

Remittances and Development: Are We Missing Something? A Case Study of the Impact of Remittances in Ecuador

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Abstract

This paper analyzes the impact of remittances on development in Ecuador at the macro level, as well as on some human capital variables. At the macro level, we find that remittances may not be contributing to balance-of-payments stability in Ecuador, contrary to what some official sources suggest. Regarding human capital, we find no significant effects of remittances on human capital variables. However, the paper does find significant effect on smoothing consumption, especially among non-poor households in the urban areas. To analyze the effect of remittances on human development, the paper uses a new data set.

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Introduction

The need to evaluate the impact of remittances in Ecuador is one of the outcomes of a previous study on bilateral economic relations between Spain and Ecuador (Olivieé, 2008).² That paper was meant to evaluate both the positive and negative social and economic effects of bilateral flows in Ecuador. This proved to be no simple task. According to official estimates, migrant remittances could represent as much as 80% of total exchange rate inflows from Spain; but updated data were scarce, as were academic papers recording or evaluating the main features or development outcomes of migrants' transfers.³

This vacuum was striking alongside the recent proliferation of reports by multilateral organizations (Inter-American Development Bank, International Labor Organization, World Bank) and academic papers (Carling, 2005; López-Córdova and Olmedo, 2006; Ratha, 2003 and 2005) that underline the high and increasing magnitude of international flow –especially to Latin America– and that explore its positive effect on development in recipient countries. Moreover, in the particular case of Ecuador, there are important economic policy implications. On the one hand, according to official figures, remittances, and increasing oil prices, are significantly contributing to balance-of-payments equilibrium in Ecuador,⁴ thus determining the macro policy articulated in that country. Although Ecuador has recorded migration flows for several decades, the financial crisis in 1999 triggered an important wave of migration, mostly to Spain,

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³ Exceptions include Acosta *et al.* (2006), Bendixen (2003), Bertoli (2008), and Solimano (2003).

⁴ According to official data from the central banks of Ecuador and Spain (Banco Central de Ecuador and Banco de España).

resulting in an increased flow of remittances to Ecuador at the beginning of this decade. On the other hand, donor states recording significant inflows of migration have recently begun designing and implementing co-development programs. Such programs seek to link communities of origin (Ecuador, in this case) and destination (Spain, for instance) and aim to include remittances as a factor. Therefore, such cooperation assumes that remittance recipients are potential stakeholders of international assistance (i.e., poor).

The objective of this paper is to contribute to the academic literature on the development outcomes of migrants' remittances. Specifically, for the case of Ecuador, we intend to test two hypotheses recurrent in academic literature: whether remittances constitute an important and stable source of external financing; and, on the basis of newly collected data, whether this inflow consistently contributes to development through poverty reduction, as well as through improved health and education conditions in Ecuador.

The first section includes a literature review. Section 2 is devoted to the first hypothesis, evaluating the economic importance of Ecuadorian remittances according to different data sources. The third section estimates the impact of remittances on poverty reduction; after describing the main features of remittances in Ecuador (recipient income level and main uses of remittances), we estimate these transfers' impact on a variety of social indicators. The final section extracts academic and policy conclusions.

1. Literature review

Generally speaking, academic literature on remittances can be divided into three groups: (i) analyses of the reasons to remit (altruism, exchange, insurance, investment,

and inheritance⁵ (Cox *et al.*, 1998; Gosh, 2006; IMF, 2005; López-Córdova and Olmedo, 2006; Rappoport and Docquier, 2005; Solimano, 2003)); (ii) research on transferring channels, transferring costs, or policy options for reducing these costs (see, for instance, IMF (2005), Orozco (2006), and Orozco and Fedewa (2006)); and finally (iii), a vast body of literature on the impact of remittances on development in receiving countries, mostly highlighting human capital and macroeconomic effects.

This literature review focuses on the latter. Specifically, we will briefly literature in light of the two assumptions to be tested in this document: the volume and stability of remittances, and their impact on human development.

There is little disagreement over the importance and stability of this flow as a source of external financing (Gosh, 2006; Ratha, 2003; World Bank, 2006) and, therefore, its capacity to balance the external account (e.g., by compensating current-account deficits), to fill the gap of domestic savings, to feed local financial systems, or to improve the receiving country's capacity to access foreign financing.⁶ In the case of Ecuador, several studies point to the fact that migrants' remittances are now the second-largest source of external financing after oil revenues (Olivié, 2008). The high volume and stability of remittances therefore contrast with the low and concentrated or volatile access of developing countries to alternative sources of funds, such as foreign direct investment in the first case, or official assistance and private credit in the second (Ratha, 2003). Moreover, several studies underline that remittances may record counter-cyclical behavior, increasing in times of economic recession or financial crises in destination countries. This would mean that remittances have also become a mechanism for absorbing adverse shocks (Molina, 2006; World Bank, 2006).

⁵ These are the main reasons to remit according to López-Córdova and Olmedo (2006).

⁶ Exceptions are made of some studies (like Shaw (2005)) that find a decrease in New Zealand's remittance flows to Samoa related to family reunion or the death of relatives in the migrants' country of origin. This risk of depletion is also pointed out by Muliania (2005).

A second commonly accepted assumption involves the impact of remittances on development through their capacity to alleviate poverty. There is common belief in a direct link connecting migrant remittances with poverty reduction and human development –better education, wider access to health care– thus facilitating the achievement of the Millennium Development Goals (MDGs). Academic articles on this topic cover a wide range of countries and impact variables, and they come to very diverse conclusions. According to the World Bank (2006), remittances do tend to reduce poverty, have a weak impact on inequality, and lead to higher household expenses in health and education. More precisely, Adams and Page (2005) estimate the impact of migration and remittances on inequality and poverty for 71 countries and find that a 10% increase in remittances reduces the proportion of individuals living below the poverty line by 3.5%.⁷

According to Acosta *et al.* (2007b), remittances have the capacity of lowering poverty in Latin America. Every 1% increase in remittances as a proportion of GDP leads to a 0.37% poverty reduction in this region. However, the impact on poverty varies from country to country and depends on initial levels of income inequality. On the basis of balance-of-payments data and national household surveys, Acosta *et al.* (2007a) evaluate the impact of remittances on poverty, education, and health in eleven Latin American countries⁸ and conclude that a moderate but positive impact on poverty reduction does exist. The authors also observe strong regional heterogeneity regarding this impact.⁹ Fajnzylber and López (2007) come to the same conclusion: remittances have a positive but weak impact on poverty reduction, equality, growth, and investment.

⁷ The impact found on poverty reduction is stronger than that of a previous analysis which concluded that, on average, a 10% increase in the share of international remittances in a country's GDP could lead to a 1.6% decline in the share of people living in poverty (Adams and Page, 2003).

⁸ Bolivia, Dominican Republic, Guatemala, Haiti, Honduras, Ecuador, El Salvador, Mexico, Nicaragua, Paraguay, and Peru.

⁹ Heterogeneity of results is frequently mentioned in remittance and migration literature (see also Fajnzylber and López, 2007). This feature shows the deficiencies inherent in cross-country approaches, reinforcing the need for case-by-case country studies.

