Accounting for Remittance and Migration Effects on Children's Schooling

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Abstract

We examine the impact of remittance receipt on children's school attendance in the Dominican Republic. To isolate the effect of remittances from the effect of sometimes concurrent household migration, we focus on children in households without members currently residing abroad. The focus on this group is meaningful as 88 percent of children and as much as 52 percent of children in remittance-receiving households reside in those households. We find that remittances promote children's school attendance regardless of the child's gender and birth order. Additionally, we find that migration has a negative impact on the school attendance of children as it effectively eliminates the positive effect of remittance receipt when we expand our sample to include children in households with members currently residing abroad.

Keywords: Latin America, Dominican Republic, school attendance, remittances, migration

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I.   Introduction

Because of the development potential of financial inflows, a growing literature has looked for positive impacts of international remittances on poor economies. Remittances have been studied to ascertain to what degree these flows serve to raise or even-out consumption levels, provide for housing, promote business investments, and increase the availability of health services for individuals with monetary constraints. Yet, some studies have suggested that remittances primarily raise consumption levels and do not necessarily promote investments in either physical or human capital.[1] We suspect that these competing conclusions about the benefits of remittances may partially be due to the confounding impacts of remittances and family migration. While remittances can benefit households by lifting liquidity constraints, migration of a family member may have a deleterious impact on the household's well-being. The absence of a family member may deprive the household of the migrant's market and non-market production, possibly making the household worse-off. Therefore, it is of interest to ask to what extent the gains from remittances make up for the losses sustained from family migration.

In this paper, we provide illustrative evidence of the importance of distinguishing between the presumably negative migration effect and the positive effect of remittances when examining the impact of remittance inflows on children's schooling using data from the Dominican Republic. The Dominican Republic is an interesting case study for various reasons. First, it is a country that has experienced extensive emigration. According to the World Bank, twelve percent of the Dominican population has emigrated (World Bank 2009). Secondly, remittance receipts in the Dominican Republic account for about 10 percent of the country's GDP (World Bank 2009). Third, children's 2007 school attendance rates are relatively low. The

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[1] See Durand and Massey (1992) for a review of studies suggesting that remittances are used in "non-productive" ways and Caceras (2008) for a more recent study arguing likewise for El Salvador.

primary school net enrollment rate is 82 percent, with secondary enrollment rates falling to 61 percent (UNESCO 2009), thus leaving significant room for improvements in educational attainment. Finally, the Dominican Republic is a particularly interesting case study for the purpose of our analysis due to the substantial variation in emigration and remittance-receiving patterns across households, which enables us to separate the migration effect from the remittance effect and to confirm their competing impacts.

We proceed by first distinguishing households with a family member currently abroad (i.e. migrant households) from households without migrants in the U.S. or elsewhere (i.e. non-migrant households). Focusing our attention on non-migrant households –to which most of the children in the sample belong to and in which more than half of children in remittance-receiving households reside, we examine the impact that the receipt of remittance income has on their children's school attendance. To the extent that non-migrant households do not have members abroad, we are able to isolate the impact of the receipt of remittances from that of family migration on the schooling of children. In order to empirically sign the effect of family migration on the schooling of children and to gauge whether the presumably negative migration effect offsets the positive impact of remittance-receipt, we repeat the analysis expanding our sample to include children residing in migrant households. We then compare our estimates of the impact of remittance receipt in the two instances, i.e. when we exclude and when we include children residing in migrant households, to gain a better understanding of how family migration and remittance-receipt affect children's schooling. To conclude, we explore variations in the impact of remittance receipt on children's school attendance depending on their gender and birth order –two characteristics proven to be crucial in previous studies of human capital investments on children (e.g. Calero *et al*. 2009; Emerson and Souza 2008).

We find that remittances promote children's school attendance in the Dominican Republic regardless of the child's gender and birth order. Additionally, we are able to conclude that migration has a negative impact on the school attendance of children since the positive effect of remittance receipt effectively disappears when we expand our sample to include children in migrant households. Overall, the analysis provides further evidence of the positive impact that remittances can have on remittance-receiving countries, while also noting that migration of family members may temper and even cancel-out the positive remittance effect. As is the case with the Dominican Republic, the findings should prove of interest to developing countries with extensive emigration and striving to promote educational attainment.

