DISCUSSION PAPER SERIES

IZA DP No. 3657

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August 2008

Forschungsinstitut
zur Zukunft der Arbeit
Institute for the Study
of Labor

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August 2008

ABSTRACT

Migration, Remittances and Children's Schooling in Haiti

In this paper, we focus on the use of remittances to school children remaining in migrant communities in Haiti. After addressing the endogeneity of remittance receipt, we find that remittances raise school attendance for all children in some communities regardless of whether they have household members abroad or not; however, in other communities, we only observe this effect among children living in households that do not experience any family out-migration. Our finding underscores the simultaneous and opposing impacts of household out-migration and remittance receipt on children's schooling. While the receipt of remittances by the household lifts budget constraints and raises the children's likelihood of being schooled, the disruptive effect of household out-migration imposes an economic burden on the remaining household members and reduces their likelihood of being schooled. As such, remittances ameliorate the negative disruptive effect of household out-migration on children's schooling and, given the substantial costs of schooling in Haiti, contribute to the accumulation of human capital in the midst of extreme poverty.

JEL Classification: F22, O54

Keywords: migration, remittances, education, Haiti

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I. Introduction

Remittances, the earnings that migrant workers send back to their home communities, either sporadically or on a regular basis, have gained the attention of scholars and others seeking to understand migration and its ramifications. While there are a number of reasons to be interested in these money flows, our interest derives in the possibility that remittances can serve to improve the living standard of families who remain in the origin communities in the long-run. Researchers have found, for example, that some households use remittances toward the establishment or expansion of small businesses (e.g. Woodruff and Zenteno, 2007; Amuedo-Dorantes and Pozo, 2006). In the longer-term, these investments may better the income generating opportunities of families remaining in the home community. In that vein, Duryea et al. (2005) have found that remittances are used to improve housing infrastructure such as in the addition of plumbing and refrigeration. These types of improvements in the physical environment in which families live are thought to contribute toward reductions in infant mortality rates. Finally, others have found that remittances are used to directly cover medical expenses, which presumably lead to healthier populations (e.g. Amuedo-Dorantes and Pozo, 2008).

In this paper, we examine yet another use of remittances that may lead to overall improvements in the lives and long-run income generating abilities of households in origin communities. We focus on the use of remittances to school children remaining in migrant communities in Haiti. The importance of human capital investments for economic development is difficult to overstate. Increasing the educational attainment of children and of adults is generally viewed as a desirable policy goal. In addition to elevating skill levels of workers, higher levels of education are known to be associated with better community health, lower levels

of crime, and more effective democratic political systems. Furthermore, few would argue that in Haiti current levels of human capital are "sufficient" to sustain economic growth.

A few recent studies have examined the impact of remittances on the schooling of children in El Salvador, Mexico, Guatemala and Philippines, among other countries (e.g. Cox Edwards and Ureta 2003, Hanson and Woodruff 2003, Adams 2006, and Yang 2008). Overall, these studies find that remittances either reduce the likelihood of quitting school, increase years of schooling of children, are invested on education, and raise the fraction of school-age children attending school, respectively. Yet, since these studies are not able to separate the "remittance effect" from the "migration effect", it is unclear whether we can conclude anything regarding the sole impact of remittances on schooling. In contrast, Amuedo-Dorantes and Pozo (2007) study the impact of remittances on schooling in the Dominican Republic and find that remittances increase the schooling of children in remittance-receiving households without migrant members abroad (as distinct from remittance-receiving households with migrant members abroad). To the extent that remittance-receiving households without migrant members abroad do not experience a "migration effect", they are able to separate and assess the impact of remittances on children's schooling.

In this paper, we follow a similar approach to the one used by Amuedo-Dorantes and Pozo (2007) when examining the effect that remittances on schooling in the Dominican Republic. Specifically, we take into account that these monetary transfers from emigrants to their home communities in Haiti take place under a variety of circumstances. In some instances, remittances are sent to a household from a family member who has specifically migrated in order to provide her family with these additional resources. In such a case, we will refer to the household as a "migrant household." The family is, in principle, gaining from the receipt of

monetary inflows. However, it is also the case that the household has lost the physical presence of a family member, which is likely to have an impact on the family as well. Children may need take over family chores or work in the family business, responsibilities that had previously been assumed by the absent family member. These responsibilities may interfere with schooling even if financial resources are available to send the children to school. An alternative scenario is that remittances are sent from more distant relatives or even from friends. In that case, remittances are received by the family, but without the disruptions caused by the migration of a family member. In our view, it is likely that the effect of remittances on these two households will differ, as one receives remittances but endures the disruptive effect of family migration, while the second household receives the monetary inflow without the loss of family members. In terms of better understanding the impact of remittances on the schooling of children, we view it as important to distinguish amongst these cases to obtain better estimates of the effects of migration and remittances on the household. Indeed, to this date, most studies examining the impact of remittances on schooling do not distinguish between the two aforementioned types of households. This is because most national surveys do not provide information both on the migration of family members and remittance receipts. In such a case, it is assumed, for example, that if a household is receiving remittances from abroad, those are from a household member who has migrated. However, in many of the surveys that we have examined containing information both on remittances and migration, we find that this assumption is not valid. Some of the households receive remittances from family members who are now residing abroad. Other households receive remittances from more distant relatives and have not experienced the loss of a family member. In yet other cases, we find that there are households that have members abroad, but do not receive remittances. In this study, we differentiate among these situations to

the extent permitted by the data and, thereby, try to separate the "remittance-effect" from the "migration-effect".

Moreover, it is worth mentioning that our interest is on the impact of private transfers on the accumulation of human capital. Why? Overall, public resources devoted to education are meager in Haiti compared to many other countries in the Latin American and Caribbean region (LAC). The private sector is the primary vehicle by which access to education is possible, and has become a substitute for public investment rather than a complement. Almost 90 percent of all schools in Haiti are private or parochial; over three-fourths of private schools have a religious affiliation (Salmi, 1998). Despite a constitutional guarantee of free education, public schools are costly and are of very low quality. Due to low and inconsistent budget allocation for non-salary expenditures from the government, it is common practice for public schools to require a parental financial contribution. In addition to those fees, parents who sent their children to public schools must also purchase books, schools supplies and pay for uniforms (Salmi, 1998). As a result, access to education remains problematic for vulnerable groups, and it can be a heavy financial burden whether the child attends either public or private schools.