Acosta *et al.* (2008) find a positive impact on education expenditures and enrollment rates, as well as on health spending, and on anthropometric indicators in lowest quintiles in El Salvador, Guatemala, Peru, Nicaragua, and the Dominican Republic. However, results for Mexico prove insignificant, while a positive impact on savings is seen among the lowest income groups throughout the region as a whole. On the other hand, López-Córdova (2006) finds positive results for Mexico, where infant mortality and child illiteracy (ages 6 to 14) decline as a consequence of remittances. Inter-American Dialogue (2007) finds signs of an impact on poverty by flows from the United States to Latin America –including improved diets and housing conditions– partly due to a concentration of remittances in low-income rural households. Gosh (2006) points out that the majority of migrants are non-poor. Therefore, Gosh sees an indirect link (if any) with poverty reduction in migrants’ home countries, as a consequence of the spill-over effect of flows received by non-poor migrants’ relatives. On the other hand, that same report acknowledges the existence of poor households among recipients, as well as the capacity of collective remittances to improve infrastructure in hometown communities. However, poor people are a minority of remittance recipients.

Other papers find a positive influence by remittances on education outcomes in other countries. See for instance Cox, Edwards, and Ureta (2003), or Acosta (2007), for analyses of El Salvador, or Yang (2004) for analysis of the Philippines.

In the particular case of Ecuador, Acosta *et al.* (2007a) find a weak impact by remittances on poverty reduction at the national level, but a significant impact for individual receiving households. The same study observes a positive impact on education, and specifically on years of accumulated schooling, although this is limited to urban areas. The study also acknowledges a weaker impact by remittances on development in Ecuador, as compared to other countries analyzed therein. Calero *et al.*

(2008) find similar results. In Ecuador, remittances have a positive effect on both school enrollment and child labor, especially among girls in rural areas. In addition, Pacheco (2007) finds no significant effects by remittances on students' cognitive achievement among children from rural areas. Guerrero (2007) finds no significant effects by remittances on health spending. According to Acosta *et al.* (2006), remittances might have helped 5% of Ecuador's population out of poverty between 2001 and 2002. This limited impact is the result of the concentration of remittances in non-poor families.

Other studies on the impact of remittances on development at the household and micro level include their role as insurance against risks (Kapur, 2004; Taylor, 1999), as well as their impact on income inequality (Acosta *et al.*, 2007b; Adams, 1991; Adams and Page, 2005; Gosh, 2006; Koechlin and León, 2006; López-Córdova and Olmedo, 2006; IMF, 2005) and on employment (López-Córdova and Olmedo, 2006). There are fewer papers or reports on the meso or community-level impact of migrants' transfers. One example is Gosh (2006), who assesses the positive impact of remittances on housing and agrarian techniques. At the macro level, the bulk of academic literature is devoted to remittances' impact on Dutch disease (Gosh, 2006; IMF, 2005; Martínez, 2007; López, *et al.*, 2007),¹⁰ on exchange rates, exports, and income (Amuedo-Dorantes and Pozo, 2004; Fajnzylber and López, 2007; Gosh, 2006; IMF, 2005; López-Córdova and Olmedo, 2006; World Bank, 2006).¹¹

¹⁰ Actually, Martínez (2007) finds evidence in Ecuador of Dutch disease, a phenomenon that is generally associated with increases in consumption levels.

¹¹ For further analyses of the impact of remittances, a comprehensive literature review classifying short- and long-run effects can be found in Rappoport and Docquier (2005).

2. Are remittances a stable and predictable source of financing?

As shown in the previous section, the bulk of recent reports and updated data on remittances published by multilateral organizations like the World Bank or the Inter-American Development Bank (IADB) underline the high volume of remittances relative to the size of recipient economies, particularly for Latin America.¹² According to the Multilateral Investment Fund, Latin America and the Caribbean received US\$62,300 million in remittances in 2006; that is, 15% more than the previous year. This figure includes remittances to Ecuador: US\$2,900 million in 2006. The World Bank records similar figures: US\$2,922 million in 2006 and an expected increase to US\$3,178 million in 2007.¹³

Other official sources at the national level indicate similar amounts. According to *Banco de España* (central bank of Spain), Spain's remittances to Ecuador amounted to US\$1,453 million in 2006.¹⁴ This figure is slightly higher than recorded by *Banco Central de Ecuador* (central bank of Ecuador): almost US\$1,300 million coming from Spain; that is, 44.2% of total flows from all origins.¹⁵ Data from *Banco Central de Ecuador* coincide with World Bank and IADB figures (Table 1).

There are well-known problems in dealing with remittance figures. Perhaps the most common is the inability of central banks to totally capture this flow, since a significant portion is transferred through informal financial channels. In this sense, some authors recommend household surveys in order to capture the effective volume of transfers; see, for instance, Álvarez *et al.* (2006) and Hernández-Coss (2005). This is precisely what

¹² See, for instance, MIF-IADB (2004 and 2006).

¹³ This increase could be partly explained by exchange rate variations (dollar-euro), as a significant proportion of remittances outflow from Spain.

¹⁴ Total remittance outflows from Spain amount to €6,807 million. *Banco de España* has recorded a 37.9% increase in total remittance outflow over the previous year.

¹⁵ Variations between these two sources can be partly explained by exchange rate calculations.

Instituto Nacional de Estadísticas y Censos (INEC, the national statistics office) did in Ecuador. However, the most recent national household survey (*Encuesta de Condiciones de Vida*) in 2006 revealed a significantly lower volume of transfers. According to this source, Ecuadorian households received US\$732 million in 2006, of which US\$322 million came from Spain. A higher figure is published by Jiménez-Martín *et al.* (2007), in a study that estimates the volume and destination of remittances both inside and outside the European Union. This research identifies Spain-Ecuador as one of the main remittances “corridors”. In 2004, the estimated flow through this corridor was €571.4 million, or approximately US\$711 million.

The considerable differences between various sources of data might be attributed to an overvaluation of remittances by central banks reporting to multilateral organizations; to an undervaluation by INEC and Jiménez-Martín *et al.* (2007); or to both. Actually, data published by *Banco de España* is also just an estimation of this flow; it is not entirely based on reporting by the financial system. As explained by Álvarez *et al.* (2006), this came as a response to the low volume of remittances being recorded by the reporting system. Inflows from Spanish migrants to Northern Europe in the 1960s and 1970s were still exceeding outflows to developing countries, despite the huge immigration inflows recorded by Spain in the 1990s and 2000s decade. In pursuing this exercise, *Banco de España* may have designed a model that overestimates remittance flows.

International organizations tend to assume that remittances constitute an important, predictable, and stable source of external financing that could be undervalued by central banks. Nonetheless, a closer look at figures for Spain and Ecuador indicate that alternative sources of data offer a very different picture. It would be necessary to explore the methodologies behind each of these sources to correctly explain the

differences. However, the assumption that migrants' savings provide "super" balance-of-payments equilibrium might be misguided in the case of Ecuador.

3. Are remittances contributing to poverty alleviation?

The second hypothesis in question for the case of Ecuador is remittances contribute to social development. The bulk of academic literature on the impact of remittances defines development as: poverty reduction; improvement in health and education indicators; or all of the above. The particular definition of development chosen for impact evaluation is crucial: free external transfers in hard currencies may have several obvious positive impacts in any economy. The tricky question is whether such transfers enhance the living conditions of the poorest populations. Not only is this the main goal established by the international agenda for developing countries (see the MDGs); it is also the guideline for bilateral and multilateral development agencies.