II. Background on Remittances and Children's Schooling

A growing number of studies have examined the impact of remittances on children's schooling and educational attainment all over the world. Focusing on Latin America, the hypothesis that remittances raise educational attainment or investments in schooling has received support in a growing number of studies, including those by Ilahi (2001) for Peru; Cox Edwards and Ureta (2003) for El Salvador; Borraz (2005) for Mexico; Acosta *et al.* (2007) for a number of Latin American countries; and Calero *et al*. (2009) for Ecuador. Standard economic theory suggests that, by lifting liquidity constraints, remittances should raise investments in human capital of household members, particularly in poor developing countries. While schools may be state-supported, students in developing nations are often expected to pay for their books, uniforms, supplies and sometimes even teacher salaries. Furthermore, attending school imposes additional costs on the family through accompanying reductions in monetary income or household production by the attendee. Given the competition between school and work, remittances, often amounting to a considerable fraction of the household budget, have the

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potential to loosen household liquidity constraints and increase investments in human capital. Yet, perhaps contrary to what one would expect from the income effect due to increases in non-labor income, Acosta *et al.* (2007) conclude that remittances do not raise educational attainment in the Dominican Republic.

In this paper, we revisit the role of remittances on school attendance in the Dominican Republic. Unlike the aforementioned literature, we take into account the fact that migration of a family member often accompanies the receipt of remittances by the household. We also carefully address the endogeneity of remittance receipt. The absence of adult household members due to migration may induce changes in the schooling of non-migrating family members for various reasons. Children may engage in market activities to replace the household's lost income, leaving less time to devote to their studies. Also, children may skip or quit school in order to attend to necessary household chores or to care for younger children or elderly family members –activities formerly undertaken by the now absent household member. Consequently, if we do not adequately control for family emigration, we may not uncover the true impact of remittances on children's schooling. A recent study by Bansak and Chezum (2009) of the educational attainment of Nepalese children acknowledges the two competing impacts of remittances and family emigration, which they describe as net remittance and absenteeism effects. However, some doubts remain as to the ability of the strategy employed in their analysis to separate and properly estimate the remittance and migration effects.[2]

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[2] Their study uses past literacy rates and political unrest indicators as instruments for remittances and absenteeism. While the two instruments are likely to be related to the variables being instrumented, they are also correlated to children's educational attainment. Furthermore, to the extent that both instruments contribute to absenteeism and family remittances, it becomes impossible to separate the two competing impacts.

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III. Data and Descriptive Statistics

To ascertain the impact of remittances on children's schooling, we use Dominican data from the Latin American Migration Project survey (known as the LAMP-DR7).[3] The LAMP-DR7 consists of 907 households with 1123 children between the ages of 7 and 18 interviewed in seven Dominican communities in 1999 and 2000. Two of the communities are located within the capital city, Santo Domingo, while the remaining communities are located in a diversity of areas including farming communities, impoverished rural towns, and middle-sized cities.

Table 1 displays some descriptive statistics for the variables in our sample. The first two columns of Table 1 refer to all children regardless of whether or not they reside in a household with family members abroad. These figures indicate that the school attendance rate for children between 7 and 18 years of age in this sample of Dominican children is about 76 percent. Nineteen percent of all children in the seven communities being surveyed by the LAMP reside in remittance-receiving households.[4] Eighty percent of household heads are employed and approximately 40 percent of household members are children between 7 and 18 years of age. The female spouse (or if there is no female spouse, the household head) has 3.25 years of education. Comparisons of these descriptive statistics with those in the last two columns, which refer to children in non-migrant households, reveal that the variables of interest take on very similar values in both samples. This is not surprising given that the vast majority of children in the LAMP-DR7 reside in non-migrant households, i.e. 983 children out of the 1123 total.

The purpose of our analysis is to learn about the impact that the receipt of remittances by the household may have on children's school attendance. Since we do not have information on

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[3] The Latin American Migration Project (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: http://lamp.opr.princeton.edu/.
[4] We only have information on the receipt of remittances by the household, but not on the amount received.

the household's history of remittance receipts, we focus on the impact that the receipt of remittances by the household may have on the contemporaneous school attendance of children.[5] Simple descriptive statistics concerning school attendance for all 7 to 18 year olds in the survey are displayed in Table 2. Boys have a slight edge over girls in school attendance, but this gender difference is not statistically significant. However, firstborns are significantly less likely to attend school relative to their younger siblings.

