the basis of religion and ethnicity at the district level (Adams (2008)). For each individual, the religious network variable is the fraction of people belonging to a religion in the district who are receiving remittances, excluding individual i. Similarly, the ethnic network variable corresponds to the fraction of people belonging to a given ethnic group in the district who are receiving remittances, excluding individual i. Similar network variables were constructed for households receiving domestic remittances and households receiving international remittances. The intuition behind constructing such network variables is that apart from religious or ethnic association, the presence and knowledge about remittance receiving households in the area motivate people to migrate and send remittances to family and friends back home. It is also perfectly legitimate to conceive that such networks are correlated with the receipt of remittances but not with household level labor market decisions.

IV.3.3 Econometric specification

As discussed before, we follow the standard practice in the migration literature of employing instrumental variables to control for endogeniety in our econometric estimations.

1) Decision to send the child to work

We try to empirically investigate whether the remittance receiving status of households has an impact on the decision to have children active in the labor market. In the presence of endogeniety, simple probit estimation of AI is inefficient. In order to account for the

endogeniety and selection issues, we use a bivariate probit specification (Barham and Boucher (1998), McKenzie and Rapoport (2006)).

$$CHILDLABOR_i = \alpha_1 + \beta_1 REMITHH + \delta_1 x_i + \varepsilon_{1i} \quad \text{(A1)}$$

$$REMITHH_i = \alpha_2 + \delta_2 x_i + \eta z_i + \varepsilon_{2i} \quad \text{(A2)}$$

Here observed CHILDLABOR takes a value of 1 if the underlying latent variable CHILDLABOR* is greater than zero and 0 otherwise. x contains the individual and household characteristics which capture the human capital, physical capital and demographic profile of the households and individuals. A lower value for β_1 will imply significant negative impact of remittances on child labor.

In our specification, the variable z denotes our instruments (religious and network variables) used to identify remittance receiving households. We assume a bivariate normal distribution for ε_{1i} and ε_{2i} with ρ equivalent to $Cov(\varepsilon_{1i}, \varepsilon_{2i})$. A test of the endogeniety between remittance receiving status of the household and the child labor can be implemented by a simple test of ρ different from 0.

2) Number of hours a child work a year

We try to investigate whether remittance receiving status has an impact on the number of hours worked by children. In the presence of endogeniety between the remittance recipient status of the household and the number of hours the children work, simple ordinary least square estimation of B1 is inefficient.

$$LHOURS_i = \varpi_1 + \theta_1 REMITHH + \omega_1 x_i + \mu_{1i} \quad \text{(B1)}$$

$$REMITHH_i = \varpi_2 + \theta_2 x_i + \psi z_i + \mu_{2i} \quad \text{(B2)}$$

As explained before, the error terms μ_{1i} and μ_{2i} will be correlated if there are some unobserved characteristics that makes households with the remittance recipient status correlated with the number of hours children are sent to work. In order to address this issue, we utilize a two step procedure due to Heckman (1978, 1979) and Maddala (1983) widely known as the treatment effects model. This model often referred to as the restricted control function method is appropriate when the censoring of the remittance non-receiving households does not take place as it would in a standard Heckman

selection model. [10] In the first step, B2 is estimated to obtain predicted value of the hazard function and then it is substituted in B1 to obtain consistent estimates of the coefficient of θ_1. These estimates are at least as efficient as its alternative, the instrumental variable estimator (Verbeek and Vella, 1999).[11]

The model is statistically identified since we have included the instruments z_i in B2 and not in B1. σ_i is the $Cov(\mu_{1i}, \mu_{2i})$. The estimated σ_i provides a specification test for the model, with high statistical significance indicating that the null hypothesis (non augmented ordinary least square regression is true) should be rejected.[12]

V. Results

In this section, we present the results of our estimation of the bivariate probit model and the treatment effects model to examine the impact of remittances on the decision to send children to work and the number of hours worked a year. As in the previous studies mentioned earlier, we expect remittances to reduce child labor; both decisions to send children to work and the number of hours worked a year. One of the most important issues of interest is whether there exists any significant difference between households receiving remittances from domestic migrants and international migrants, controlling for endogeniety and selection. Therefore, we intend to examine the impact of remittances on different samples of data so as to separate the effect of domestic and international remittances. The domestic sample consists of households which do not receive remittances and households which receive remittances from domestic migrants. The international sample consists of households which do not receive remittances and households which receive remittances from international migrants. In order to estimate the overall impact of remittances on labor market behaviors of interest, we look at

[10] The treatment effects model differs from the standard selection model in several respects; the selection model assumes a conditional sample whereas the treatment effects model is applicable when all observations are pooled as if some observations are receiving a non random assignment of treatment. In our case, the treatment is the remittance recipient status of the household.