This section is devoted to testing this hypothesis for the case of Ecuador. Our first step in doing so will be to check whether remittances are mostly received by poor individuals or in developing countries. Secondly, we will survey the principal uses of remittances and, finally, we will evaluate the impact of remittances on a variety of social indicators.

3.1. Who receives remittances?

According to INEC data collected in 2006, remittances are distributed among quintiles as shown in Table 2. The quintile that concentrates the highest proportion of remittances is quintile 4 (43% of total transfers), followed by quintile 5 (just over 34%),

quintile 3 (at 17.04%), quintile 2 (less than 4%) and, in the last position, quintile 1 (slightly more than 2%). Actually, the two richest quintiles (4 and 5) concentrated more than 77% of total remittance inflows in 2006. This is particularly important for its potential for poverty reduction in a country like Ecuador. Like other Latin American countries, Ecuador records high rates of income inequality,¹⁶ which explains the very wide range of income in quintile 5 (starting at \$275/month and rising to as high as \$7,427/month¹⁷ (see Table 2)).¹⁸

These results are consistent with analyses of the patterns and evolution of Ecuadorian migration –migrants are not from among the poorest populations (López and Villamar, 2004)– and with a previous study on the income distribution of remittances in the Andean country (Acosta *et al.* 2006). But according to Bendixen (2003), per capita income of remittance beneficiaries is slightly above the poverty threshold. Such differing results might be explained by methodological differences, or by an evolution of the economic features of recipients. Data for Bendixen’s analysis were collected in 2003, just three years after the economic crisis behind the latest migration wave. Different population movements may have taken place in subsequent years, such as family reunion in destination countries (shifting the remittances to different beneficiaries in Ecuador), or improvement in the living conditions of recipients as a consequence of sustained flow, or as a result of other internal or external economic factors.

¹⁶ According to the United Nations Development Programme (UNDP), Ecuador records a Gini index of 0.536, compared to 0.42 in Thailand, 0.29 in Croatia, or 0.395 in Morocco.

¹⁷ The same source shows that remittances are evenly distributed among deciles 9 and 10. This means that slightly less than US\$33 million of remittances are received by individuals with an income between \$345.10 and \$7,427.17/month.

¹⁸ Note that poverty lines for Ecuador are established by INEC at \$56.64/month, with extreme poverty below \$31.92/month.

3.2. What are remittances used for?

Answering this question, and evaluating the impact of remittances on social indicators, has required the collection of new data, as information provided by INEC was not sufficient. For a detailed description of the database, see Box 1. One of our goals in collecting new data on remittances was to get a clearer picture of how this foreign inflow is consumed or invested, in order to more precisely evaluate its potential impact on development. For this reason, individuals were asked how they used the money received from abroad –four principal uses ranked by volume– and how much money was devoted to each of these uses. This yielded precise information on the end-uses of remittances in Ecuador. In the first place, the total volume of remittances reported by end-use amounts to US\$173,162,386; or 81.88% of total remittances according to previous determination of the volume of money received. Next, the twelve options given to respondents in this question allowed fair distinction among the end-uses chosen by remittance recipients, with only 4.33% of remittances going to “other” uses (see Table 3).

According to this information, remittances are mainly used to buy food (43.55% of the total). The second heading, education, accounts for 18.14% of total remittances. After debt reimbursement (which ranks third), health is the fourth most important use of remittances, accounting for just 7.63% of the total. Also, remittances are concentrated in a small number of uses: these four headings account for 77.62% of total remittances. The remaining eight options –clothes, housing, others, savings, vehicles, special

occasions, electrical appliances, and investing in a business— collectively absorb only 22.38% of the flow.

This distribution may have several implications in relation to remittances' impact on development. Food purchase can have a significant impact on development, following the MDGs definition, if this purchasing is concentrated in most vulnerable groups. If so, remittances may be acting as a survival mechanism for the poorest households. If, on the contrary, food is mainly purchased by highest income quintiles, the effect on development would be diluted. As shown in Table 2, remittances are concentrated in quintiles 4 and 5 (the richest). Therefore, the possibility that increased food purchase may help lift the lowest quintiles out of poverty remains low. Quintiles 1 and 2 (the poorest) spend more on food than the average, at 60.67% and 62.44%, respectively. Although this proportion drops in quintiles 3 to 5, food purchase is still concentrated among the non-poor: slightly less than 92% of total food consumption relative to total remittances received occurs in quintiles 3, 4, and 5, with slightly more than 8% going to quintiles 1 and 2.

Spending in health and education may contribute in the medium and long term to development through human capital formation and poverty reduction. These two headings account for only 25.77% of total remittances by end-uses. The proportion dedicated to education increases in quintiles 2 and 3 (at 19.61% and 18.99%, respectively) relative to quintile 1 (at 11.48%). But, surprisingly, this proportion falls to 15.80% in quintile 4. This is the lowest proportion devoted to spending in education and it corresponds to the very population receiving the highest proportion of remittances, according to data on remittances received. Here again, the richest quintiles are not taking advantage of their relatively better financial situation to invest or spend in categories that may have a longer-term impact on their well-being. The proportion of

health spending relative to the total volume of remittances spent increases with income: quintile 1 spends 1.92% of total remittances on health, while quintile 5 spends almost 11%. Nonetheless, as already underlined, overall health spending still accounts for less than 8% of total remittances.

Other uses that could have a significant impact on development, such as saving or investing in a business, are almost null. It can be said that remittance recipients do not save, regardless of their quintile. Saving rates vary from 1.99% in quintile 4 to 4.79% in quintile 5. Actually, the fact that quintile 4 (the group receiving the highest proportion of remittances) saves less than any other is very revealing of the role that remittances play in Ecuador. Quintiles 1, 2, and 3 don't invest in businesses. This heading, which is the lowest proportional option for remittance end-use in Ecuador, is concentrated in quintile 5.

It is difficult to say whether these results are consistent with Bendixen's previous analysis (2003) on the use of remittances in Ecuador, as the end-use headings in the Bendixen paper are broader: daily spending, long-term investment, and luxury goods. However, we can identify two differences: Bendixen identifies a higher proportion of long-term investment (22%), and the same study observes a decline in daily expenses – rent, food, medicine– and an increase in investment and luxury products as the income goes up. Again, these differences can be explained by methodological differences, by changing patterns in remittance use, or by both. However, our data are consistent with Guerrero (2007): remittance recipients do not increase health spending.

According to Orozco (2005), Ecuadorians receiving remittances from the United States spend less in coping with basic household needs than does the overall population.

This might indicate higher income in households receiving funds from the United States, which would be consistent with Ecuador's migration patterns.¹⁹

3.3. What is the impact of remittances on social development?

a) Identification strategy

To evaluate the impact of remittances we take advantage of the fact that migrants receive remittances through formal banks and money-transfer companies. Using the data annexed to the Living Standard Measurement Survey (LSMS), we found that individuals receiving remittances preferentially use the institutions reported in Table 4, which differentiates banks and money-transfer companies. The formal banks most used to receive transfers are: Banco Bolivariano, Servipagos, Banco del Pichincha, Banco de Guayaquil, Banco del Austro, and Produbanco. These account for 90% of total remittances received through the formal banking system. At the same time, Delgado Travel, Western Union, and Money Gram account for 87% of total of remittances received through money-transfer companies. In this regard, the probability of receiving remittances will be higher among those living in a parish where any of these financial intermediaries are located. We assume that the presence of these institutions is not related to the outcome variables used in the following models. One potential problem with our instrument is that the availability of banks and/or money-transfer companies could be correlated with the local economic environment. Thus do we include some variables at parish level, as well as cantonal fixed effects, in order to dilute this threat.