IV.   Empirical Methodology

To analyze the effect of remittance receipt on children's school attendance, we could estimate the following benchmark model:

(1) $School\ Attendance_{if} = \alpha + \beta R_f + \chi' X_{if} + \varepsilon_{if}$,

where: $\varepsilon_{if} \mid R_f, X_{if} \sim \mathrm{N}(0, \sigma^2)$ for i=1, …, n individuals in the sample. R_f is a dummy variable denoting whether the household receives international remittances. (Unfortunately, the survey does not contain information on the dollar amount received by families.) The vector X_{if} includes information on a variety of covariates thought to be important determinants of children's schooling according to earlier studies, such as those by Cox Edwards and Ureta (2003) and Hanson and Woodruff (2003). Some of these determinants include information on children's gender and order of birth to allow for differential returns to educational investment for boys and girls, as well as for first-borns and later-born children. We account for additional child descriptors potentially affecting children's educational attainment, such as age. We also include information on the employment of the household head, household assets, and the percent of school-age children living in the household as important factors influencing the household's

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[5] An alternative approach would measure educational attainment (perhaps the number of years of schooling completed by the child in relation to their age), but such a variable is likely to depend on the household's history of remittance receipts.

financial ability to send children to school. Additionally, we account for the educational attainment of the female spouse, a factor known to be highly correlated with children's educational attainment (Haveman and Wolfe 1995, Schultz 2002). Finally, we include a set of community dummy variables to take into account regional differences across the various Dominican Republic communities to which the children belong to, such as differences in per capita income levels or school infrastructure possibly impacting school attendance rates.

A)   Distinguishing Between the Remittance and the Household Migration Effects

There are several econometric problems that could arise in the estimation of equation (1). Perhaps, the most pressing problem is the fact that household migration has taken place for 48 percent of the children residing in remittance receiving households. Remittances –a source of non-labor income– may lift budget constraints and, through an income effect, improve the likelihood that children in remittance-receiving households go to school. However, the presence of family members abroad may induce changes in school attendance of children in non-migrant households for a variety of reasons. Children may have less time to devote to schooling because they engage in market activities to earn income to defray migration-related expenses of household members or to replace the migrant's former contributions to the household's income. Alternatively, children may leave school to attend to necessary household chores that the absent migrant no longer attends to. Finally, if children expect to follow their family members and migrate in the future, they may drop out of school if Dominican education is not generally rewarded in the destination.[6] Therefore, attributing choices in schooling to remittances alone may not be appropriate if there is a concurrent migration effect.

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[6] Kandel and Kao (2001) suggest this to be the case in Mexico. They find that children in families with high U.S. emigration probabilities are less likely to go to school.

Distinguishing the disruptive effect of household emigration from the income effect of remittance inflows on children's schooling is problematic as it requires the identification of two separate events that are often driven by similar factors. While the existence of a close family member abroad significantly raises the odds of remittance receipt for a significant portion of families in the Dominican Republic, more than half of remittance-receiving households seem to be receiving these flows, not from close family, but rather from distant relatives or perhaps friends. In those instances, remittance receipts are not related to household migration. We take advantage of the diversity in household emigration and remittance-receipt patterns in our sample and focus our attention on children residing in non-migrant households to separate the remittance effect from the family migration effect.[7] While this constitutes a selected group, examining the effect of remittance receipt on the school attendance of these children is still of interest for various reasons. First, the vast majority of children in our sample (i.e. 983 out of 1123 or 88 percent of our sample) reside in households without close family members abroad (see Table 3). Second, migration of a household member is not a precondition for remittance receipt in the Dominican Republic. More than half of children in remittance-receiving households (124 out of 217 in the LAMP-DR7) live in households without a household member abroad (see Table 3). These households must be receiving remittances from distant relatives or even friends. Finally, the focus on non-migrant households provides us with a more homogenous sample of children.

B)   Endogeneity of Remittance Receipt

The estimation of equation (1) presents one additional challenge. Specifically, the receipt of remittances and the error term may be correlated, in which case the coefficient estimate for

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[7] While it may seem of interest to also compare children's school attendance in migrant households according to their receipt of remittances, the small number of children in migrant households impedes this exercise. There are only 140 children in migrant households and, of these, ninety-three live in households that receive remittances and only 47 residing in households that do not receive remittances.

remittance receipt is biased. There are two potential sources for this noted correlation. The first source originates in the presence of unobserved heterogeneity and omitted variable bias. The receipt of remittances may be inversely related, for example, to household income which, in turn, may be positively correlated to school attendance.[8] In that regard, our estimate of the impact of the receipt of remittances is likely to be downward biased. The second source of correlation between the receipt of remittances and the error term in equation (1) results from the potential joint determination of remittance transfers and children's schooling. In particular, while it seems reasonable to expect that remittance receipts facilitate investments in schooling, it may also be the case that children's schooling induce remittance inflows, e.g. an aunt may be remitting to a favorite nephew to reward him for his school attendance. In that case, the nephew's schooling is determining the aunt's remittances.

