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Migration, Remittances, and Children's Schooling in Haiti

By
CATALINA AMUEDO-DORANTES,
ANNIE GEORGES,
and
SUSAN POZO

The authors examine the impact of remittances on the schooling of children in various Haitian communities with a high incidence of out-migration. After addressing the endogeneity of remittance receipt, they find that, in some communities, remittances raise school attendance for all children regardless of whether they have household members abroad. However, in other communities, this effect is observed only among children living in households that do not experience any family out-migration. Hence, 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 children's school attendance. As such, remittances ameliorate the negative disruptive effect of household out-migration on children's schooling in some migrating communities in Haiti and, therefore, contribute to the accumulation of human capital in the midst of extreme poverty.

Keywords: migration; remittances; schooling; Haiti

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

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be interested in these money flows, our interest lies in the possibility that remittances can serve to improve living standards for families who remain in the origin communities. Researchers have found, for example, that some households use remittances to establish or expand small businesses (e.g., Woodruff and Zenteno 2007; Amuedo-Dorantes and Pozo 2006). In the longer term, these investments may improve income-generating opportunities for families remaining in the home community. In that vein, Duryea, López-Córdova, and Olmedo (2005) found that remittances are often used to improve housing infrastructure, by adding plumbing and refrigeration, for example. Improvements in the physical environment in which families live are thought to contribute to reductions in infant mortality rates. Others have found that remittances are used directly to cover medical expenses, presumably leading to healthier populations (e.g., Amuedo-Dorantes and Pozo 2008).

In this article, we focus on the use of remittances to educate children remaining behind in Haitian communities with a high incidence of out-migration. The importance of human capital investments for economic development is difficult to overstate. In addition to elevating the skill levels of workers, higher levels of education are associated with better community health, less crime, and more effective democratic political systems. Furthermore, few would argue that the current levels of human capital in Haiti are "sufficient" to sustain economic growth.

Recent studies have examined the effect of remittances on the schooling of children in El Salvador, Mexico, Guatemala, and the Philippines, among other countries (e.g., Edwards and Ureta 2003; Hanson and Woodruff 2003; Adams 2006; and Yang 2008). Together, these studies reveal that remittances reduce children's likelihood of quitting school, increase years of schooling, and raise the percentage of school-age children attending school. Since these studies are not able to separate "remittance effects" from "migration effects," however, it is unclear whether we can conclude anything regarding the independent influence of remittances on schooling. In contrast, Amuedo-Dorantes and Pozo (2007) study the effect of remittances on schooling in the Dominican Republic (DR) and found that remittances increase the schooling of children in households without migrants that, nevertheless, receive remittances from distant family members or friends who are abroad (as opposed to 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.

We follow here a similar approach to the one used by Amuedo-Dorantes and Pozo (2007) when examining the effect of remittances on schooling in the DR. 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 to provide her or his family with these additional resources. We will refer to families with migrant members as "migrant households." Such

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families benefit from the monetary inflows but also lose the physical presence of a family member, which is likely to have an impact on the family as well. Children may need to take over family chores or work in the family business. These responsibilities may interfere with schooling even if financial resources are available to send the children to school.

Alternatively, remittances may be sent from more distant relatives or even from friends. In that case, remittances are not accompanied by the disruptions caused by the migration of a family member. In our view, it is likely that the effect of remittances on migrant and nonmigrant households will differ, as one receives remittances but endures the disruptive effect of family migration, while the other benefits financially without suffering the absence of family members.