¹⁹ Migration to the United States began several decades ago and records a longer track on remittance sending that may have had a medium- or long-term impact on household income (Jockisch and Pribilsky, 2002).

We will estimate several forms of the following equation, where Y_i is the outcome variable:

$$Y_i = \delta R_i + X_i \beta + u_i \quad (1)$$

We will evaluate the effect of remittances on several aspects of human development, such as school enrollment for children aged 6 to 15; child malnutrition; prevalence of respiratory diseases and diarrhea among children aged under 5; and access to health services among those who were sick during the two weeks prior to data collection. In addition, we will evaluate the impact on certain areas of consumption: log of per capita consumption; log of consumption of food; log of consumption of electronic appliances; log of consumption of other goods; and the expenditure on home construction or repair. X_i is a vector of individual, household, and community (parish) level characteristics. R_i is the treatment variable and refers to the monthly amount of remittances received by the household. Our parameter of interest is δ .

We use three different specifications. The first specification only includes the amount of remittances received by the household (the treatment variable). Specification Two includes, in addition, some individual and household variables, including sex, age, and dummy variables for self-defined ethnicity at individual level; and the age, sex, and schooling level of the head of household. Finally, the third specification includes some parochial-level variables (average years of schooling, per capita income) as well as cantonal dummies (around 240).

As already mentioned, to address potential biases caused by the endogeneity of the treatment variable (R_i), we apply an instrumental-variables approach where the amount of remittances received is instrumented by an indicative variable (taking a value of 1 if the parish has any of the banks or money-transfer enterprises reported in Table 4, or a value of 0 if it does not). This means that we will estimate a first-stage equation in which

the endogenous variable R in equation (1) is instrumented by the presence (or lack thereof) of transmission institutions at parish level (Z). Therefore, the identifying assumption is that $E(Z_i \cdot u_i | X_i) = 0$.

In addition to equation (1) we also present results from reduced-form estimation. This equation has a specification similar to equation (1), except that R is replaced by Z . Such instrumental-variables estimates apply only to those whose likelihood of receiving remittances was affected by the instrument (that is, by the presence or absence of bank or money-transfer institutions). These are called “compliers”, following Angrist *et al.* (1996), and cannot be easily identified from the data without additional assumptions,²⁰ though they may have characteristics that make their outcome variables particularly sensitive to transfers.

b) Results

The first thing that we need to establish is the first-stage effect of the availability of money-transfer institutions on the amount of remittances. Using the same three specifications above mentioned, we find that the presence of money-transfer institutions has a significant and positive association with the amount of remittances. The coefficient remains positive and significant through all the three specifications. Having a money-transfer institution in the parish increases the amount of remittances by around US\$8 per month (see Table 5).

Table 6 shows the effect of remittances on school enrollment. Ordinary least squares (OLS) estimates show that the amount of remittances has a small but significant association with school enrollment. Through the three specifications, the coefficient is

²⁰ See Angrist (2004) on this issue.

significant and positive. The reduced-form estimates shows no robust results. These are significant and positive under specifications 1 and 2, but become insignificant under specification 3. Finally, the two-stage estimates, which report the local average treatment effect, show no robust estimates. The coefficient is significant under specification 1, but not significant under specifications 2 and 3. In sum, we find no significant effects of remittances on school enrollment. Appendix 1 introduces the results of two-stage estimates for urban and rural areas. Results remain the same; we find no significant effect of remittances on school enrollment.

We also evaluate the effect of remittances on child malnutrition. In this case the dependent variable is the Z score. Results show a significant and positive effect under the reduced-form estimates, but no significant estimates under the two-stage estimates (see Table 7). The same applies separately for urban and rural areas (see Appendix 1).

Tables 8 and 9 evaluate the effect of remittances on the prevalence of diarrhea and respiratory diseases in children aged 5 or less. In any case, we find no significant effects, with the same results obtained for urban and rural areas (see Appendix 1).

In evaluating the effect of remittances on access to health services, the dependent variable is a dummy that takes the value of 1 if the person attended a health center while sick, and 0 if not. OLS estimates show no significant difference in the access to health services between those who receive remittances and those who do not. The result remains the same throughout the three specifications used. However, results of the reduced form show a significant and positive effect of remittances on access to health centers. The two-stage results are not robust. We find a significant and positive impact under specifications 1 and 2, but the coefficient becomes insignificant under specification 3 (see Table 10). When we split the sample between urban and rural areas we reach the same conclusion. In urban areas, results are not robust and the coefficient

becomes insignificant under specification 3; and in rural areas the coefficient is never significant (see Appendix 1).

Next, we estimate the effect of remittances on consumption. Regarding total consumption, and using the log of per-capita consumption, OLS results show that people who receive remittances record a higher consumption than those who do not. Results for the reduced form and the two-stage least square (2SLS) are significant and positive, and remain significant under the three specifications. In this case, two-stage results show that increasing the amount of remittances by US\$100 each month increases the general per capita consumption by around 1% (see Table 11). When we split the sample between urban and rural areas, we find that the effect is significant and positive only for the former, but not for the latter (see Appendix 1).

For the log of expenditures in food, the two-stage estimates are not robust. These are significant under specification 1 and 2, but become insignificant under specification 3. However, when we split the sample, the coefficient is significant under the three specifications in the urban area, where increasing the amount of remittances by US\$100 increases the consumption of food by 1.3%. However, the coefficient is never significant in the rural area (see Table 12 and Appendix 1).

Similar results are found for the log of expenditure on kitchen appliances. In this case, the coefficient is significant and positive in a robust manner only for urban areas (see Table 13 and Appendix 1), and are never significant coefficients in rural areas. The same results are found for the log of expenditure on other goods (including goods other than kitchen appliances (see Table 14 and Appendix 1)). Interestingly, we find that the effect is greater for kitchen appliances and other goods than for expenditures on food.

Finally, in relation to expenditures directed toward home improvement or purchase, we found no significant results (see Tables 15 and 16).

Conclusions

This study leads to two main academic conclusions. First, we cannot state that remittances are contributing significantly to balance-of-payments stability in Ecuador, as varying sources show important differences in the total volume of remittance inflows. Second, also in the case of Ecuador, remittances do not impact key human development indicators and, therefore, are not contributing to development – at least not through human capital formation.

This second assumption is supported by the distribution of remittances by uses, and by the impact evaluation carried out in Section 3. In the first place, remittance recipients are mostly non-poor. Secondly, remittances are mainly used for consumption and, more precisely, for purchasing food. Thirdly, we find no significant effects of remittances on some key variables of human development. Moreover, we find significant effects on consumption. This could mean that remittances have a positive and significant effect on reducing short-term poverty, but no effect on expanding people's capabilities. In addition, this effect of reducing short-term poverty is concentrated in urban areas, with no significant results found in rural areas.