Private aid in the form of remittances is, unlike public aid, substantial for Haiti. As such, these monetary inflows have the potential to partially offset the negative effects of the economic and political crises that gripped the nation in the last two decades on schooling investments. Receipt of workers' remittances amounted to 21.5 percent of Haiti's GDP in 2006. By comparison, its neighbor, the Dominican Republic (DR), received remittances to the tune of 9.6 percent of Dominican GDP. While 9.6 percent of GDP represents a relatively large sum, it pales in comparison to the magnitude of Haiti's inflows. It is often assumed that these private inflows could compensate for the lack of public support of education. Even though the data available do

not permit us to ascertain whether this is so, we begin to explore the issue by evaluating whether remittances from abroad are associated with investment in schooling by the household.

II. Brief Background on Available Resources and Educational Attainment in Haiti

Social, economic and environmental indicators show that Haiti is among the most disadvantaged countries in the Western Hemisphere, with high levels of income inequality. Per capita GDP (in international dollars) for a handful of countries in the region during 2006 are displayed in Figure 1. Haiti's per capita income is about one-seventh of the average for the region (1186/8699=0.14).

A long history of political repression (Duvalier regimes) coupled with more recent political instability has handicapped the Haitian economy and hampered the development of social and political institutions that might help lift Haiti from extreme poverty. Recent poverty estimates from the *Enquête sur les Conditions de Vie en Haïti* (Haitian Living Conditions Survey, HLCS) conducted in 2001 by the *Institut Haitien de Statistique et d'Informatique* show that 56 percent of Haiti's population live in extreme poverty, which is defined as less than $1 per day per person. Additionally, about 76 percent of the population is poor, which is defined as less than $2 per day per person (Sletten and Egset 2004).

The political crisis and armed rebellion has not only affected the economy, it has hampered the government's and international donors' efforts to gather the necessary data on which to make sound policy decisions. Obtaining basic information about socioeconomic conditions for the purposes of this study proved difficult. For example, while it is fairly straightforward to obtain statistics on national schooling rates (e.g. net and gross enrollment ratios from UNESCO, *Global Education Digest*) for most nations in the region, these data are not available for Haiti. Other than the estimates from the 2001 HLCS, the most recent national

statistic that could provide us with some sense of the human capital stock in Haiti was the literacy rate. Figure 2 displays adult (individuals 15 years of age and over) and youth (individuals from 15 to 24 years of age) literacy rates in 2005 for Haiti, the DR, Mexico, and the LAC region. These data imply that thirty-four percent of youth in Haiti are illiterate. This compares with a 2 to 3 percent illiteracy rate in Mexico, while the DR and the LAC region overall claim a 6 percent illiteracy rate (*Oficina Regional de Educación para America Latina y el Caribe*). Haiti, perhaps, more than the other LAC countries, experiences greater inequality in educational outcomes according to the 2001 HLCS. Among adults, literacy rates in 2001 in major metropolitan areas were 82 percent and falling to 72 percent in other urban areas. Youths residing in rural areas lagged significantly behind with estimated literacy rates of 38 percent. In the western side of the country, literacy rates among adult men were 74 percent, the highest estimate across the country's nine départements. Not only is Haiti an outlier in terms of human capital stock, but there also appears to be considerable variation today in Haitian access to basic human capital.

Haiti also seems to be an outlier when it comes to remittance inflows. The receipts of workers' remittances as a percent of GDP are displayed for a number of LAC countries in Table 1. Remittance receipts in 1996 amounted to 5 percent of Haiti's GDP but had risen to 21.5 percent by 2006. By comparison, its neighboring country –the Dominican Republic– received remittances amounting to half that in relative terms—about 10 percent of its GDP. As another comparison yet, Mexico –a country often cited for its large share of remittance receipt– reported remittance transfers that account for only 3 percent of its GDP.

When related to exports of goods or to exports of goods and services (see Table 2), it is clear that Haiti's main source of hard currency is derived from these international transfers of

resources. For every U.S. dollar earned via the exports of goods and services, Haiti received $1.72 in private transfers from family and friends abroad. In comparison, consider El Salvador. For every US$ earned through the exports of goods and services Salvadorians received 52 cents in remittances in 2006. In yet another comparison it is interesting to note that for every dollar that Haiti receives in official development assistance, Haitians appear to get on average $2 in remittances (WDI online). Clearly, remittances to Haiti are of a very significant magnitude and may play an important role in raising living standards for its people.

The data from the Haitian Living Conditions Survey also indicate that in the Metropolitan area of Port-au-Prince the poor and extremely poor are more dependent on private transfers; however, the non-poor receive more private transfers in absolute terms than the poor. Additionally, in rural areas, the non-poor are primarily dependent on both external and internal transfers (Sletten and Egset 2004). The data from the Haitian Living Conditions Survey show that 36 percent of the extremely poor receive external transfers, and 59 percent of poor receive external transfers (Sletten and Egset 2004). Therefore, the most destitute do not appear to be the primary beneficiaries of transfers.

In this paper, we attempt to trace the impact that remittances have on the schooling of children in the Haitian household. To what extent do remittances permit households to increase their investments in education? Given the excessive levels of poverty in Haiti can households spare some of these inflows to enhance the educational attainment of children? Adams (2006) provides evidence that remittances are used overwhelmingly toward human capital investments in the case of Guatemala dispelling the notion that they are used mainly for consumption purposes. In what follows, we explore whether a link exists between remittance inflows and investments in education in Haiti's case.

III. Preliminary Hypotheses, Data and Descriptive Statistics

While it may appear that remittances could only help by lifting liquidity constraints and thereby facilitating investments in education, it is also the case that the receipt of remittances may be associated with the out-migration of a family member. Family migration is thought to disrupt the family in ways that may impede educational investments. For example, the absence of a parent may require that children "pick up the slack" through paid work or by increasing hours engaged in family chores (Hanson and Woodruff, 2003). Migration of a family member may also increase the likelihood that other family members will migrate and, as such, reduce the incentive to go to school at home since the expected return to that schooling may be very poorly rewarded in the host country. Kandel and Kao (2001) find that Mexican families with higher probabilities of migration to the United States invest less in education presumably because the return to (primary and secondary) Mexican education is low in the United States. Hence, identifying the true impact of remittance receipt on children' education is complicated due to the family dynamics that accompany the out-migration of family members. Our study will attempt to account for this migration effect when examining the impact of remittances on children's schooling to better understand the impacts of these private transfers.