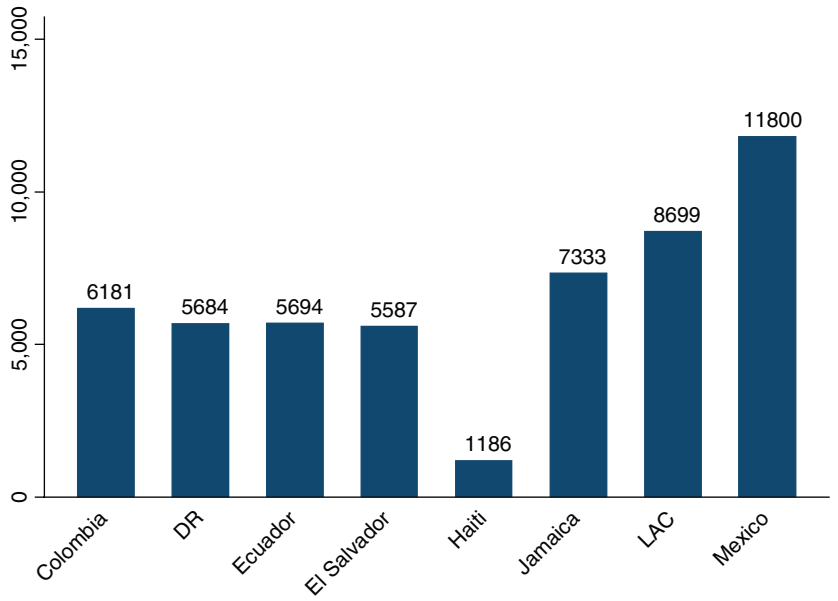
To date, most studies examining the effect of remittances on schooling do not distinguish between migrant and nonmigrant households. This is because most national surveys do not provide information on both the migration of family members and remittance receipts. It is assumed, for example, that if a household is receiving remittances from abroad, those are from a household member who has migrated. However, survey data we have examined from the Latin American Migration Project for the Dominican Republic does not validate this assumption. Some of the households receive remittances from family members who are now residing abroad; others receive remittances from more distant relatives without experiencing the loss of a family member. Yet other households have family members abroad but do not receive remittances. In this study, we differentiate among these situations to the extent permitted by the data in an effort to separate the remittance effect from the migration effect.

Our interest is in the impact of private transfers on the accumulation of human capital in Haiti because overall, public resources devoted to education are meager in Haiti compared to many other countries in Latin America and the Caribbean (LAC). The private sector is the primary vehicle by which access to education is made possible, and it has become a substitute rather than a complement for public investment. Almost 90 percent of all schools in Haiti are private or parochial (Salmi 1998), and despite a constitutional guarantee of free education, public schools are costly and of very low quality. It is common practice for public schools to require a parental financial contribution, owing to low and inconsistent budget allocations from the government for nonsalary expenditures. In addition to these fees, parents who send their children to public schools must purchase books, school supplies, and uniforms (Salmi 1998).

Private aid in the form of remittances is, unlike public aid, substantial for Haiti. These monetary inflows could potentially offset the negative effects on schooling investments of the economic and political crises that have gripped the nation over the last two decades. Workers' remittances amounted to 21.5 percent of Haiti's gross domestic product (GDP) in 2006. By comparison, the remittances its neighbor, the DR, received represented only 9.6 percent of Dominican GDP. While 9.6 percent of GDP constitutes a relatively large percentage, it pales in comparison to the percentage in Haiti. It is often assumed that these private inflows could compensate for the lack of public support of education. Even though the data

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FIGURE 1
Per Capita GDP in Selected LAC Countries (in Constant 2005 International Dollars)



SOURCE: World Development Indicators, online.
NOTE: LAC = Latin America and Caribbean; DR = Dominican Republic.

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.

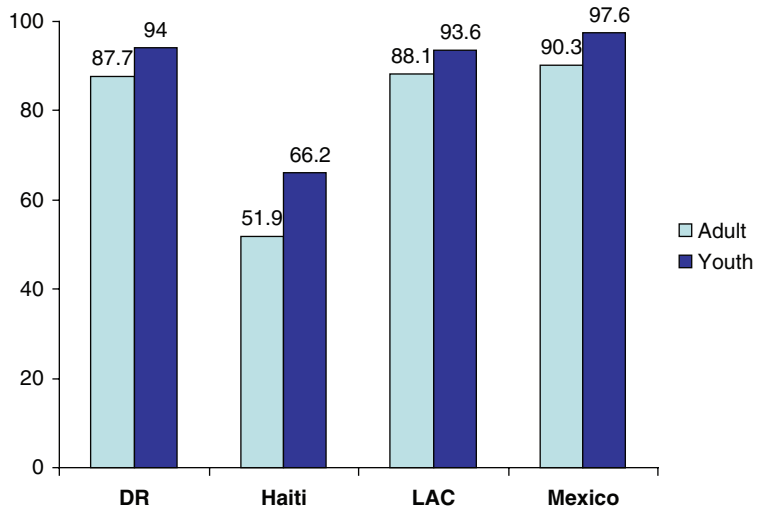
Available Resources and Educational Attainment in Haiti

Social, economic, and environmental indicators consistently rank Haiti among the most disadvantaged countries in the Western Hemisphere, with high levels of poverty and income inequality. Per capita GDP for a handful of countries in the region during 2006 is displayed in Figure 1. Haiti's per capita income is about one-seventh of the average for the region.