The distribution of remittances by end-use shows the importance of food consumption compared to other headings, such as electrical appliances. However, the impact-evaluation results show that the magnitude of the impact of remittances on consumption of kitchen appliances is greater than the impact of remittances on food spending.

In general terms, our results do not coincide with those found at the international level (World Bank, 2006; Adams and Page, 2005) or at the regional level (Acosta *et al.*,

2007a and b; Fajnzylber and López, 2007; InterAmerican Dialogue, 2007). In the first case, apart from the fact that these studies analyze global trends that can obscure wide disparities among countries and regions, we should bear in mind that they are generally based on official statistics. As shown in the second section, these sources may overvalue, for certain countries, the exact amount of remittances. Although remittances seem to have a positive effect on Latin American development, regional analyses point out that significant differences exist from one country to another. For instance, Acosta *et al.* (2007a) find a much weaker impact on poverty reduction in Ecuador than in other countries. Moreover, Cox Edwards and Ureta (2003) and Acosta (2007) find a positive impact in El Salvador; a result shared by Yang (2004) in his analysis of the Philippines.

Therefore, the fact that our results do not coincide with those found by other authors can be explained by (i) the disparity of remittance impacts from one country to another, according to factors such as the socioeconomic characteristics of migrants; (ii) the quality of official data used for international analyses; and (iii) methodological differences in impact evaluations.

The results found in this study also have political implications. For Ecuador, they may mean, firstly, that remittances may not be contributing that much to balance-of-payments equilibrium. In that case, macroeconomic management –foreign debt, external trade– should perhaps assume a more modest source of financial resources. Secondly, internal development policies should take into account the very limited impact of remittances on development, at least at the individual and household levels. Social policies and programs should be based on this result.

There are also political implications for donors. Co-development programs tend to be based on the assumption that remittance recipients are potential beneficiaries of development assistance, and are therefore poor. This study demonstrates that this is not

the case in Ecuador. Co-development programs might be redesigned, if not reconsidered. For the case of Ecuador, we know that remittances are not progressive at the micro level (recipients are not poor), but that they are progressive at the macro level (the financial flow from rich to developing countries does indeed exist). The challenge for both donor and recipient is to explore the meso level, where remittances could potentially impact development.

What next? One of the key questions is whether Ecuador is an exception to the rule. Is it one of very few countries not recording an impact of remittances on human capital development, or would similar results be found for other countries? As already stated, other studies show positive results in Latin America, but perhaps due to methodological differences. Therefore, the only way to answer this question would be to apply this methodology to explore the effects of remittances on other countries, thus enabling consistent comparisons between countries.

Lastly, it should be mentioned that the results found in this paper are consistent with two important structural economic features of the Latin American region. In the first place, the region has historically recorded a high propensity to consume and a low propensity to save and invest. Ecuadorians are using remittances exactly as Latin Americans have traditionally used other national and international resources. Also, income is highly concentrated, and in this sense, remittances in Ecuador seem to reinforce this feature. These regional characteristics are among the factors explaining the very different economic performance between this region and others, such as East Asia.

References

Acosta, P. (2007), “School Attendance, Child Labor, and Remittances from International Migration: the Case of El Salvador”, document prepared for *Congreso Latinoamericano y Caribeño de Ciencias Sociales*, FLACSO, 29-31 October, Quito.

Acosta, A., S. López and D. Villamar (2006), “La contribución de las remesas a la economía ecuatoriana”, in Acosta, A. *et al.*, *Crisis, migración y remesas en Ecuador. ¿Una oportunidad para el codesarrollo?*, CIDEAL, Madrid.

Acosta, P., P. Fajnzylber and H. López (2007a), “The Impact of Remittances on Poverty and Human Capital: Evidence from Latin American Household Surveys”, *World Bank Policy Research Working Paper*, Nr. 4247, June.

Acosta, P., C. Calderón, P. Fajnzylber and H. López (2007b), “What is the Impact of International Remittances on Poverty and Inequality in Latin America?”, *World Bank Policy Research Working Paper*, Nr. 4249, June.

Acosta, P., P. Fajnzylber and López (2008), “Remittances and Household Behavior: Evidence from Latin America”, *Remittances and Development: Lessons from Latin America*, World Bank, Chap. 5, p. 133-169.

Adams, R. (1991), “The Effects of International Remittances on Poverty, Inequality, and Development in Rural Egypt”, *Research Report*, Nr. 86, International Food Policy Research Institute, Washington DC.

Adams, R. and J. Page (2003), “International Migration, Remittances and Poverty in Developing Countries”, *World Bank Policy Research Working Paper*, Nr. 3179, December.

Adams, R. and J. Page (2005), “Do International Migration and Remittances Reduce Poverty in Developing Countries?”, *World Development*, Vol. 33, Nr. 10, p. 1645-1669.

Álvarez, F., M.T. García and P. Tello (2006), “Las remesas de emigrantes en la Balanza de Pagos española” *Boletín Económico del Banco de España*, July-August, p. 141-166.

Amuedo-Dorantes, C. and S. Pozo (2004), “Worker’s Remittances and the Real Exchange Rate: A Paradox of Gifts”, *World Development*, Vol. 32, Nr. 8, p. 1407-1417.

Angrist, J., G. Imbens, and D. Rubin (1996), “Identification of Casual Effects Using Instrumental Variables”, *Journal of the American Statistical Association*, vol. 91, Nr. 434, p. 444-55.

Angrist, J. (2004), “Treatment Effect Heterogeneity in Theory and in Practice”, *Economic Journal*, Vol. 114, Nr. 3, p. C52-83.

Bendixen (2003), “Receptores de remesas en Ecuador. Una investigación de mercado”, Multilateral Investment Fund – Inter-American Development Bank and Pew Hispanic Center, Quito, May.

Bertoli, S. (2008), “The Development Impact of the Remittances Sent by Ecuadorian Migrants” in Olivie. I., “Policy Coherence for Development: Impact of Economic Links with Spain on Ecuador’s Development”, Annex, forthcoming publication.

Calero, C., A.J. Bedi and R. Sparrow (2008), “Remittances, Liquidity Constraints and Human Capital Investments in Ecuador” *IZA DP*, Nr. 3358, IZA Discussion Papers Series, February.

Carling, J. (2005), “Migrant Remittances and Development Cooperation”, *PRIO Report* Nr. 1/2005, International Peace Research Institute, Oslo.

Cox, D., Z. Eser and E. Jiménez (1998), “Motives for Private Transfers Over the Life Cycle: An Analytical Framework and Evidence for Peru”, *Journal of Development Economics*, Vol. 55, Nr. 1, February, p. 57-80.

Cox Edwards, A. and M. Ureta (2003), “International Migration, Remittances and Schooling: Evidence from El Salvador”, *NBER Working Paper*, Nr. W9766, June.

Fajnzylber, P. and H. López (2007), “Close to Home: the Development Impact of Remittances in Latin America”, *Conference Edition*, World Bank, Washington DC.

Ghosh, B. (2006), “Migrants’ Remittances and Development: Myths, Rhetoric and Realities”, International Organization for Migration (IOM) and The Hague Process on Refugees and Migration, Geneva.

Guerrero, P. A. (2007), “El impacto de los ingresos por remesas en el gasto de salud de los hogares”, document prepared for *Congreso Latinoamericano y Caribeño de Ciencias Sociales*, FLACSO, 29-31 October, Quito.