To gain insights into the impact of remittances on children's education, we use the data contained in the Haitian community files from the Latin American Migration Project (LAMP).[1] The LAMP is a companion to the Mexican Migration Project (MMP) begun in 1982 to study the migration patterns of Mexicans both within Mexico as well as to the United States. The purpose of the LAMP is to expand our knowledge of migration and immigration by exploring these

[1] The Latin American Migration Project (LAMP) is a collaborative research project based at the Princeton University and the University of Guadalajara, supported by the National Institute of Child Health and Human Development (NICHD). The LAMP website is: http://lamp.opr.princeton.edu.

patterns for individuals originating from other countries and areas of Latin America. We exploit the data files from Haiti, which collect detailed social, demographic, and economic information from approximately 300 households and a total of 1,575 individuals. The survey contains information on whether the household receives remittances from abroad, the emigration of family members, and educational attainment of all household members. The survey instrument was administered to 100 households in 2000 and to the remaining 200 households in 2002. Finally, it is important to note that the methodology of the LAMP is to choose communities with a high incidence of migration. Therefore, our findings are not representative of the overall Haitian population but, instead, of subpopulation known to have experienced above average migration. Nonetheless, migration is quite pervasive overall in Haiti. Decades of internal political conflicts have contributed to a cycle of economic hardships. GDP, trade, as well as domestic and foreign investments have been on the decline since the 1980s (World Bank Group, 2004). As such, the employment rate is below 50 percent. Consequently, migration plays an important role in the Haitian economy where private transfers sent by migrants are an important source of economic resources.

We focus our analysis on children aged 6 to 17, resulting in a sample of 328 individuals. Figure 3 provides a summary of the composition of our sample in terms of whether the children reside in households experiencing out-migration or/and receiving remittances. Over half of this sample (182 children/teenagers) resides in a remittance-receiving household. Yet, only 30 percent of these remittance-receiving households are 'migrant' households, i.e. households that claim to have a family member abroad. As such, over two-thirds of the children living in remittance-receiving households receive those monetary transfers from distant relatives or friends, as the household has not experienced the out-migration of any family member.

Additionally, four percent of children in our sample live in households that experience out-migration but do not receive remittance transfers. Finally, forty percent of children reside in households that do not experience out-migration of family members and do not receive remittances from abroad.

In this study, we use a single measure of education, that is, a dummy variable indicative of whether the child currently attends school. Using school attendance as the measure of children's educational attainment presents some shortcomings. For instance, it ignores certain complications surrounding educational attainment, as in the case of school repetition, late integration into the education system and school interruption. Specifically, approximately 13 percent of children in pre-primary through 4^{th} grade in Haiti repeat grades compared to 5 percent in the Dominican Republic (Cumbre de las Americas, 1998).

Another shortcoming of our measure is that there is significant variance in the age at which Haitian children tend to enter the education system. On average it is much later than is typical in other countries. Estimates from the 2001 HLCS indicate that 35 percent of 6-year-old children are enrolled in school. Enrollment rates increase with age; for instance, children age 7 to 11 display escalating enrollment rate ranging from 50 percent to 75 percent. Additionally, school interruption during the academic year is pervasive. The reasons for school interruption, non-participation and late school integration among young children are not well understood. Based on the 2001 HLCS data, which is the last known survey to gather this information, the vast majority of respondents did not specify a reason for not integrating into the education system until late childhood, for disruption in schooling and non-participation in the education system. For example, thirty-eight percent of respondents specified the cost associated with

school as their primary reason for school interruption, whereas 44 percent of the respondents did not give specific reasons for interrupting their academic studies.

The reasons for later school entry and non-participation among young children are equally unclear. According to data from HLCS, twenty-one percent of respondents stated the cost of education as the primary reason for non-participation, whereas 66 percent did not specify a reason. The combined effect of late childhood school participation, school interruption and school repetition is a high enrollment rate at the primary level among youths. That is, older children are enrolled in lower grades than would be consistent with their age, resulting in very high gross enrollment rate at the primary grade level.

Despite these shortcomings, our measure of schooling (current school attendance) presents some advantages. First, to appropriately measure educational attainment, we would need to know the month when the child was born so as to compute her/his age-consistent years of education. We lack this information from the survey. More importantly, the survey only collects information on the current receipt of remittances by the household –a flow measure. Therefore, we lack information on the past receipt of remittances by the household, which may have influenced the educational attainment of the children as captured by years of schooling. Consequently, it makes more sense to evaluate the impact that the current receipt of remittances by the household has on the children's current school attendance.

About 88 percent of children in our sample are reported as being schooled (see Tables 3 and 4). Furthermore we see that the probability of being in school is generally greater in the older age groups. Nonetheless, our schooling rates do seem to be higher than the Haitian average and seem to point to some selection bias in the data due to the LAMP concentration in these 3 specific communities. Table 3 also reports that the probability of being schooled is the highest in

two scenarios: i) when the child lives in a household that has experienced out-migration, but receives remittances from abroad (89 percent of children in that group are schooled) and ii) when the child lives in a household that has not experienced out-migration and does not receive remittance transfers (also 89 percent of children in this group are in school). Children appear least likely to be schooled when they reside in households experiencing the out-migration of family members, but are not the beneficiaries of remittances from abroad. Only 75 percent of the children in those households are in school.

Table 4 provides some additional characteristics of schooled children according to two of their personal characteristics: gender and whether they are the household head's own children. The extended family tradition along with the high levels of emigration of some family members has led to a fairly high incidence of non-nuclear households. Overall, girls are more likely to be schooled than boys. Specifically, only 85 percent of boys are in school compared to 92 percent of girls, with this discrepancy getting larger for younger cohorts of children. Additionally, a higher percentage of the household head's own children are schooled relative to other children residing in the household. These descriptive statistics point to the necessity to control for these factors when examining the impact of remittances on children's schooling.

IV. Methodology

In examining the impact of remittance receipt on children's schooling outcome, we may think of a simple model such that:

(1) $$Schooling_{if} = Remittance\ Receipt_{if} * \beta + \gamma * X_{if} + u_{if}$$

where $Schooling_{if}$ represents the educational outcome being examined. The vector X_{if} includes information on a variety of covariates thought to be important determinants of children's educational outcomes in previous studies (Edwards and Ureta 2003, Hanson and Woodruff

2003). These factors include information on children's gender and family affiliation to allow for differential returns to educational investment for boys and girls, as well as for the household head's own children versus other children residing in the household. Likewise, we account for additional child descriptors potentially affecting children's schooling, such as age and birth order. Additionally, we include information on household wealth, the percent of non-working age household members, and the percent of school-age children living in the household as important factors influencing the household's financial ability to send children to school. We also incorporate information on the educational attainment of the female spouse, as well as of other non-school-aged household members in Haiti (Haveman and Wolfe 1995, Schultz 2002).