A long history of political repression during the two 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. Poverty estimates from the Enquête sur les

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FIGURE 2
2005 Literacy Rates in Selected LAC Countries



SOURCE: Oficina Regional de Educación para América Latina y el Caribe (2008).
NOTE: LAC = Latin America and Caribbean; DR = Dominican Republic.

Conditions de Vie en Haïti (Haitian Living Conditions Survey; HLCS), conducted in 2001 by the Institut Haitien de Statistique et d'Informatique (Institut Haïtien de Statistique et d'Informatique; IHSI 2005), show that 56 percent of Haiti's population live in extreme poverty, living on less than $1 per day per person. About 76 percent of the population is poor, living on less than $2 per day (Sletten and Egset 2004).

The political crisis and armed rebellion have also hampered efforts by the government and international donors to gather the data needed 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's *Global Education Digest*) for most nations in the region, these data are unavailable for Haiti. Other than the estimates from the 2001 HLCS, the most recent national statistic to offer some sense of the human capital stock in Haiti is the literacy rate. Figure 2 displays literacy rates for adults (age twenty-five and over) and youth (ages fifteen to twenty-four) in 2005 for Haiti, the DR, Mexico, and the LAC as a whole. These data suggest that 34 percent of youth in Haiti are illiterate, compared with 2 to 3 percent in Mexico and 6 percent in the DR and the LAC region overall (Oficina Regional de Educación para América Latina y el Caribe 2008).

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TABLE 1
Workers' Remittances as a Share of GDP in 1996 and 2006

Country	1996	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

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

Haiti experiences greater inequality in educational outcomes according to the 2001 HLCS. Among adults, literacy rates in major metropolitan areas were 82 percent, compared with 72 percent in other urban areas; young people in rural areas lagged significantly behind, with an estimated literacy rate of 38 percent. In the western side of the country, literacy among adult men was 74 percent, the highest estimate among the country's nine departments. Not only is Haiti an outlier in terms of its human capital stock, but there also appears to be considerable variation within Haiti in access to basic human capital.

Haiti also seems to be an outlier when it comes to remittance inflows. Table 1 presents migrant workers' remittances as a percent of GDP for a number of LAC countries. Receipts amounted to 5 percent of Haiti's GDP in 1996 but had risen to 21.5 percent by 2006. By comparison, its neighboring country, the DR, received remittances amounting to half that in relative terms—about 10 percent of GDP. Meanwhile Mexico, a country often cited for its large volume of remittances, reported remittance transfers that accounted for only 3 percent of its GDP.

Table 2 expresses remittances relative to exports of goods and services to show clearly that Haiti's main source of hard currency is derived from these international transfers. For every U.S. dollar earned via the export of goods and services, Haiti received $1.72 in private transfers from family and friends abroad. In comparison, consider El Salvador: for every U.S. dollar earned through the export of goods and services, Salvadorans received $0.53 in remittances in 2006. Moreover, for every dollar that Haiti receives in official development assistance, Haitians appear to get on average $2 in remittances (World Development Indicators

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

[WDI] online). Clearly, remittances to Haiti are of a very significant magnitude and may play an important role in raising its people's living standards.

The data from the HLCS also indicate that the poor and extremely poor are more dependent on private transfers in the metropolitan area of Port-au-Prince than elsewhere. Nonetheless, the nonpoor there receive more private transfers in absolute terms than the poor. Additionally, in rural areas, nonpoor households are almost completely dependent on external and internal private transfers. Thirty-six percent of the extremely poor and 59 percent of the poor receive external transfers (Sletten and Egset 2004). Therefore, the most destitute do not appear to be the primary beneficiaries of transfers.