Hernández-Coss, R. (2005), “A Proposed Framework to Analyze Informal Funds Transfer Systems”, in Munzele, S. and D. Ratha, *Remittances. Development Impact and Future Prospects*, The World Bank, Washington DC.

IMF (2005), “Workers’ Remittances and Economic Development”, *World Economic Outlook*, International Monetary Fund, Washington DC, Chap. 2, p. 69-84.

Inter-American Dialogue (2007), “Making the Most of Family Remittances”, *Second Report of the Inter-American Dialogue Task Force on Remittances*, Inter-American Dialogue, Washington DC, May.

Jiménez-Martín S., N. Jorgensen and J.M. Labeaga (2007), “The Volume and Geography of Remittances from the EU”, *mimeo*, Fundación de Estudios de Economía Aplicada (FEDEA), Madrid.

Jokisch, B. and J. Pribilsky (2002), “The Panic to Leave: Economic Crisis and the “New Emigration” to Ecuador”, *International Migration*, Vol. 40, Nr. 4, p. 75-97.

Kapur, D. (2004), “Remittances: the New Development Mantra?”, *G-24 Discussion Paper Series*, Nr. 29, United Nations Conference on Trade and Development, April.

Koehlin V. and G. León (2006), “International Remittances and Income Inequality: An Empirical Investigation”, *Research Department Working Paper*, Nr. 571, Inter-American Development Bank, Washington DC, October.

López, S. and D. Villamar (2004), “Análisis sobre el proceso migratorio en el Sur de Quito” in Hidalgo, F. (comp.), *Migraciones. Un juego con cartas marcadas*, Abga-Yala, Quito.

López, H., L. Molina y M. Bussolo (2007), “Remittances and the Real Exchange Rate”, *World Bank Policy Research Working Paper*, Nr. 4213, April.

López-Córdova, E. (2006), “Globalization, Migration and Development: the Role of the Mexican Migrant Remittances”, *INTAL-ITD Working Paper*, Nr. 20, Institute for the Integration of Latin America and the Caribbean e Integration, Trade and Hemispheric Issues Division.

López-Córdova, E. and A. Olmedo (2006), “International Remittances and Development: Existing Evidence, Policies and Recommendations”, *INTAL-ITD Working Paper*, Nr. 41, Institute for the Integration of Latin America and the Caribbean e Integration, Trade and Hemispheric Issues Division.

Martínez, D. (2007), “Enfermedad holandesa en las remesas?” *Latinwatch*, Servicio de Estudios Económicos, BBVA, First Semester, Madrid.

MIF-IADB (2004), “Sending Money Home: Remittance to Latin America and the Caribbean”, Multilateral Investment Fund – Inter-American Development Bank, Washington DC, May.

MIF-IADB (2006), “Sending Money Home: Leveraging the Development Impact of Remittances”, Multilateral Investment Fund – Inter-American Development Bank, Washington DC.

Molina, L. (2006), “Migraciones y desarrollo: el papel de las remesas” in Olivieé, I. y A. Sorroza, *Más allá de la ayuda. Coherencia de políticas económicas para el desarrollo*, Ariel y Real Instituto Elcano, Madrid, Chap. 2, *comentarios*, p 163-171.

Mulinaina, T. (2005), “Mismatched Perceptions: Views on Remittance Obligations among Remittance Senders and Recipients” in Shaw, J (ed.), “Remittances, Microfinance and Development: Building the Links. Volume 1: A Global View”, The Foundation for Development Cooperation, Brisbane, Chap. 3, p.26-32.

Olivieé, I. (2008), “Policy Coherence for Development: Impact of Economic Links with Spain on Ecuador’s Development”, forthcoming publication.

Orozco, M. (coord.) (2005), “Transnational Engagement, Remittances and their Relationship to Development in Latin America and the Caribbean”, Institute for the Study of International Migration, Georgetown University, Washington DC, July.

Orozco, M. (2006), “International Flows of Remittances: Cost, Competition and Financial Access in Latin America and the Caribbean – Toward an Industry Scorecard”, Report presented

at the meeting *Remittances and Transnational Families*, Multilateral Investment Fund – Inter-American Development Bank and the Annie E Casey Foundation, 12 May, Washington DC.

Orozco, M. and R. Fedewa (2006), “Leveraging Efforts on Remittances and Financial Intermediation”, *INTAL-ITD Working Paper*, Nr. 24, Institute for the Integration of Latin America and the Caribbean e Integration, Trade and Hemispheric Issues Division.

Pacheco, A. (2007), “Influencia de la migración en el rendimiento escolar de niños en hogares rurales ecuatorianos”, document prepared for *Congreso Latinoamericano y Caribeño de Ciencias Sociales*, FLACSO, 29-31 October, Quito.

Rapoport, H y F. Docquier (2005), “The Economics of Migrants’ Remittances” *IZA DP*, Nr. 1531, IZA Discussion Papers Series, March.

Ratha, D. (2003), “Workers’ Remittances: An Important and Stable Source of External Development Finance”, *Global Development Finance 2003*, World Bank, Chap. 7, p. 157-175.

Ratha, D. (2005), “Workers’ Remittances: An Important and Stable Source of External Development Finance”, in Maimbo S. M. and D. Ratha, *Remittances, Development Impact and Future Prospects*, World Bank, Washington DC.

Shaw, J. (ed.) (2005), “Remittances, Microfinance and Development: Building the Links. Volume 1: A Global View”, The Foundation for Development Cooperation, Brisbane.

Solimano, A. (2003), “Workers Remittances to the Andean Region: Mechanisms, Costs and Development Impact”, paper prepared for the Multilateral Investment Fund – Inter-American Development Bank Conference on *Remittances and Development*, Quito, May.

Taylor, J.E. (1999), “The New Economics of Labour Migration and the Role of Remittances”, *International Migration*, Vol. 37, Nr. 1, p. 63-86.

World Bank (2006), *Global Economic Prospects. Economic Implications of Remittances and Migration*, World Bank, Washington DC.

Yang, D. (2004), “International Migration, Human Capital and Entrepreneurship: Evidence from Philippine Migrants’ Exchange Rate Shocks”, *Ford School of Public Policy Working Paper*, Nr. 02-011, Ann Arbor, Michigan University, Michigan.

Annex

Box 1. Data description

Data come from the Living Standard Measurement Survey of Ecuador of 2006 (LSMS 2006). The Ecuadorian survey has the same structure as any other LSMS around the world. It includes a complete list of all household members, and a consumption module that allows us to differentiate items such as food, education, health, housing, etc. In addition, the survey has some variables on education, health, and nutrition that provide information on access to school, school attendance, child malnutrition, access to health services, childhood diseases, and so on. The survey also includes information at the household level: housing conditions, expenditures on housing, and some additional infrastructural variables, as well as some assets of the household.

The sample has a stratified multiphase design where the first level is given by the strata; within each stratum housings were selected, and in each housing one household was interviewed. The sample size is 55,666 individuals corresponding to 13,581 households. From this total, 2,782 persons declared to have received remittances during the last twelve months.