[11] Choosing one model over the other entails a tradeoff between making distributional assumptions about the errors and attaining consistency of the structural parameters of interest. The treatment effects model assumes a bivariate normal distribution of the errors in the first and second stage equation, but yields consistent and efficient structural parameters. In comparison, the IV model is free of distributional assumptions, but the estimates may be inconsistent. Vella and Verbeek (1999) show that if the normality assumption is satisfied, IV and treatment effects models are identical.

[12] Stated differently, a high correlation between the regression errors indicates that endogeneity is present.

everyone together which includes all non remittance receiving households and remittance receiving households without distinguishing them on the basis of the source of remittances.

V.1 First stage results

The first stage regressions in both the bivariate probit and treatment effects models are meant to estimate the probability of belonging to a remittances receiving household. Since qualitatively the results are identical, we will proceed to discuss these two sets of results together. Second columns in Table A2, Table A3, Table A4, Table A5, Table A6 and Table A7 presents the results of the first stage regressions. When all households are taken together without considering the source remittance receiving status of households, we find that residing in an urban area has a positive effect on remittance status. Years of education of the household head and the number of dependent children below the age of five is negatively associated with the remittance status. Both religious remittance networks and ethnic networks have a positive and statistically significant relationship with belonging to a remittance receiving household. In the case of the domestic sample, all the above relationships hold. However, it is interesting to note that when the household head is more educated, the household is less likely to have a remittance recipient status. On the other hand, in the case of international sample, if the household has more members who are secondary educated, it is less likely to receive remittances. Both these and the sign of coefficients on the number of tertiary educated suggest that domestic remittance status is more among the less educated households and international remittance status is more among households which have more tertiary educated members.

V.1I Second stage results

Remittances are expected to reduce child labor since they help in relaxing the household budget constraint. But if migration and remittances are primarily motivated by extreme poverty and vulnerability, the household might require more resources by sending the children to work. First we briefly discuss the impact of other control

variables that affect the decision to send children to work and the number of hours they are made to work.

Probit and bivariate probit results of the impact of remittances on child labor are presented in Table A2, Table A3 and Table A4. For everyone taken together, the domestic sample and the international sample, urban location and number of primary and secondary educated in the household negatively affects the decision to send children to work as well as the number of hours worked. But as age increases the probability of the child being active in the labor market is also higher. When there are more dependent children in the household, the probability of child labor is higher. The more educated the household head is, children are less likely to work.

Results of the treatment effects regressions on the impact of remittances on the natural logarithm of the number of hours children are made to work are presented in Table A5, Table A6 and Table A7. In all the three sub samples of data, children in the urban areas tend to work less hours, probably because most child labor is found in the rural areas and in the agricultural sector as well as the increased access to education in the urban areas. Gender difference does not have a significant impact on the number of hours worked by children. As expected older children work more than the younger. Household level education variables have a negative and significant effect on the number of hours worked. Having younger dependent children tends to contribute towards increased hours of work for children. Household ownership of land seems to be an additional factor in increased hours of work while increased secondary enrolment in the district tends to reduce the number of hours worked by children.

(1) Impact of remittances on the decision to send children to work

For everyone taken together, the probit results shown in Table A2 suggest that remittances do not have any statistically significant effect on child labor. But, when controlled for endogeniety, we find in the bivariate probit results that remittances have a positive and significant effect on reducing child labor. The statistical significance of ρ further reveals that simple probit regression is an inaccurate description the reality.

In the case of domestic remittances, the results shown in Table A3 reveal that remittances do not have a statistically significant effect on child labor. Both the probit

and bivariate probit results confirm that remittances do not have any effect on child labor. This further shows that most of domestic migration and remittances are driven by the poverty of the households and even the receipt of remittances reduce their dependence on child labor.

Table A4, clearly shows the positive impact of international remittances on reducing child labor. Though the coefficient on belonging to a remittances receiving household is positive but not significant in the probit regression, the negative and statistically significant coefficient on the bivariate probit regression that controls for the remittance receiving status shows that international remittance helps to reduce child labor.