Adams (2006) provides evidence that in Guatemala, remittances are channeled overwhelmingly toward human capital investments, dispelling the notion that they are used mainly for consumption purposes. In attempting to trace the effects remittances have on the schooling of Haitian children, we consider to what extent 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 their children's educational attainment?

Hypotheses, Data, and Descriptive Statistics

Where the receipt of remittances is associated with the out-migration of a family member, it may disrupt the family in ways that impede educational investments.

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As noted above, the absence of a parent may require children to pick up the slack through paid work or by increasing hours engaged in family chores (Hanson and Woodruff 2003). The migration of a family member may also increase the likelihood that other family members migrate and, accordingly, reduces the incentive to go to school at home, since the expected return on that schooling may be poor in the host country. Kandel and Kao (2001) found that Mexican families with higher probabilities of migration to the United States invest less in education, presumably because the return on (primary and secondary) Mexican education is low for people who expect to work in the United States. Hence, identifying the true impact of remittance receipt on children's education is complicated.

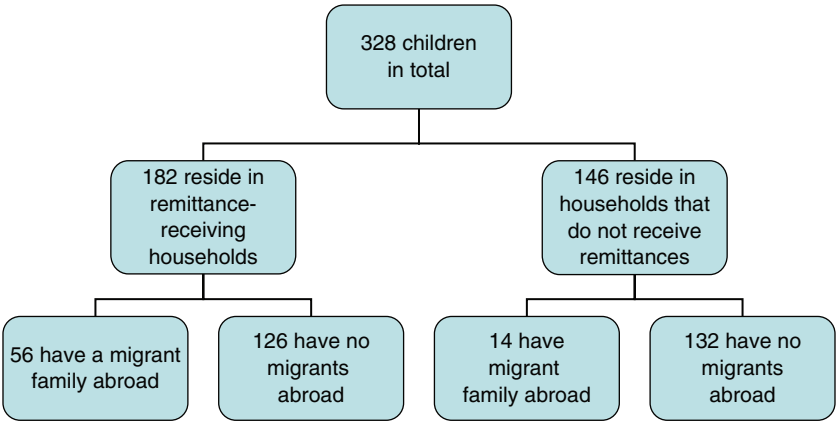
To gain insights into the impact of remittances on children's education, we use the data contained in the Haitian community files from the Latin American Migration Project (LAMP).[1] The LAMP is a companion to the Mexican Migration Project (MMP) begun in 1982 to study the migration of Mexicans both within Mexico and to the United States. The purpose of the LAMP is to expand our knowledge of migration and immigration by exploring these patterns for individuals originating in other regions 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 received remittances from abroad, the emigration status of family members, and the educational attainment of all household members. The survey instrument was administered to one hundred households in 2000 and to another two hundred households in 2002.

Because the methodology of the LAMP specifically targets communities with a high incidence of migration, our findings cannot be taken to represent the overall Haitian population. Migration is quite pervasive throughout Haiti, and decades of internal political conflict have contributed to a seemingly unending cycle of economic hardship. Along with trade and domestic and foreign investment, GDP has been on the decline since the 1980s (World Bank Group 2004), and the employment rate is below 50 percent. Consequently, migration plays an important role in the Haitian economy.

We focus our analysis on children aged six to seventeen, 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 and/or receiving remittances. More than half of those in the sample (182 children and teenagers) reside in remittance-receiving households, yet only 30 percent of these households are migrant households. Thus, more than two-thirds of children living in remittance-receiving households are receiving those monetary transfers from more distant relatives or friends. Only 4 percent of children in our sample live in households that experienced out-migration but did not report remittance transfers. Finally, 40 percent of children reside in nonmigrant households that do not receive remittances.

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FIGURE 3
Remittance Receipt and Migration by School-Age Children in Latin American Migration Project Samples of Haiti



SOURCE: World Development Indicators, online.

In this study, we use a single measure of education—a dummy variable indicating whether a child currently attends school. Using school attendance as the measure of children's educational attainment has its shortcomings. For instance, it ignores certain complications surrounding educational attainment, such as grade repetition, late integration into the education system, and school interruption. Specifically, approximately 13 percent of children in preprimary through fourth grade in Haiti repeat a grade, compared to 5 percent in the DR (Cumbres de las Americas 1998).