Note that, in the above specification, the coefficient estimate for remittance receipt will be biased in the presence of any correlation between household remittance receipt and the error term. Specifically, remittances may be related to household income and wealth, which, in turn, is likely to be correlated to children's schooling, i.e. $\mathrm{Cov}(X,u) \neq 0$. This correlation may result in inconsistent and biased estimates of the educational impact of household remittance receipt.

In order to address the potential correlation between household remittance receipt and the error term, we instrument household remittance receipt using information on a variety of covariates (Z_{if}) thought to be important determinants of remittance receipt as follows:

(2) $\textit{Remittance Receipt}_{if} = \phi * X_{if} + \varphi * Z_{if} + v_{if}$, where: (u_{if}, v_{if}) are normally distributed, with: $\mathrm{Cov}(Z,u) = 0$ and $\mathrm{Cov}(Z,X) \neq 0$. The variables included in Z_{if} inform on the remitting capabilities of potential remitters and, at least, one of them must serve to explain household remittance receipt, yet have no impact on children's schooling. We have two variables that effectively work as instruments. One tracks weekly earnings of workers in the US who are

similar to potential Haitian remitters and the other one tracks unemployment in those geographic areas in which the household is likely to have migrant networks.

The migrant networks that we map out are determined as follows. For each household, we gather information on the geographic location of current and past migration spells of its members. Specifically, we know the last U.S. location of all migrant household members. Additionally, the survey collects information on the U.S. location of the household head's mother, father and siblings if currently abroad. We record all these locations and assume that, if the household is receiving remittances, they are most likely to come from these areas. Next we merge the U.S. state-level unemployment rate and the real weekly earnings of Hispanic workers (considered to be the closest demographic group to Haitians when it comes to labor market performance) to each household claiming to either have some migration experience and/or migrant networks in the U.S.[2] When a household has migrant networks in more than one state, we compute a weighted average of weekly earnings as well as of unemployment rates taking into account the various U.S. locations of household and family members. Households without any migration experience or migrant networks in the U.S. are assigned the Dominican Republic's unemployment rate and its informal sector's weekly earnings as the Dominican Republic is an easier, cheaper and frequent alternative destination for Haitian emigrants.[3]

We check that our instruments are sufficiently correlated to household remittance receipt, which is confirmed by the first-stage results of the instrumental regressions as will be discussed in what follows. Additionally, we rationalize that U.S. state-level unemployment and weekly

[2] The unemployment rate and weekly earnings for Hispanic workers at the state level were obtained from the CPS MORG NBER extracts. Given the survey dates we used 2000 data for community 1 households and 2002 data for community 2 households. The series were deflated using annual U.S.CPI data from the BLS.

[3] Weekly earnings and unemployment rates for informal sector work in the DR in 2000 and 2002 were obtained from *Encuesta de Fuerza de Trabajo, Banco Central de la Republica Dominicana* http://www.bancentral.gov.do/estadisticas.asp?a=Mercado_de_Trabajo. These are deflated using the consumer price index as reported in WDI.

earnings are not likely to be linked to the schooling of children in Haiti other than through remittances themselves. In any event, we test for the exogeneity of the instruments following Wooldridge (2003, p. 505). The results from the Wald test are displayed at the bottom of Tables 5 and 6 and suggest that our two instruments do not significantly explain children's schooling other than via the receipt of remittances by the household.

Another point worth emphasizing in the empirical analysis is the fact that, to the extent that remittances are preceded by the migration of a working-aged household member for one-third of the children in our sample, the remittance coefficient could be, at times, capturing the combined effect of household migration and remittance receipt. In this regard, it is worth emphasizing that the expected educational impacts of household migration and household remittance receipt are likely to work in opposite directions. Specifically, remittances are expected to facilitate investments in education by lifting liquidity constraints, whereas household migration is thought to disrupt family life in ways that may impede educational investments or reduce the anticipated returns to said educational investments. Therefore, to the extent that these two effects are expected to have opposite impacts on children's schooling, we can assess which of the two dominates.

To separate the remittance-receipt and migration impacts, we re-estimate our schooling equation using only households that do not experience the out-migration of a family member – henceforth "non-migrant" households. With that sample, the remittance effect is no longer contaminated by a migration effect as these households have not experienced any out-migration of family. As such, through the comparison of the results using the non-migrant households to the results using all households, we can derive preliminary conclusions about the differential impact of remittance-receipt and migration on the children's schooling likelihood.

Lastly, we note a final complication of the analysis of the Haitian data in the LAMP. Due to political unrest, the fielding of the Haitian survey took place over two time periods: December 2000-January 2001 and December 2002-January 2003. While the original intent was to survey communities 1, 2 and 3 at the same time, safety concerns required the temporary interruption of the survey. In particular, community 1 was surveyed in December 2000-January 2001 before full-blown unrest, whereas communities 2 and 3 were surveyed in December 2002-January 2003 after the political and economic crisis. Given the marked differences in the data as well as in the circumstances surrounding the surveying of these communities, we undertake the analysis separately for each time period[4].

V. Results

Tables 5 and 6 display the key results from estimating equation (1) using instrumental variable methods. In all instances, our two instrumental variables appear to be highly correlated with household remittance receipt as indicated by the joint significance tests at the bottom of Tables 5 and 6. In addition, the exogeneity tests at the bottom of the tables reveal that our instruments are uncorrelated with children's schooling. Therefore, our instruments are econometrically valid. As noted in the previous section, given the unique and distinct circumstances characterizing each of the survey periods, we distinguish between households interviewed in 2000 (i.e. Table 5) and households interviewed in 2002 (i.e. Table 6) when carrying out the analysis. Additionally, we estimate our models using all households as well as using only those households without migrant members to purge our estimates of any potential

[4] One political faction charged the ruling party with tainting the election returns in 2000. A highly polarized debate ensued with serious political violence. The international community responded to the violence by withholding aid, which in turn converted a poor economic situation into an economic crisis. The "Rule of Law" sub-index within the World Governance Index moved for 2.9 (a percentile rank) in 2000 to 0.5 in 2002 and up to 3.8 in 2003 (the survey was not taken in 2001) http://info.worldbank.org/governance/wgi2007/sc_chart.asp

disruptive effect of out-migration of a household member.[5] Finally, it is also worth noting that, since remittance receipt perfectly predicts the outcome of interest in the case of households residing in community 1, i.e. those interviewed in 2000, we are required to estimate equation (1) as an instrumental variable linear probability model. As noted by Wooldridge (2003), the main shortcoming of the linear probability model originates in the usage of predicted probabilities outside the unit interval to make predictions –a problem particularly acute with respect to continuous regressors, but not as much when interpreting our variable of interest, i.e. remittance receipt. In any event, because remittance receipt does not perfectly predict the schooling of children in the case of households from communities 2 and 3, i.e. those interviewed in 2002, we are able to estimate equation (1) as an instrumental variable probit model in those instances.