To account for the potential endogeneity of remittance receipt, we estimate equation (1) as a two-stage linear probability model. We instrument remittance receipt with the 1999-2000 unemployment rate and average real earnings in personal care and service occupations in those U.S. states where household heads likely developed networks.[9] In those instances when the family has no known prior migration history, these instrumental variables take on the unemployment and wage values in Puerto Rico. With no history of household migration to the U.S. mainland, Puerto Rico –accessible by boat from the Dominican Republic and, as such, a common destinations of Dominicans going to the U.S.– is more likely to be the origin of the remittance flows.

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[8] This is one of the variables we lack information on in the dataset.
[9] Unemployment rates and earnings data were obtained from the Bureau of Labor Statistics at: http://www.bls.gov/ and the migration history of the household head is used to identify the state in the U.S. in which the household has likely established migration networks, such as friends and distant family members who may be the source of remittances today.

What is the logic behind our choice of instruments? Current labor market conditions in U.S. destination areas are likely to be correlated with the sending of remittances by migrants. Our identifying assumption is that current U.S. labor market conditions do not affect the school attendance of children in the Dominican Republic other than through remittances. As is often the case with instruments, ours could be subject to potential shortcomings we discuss in what follows. For instance, one potential threat is that the instruments could be related to household characteristics that affect children's schooling, such as household income. Higher income households may have historically placed migrants in economically more attractive states in the U.S. To address this possibility, we control for as many household characteristics correlated with household income as we possibly can, including the educational attainment of the female head (believed to be the most important indicator of children's educational attainment), the employment of the household head, and household assets.

A second possible threat to the validity of our instruments could come from the fact that Dominican migrants from different regions may traditionally send migrants to specific U.S. states. In that case, the instruments could be simply capturing regional differences across Dominican communities, such as differences in per capital income levels, school infrastructure or overall economic development. To account for this possibility, the analysis includes community dummies.

A final threat to the validity of this instrument (although also related to regional differences and economic development captured by the community dummies) is if migration networks alter children's school attendance rates by directly or indirectly impacting household wealth or by changing the incentives to acquire an education. Introducing community fixed effects indirectly accounts for differences in migration networks across communities. In any

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event, as noted by others in this literature (McKenzie and Rapoport 2006), the effect of a community network is likely to be second-order (to the effect of other household characteristics) in the education decision.

In addition to discussing the theoretical basis and overall rationale for our choice of instruments, we inspect our instrumental variables to ascertain their validity as instruments from an econometric standpoint. Specifically, we first check their correlation with the receipt of remittances by the household –the endogenous regressor to be instrumented. The problem of "weak instruments" arises when either the instruments are weakly correlated with the endogenous regressor (i.e. remittance receipt), or the number of instruments is too large (Angrist and Krueger 2001). Therefore, we check for the strength of our instruments with the F-test at the bottom of Table 4 and Table 5 and, in both instances, the tests indicate that our instruments are strongly correlated to remittance receipt.[10] Additionally, the results from the first stage estimation in the bottom panels of Table 4 and Table 5 (to be discussed in the next section) are reasonable and indicate that the instruments help predict household remittance-receipt. Secondly, because remittance income is being instrumented by two variables, we use over-identification tests to examine the exogeneity of the instruments. Due to existing concerns regarding the low power of these tests in case of general misspecifications (e.g. Newey 1985), we use Sargan's (1958) test as well as a recommended variation of the Basmann (1960) test –the Basmann-LIML form of the test (see Staiger and Stock 1997). Both tests examine the exogeneity of each one of our instruments conditional on the other one being valid. That is, in both tests, the null hypothesis is that the excluded instruments are uncorrelated with the error term and correctly excluded from the estimated equation. As such, a rejection of the null hypothesis casts doubt on the validity of the instruments (Baum *et al*. 2002, Wooldridge 2002).