Table 9. Marginal Effects on child labor of belonging to a remittance recipient household

	Probit	Bivariate Probit
All	-0.01	-0.02*
	(0.10)	(-0.02)
Domestic sample	-0.01	0.02
	(0.01)	0.00
International sample	0.01	-0.06***
	(0.01)	0.00

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 9 presents the marginal effects of belonging to a remittance receiving household for all the three groups discussed earlier for the probit and bivariate probit regressions. We find that regardless of the source of remittances, belonging to a remittance receiving household reduces child labor by 2 percent. As expected, international remittances have a substantial impact on reducing child labor: belonging to a household that receives international remittances reduces child labor by 6 percent. As noted earlier, domestic remittances have no statistically significant impact on child labor.

(2) Impact of remittances on the number of hours worked

Though the bivariate probit regressions on the decisions to send children to work Reveals the role of remittances in reducing the labor market participation of children at least in the international remittance receiving households, a clearer picture would emerge

only if we investigate the impact of remittances on the number of hours worked a year. Table A5, Table A6 and Table A7 present the results of the treatment effects regressions for the three samples. For everyone taken together, remittances regardless of the source reduce the number of hours worked by children. For the domestic sample, belonging to a remittance receiving household increases the number of hours worked by children. This could be due to the fact that domestic migration if often motivated by poverty and extreme vulnerability so that the absence of a household member might necessitate the children present in the household to work for more hours. However, belonging to an international remittance receiving household unambiguously reduces the number of hours worked by children. Since in most cases, international remittances are much larger in magnitude, receiving households are better able to overcome their dependence the earnings made by child labor.

VI. Conclusions and policy implications

In this paper, we examined the impact of remittances on one of most policy relevant labor market outcomes; child labor in Ghana using the most recent national representative household survey. In particular, the paper looked at whether international remittance receiving households behave differently from domestic remittance receiving households with regard to the decision on sending their children to work and the number of hours they are made to work. We used instrumental variable based bivariate probit regressions to control for the endogeneity of remittance receiving status and labor market outcomes. Further, we also estimated treatment effects models to investigate whether children belonging to remittance receiving households work fewer hours.

Our findings indicate that there is significant difference between domestic remittance receiving households and international remittance receiving households. With regard to child labor, international remittances unambiguously reduce child labor. However, domestic remittance receiving status does not have a significant effect on child labor. Overall, our results confirm that international remittances have a positive impact on the labor market behavior of childrenr while domestic remittances are part of a broader strategy of household coping mechanism. Our estimates of the endogeneity corrected regressions on the number of hours worked also confirm our findings.

Controlling for individual and household level characteristics children belonging to international remittance receiving households tend to work fewer hours while children belonging to domestic remittance receiving households tend to work more hours a year.

It is important to consider the country's context when trying to predict the effect of policies that affect child labor. Because of data constraints, it was not possible to quantify the relative importance of the wage effect and the reservation wages. It will also important to assess the possible impact of remittances on entrepreneurship activities in Ghana and the labor market participation of women on these activities. We will take that task of assessing the impact of remittances on various types of formal and informal activities in a subsequent exercise. Overall, we find that remittances especially international remittances have an important role in reducing child labor. Policies that foster the flow of international remittances need to be fostered due to their direct impact on development outcomes and the achievement of Millennium Development Goals.

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Table A1. Means of variables in the regressions

	Remittance Receiving Status of Households			
Variable	Both Domestic and International	None	Domestic	International
Urban	0.33	0.32	0.26	0.62
Male	0.51	0.52	0.51	0.49
Age	11.02	10.97	10.99	11.11
age squared	128.04	127.11	127.26	130.05
Years of education of father	2.66	1.49	2.48	3.85
Years of education of father squared	26.63	14.82	24.57	39.77
Years of education mother	1.11	0.57	0.97	1.85
Years of education of mother squared	9.96	5.24	8.35	17.46
Years of education the household head	4.49	4.92	3.72	7.69
Number of primary educated in the hh	0.72	0.74	0.67	0.91
Number of secondary educated in the hh	0.89	0.95	0.78	1.31
Number of tertiary educated in the hh	0.08	0.08	0.04	0.22
Number of males above the age of 15 in the hh	1.96	2.01	2.03	1.67
Number of children below the age of 5 in the hh	0.92	1.02	0.99	0.63
Whether the household owns land	0.54	0.53	0.57	0.4
Secondary school enrollment in the district	34.24	34.32	33.47	37.8
Christian	0.68	0.64	0.65	0.8
Muslim	0.16	0.2	0.17	0.12
Traditional	0.13	0.13	0.15	0.05
Religious network	0.34	0.31	0.34	0.33
Ethnic network	0.35	0.31	0.35	0.33
Child labor- number of hours annual	745.7718	939.5979	772.2032	512.5181
Number of observations	2,794	6,101	2,307	590