A particular shortcoming of our measure stems from the significant variance in the age at which Haitian children enter the education system. On average, it is much later than in other countries. Estimates from the 2001 HLCS indicate that just 35 percent of six-year-olds are enrolled in school. Enrollment rates increase with age, with children aged seven to eleven displaying escalating enrollment rates that range from 50 to 75 percent. School interruption during the academic year is also pervasive. The reasons for school interruption, nonparticipation, and late school integration among young children are not well understood. The vast majority of respondents in the 2001 HLCS, the last known survey to gather this information, did not give reasons for these phenomena. For example, while 38 percent of respondents specified the cost of education as the primary reason for school interruption, 44 percent gave no specific reason for this. Twenty-one percent specified the cost of education as the primary reason

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TABLE 3
Percentage of Children Schooled by Household Remittance Receipt and Migration Status

	Households That Were Lived In			
	Remittance-Receiving		Non-Remittance-Receiving	
Age	Migrant	Nonmigrant	Migrant	Nonmigrant
6-17	89	87	79	89
6-11	83	86	83	89
12-17	92	88	75	90

for nonparticipation, but 66 percent did not specify a reason. The combined effect of late childhood school participation, school interruption, and school repetition is that older children are often enrolled in lower grades than would be consistent with their age, resulting in a high gross enrollment rate at the primary grade level.

Despite these shortcomings, our measure of schooling (current school attendance) offers some advantages. First, to measure educational attainment appropriately, we would need to know the month when the child was born so as to compute his or her age-consistent years of education, but the survey lacks this information. More important, the survey collects information only on the current receipt of remittances by the household—a flow measure. Accordingly, we lack information on the past receipt of remittances by the household, which may have influenced the educational attainment of the children as measured by years of schooling. Consequently, it makes more sense to evaluate the impact of the current receipt of remittances by the household on children's current school attendance.

As shown in Table 3, about 88 percent of children in our sample are reported as being in school, and the probability of being enrolled is generally greater in older age groups. Nonetheless, schooling rates do seem to be higher than the Haitian average and point to potential selection bias in the data due to the LAMP concentration in these three specific communities. Table 3 also suggests that the probability of being enrolled in school is highest under two scenarios: (1) when a child lives in a household that has experienced out-migration but receives remittances from abroad and (2) when a child lives in a household that has not experienced out-migration and does not receive remittances—89 percent of children in both groups are in school. Children are least likely to be in school when they reside in households that report the out-migration of family members but no receipt of remittances from abroad—only 75 percent of the children in these households are in school.

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TABLE 4
Percentage of Children Schooled by Gender and by Relationship to Household Head

Age	Male	Female	*t*-Statistic	Own Child	Other Child	*t*-Statistic
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 4 provides additional information on two personal characteristics of enrolled children: gender and whether they are the household head's own children. A tradition of extended-family households, along with high levels of emigration, has led to a fairly high incidence of nonnuclear households. Overall, girls are more likely to be in school than boys: only 85 percent of boys are in school compared to 92 percent of girls, with this discrepancy being larger among younger children. Additionally, a higher percentage of the household head's own children were in school relative to other children residing in the household. These descriptive statistics point to the necessity of controlling for these factors when examining the impact of remittances on children's schooling.

Methods

In examining the effect of remittance receipt on children's schooling outcomes, we specify a simple model such that

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

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, as well as information on household wealth, the percentage of non-working-age household members, and the percentage 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

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well as of other non-school-age 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 the receipt of remittances and the error term. Specifically, remittances may be related to household income and wealth, which, in turn, are likely to be correlated to children's schooling, that is, $\text{Cov}(X, u) \neq 0$. This correlation may result in inconsistent and biased estimates of the effect of remittances on education.

To address this potential bias, we instrument household remittance receipt using information on a variety of covariates (Z_{if}) thought to be important determinants of remittance receipt as follows:

$$\textit{Remittance Receipt}_{if} = \phi \times X_{if} + \varphi \times Z_{if} + \upsilon_{if}, \tag{2}$$

where (u_{if}, υ_{if}) are normally distributed, with $\text{Cov}(Z, u) = 0$ and $\text{Cov}(Z, X) \neq 0$. 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 United States who are similar to potential Haitian remitters; the other tracks unemployment in those geographic areas in which the household is likely to have migrant networks.