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[10] The F-statistic is larger than 10 in both instances.

As shown by both tests at the bottom of Table 4 and Table 5, we are unable to reject the null hypothesis regardless of the sample of children considered in the analysis. Finally, to informally test whether the instruments violate the exclusion restriction, we also regress school attendance on household remittance-receipt, the other regressors known to affect children's schooling, and our instruments. The results, shown in the Appendix Table for the two different samples of children we analyze in Tables 4 and 5, indicate the lack of a statistically significant relationship between our instruments and school attendance once we account for household remittance receipt along with the other household and children characteristics included in the analysis. As such, the instruments appear to be correctly excluded from the main equation modeling children's school attendance.

In what follows, we examine the impact of remittance receipt on school attendance by estimating equation (1) as a two-stage linear probability model. Relative to a probit or logit model, the usage of a linear probability model allows us to handle instrumental variable estimates with standard two-stage least squares procedures, facilitating the estimation of standard errors and model convergence when sample sizes are not large. Subsequently, we assess how remittance receipt may be affecting children's school attendance by gender and by birth order. All the analyses compute robust standard errors that take into account data clustering at the household level.

V.   Results

The main objective of our analysis is to assess the impact of remittance receipt on children's school attendance by separating the income effect of remittance receipt from the disruptive impact of contemporaneous household emigration while also addressing the endogeneity of remittance-receipt. We first estimate our model focusing on children residing in

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households without family members currently abroad to purge the coefficient estimate of remittance-receipt from any potential disruptive impact of contemporaneous family emigration. Additionally, we address the endogeneity of remittance-receipt through the use of an instrumental variable approach in the estimation of equation (1). The results from such an exercise are displayed in Table 4.

Before discussing our findings, we inspect our instrumental variables (i.e. state unemployment rates and real wages in personal care and service occupations) to ascertain their suitability as instruments. As described in the previous section, the test results at the bottom of Table 4 confirm that each instrumental variable appears sufficiently correlated to remittance receipt and, conditional on the other one being valid, uncorrelated to the error term in equation (1). As shown by the regression output in the bottom panel of Table 4, higher unemployment rates in the destination states of migrants are positively correlated with a higher likelihood of remittance receipt, which supports the view that migrants may be remitting money back to their communities for self-insurance purposes. Immigrants likely bear higher employment risk during times of rising unemployment, making it prudent for them to insure themselves against these risks by remitting funds back to their communities. In this way, migrants maintain "good standing" within the community permitting them to return (with honor) in the event of an unsuccessful migration experience (Lucas and Stark 1985, Amuedo-Dorantes and Pozo 2006). Yet, migrants may have multiple motives when remitting money home, including altruism (Becker 1974, Stark 1991). If migrants also remit altruistically, remittances should be directly related to their remitting capacity as reflected by the positive sign on the average real earnings in personal care and service occupations in those U.S. states where they travel to. Likewise, if migrants remit money home to make a specific purchase (e.g., a plot of land or a house) or for investment

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purposes (e.g., setting up a small business), remittances should increase with their real earnings as we observe in the first-stage results.

A)   Remittance Receipt and Children's School Attendance

Do remittances promote children's school attendance? According to the figures in the top panel of Table 4, an increase in the probability of remittance receipt of 10 percentage-points raises the likelihood of school attendance by approximately 2 percentage-points (i.e. 0.1*0.22=0.022) from an average of 0.75 to approximately 0.77 (see Table 1 for group averages).[11]   As such, remittances help close the non-attendance gap by a non-negligible 8 percent.   Furthermore, because primary school-age children tend to attend school rather consistently, most of the remittance effect is likely to be enjoyed by secondary school-age children for whom remittances may then be raising school attendance well beyond 2 percentage-points.

Other determinants of children's school attendance include the percentage of school-aged children in the household, which is positively related to school attendance suggesting that the educational attainment of all children in the household is positively correlated. Additionally, the likelihood of school attendance appears to significantly differ by birth order, with firstborns being 4 percentage-points more likely to attend school than their younger siblings.