What are some of the key findings emerging from the analysis? Starting first with community 1, we note that the likelihood of being schooled is higher for older children. This is consistent with what we know about enrollment patterns across different regions in Haiti and the fact that in certain age ranges, school attendance tends to increase as children get older. We also find that remittances raise the likelihood of schooling when we do not control for whether the household claim to have members residing abroad or not (see columns (1) and (2)). In interpreting the magnitude of the coefficient on remittances in Table 5, it is worth noting that, through its instrumentation, the dichotomous remittance receipt variable has in effect been replaced with a continuous variable which can be interpreted as a probability of remittance receipt. Therefore, an increase in the probability of remittance receipt of 10 percentage points (i.e. 0.1) raises the likelihood of school attendance by 2 percentage points (i.e. 0.1*0.21= 0.02).

[5] We are unable to estimate our models exclusively for households with migrant members due to the limited number of observations available in such instances.

Of greater interest to us, however, is the estimated impact of remittance receipt by the household on children's schooling when the household does not have any migrant members as, in that event, the positive income effect of remittances on children's schooling is not biased downwards by the negative disruptive effect of household out-migration in the sample. Columns (3) and (4) of Table 5 display the results from estimating equation (1) using instrumental variable methods and focusing on households from community 1 lacking any previous migration experience, which cuts our sample from 140 to 105 households. As expected, remittance receipt by the household continues to raise children's probability of being schooled and, given the lack of any potentially disruptive family impact, the income effect of remittances on children's schooling likelihood appears somewhat stronger. In particular, an increase in the probability of remittance receipt of 10 percentage points (i.e. 0.1, as assumed above) now raises the likelihood of school attendance by approximately 3 percentage points (i.e. 0.1*0.28= 0.028). However, the Chow test of the equality of the estimated effect of remittance income across children from all households (i.e. column (1)) and children from households without migrants (column (3)) at the bottom of Table 5 reveals that they are not statistically different. As such, the Chow statistic suggests that the disruptive impact of household out-migration on the schooling of children in households from community 1 is fairly small. Why may this be the case? One of the characteristics of community 1 is the large number of schools, both public and private, that line the main street, making this community a magnet for students in nearby areas. This availability and easy access to a variety of schools may help minimize the disruptive effect resulting from the out-migration of household members and, thus, allow for a significant remittance income effect on children's schooling.

Did remittances continue to have a positive impact on children's schooling after the political unrest in 2001? We entertain this question using data from 2002 from communities 2 and 3, both of which differed from community 1 with regards to the accessibility to nearby schools. Community 2 is an active commercial port with lots of traffic and narrow roads, whereas community 3 is a major point of departure for Haitian migrants planning to enter the U.S. by sea and is characterized by its difficult access by car. Therefore, access to schools in these two communities does not resemble that of community 1. Table 6 displays the results from estimating two instrumental variable probit models: one uses all households in the two communities (columns (1)-(3)) and the other one focuses on households without migrants (columns (4)-(6)). When we pool all households from communities 2 and 3, remittance receipt does not seem to raise the likelihood that children will be schooled. Instead, household wealth, relatively more non-working age household members (perhaps a by-product of household emigration), more educated parents, relatively fewer school-aged children in the household (possibly signaling less competition for household resources), are all associated with greater investments in human capital.

Since the expected educational impacts of household migration and household remittance receipt are likely to work in opposite directions, we re-estimate our instrumental probit model focusing on children in households without migrants for which the positive income effect of remittance income is unlikely to be diminished and/or contaminated by any simultaneous disruptive impacts from family out-migration. The results from that exercise are displayed in columns (4)-(6) in Table 6. Perhaps the most important finding is that children residing in remittance-receiving households are more likely to be schooled than children in non-remittance receiving households. A 10 percentage point increase in the probability of receiving remittances

now raises school attendance by 4.7 percentage points; that is, a greater impact of remittance receipt than for community 1. As such, the additional resources received by the households as transfers from individuals abroad do appear to result in additional resources devoted to education. As it would be expected, children's schooling is still more likely in households with a more educated female spouse or head, as well as in households with a small fraction of school-aged children (i.e. signaling less competition for household resources). Likewise, the household head's own children are more likely to be schooled than other children in the household. Perhaps, the only counterintuitive result is that children are more likely to attend schools when they reside in households with less educated adults. Yet, it is also the case that these are children in communities characterized by their active ports and out-migration and, therefore, the opportunity cost of schooling in Haiti may be higher in these communities compared with community 1.

VI. Summary and Conclusions

With this study, we add to the existing literature on the impacts of remittances on the educational attainment of children in emigrants' origin communities. As noted in the Introduction, our main contribution is to separate the "migration effect" from the "remittance effect" in order to gauge the impact of remittance receipt on the children's likelihood of being schooled in an understudied country like Haiti. Because of the political context in which the LAMP was implemented in Haiti, as well as owing to the distinct characteristics of the communities being surveyed, we undertake the analysis separately for children in households interviewed in 2000 (i.e. community 1) and in 2002 (i.e. communities 2 and 3). Additionally, as noted above, we estimate the impact of remittance receipt on children's schooling first pooling children from all households and, subsequently, using a sub-sample of children from households

that do not experience any out-migration. In this manner, we are able to better gauge the presumably positive income effect of remittances on schooling as it will not be diminished by any simultaneous disruptive impact of household out-migration.

After addressing the endogeneity of remittance receipt, we find that remittances raise school attendance for all children in community 1 (a community characterized by its abundance of private, parochial and public schools) regardless of whether they have household members abroad or not. However, remittances only raise school attendance among children in communities 2 and 3 (both of which lack easy school access) when we restrict our attention to the sub-sample of children living in households that do not experience any family out-migration. This last finding underscores the simultaneous and opposing impacts of household out-migration and remittance receipt on children's schooling. While the receipt of remittances by the household lifts budget constraints and raises the children's likelihood of being schooled, the disruptive effect of household out-migration imposes an economic burden on the remaining household members and reduces their likelihood of being schooled. As such, remittances ameliorate the negative disruptive effect of household out-migration on children's schooling and, given the substantial costs of schooling in Haiti, contribute to the accumulation of human capital in the midst of extreme poverty.