Table A2. Probit and Brivariate Probit Regressions on Decision to send children to work –All households

	Probit	Bivariate Probit	
	child labor	child labor	Belong to a remittance recipient household
Belong to a remittance recipient household	-0.05	-0.48**	
	[0.05]	[0.21]	
Remittance receiving hh with female head	-0.1	-0.1	
	[0.10]	[0.10]	
Urban	-0.54***	-0.89***	0.45***
	[0.12]	[0.12]	[0.07]
Male	0.05	0.05	
	[0.05]	[0.05]	
Age	0.91***	0.89***	
	[0.08]	[0.08]	
Age-squared	-0.04***	-0.04***	
	[0.00]	[0.00]	
Years of education of head of hh	-0.03***	-0.03***	-0.06***
	[0.01]	[0.01]	[0.01]
Number of hh members with primary edu	-0.07***	-0.07***	-0.01
	[0.03]	[0.03]	[0.02]
Number of hh members with secondary edu	-0.08***	-0.08***	-0.02
	[0.03]	[0.03]	[0.02]
Number of hh members with tertiary edu	0.05	0.07	-0.07
	[0.09]	[0.09]	[0.08]
Number of hh members above age 15	0.02	0.03	0.02
	[0.02]	[0.02]	[0.01]
Number of hh members below age 5	0.07***	0.06***	-0.08***
	[0.02]	[0.02]	[0.02]
HH owns land	0.08	0.08	0.03
	[0.05]	[0.05]	[0.03]
secondary enrolment in the region	-0.00*	0.00	0.00*
	[0.00]	[0.00]	[0.00]
Christian	-0.41***	-0.38***	0.13
	[0.10]	[0.10]	[0.09]
Muslim	-0.30***	-0.30***	0.12
	[0.11]	[0.11]	[0.10]

Traditional	-0.34***	-0.31***	0.13
	[0.11]	[0.11]	[0.10]
Religious network			1.36***
			[0.33]
Ethnic network			2.11***
			[0.22]
Years of education of hh head			0.00***
			[0.00]
Constant	-5.36***	-5.12***	-1.69***
	[0.46]	[0.48]	[0.14]
Observations	8886	8886	8886
Log likelihood	-2428.52	-47737.2	
Rho		0.27*	
e(rho)		-0.14	

Standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1
Regional fixed effects included, but not presented.

Table A3. Probit and Brivariate Probit Regressions on Decision to send children to work – Domestic sample

	Probit	Bivariate Probit	
	child labor	child labor	Belong to a remittance recipient household
Belong to a remittance recipient household	-0.08	0.24	
	[0.06]	[0.17]	
Remittance receiving hh with female head	-0.04	-0.04	
	[0.10]	[0.10]	
Urban	-0.64***	-0.92***	0.35***
	[0.14]	[0.12]	[0.08]
Male	0.05	0.04	
	[0.05]	[0.05]	
Age	0.93***	0.92***	
	[0.08]	[0.08]	
Age-squared	-0.04***	-0.04***	
	[0.00]	[0.00]	
Years of education of head of hh	-0.02***	-0.02**	-0.05***
	[0.01]	[0.01]	[0.01]
Number of hh members with primary edu	-0.06**	-0.06**	-0.03
	[0.03]	[0.03]	[0.02]
Number of hh members with secondary edu	-0.09***	-0.09***	-0.01
	[0.03]	[0.03]	[0.02]
Number of hh members with tertiary edu	0.05	0.05	-0.09
	[0.10]	[0.10]	[0.10]
Number of hh members above age 15	0.01	0.01	0.02
	[0.02]	[0.02]	[0.01]
Number of hh members below age 5	0.08***	0.09***	-0.07***
	[0.02]	[0.02]	[0.02]
HH owns land	0.06	0.06	0.02
	[0.05]	[0.05]	[0.04]
secondary enrolment in the region	-0.00*	-0.00*	0.00*
	[0.00]	[0.00]	[0.00]
Christian	-0.36***	-0.37***	0.14
	[0.11]	[0.11]	[0.09]
Muslim	-0.23**	-0.22**	0.03
	[0.11]	[0.11]	[0.10]