Among these, we selected a sub-sample (with national representation) of 937 cases and revisited their households to obtain additional information on the characteristics of the migrant; the links between the remittance sender and recipient; the amount, frequency, and transfer mechanisms; detailed information on the end-uses of remittances; and the access of recipients to financial services. The households were selected from cities absorbing the highest proportion of remittances, and include the following provinces: Pichincha, Guayas, Azuay, Esmeraldas, Cañar, El Oro, Loja, and Tungurahua. The information collected on the transfer mechanisms is especially relevant to our identification strategy (see section 3.3).

Table 1: Remittance estimates according to different sources (2006, US\$ millions)

	Banco de España	Banco Central de Ecuador	INEC	FEDEA
Ecuador total	-	2,916 (b)	732 (c)	-
Spain - Ecuador	1,453 (a)	1,289 (b)	322 (c)	711 (d)

- (a) Banco de España (2006), “Balanza de pagos y posición de Inversión Internacional de España” and online data. Same source for euro-dollar applied exchange rate –average of daily exchange rates– (1 euro = 1.2556 \$)
- (b) Banco Central de Ecuador, online data (<http://www.bce.fin.ec/frame.php?CNT=ARB0000985>)
- (c) INEC, online data (http://www.inec.gov.ec/web/guest/descargas/basedatos/inv_socd/con_vid)
- (d) Jiménez-Martín *et al.* (2007). Figure for 2004, originally expressed in US\$. Source (a) for applied exchange rate –average of daily exchange rates– (1 euro = 1.2439 \$.)

Table 2: Remittances by income distribution, Ecuador

	quintile 1	quintile 2	quintile 3	quintile 4	quintile 5
Remittances (\$)	4,254,277	7,796,783	36,048,886	90,946,070	72,449,148
Remittances (% of total)	2.01	3.69	17.04	43.00	34.26
Recipients (number)	3,053	7,641	22,597	45,134	47,635
Average income	43.08	84.86	130.41	207.94	522.89
Minimum income	0.25	65.78	105.8	162.5	275.25
Maximum income	65.78	105.79	162.49	275.05	7,427.17

Source: INEC (*Encuesta de Condiciones de Vida* and *Encuesta de Ingresos y Gastos*) and authors' calculations

Table 3: Remittance uses by income distribution (2007, US\$ and %)

	quintile 1	quintile 2	quintile 3	quintile 4	quintile 5	total
Housing and land (building, purchasing, or enlargement)	194,751	161,709	3,385,626	1,005,026	3,796,118	8,543,230
	(5.44) (a)	(2.45)	(8.78)	(1.68)	(5.89)	(4.93)
Electrical appliances and other home appliances	73,032	0	0	0	589,583	662,614
	(2.04)	(0)	(0)	(0)	(0.91)	(0.38)
Vehicle purchase	0	0	1,299,088	56,594	4,297,287	5,652,969
	(0)	(0)	(3.37)	(0.09)	(6.67)	(3.26)
Investment in a business	0	0	0	44,832	455,459	500,291
	(0)	(0)	(0)	(0.07)	(0.71)	(0.29)
Savings	90,264	166,400	1,733,833	1,192,711	3,089,772	6,272,981
	(2.52)	(2.52)	(4.50)	(1.99)	(4.79)	(3.62)
Food	2,174,026	4,128,947	17,641,136	29,093,679	22,367,541	75,405,329
	(60.67)	(62.44)	(45.74)	(48.53)	(34.71)	(43.55)
Clothes purchase	300,457	283,193	1,374,312	3,699,054	3,124,229	8,781,245
	(8.39)	(4.28)	(3.56)	(6.17)	(4.85)	(5.07)
Education	411,242	1,296,693	7,325,830	9,474,765	12,900,449	31,408,979
	(11.48)	(19.61)	(18.99)	(15.80)	(20.02)	(18.14)
Health	68,827	205,202	2,104,179	3,754,832	7,076,215	13,209,254
	(1.92)	(3.10)	(5.46)	(6.26)	(10.98)	(7.63)
Debt reimbursement (other than previous destinations)	76,903	0	1,883,711	8,764,530	3,663,276	14,388,420
	(2.15)	(0)	(4.88)	(14.62)	(5.68)	(8.31)
Special occasions (weddings, birthdays...)	29,802	26,092	408,146	151,914	228,454	844,408
	(0.83)	(0.39)	(1.06)	(0.25)	(0.35)	(0.49)
Other	163,773	344,524	1,413,580	2,715,547	2,855,242	7,492,666
	(4.57)	(5.21)	(3.67)	(4.53)	(4.43)	(4.33)
Total	3,583,077	6,612,760	38,569,441	59,953,484	64,443,625	173,162,386

(a) parentheses indicate %.

Source: Data collected by Real Instituto Elcano and FLACSO, INEC (*Encuesta de Condiciones de Vida* and *Encuesta de Ingresos y Gastos*), and authors' calculations.

Table 4. Transfer mechanisms

Banks	valid percent	cumulative percent
Banco Bolivariano	39.9	39.9
Servipagos	26.9	66.8
Banco de Pichincha	7.1	73.9
Banco de Guayaquil	5.8	79.7
Banco Austro	5.7	85.4
Banco Produbanco	4.4	89.8
Transfer companies		
Delgado Travel	54.1	54.1
Western Union	26.3	80.5
Money Gram	6.9	87.3

Table 5. First-stage estimates

<i>dep var</i> : remittances	specification 1	specification 2	specification 3
Instrument	10.9235* (2.6465)	6.0283** (2.4607)	8.9622** (3.6976)
F-value for instrument	17.04*	6**	5.87**

Standard errors in parentheses. Estimates corrected by heteroskedasticity and parish autocorrelation.
*Significant at 1%, ** significant at 5%, *** significant at 10%.

Table 6. Impact of remittances on school enrollment

<i>dep var</i> : enrollment	specification 1	specification 2	specification 3
R	0.00007* (0.00002)	0.00005* (0.00001)	0.00005* (0.00001)
Cases	13219	13219	13219
R squared	0.0008	0.0383	0.0743
Reduced form			
Z	0.0655* (0.0107)	0.0329* (0.0101)	0.0203 (0.0130)
2SLS			
R	0.0066* (0.0028)	0.0077 (0.0072)	0.0015 (0.0011)

Standard errors in parentheses. Estimates corrected by heteroskedasticity and parish autocorrelation.
*Significant at 1%, ** significant at 5%, *** significant at 10%.

Table 7. Impact of remittances on child malnutrition

OLS <i>dep Var: Z score</i>	specification 1	specification 2	specification 3
R	0.0002 (0.0002)	-0.0001 (0.0001)	0.00001 (0.0001)
Cases	6050	6050	6050
R squared	0.0003	0.0822	0.1763
Reduced form			
Z	0.4131* (0.0976)	0.1958* (0.0706)	0.1176** (0.0603)
2SLS			
R	0.046* (0.015)	0.0496 (0.0346)	0.0183 (0.0156)

Standard errors in parentheses. Estimates corrected by heteroskedasticity and parish autocorrelation.
*Significant at 1%, ** significant at 5%, *** significant at 10%.

Table 8. Impact of remittances on prevalence of respiratory diseases

OLS	specification 1	specification 2	specification 3
R	-0.0002* (0.00007)	-0.0002* (0.00007)	-0.0002* (0.00006)
Cases	6221	6221	6221
R squared	0.0017	0.0065	0.0602
Reduced form			
Z	-0.0132 (0.0188)	-0.0087 (0.0200)	-0.0591*** (0.0333)
2SLS			
R	-0.0014 (0.0021)	-0.0021 (0.0049)	-0.0097 (0.0087)

Standard errors in parentheses. Estimates corrected by heteroskedasticity and parish autocorrelation.
*Significant at 1%, ** significant at 5%, *** significant at 10%.