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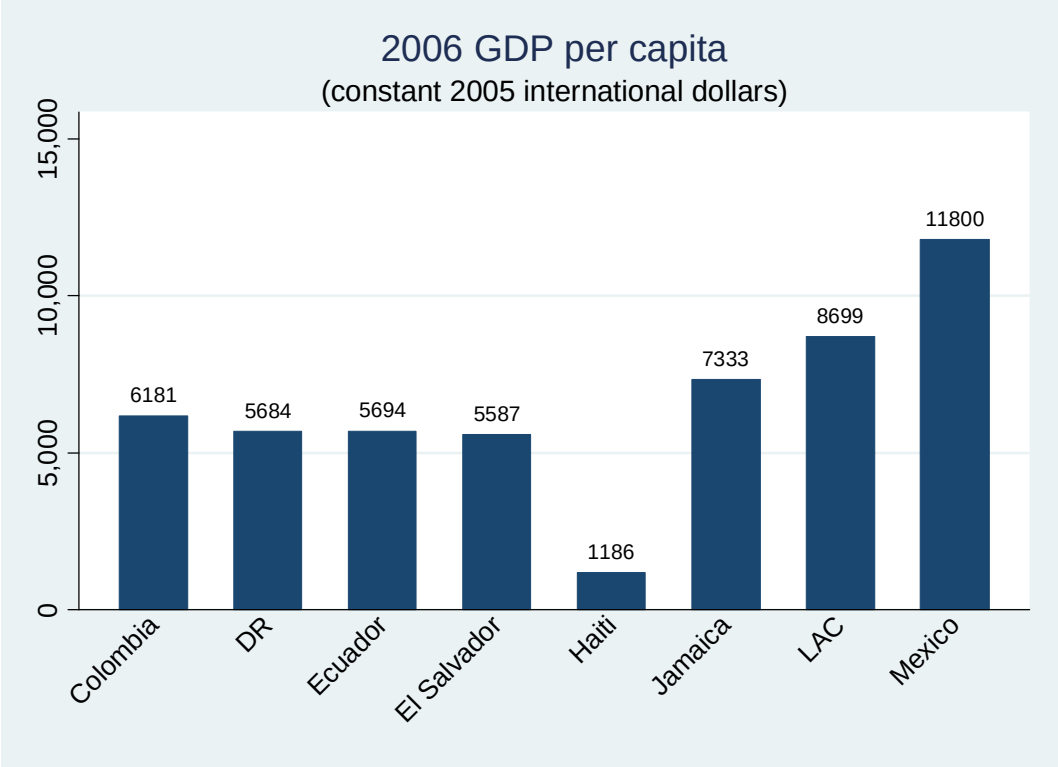
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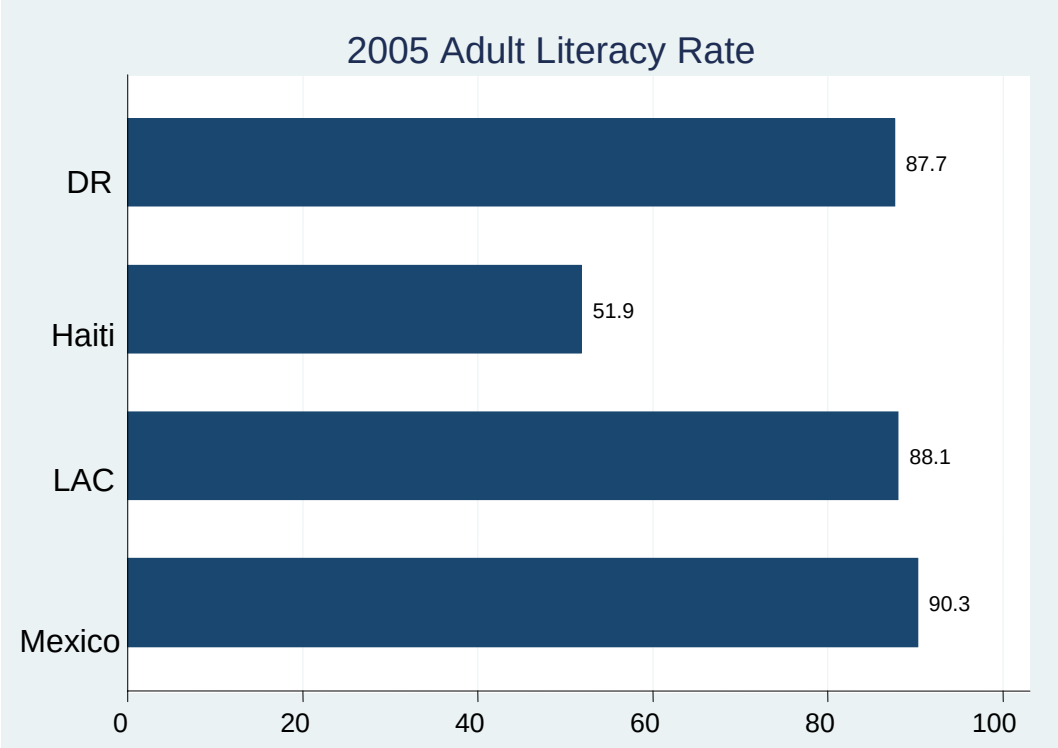
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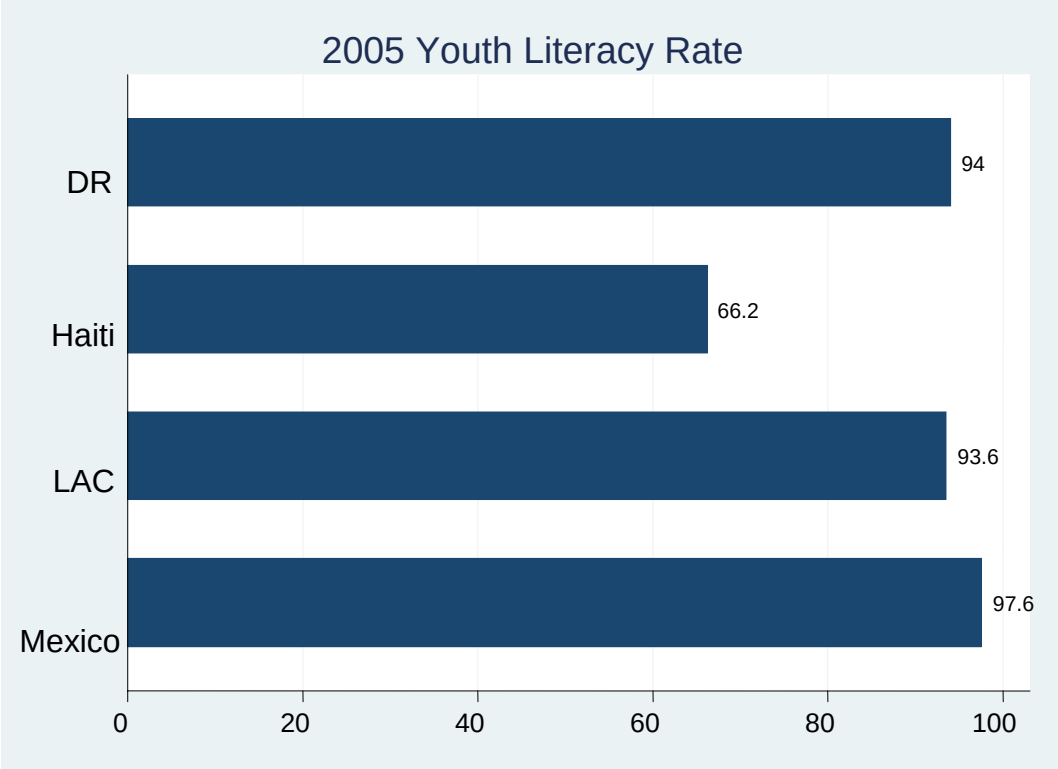
Figure 1