In sum, the aforementioned findings help us gauge the effect of remittance receipt on children's school attendance. However, can we say anything about the effect of migration and the need to distinguish between the two effects? To illustrate the importance of separating the remittance effect from the disruptive effect of contemporaneous family migration when assessing the impact of remittance-receipt, we re-estimate our model adding children in households with

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[11] Note that the likelihood of receiving remittances is instrumented using continuous variables, thus changing the interpretation of its coefficient from the interpretation of a dichotomous variable to that of a continuous one.

family members currently abroad (i.e. migrant households). Table 5 displays the results from that exercise. Remittances no longer have a positive impact on children's school attendance. Hence, the result in Table 5 suggests that the coefficient for remittance-receipt confounds the impact of family migration with the remittance effect. It is worth noting that the result from Table 5 parallels the finding of Acosta *et al.* (2007), who examine the impact of remittances on the educational attainment of children in the Dominican Republic without distinguishing between children in migrant as opposed to non-migrant households. In their study, Acosta *et al.* (2007) conclude that remittances have no significant impact on the educational attainment of children. Although our focus is on school attendance, we find that, once we include children from migrant families experiencing a contemporaneous family emigration effect, remittances no longer have the positive impact on children's schooling. Therefore, failure to properly separate the family emigration effect from the remittance effect may underestimate the positive effect of remittances on children's schooling.

B)   Remittances and Children's Schooling by Gender and Birth Order

To further gauge the robustness of our findings, as well as to gain a better understanding of the impact of remittance inflows on children's schooling, we repeat the analysis in the previous section distinguishing according to the child's gender and birth order –characteristics known to be highly correlated with children's educational attainment. Starting with gender, the figures in Panel A, Table 6, indicate that the receipt of remittance inflows increases school attendance among both girls and boys. In particular, a 10 percentage-point increase in the likelihood of receiving remittances raises the likelihood of school attendance by approximately 1.6 percentage-points among boys (from an average of 0.74 to about 0.76) and by 2.8 percentage-points among girls (from 0.76 to approximately 0.79). Although the effect of the

receipt of remittances on the school attendance of girls appears stronger than for boys, a Chow test of the equality of the estimated effect of remittance receipt for boys and girls reveals that these coefficients are not statistically different.

We also examine the differential impact of remittances on children's school attendance according to their birth order. According to the figures in Panel B, Table 6, the receipt of remittances by the household benefits all children in the household regardless of their order of birth. Specifically, a 10 percentage-point increase in the likelihood of receiving remittances raises the likelihood of school attendance from 0.77 to approximately 0.80 among firstborns and from 0.73 to 0.75 among younger children in the household. As in the case of boys and girls, the Chow test of the equality of the estimated effect of remittance receipt for firstborns and for higher birth order siblings indicates that it is not statistically different.

Overall, unlike findings from other studies (Mexico and elsewhere), remittances in the Dominican Republic do not seem to exclusively better the educational outcomes of boys, girls, first-borns or later-born children. Instead, remittances seem to promote the school attendance of all children regardless of gender and birth order.

VI.   Concluding Remarks

The present study examines the impact of remittance receipt on the school attendance of children in the Dominican Republic. We focus our analysis on children residing in households with heads claiming no close family members abroad. This focus is intended to help isolate the impact of remittance receipt from that of contemporaneous household migration. While non-migrant households constitute a selected group, children from non-migrant households account for 88 percent of our sample of Dominican children and drive the average rate of remittance receipt in the sample. After all, fifty-two percent of children in remittance receiving households

in the Dominican LAMP are living in non-migrant households –defined as households where the head has no close relatives abroad.

We find that remittances do positively impact children's school attendance. A 10 percentage increase in the likelihood of receiving remittances raises the likelihood of school attendance by approximately 2 percentage-points from an average of 0.75 to about 0.77. Furthermore, remittances appear to benefit all children in the household regardless of gender and order of birth. In all instances, a 10 percentage increase in the likelihood of remittance-receipt by the household raises the children's probability of school attendance anywhere between 1.6 and 2.8 percentage-points. Finally, we also find empirical evidence of an often confounding negative impact of family migration on children's schooling. The positive impact of remittance receipt on children's school attendance effectively disappears when we expand our sample to include children in migrant households. This finding helps confirm the expectation of a disruptive effect of family migration on children's schooling. That is, the migration of a family member often imposes hardships on the family members left behind and, in turn, on children who may need to skip school and work to make up for the monetary and non-monetary contributions that migrants made to the households before migrating. Alternatively, if Dominican education is poorly rewarded in the destination countries of emigrants, expectations of future emigration may reduce school attendance among children residing in migrant households. Overall, family migration may temper the positive impact of remittance-receipt, which helps us understand previous findings of a zero impact of remittance income on children's educational attainment.