Table 9. Impact of remittances on prevalence of diarrhea

OLS	specification 1	specification 2	specification 3
R	-0.0001 (0.00007)	-0.00002 (0.00007)	-0.00003 (0.00007)
Cases	6221	6221	6221
R squared	0.0003	0.0185	0.0548
Reduced form			
Z	-0.0324* (0.0156)	0.0045 (0.0156)	0.0600* (0.020)
2SLS			
R	-0.0036* (0.0018)	0.0011 (0.0039)	0.0099 (0.0075)

Standard errors in parentheses. Estimates corrected by heteroskedasticity and parish autocorrelation.
*Significant at 1%, ** significant at 5%, *** significant at 10%.

Table 10. Impact of remittances on access to health services

OLS	specification 1	specification 2	specification 3
R	0.00001 (0.00001)	9.2800E-06 (0.00001)	6.37E-06 (0.00001)
Cases	12932	12932	12932
R squared	0.0001	0.0051	0.0635
Reduced form			
Z	0.0247* (0.0049)	0.0204* (0.0049)	0.0232* (0.0067)
2SLS			
R	0.0025* (0.0008)	0.0043* (0.0026)	0.0057 (0.0073)

Standard errors in parentheses. Estimates corrected by heteroskedasticity and parish autocorrelation.
*Significant at 1%, ** significant at 5%, *** significant at 10%.

Table 11. Impact of remittances on log of per capita consumption

OLS	specification 1	specification 2	specification 3
R	0.001* (0.0001)	0.0008* (0.0001)	0.0007* (0.0001)
Cases	55376	55376	55376
R squared	0.0222	0.3522	0.4327
Reduced form			
Z	0.5193* (0.0572)	0.2722* (0.0327)	0.0775* (0.0287)
2SLS			
R	0.0475* (0.0109)	0.0451* (0.0173)	0.0086** (0.0043)

Standard errors in parentheses. Estimates corrected by heteroskedasticity and parish autocorrelation.
*Significant at 1%, ** significant at 5%, *** significant at 10%.

Table 12. Impact of remittances on log of food expenditure

OLS	specification 1	specification 2	specification 3
R	0.0004* (0.00007)	0.0004* (0.00007)	0.0004* (0.00006)
Cases	55198	55198	55198
R squared	0.0053	0.086	0.1403
Reduced form			
Z	0.1868* (0.0321)	0.1137* (0.0296)	0.0208 (0.0302)
2SLS			
R	0.017* (0.0043)	0.0188* (0.0085)	0.0023 (0.0034)

Standard errors in parentheses. Estimates corrected by heteroskedasticity and parish autocorrelation.
*Significant at 1%, ** significant at 5%, *** significant at 10%.

Table 13. Impact of remittances on log of expenditure on kitchen appliances

OLS	specification 1	specification 2	specification 3
R	0.0011* (0.0002)	0.0009* (0.0002)	0.0009* (0.0002)
Cases	54559	54559	54559
R squared	0.0086	0.1576	0.2051
Reduced form			
Z	0.5686* (0.0558)	0.2612* (0.0389)	0.0661 (0.0484)
2SLS			
R	0.0526* (0.0128)	0.0438* (0.0182)	0.0077 (0.0060)

Standard errors in parentheses. Estimates corrected by heteroskedasticity and parish autocorrelation.
*Significant at 1%, ** significant at 5%, *** significant at 10%.

Table 14. Impact of remittances on other consumption items

OLS	specification 1	specification 2	specification 3
R	0.0012* (0.0002)	0.001* (0.0002)	0.0009* (0.0001)
Cases	54817	54817	54817
R squared	0.0145	0.2363	0.3184
Reduced form			
Z	0.6488* (0.0630)	0.3431* (0.0417)	0.115** (0.0456)
2SLS			
R	0.0603* (0.0142)	0.058* (0.0237)	0.0134** (0.0066)

Standard errors in parentheses. Estimates corrected by heteroskedasticity and parish autocorrelation.
*Significant at 1%, ** significant at 5%, *** significant at 10%.

Table 15. Impact of remittances on housing

OLS	specification 1	specification 2	specification 3
R	0.0002* (0.00005)	0.0002* (0.00005)	0.0002* (0.00005)
Cases	55376	55376	55376
R squared	0.0027	0.0315	0.0648
Reduced form			
Z	0.0664* (0.0153)	0.0184 (0.0141)	-0.026 (0.0177)
2SLS			
R	0.006* (0.0019)	0.003 (0.0027)	-0.003 (0.0025)

Standard errors in parentheses. Estimates corrected by heteroskedasticity and parish autocorrelation.
*Significant at 1%, ** significant at 5%, *** significant at 10%.

Appendix 1

Two-stage estimates of the impact of remittances in several variables of human development

<i>Dependent variable</i>	urban			rural		
	spec 1	spec 2	spec 3	spec 1	spec 2	spec 3
Enrollment	0.001 (0.0007)	0.0002 (0.0011)	-0.0021 (0.0022)	-0.0194 (0.0909)	-0.0128 (0.0492)	0.0015 (0.0014)
Z score	0.015 (0.0151)	0.0116 (0.0282)	0.0167 (0.0137)	0.0896 (0.2196)	0.0368 (0.0729)	-0.0028 (0.0071)
Respiratory disease	-0.0038 (0.0033)	-0.0022 (0.006)	-0.0004 (0.0041)	-0.0166 (0.0458)	-0.0125 (0.0262)	0.0003 (0.0038)
Diarrhea	-0.0013 (0.0025)	0.0034 (0.007)	0.0042 (0.0033)	0.0048 (0.0221)	0.0031 (0.0141)	0.0088 (0.0058)
Access to health services	0.0015* (0.0006)	0.0017** (0.0007)	0.0061 (0.0067)	-0.0041 (0.0072)	-0.0054 (0.0134)	0.0015 (0.0012)
Log of consumption	0.0214* (0.0048)	0.0165* (0.0042)	0.0124* (0.0039)	-0.1733 (1.1459)	-0.4910 (11.210)	-0.0016 (0.0036)
Log of food expenditures	0.0057** (0.0026)	0.0062** (0.0031)	0.0096** (0.0044)	-0.0588 (0.3974)	-0.0481 (1.036)	-0.0010 (0.0035)
Log of kitchen appliances	0.0213* (0.0061)	0.0167* (0.0064)	0.0205* (0.0064)	-0.2005 (1.1107)	-0.4565 (7.8978)	-0.0132 (0.0091)
Log of expenditure on other goods	0.0252* (0.0056)	0.0197* (0.0054)	0.0228* (0.0075)	-0.2442 (1.3277)	-0.825 (17.704)	-0.0008 (0.0054)
Housing	0.0004 (0.0014)	-0.001 (0.0020)	0.0016 (0.0032)	-0.0306 (0.2066)	-0.0661 (1.5269)	-0.0008 (0.0024)

Standard errors in parentheses. Estimates corrected by heteroskedasticity and parish autocorrelation.

*Significant at 1%, ** significant at 5%, *** significant at 10%.