Source: World Development Indicators, online

Figure 2
Literacy Rates





Source: Oficina Regional de Educación para América Latina y el Caribe, UNESCO, www.prie.oas.org/espanol/cpo_home.asp.

Figure 3
Remittance Receipt and Migration by School Aged Children

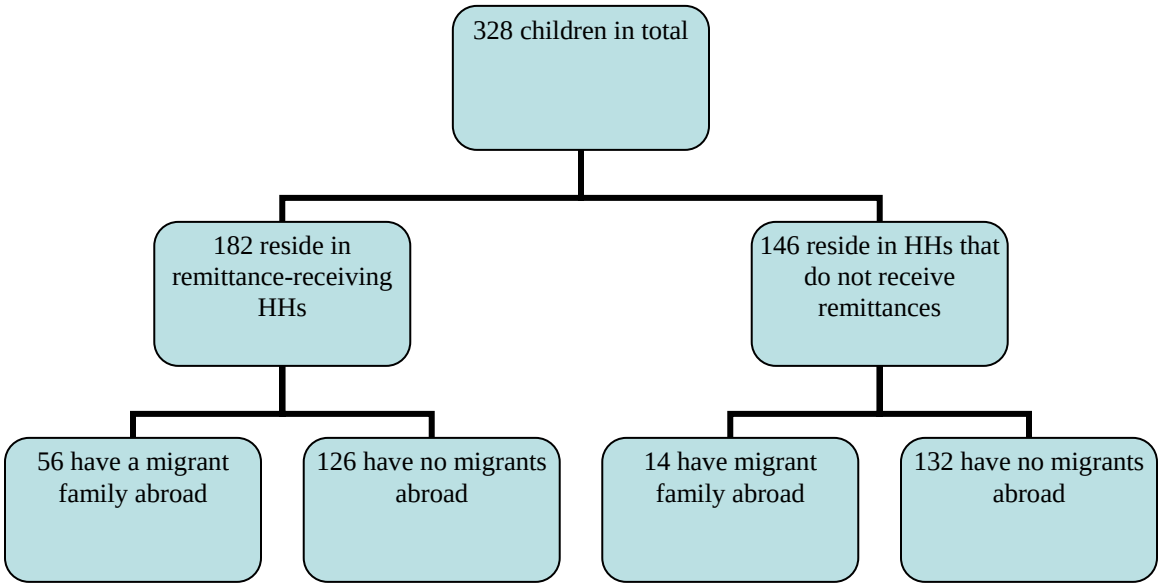


Table 1: Workers Remittances as a Share of GDP in 1996 and 2006

Country	Remittances/GDP in 1996	Remittances/GDP in 2006
Bolivia	0.2	5.5
Brazil	0.3	0.4
Colombia	0.7	2.6
Dominican Republic	6.8	9.6
El Salvador	10.5	17.8
Guatemala	2.4	10.2
Haiti	**5.0**	**21.5**
Honduras	3.9	25.6
Jamaica	10.9	19.4
Mexico	1.5	3.0
Nicaragua	2.9	12.4
Panama	0.9	0.9
Peru	1.1	2.0

Sources and Notes: GDP and workers' remittances (workers' remittances and compensation of employees) are from *World Development Indicator, online.*

Table 2: Workers Remittances as a share of Exports in 2006

Country	Remittances/Exports	Remittances/(Exports of Goods and Services)
Bolivia	15.8	6.73
Brazil	3.1	3.37
Colombia	16.1	19.75
Dominican Republic	47.3	26.20
El Salvador	94.7	53.23
Guatemala	60.1	52.27
Haiti	**211.1**	**172.85**
Honduras	122.6	32.66
Jamaica	98.4	39.74
Mexico	10.0	8.22
Nicaragua	63.8	33.81
Panama	14.2	1.11
Peru	7.8	8.06

Source and Notes: Workers' remittances (workers' remittances and compensation of employees) and exports of goods and exports of goods and services are from *World Development Indicator, online.*

Table 3: Percent of Children Schooled by Household Migration and Remittance Receipt Status

Age	Lives in a Remittance-receiving & Migrant HH	Lives in a Remittance-receiving & Non-migrant HH	Lives in a Non-remittance Receiving & Migrant HH	Lives in a Non-remittance Receiving & Non-migrant HH
6-17	0.89	0.87	0.79	0.89
6-11	0.83	0.86	0.83	0.89
12-17	0.92	0.88	0.75	0.90

Table 4: Percent of Children Schooled by Gender and by Relationship to Household Head

Age	Male	Female	t-stat	Own child	Other child	t-stat
6-17	84.6	91.6	1.96	90.5	82.5	1.84
6-11	81	91.5	1.71	88.6	82.9	0.83
12-17	86.5	91.6	1.14	91.6	82.1	1.67

Table 5: IV Linear Probability Estimates of the Remittance Effect on the Likelihood of Attending School in Community 1