To conclude, our findings emphasize the need to factor in the aforementioned migration effects when evaluating the impact of remittances on children's schooling and, more generally,

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when drafting migration policies. Because of the positive impact of remittances and the negative effect of family migration on children's schooling, policies that favor migration only when remittances are more likely to follow, as well as policies aimed at increasing remittance inflows (e.g. by lowering remitting costs, offering matching funds, etceteras), can prove helpful for developing countries struggling to increase educational investments in children.

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Table 1
Descriptive Statistics

Variable Description	Children in All Households		Children in Non-Migrant Households	
Statistic	Mean	S.D.	Mean	S.D.
School Attendance	0.76	0.43	0.75	0.43
Girls	0.76	0.42	0.76	0.43
Boys	0.75	0.44	0.74	0.44
Firstborn Children	0.78	0.42	0.77	0.42
Higher Birth Order Children	0.74	0.44	0.73	0.44
Remittance-receiving Household	0.19	0.40	0.13	0.33
Employed Household Head	0.80	0.40	0.81	0.40
Household Assets (# Parcels of land + # Businesses + # Houses)	1.10	1.04	1.08	1.01
Percent of School-age Children in the Household	0.40	0.19	0.40	0.18
Educational attainment of Female Spouse or Head	3.26	4.59	3.27	4.58
Boy	0.49	0.50	0.50	0.50
Child's Age	12.39	3.52	12.35	3.54
Firstborn Child	0.47	0.50	0.46	0.50
Community no. 1	0.16	0.37	0.14	0.34
Community no. 2	0.13	0.33	0.13	0.34
Community no. 3	0.08	0.27	0.08	0.28
Community no. 4	0.09	0.29	0.10	0.30
Community no. 5	0.11	0.31	0.10	0.30
Community no. 6	0.17	0.37	0.16	0.37
Community no. 7	0.27	0.44	0.28	0.45
Unemployment Rate in U.S. Destination State	10.98	0.94	10.98	0.90
Real Yearly Earnings for Personal Care Service Workers in U.S. Destination State	8774.40	291.99	8765.02	249.39
Number of Observations	1123		983	

Notes: Educational attainment of female spouse (or head) is measured as years education/12.

Table 2
School Attendance of All Children in Migrant and in Non-Migrant Households

By Group of Children:	N	School Attendance	Difference	t-statistic
All Children	1123	0.76		
By Gender:				
Males	550	0.77	-	-
Females	573	0.75	0.02	0.73
By Birth Order:				
Firstborns	524	0.74	-	-
Higher Birth Order Children	599	0.78	-0.04	1.58**

Notes: ** signifies significance at 5 percent level or better. Authors' tabulations using the LAMP-DR7.

Table 3
All Children in School Ages 7-18

Count of:	Living in Migrant Households	Living in Non-Migrant Households	All Children
All Children	140	983	1123
Children in Remittance-Receiving Households	93	124	217

Source: Authors' tabulations using the LAMP-DR7.

Table 4
Table 4
Two-Stage Linear Probability Model of School Attendance Using Children in Non-Migrant Households

Independent Variables	Coefficient	S.E.
Household Receives Remittances	0.224***	0.063
Household Head is Employed	0.008	0.048
Household Assets	0.031	0.022
Educational Attainment of Female Spouse or Head	-0.002	0.006
Percent of School-age Children in the Household	0.267***	0.103
Boy	-0.014	0.030
Child's Age	0.004	0.005
Firstborn Child	0.042*	0.026
Community Dummies	Yes	

First Stage Results (Household Remittance Receipt)	Coefficient	S.E.
Household Head is Employed	-0.083***	0.027
Household Assets	-0.032***	0.011
Educational Attainment of Female Spouse or Head	0.005*	0.003
Percent of School-age Children in the Household	-0.092	0.059
Boy	0.022	0.020
Child's Age	-2.73e-004	0.003
Firstborn Child	-0.002	0.021
Unemployment Rate in U.S. Destination State	0.360***	0.134
Real Yearly Earnings for Personal Care Service Workers in U.S. Destination State	0.001***	2.88e-04
Community Dummies	Yes	
Number of Observations	982	
Number of Family Clusters	465	
Prob > F	0.000	

Correlation of instruments with Endogenous Variable:

F-test (2, no. of clusters)	18.71	
Prob > F	0.000	

Over-identification Test of instruments:

Sargan Test	0.840	
Prob > Chi-square	0.360	
Basmann Test	0.827	
Prob > F	0.363	

Notes: All regressions include a constant term. Standard errors correct for clustering at the household level. ***Significant at the 1% level, **significant at 5% level, and *significant at the 10% level. We use state occupational wages for personal service providers and state unemployment rates as instruments for remittances**.**

Table 5
Two-Stage Linear Probability Model of School Attendance Using All Children

Independent Variables	Coefficient	S.E.
Household Receives Remittances	-0.102	0.439
Household Head is Employed	-0.035	0.068
Household Assets	0.021	0.020
Educational Attainment of Female Spouse or Head	-0.001	0.006
Percent of School-age Children in the Household	0.253***	0.087
Boy	-0.017	0.027
Child's Age	0.007	0.005
Firstborn Child	0.048*	0.026
Community Dummies	Yes	

First Stage Results (Household Remittance Receipt)	Coefficient	S.E.
Household Head is Employed	-0.120***	0.029
Household Assets	-0.015	0.011
Educational Attainment of Female Spouse or Head	0.004	0.003
Percent of School-age Children in the Household	0.021	0.064
Boy	-0.008	0.022
Child's Age	-3.05e-04	0.003
Firstborn Child	0.021	0.023
Unemployment Rate in U.S. Destination State	0.323**	0.157
Real Yearly Earnings for Personal Care Service Workers in U.S. Destination State	0.001**	3.30e-04
Community Dummies	Yes	
Number of Observations	1122	
Number of Family Clusters	540	
Prob > F	0.000	

Correlation of instruments with Endogenous Variable:

F-test (2, no. of clusters)	12.78	
Prob > F	0.000	

Over-identification Test of instruments:

Sargan Test	0.356	
Prob > Chi-square	0.550	
Basmann Test	0.351	
Prob > F	0.553	

Notes: All regressions include a constant term. Standard errors correct for clustering at the household level. ***Significant at the 1% level, **significant at 5% level, and *significant at the 10% level. We use state occupational wages for personal service providers and state unemployment rates as instruments for remittances.

Table 6
Two-Stage Linear Probability Models of School Attendance Using Children in Non-Migrant Households

Panel A: Gender	By	Probability of School Attendance			
		Boys		Girls	
		Coefficient	S.E.	Coefficient	S.E.
Household Receives Remittances		0.156**	0.082	0.283***	0.091
Number of Observations		488		494	
Number of Family Clusters		328		327	
Prob > F		0.000		0.000	
Chow test of equality of coefficients		F(1, 465) = 1.59 with Prob > F = 0.2076			

Panel B: Birth Order	By	Probability of School Attendance			
		Firstborns		Higher Birth Order Kids	
		Coefficient	S.E.	Coefficient	S.E.
Household Receives Remittances		0.284***	0.105	0.213***	0.085
Number of Observations		453		529	
Number of Family Clusters		444		306	
Prob > F		0.000		0.000	
Chow test of equality of coefficients		F(1, 465) = 0.05 with Prob > F = 0.8264			

Notes: All regressions include a constant term. Standard errors correct for clustering at the household level. *** Significant at the 1% level and **significant at 5% level. Instruments are: 1) unemployment rates in states from which remittances are likely to originate and 2) yearly real earnings for service employees in states from which remittances are likely to originate. Originating states were determined by state location of family members who had migrated in the past.

Appendix Table
Linear Probability Models of School Attendance

Children in Non-Migrant Households

Variables	Coefficient	S.E.
Unemployment Rate in U.S. Destination States	-0.034	0.044
Real Yearly Earnings for Personal Care Service Workers in U.S. Destination States	3.24e-05	1.10e-04
Number of Observations	982	
Number of Family Clusters	465	
Prob > F	0.000	

All Children

Variables	Coefficient	S.E.
Unemployment Rate in U.S. Destination States	-0.118	0.094
Real Yearly Earnings for Personal Care Service Workers in U.S. Destination States	-2.42e-04	2.43e-04
Number of Observations	1122	
Number of Family Clusters	540	
Prob > F	0.000	

Notes: All regressions include a constant term and all the regressors included in the school attendance models in the top panels of Table 4 and Table 5. Standard errors correct for clustering at the household level. ***Significant at the 1% level, **significant at 5% level, and *significant at the 10% level.