Traditional	-0.27**	-0.28**	0.11
	[0.11]	[0.11]	[0.10]
Religious network			0.63*
			[0.35]
Ethnic network			2.51***
			[0.24]
Years of education of hh head			0.00
			[0.00]
Constant	-5.50***	-5.54***	-1.52***
	[0.47]	[0.47]	[0.14]
Observations	8399	8399	8399
Log likelihood	-2360.25	-43111.6	
Rho		-0.19*	
e(rho)		-0.1	

Standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1
Regional fixed effects included, but not presented.

Table A4. Probit and Brivariate Probit Regressions on Decision to send children to work-International sample

	Probit	Bivariate Probit	
	child labor	child labor	Belong to a remittance recipient household
Belong to a remittance recipient household	0.11	-1.46***	
	[0.11]	[0.07]	
Remittance receiving hh with female head	-0.60**	-0.46**	
	[0.26]	[0.19]	
Urban	-0.80***	0.21**	0.98***
	[0.13]	[0.11]	[0.12]
Male	0.04	0.02	
	[0.05]	[0.04]	
Age	0.87***	0.64***	
	[0.09]	[0.08]	
Age-squared	-0.04***	-0.03***	
	[0.00]	[0.00]	
Years of education of head of hh	-0.03***	-0.02***	0.01
	[0.01]	[0.01]	[0.02]
Number of hh members with primary edu	-0.06*	-0.04	0.04
	[0.03]	[0.03]	[0.03]
Number of hh members with secondary edu	-0.08***	-0.07***	-0.06***
	[0.03]	[0.02]	[0.02]
Number of hh members with tertiary edu	0.03	0.12	0.02
	[0.11]	[0.08]	[0.09]
Number of hh members above age 15	0.05**	0.05***	0.01
	[0.02]	[0.02]	[0.02]
Number of hh members below age 5	0.06**	0.00	-0.11***
	[0.02]	[0.02]	[0.03]
HH owns land	0.06	0.05	0.07
	[0.06]	[0.05]	[0.05]
secondary enrolment in the region	0.00	0.00	0.00
	[0.00]	[0.00]	[0.00]
Christian	-0.34***	-0.23**	0.03
	[0.12]	[0.11]	[0.15]
Muslim	-0.28**	-0.14	0.33**
	[0.13]	[0.12]	[0.16]

Traditional	-0.27**	-0.15	0.23
	[0.13]	[0.12]	[0.17]
Religious network			9.47***
			[0.69]
Ethnic network			0.38***
			[0.12]
Years of education of hh head			0
			[0.00]
Constant	-5.22***	-4.08***	-2.62***
	[0.53]	[0.43]	[0.18]
Observations	6682	6682	6682
Log likelihood	-1789.4753	-2242.6	
Rho		-0.95***	
e(rho)		-0.02	

Standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1
Regional fixed effects included, but not presented.

Table A5. Treatment Effects Regressions on the log of the number of hours worked –All households

	Treatment Effects Model	
	Log of hours worked a year	Belong to a remittance recipient household
Belong to a remittance recipient household	-0.38***	
	[0.13]	
Remittance receiving hh with female head	-0.02	
	[0.07]	
Urban	-0.89***	0.46***
	[0.09]	[0.07]
Male	0.00	
	[0.05]	
Age	0.76***	
	[0.07]	
Age-squared	-0.03***	
	[0.00]	
Years of education of head of hh	-0.03***	-0.06***
	[0.01]	[0.01]
Number of hh members with primary edu	-0.09***	-0.01
	[0.02]	[0.02]
Number of hh members with secondary edu	-0.06***	-0.02
	[0.02]	[0.02]
Number of hh members with tertiary edu	0.08*	-0.05
	[0.05]	[0.08]
Number of hh members above age 15	0.04*	0.02
	[0.02]	[0.01]
Number of hh members below age 5	0.07***	-0.08***
	[0.03]	[0.02]
HH owns land	0.09**	0.02
	[0.04]	[0.03]
secondary enrolment in the region	-0.00*	0.00*
	[0.00]	[0.00]
Christian	-0.59***	0.12
	[0.17]	[0.09]
Muslim	-0.63***	0.12
	[0.18]	[0.10]

Traditional	-0.35*	0.13
	[0.19]	[0.10]
Religious network		1.32***
		[0.33]
Ethnic network		2.14***
		[0.21]
Years of education of hh head		0.00***
		[0.00]
Constant	-2.16***	-1.69***
	[0.38]	[0.15]
Observations	8862	8862
Log likelihood	-14230	
Rho	0.1**	
	[0.04]	
Lambda	0.17	
	0.07	
Sigma	1.79	
	[0.03]	

Standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1
Regional fixed effects included, but not presented.