The migrant networks we map out are determined as follows. For each household, we gather information on the geographic location of current and past migration spells of all members, noting 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 parents and siblings if currently abroad. We record all these locations and assume that, if the household is receiving remittances, they are most likely coming 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) with each household claiming to either have some migration experience and/or migrant networks in the United States.[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 with no migration experience or migrant networks in the United States are assigned the DR's unemployment rate and its informal sector's weekly earnings, as the DR is easier and cheaper to reach and a frequent alternative destination for Haitian emigrants.[3]

We check that our instruments are sufficiently correlated with household remittance receipt, which is confirmed by the first-stage results of the instrumental regressions, as will be discussed below. Additionally, we rationalize that U.S. state-level unemployment and weekly earnings are not likely to be linked to the schooling of children in Haiti other than through remittances themselves. In any

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event, we test for the exogeneity of the instruments following Wooldridge (2003, 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.

Since remittances are preceded by the migration of a working-age household member for one-third of the children in our sample, the remittance coefficient could, at times, be 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 effects are expected to have opposite impacts on children's schooling, we can assess which of the two dominates.

To separate the effects of remittance receipt and family member migration, we reestimate our schooling equation using only nonmigrant 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 members. Accordingly, by comparing the results using the nonmigrant 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.

Last, 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 to January 2001 and December 2002 to 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 and January 2001, before full-blown unrest, whereas communities 2 and 3 were surveyed in December 2002 and 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]

The Effect of Remittance Receipt on Schooling

Descriptive statistics for variables used in the models are presented in the appendix. 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

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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 (Table 5) and those interviewed in 2002 (Table 6). 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 disruptive effect of out-migration of a household member.[5]

Finally, because it turned out that 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 that is particularly acute with respect to continuous regressors, but less acute when interpreting our variable of interest: 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, we are able to estimate equation (1) as an instrumental variable probit model in those instances.

Among our key findings, starting with community 1, we see 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 claims 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., by 0.1) raises the likelihood of school attendance by 2 percentage points (i.e., $0.1 \times 0.21 = 0.02$).

Of greater interest to us, however, is the estimated effect of remittance receipt on children's schooling when the household does not have any migrant members, since, in that event, the positive effect of remittance income 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, household remittance receipt continues to raise children's probability of being schooled, and given the lack of any potentially disruptive

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TABLE 5
Linear Probability Estimates of the Remittance Effect on the Likelihood of Attending School in Community 1

Variables	School-Age Children from All Households		School-Age Children from Nonmigrant Households	
	Coefficient	*SE*	Coefficient	*SE*
Remittance receipt	.2142**	.0900	.2810**	.1198
Current household assets	.0261	.0168	.0279	.0216
Percent of non-working-age household members	.2017	.2291	.3161	.2916
Mean potential education if 17 years of age or older	.1991	.1625	.3342	.2275
Potential educational attainment of female spouse or head	−.1591	.1254	−.2310	.1678
Percentage of school-age children in the household	−.0362	.1867	−.0749	.2496
Own child	.0696	.0658	.1035	.0735
Boy	.0299	.0501	.0143	.0630
Child's age	.0182**	.0081	.0207**	.0105
Firstborn child	−.0030	.0483	−.0204	.0648
Regression fit statistics				
Number of observations	140		105	
R^2	.1114		.0979	
Joint significance of IVs in first-stage regression	$F(2, 60) = 26.26$ with Prob > $\chi^2 = .0000$		$\chi^2(2) = 17.46$ with Prob > $\chi^2 = .0000$	
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 > $F = .5648$			

a. The exogeneity test is carried out using the number of observations and the R^2 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, 508).
**Statistically different from zero at the 5 percent level or better.