Type of Household	**School Aged Children from All Households**		**School Aged Children from Non-migrant Households**	
Variables	**Coefficient**	**S.E.**	**Coefficient**	**S.E.**
Remittance Receipt	**0.2142****	**0.0900**	**0.2810****	**0.1198**
Current Household Assets	0.0261	0.0168	0.0279	0.0216
Percent of Non-working Age Household Members	0.2017	0.2291	0.3161	0.2916
Mean Potential Education if 17 Years of Age and Older	0.1991	0.1625	0.3342	0.2275
Potential Educational Attainment of Female Spouse or Head	-0.1591	0.1254	-0.2310	0.1678
Percent of School-age Children in the Household	-0.0362	0.1867	-0.0749	0.2496
Own Child	0.0696	0.0658	0.1035	0.0735
Boy	0.0299	0.0501	0.0143	0.0630
Child's Age	0.0182**	0.0081	0.0207**	0.0105
Firstborn Child	-0.0030	0.0483	-0.0204	0.0648
Regression Fit Statistics				
No. of Observations	140		105	
R-squared	0.1114		0.0979	
Joint significance of IVs in first stage regression	F(2, 60) = 26.26 with Prob>Chi2 = 0.0000		Chi2(2) = 17.46 with Prob>Chi2 = 0.0000	
IV Exogeneity Test[a]	$0.266 < \chi^2_{2,5\%} = 5.99$		$0.777 < \chi^2_{2,5\%} = 5.99$	
Chow test of equality of the remittance coefficients	F(1, 116) = 0.33 with Prob>F = 0.5648			

Notes: [(a)] The exogeneity test is carried out using the number of observations and the R-squared obtained from regressing the residuals from the education-structural equations estimated above on all the system's exogenous variables along with the predictions from the migration and remittance receipt equations (Wooldridge 2003, p. 508). *** Signifies statistically different from zero at the 1 percent level or better, **signifies statistically different from zero at the 5 percent level or better and *signifies statistically different from zero at the 10 percent level or better.

Table 6: IV Probit Estimates of the Remittance Effect on the Likelihood of Attending School in Communities 2 & 3

Type of Household	**School Aged Children from All Households**			**School Aged Children from Non-migrant Households**		
Variables	**Coefficient**	**S.E.**	**M.E.**	**Coefficient**	**S.E.**	**M.E.**
Remittance Receipt	**-1.0812**	**1.0530**	**-0.2185**	**1.7010*** **	**0.4397**	**0.4664**
Current Household Assets	0.3122*	0.1824	0.0765	-0.0569	0.1538	-0.0135
Percent of Non-working Age Household Members	2.5557*	1.5091	0.6267	2.8125	1.8935	0.6667
Mean Potential Education if 17 Years of Age and Older	-3.8745	2.4886	-0.9501	-5.3583***	1.9235	-1.2702
Potential Educational Attainment of Female Spouse or Head	2.7067*	1.6221	0.6637	3.9252***	1.5671	0.9305
Percent of School-age Children in the Household	-2.3785*	1.4369	-0.5832	-4.9359***	1.5212	-1.1701
Own Child	0.6012	0.5008	0.1768	1.4777***	0.3389	0.4879
Boy	0.1896	0.4358	0.0486	-0.3863	0.3539	-0.0845
Child's Age	0.0012	0.0526	0.0003	-0.0133	0.0512	-0.0032
Firstborn Child	-0.1366	0.2225	-0.0336	-0.2639	0.2596	-0.0632
Regression Fit Statistics						
No. of Observations		187			153	
Wald Chi2-test		31.44			47.67	
Prob>Chi2		0.0005			0.0000	
Joint significance of IVs in first stage regression	Chi2(2) = 9.76 with Prob>Chi2 = 0.0076			Chi2(2) = 12.78 with Prob>Chi2 = 0.0017		
IV Exogeneity Test[a]	$1.683 < \chi^2_{2,5\%} = 5.99$			$1.3464 < \chi^2_{2,5\%} = 5.99$		
Chow test of equality of the remittance coefficients	Chi2(1) = 5.10 with Prob>Chi2 = 0.0240					

Notes: [(a)] The exogeneity test is carried out using the number of observations and the R-squared obtained from regressing the residuals from the education-structural equations estimated above on all the system's exogenous variables along with the predictions from the migration and remittance receipt equations (Wooldridge 2003, p. 508). *** Signifies statistically different from zero at the 1 percent level or better, **signifies statistically different from zero at the 5 percent level or better and *signifies statistically different from zero at the 10 percent level or better.

Table A: Descriptive Statistics for Variables Used in the Estimation

	Community 1				Communities 2 & 3			
Type of Household	**All Households**		**Non-migrant Households**		**All Households**		**Non-migrant Households**	
Variable Description	**Mean**	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**
Remittance Receipt	0.3857	0.4885	0.2952	0.4583	0.6809	0.4674	0.6209	0.4868
Percent of School-age Children in the Household	0.4230	0.1752	0.4419	0.1846	0.5036	0.2016	0.5128	0.1863
Current Household Assets	1.8286	0.9741	1.8476	1.0075	1.4840	0.9673	1.4444	1.0124
Percent of Non-working Age Household Members	0.5593	0.1569	0.5613	0.1624	0.5716	0.1734	0.5806	0.1651
Mean Potential Education if 17 Years of Age and Older	0.7741	0.1940	0.7542	0.2162	0.7425	0.1902	0.7498	0.1853
Potential Educational Attainment of Female Spouse or Head	0.6209	0.3280	0.6154	0.3599	0.6960	0.2341	0.7164	0.2224
Own Child	0.5000	0.5018	0.5905	0.4941	0.8564	0.3516	0.8562	0.3520
Boy	0.6214	0.4868	0.6381	0.4829	0.7447	0.4372	0.6993	0.4600
Child's Age	12.0500	3.1924	11.8952	3.2756	12.1489	3.3092	11.9673	3.2392
Firstborn Child	0.4857	0.5016	0.5143	0.5022	0.4787	0.5009	0.4641	0.5003
Unemployment Rate in migrant receiving areas	8.6279	5.2547	10.2286	5.1351	12.0638	5.2558	13.6340	4.5448
Real wages in migrant receiving areas.	260.3286	204.1507	191.1048	190.6255	215.3049	203.2924	155.5997	177.4601

Note: Each adult's potential educational attainment is expressed as a percent of total possible educational attainment with 12 years of education as the maximum. Hence, a value for potential educational attainment of 0.6 implies that the individual has acquired 60% of 12 years of education or 7.2 years. For children the maximum educational attainment is further adjusted to reflect their age.