Table A6. Treatment Effects Regressions on the log of the number of hours worked -Domestic sample

	Treatment Effects Model	
	Log of hours worked a year	Belong to a remittance recipient household
Belong to a remittance recipient household	2.71***	
	[0.07]	
Remittance receiving hh with female head	-0.12	
	[0.10]	
Urban	-1.08***	0.35***
	[0.11]	[0.07]
Male	0.03	
	[0.04]	
Age	0.72***	
	[0.06]	
Age-squared	-0.03***	
	[0.00]	
Years of education of head of hh	0	-0.02
	[0.01]	[0.01]
Number of hh members with primary edu	-0.04	-0.03*
	[0.03]	[0.02]
Number of hh members with secondary edu	-0.05**	0
	[0.02]	[0.02]
Number of hh members with tertiary edu	0.03	0.05
	[0.07]	[0.08]
Number of hh members above age 15	0.01	0
	[0.03]	[0.01]
Number of hh members below age 5	0.14***	-0.06***
	[0.03]	[0.02]
HH owns land	0.06	0.01
	[0.05]	[0.03]
secondary enrolment in the region	-0.00**	0
	[0.00]	[0.00]
Christian	-0.69***	0.14

	[0.19]	[0.10]
Muslim	-0.53***	0.06
	[0.20]	[0.10]
Traditional	-0.42**	0.04
	[0.21]	[0.11]
Loc7==Accra (GAMA)	0.54***	-0.14*
	[0.10]	[0.08]
Religious network		0.87***
		[0.25]
Ethnic network		1.30***
		[0.18]
Years of education of hh head		0.00
		[0.00]
Constant	-2.82***	-1.25***
	[0.40]	[0.13]
Observations	8376	8376
Log likelihood	-13964	
Rho	-0.8***	
	[-0.01]	
Lambda	-1.75	
	[0.05]	
Sigma	2.19	
	[0-04]	

Standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1
Regional fixed effects included, but not presented.

Table A7. Treatment Effects Regressions on the log of the number of hours worked –International sample

	Treatment Effects Model	
	Log of hours worked a year	Belong to a remittance recipient household
Belong to a remittance recipient household	-1.69***	
	[0.13]	
Remittance receiving hh with female head	-0.17*	
	[0.09]	
Urban	-0.36***	1.37***
	[0.11]	[0.16]
Male	-0.04	
	[0.05]	
Age	0.72***	
	[0.08]	
Age-squared	-0.03***	
	[0.00]	
Years of education of head of hh	-0.03***	0.02
	[0.01]	[0.02]
Number of hh members with primary edu	-0.07***	0.04
	[0.03]	[0.03]
Number of hh members with secondary edu	-0.06***	-0.06***
	[0.02]	[0.02]
Number of hh members with tertiary edu	0.14***	0.02
	[0.06]	[0.09]
Number of hh members above age 15	0.08***	0.01
	[0.03]	[0.02]
Number of hh members below age 5	0.02	-0.15***
	[0.03]	[0.03]
HH owns land	0.08	0.05
	[0.05]	[0.06]
secondary enrolment in the region	0	0.00*
	[0.00]	[0.00]
Christian	-0.51***	0.08

	[0.20]	[0.17]
Muslim	-0.58***	0.39**
	[0.21]	[0.18]
Traditional	-0.22	0.23
	[0.22]	[0.19]
Loc7==Accra (GAMA)	-0.35***	-1.01***
	[0.09]	[0.11]
Religious network		8.97***
		[0.88]
Ethnic network		0.48***
		[0.14]
Years of education of hh head		0.00
		[0.00]
Constant	-2.04***	-3.04***
	[0.45]	[0.24]
Observations	6666	6666
Log likelihood	-9527.8	
Rho	0.51***	
	[0.03]	
Lambda	0.94	
	[0.07]	
Sigma	1.85	
	[0.04]	

Standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1
Regional fixed effects included, but not presented.