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 (0.1, as assumed above) raises the likelihood of school attendance by approximately 3 percentage points (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 (column 1) and

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TABLE 6
Probit Estimates of the Remittance Effect on the Likelihood of Attending School in Communities 2 and 3

Variables	School-Age Children from All Households			School-Age Children from Nonmigrant Households		
	Coefficient	*SE*	*ME*	Coefficient	*SE*	*ME*
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
Percentage 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 or 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
Percentage 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						
Number of observations		187			153	
Wald χ^2 test		31.44			47.67	
Prob > χ^2		.0005			.0000	
Joint significance of IVs in first-stage regression	$\chi^2(2) = 9.76$ with Prob > $\chi^2 = .0076$			$\chi^2(2) = 12.78$ with Prob > $\chi^2 = .0017$		
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	$\chi^2(1) = 5.10$ with Prob > $\chi^2 = .0240$					

a. The exogeneity test is carried out using the number of observations and the R^2 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, 508).

*Statistically different from zero at the 10 percent level or better. ***Statistically different from zero at the 1 percent level or better.

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children from households without migrants (column 3) at the bottom of Table 5 reveals that they are not statistically different.

Thus, 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. One possible reason for this finding is that community 1 has a large number of schools, both public and private, lining its main street, making it a magnet for students in nearby areas. This availability of a variety of easily accessible schools may help to minimize the disruptive effect of household member out-migration 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 answer this question using data from 2002 from communities 2 and 3, both of which differed from community 1 in terms of accessibility to nearby schools. Community 2 is an active commercial port with heavy traffic and narrow roads, whereas community 3 is a major point of departure for Haitian migrants planning to enter the United States by sea and is difficult to access by car. Access to schools in these two communities is considerably lower than in community 1. Table 6 displays the results from estimating two instrumental variable probit models: one uses all households in the two communities (columns 1, 2, and 3); the other focuses on households without migrants (columns 4, 5, and 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, and relatively fewer school-age children in the household (possibly signaling less competition for household resources) are all associated with greater investments in human capital.

Since the expected educational effects of household migration and remittance receipt are likely to work in opposite directions, we reestimate our instrumental probit model focusing on children in nonmigrant households, for which the positive income effect of remittance income is unlikely to be diminished by any simultaneous disruptive impacts from family out-migration. The results from that exercise are displayed in columns 4, 5, and 6 of 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 raises school attendance by 4.7 percentage points—a greater impact of remittance receipt than for community 1.

In other words, the additional resources received by the households as transfers from individuals abroad do appear to result in additional resources devoted to education. As 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 fewer school-age children. Likewise, the household head's own children are

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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 than in community 1.

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" to gauge the impact of remittance receipt on children's likelihood of being schooled in an understudied country such as Haiti. Because of the political context in which the LAMP was implemented in Haiti and the distinct characteristics of the communities being surveyed, we undertook the analysis separately for children in households interviewed in 2000 (community 1) and in 2002 (communities 2 and 3). Additionally, as noted above, we estimated the impact of remittance receipt on children's schooling by first pooling children from all households and, subsequently, using a subsample of children from households that did 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 the receipt of remittances raises 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 raise school attendance among children in communities 2 and 3 (both of which lack easy school access) only when we restrict our attention to the subsample 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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Appendix
Descriptive Statistics for Variables Used in the Estimation

	Community 1				Communities 2 and 3			
	All Households		Nonmigrant Households		All Households		Nonmigrant Households	
Variable Description	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*
Remittance receipt	0.3857	0.4885	0.2952	0.4583	0.6809	0.4674	0.6209	0.4868
Percentage 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
Percentage 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 percentage 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 percent of 12 years of education, or 7.2 years. For children, the maximum educational attainment is further adjusted to reflect their age.

Notes

1. The LAMP is a collaborative research project based at Princeton University and the University of Guadalajara, supported by the National Institute of Child Health and Human Development (NICHD). The LAMP website is lamp.opr.princeton.edu.

2. The unemployment rate and weekly earnings for Hispanic workers at the state level were obtained from the Current Population Survey Merged Outgoing Rotation Groups National Bureau of Economic Research 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 consumer price index data from the U.S. Bureau of Labor Statistics.

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, available from www.bancentral.gov.do/estadisticas.asp?a=Mercado_de_Trabajo. These are deflated using the consumer price index as reported in WDI.

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 subindex within the World Governance Index moved from 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). See info.worldbank.org/governance/wgi2007/sc_chart.asp.

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

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