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The Effects of International Remittances on Child Schooling in Ecuador

José Bucheli

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**THE EFFECTS OF INTERNATIONAL REMITTANCES
ON CHILD SCHOOLING IN ECUADOR**

by

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**BACHELOR OF ARTS
ECONOMICS**

THESIS

Submitted in Partial Fulfillment of the
Requirements for the Degree of

**Master of Arts
Economics**

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DEDICATION

To all the people who have lost their lives while migrating to another country in pursuit of better opportunities for themselves, their families and their country.

*To my family for the support they showed me throughout this fulfilling process.
Their words of encouragement never faltered and pushed me to go on.*

To my friends who have always motivated me to run the extra mile. Their presence and feedback made a great contribution to this project.

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Any errors or mistakes in the present work are of course mine only.

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M.A., Economics, University of New Mexico, 2012

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ABSTRACT

An economic crisis hit Ecuador during the final years of the 20th century. This crisis initiated a massive migration of Ecuadoreans mostly to Europe and the United States. The remittances migrants started sending back rapidly increased and soon represented an important share of the GDP. This became a new source of income (or the only one) for many households. The present research project analyzes, through the use of an instrumented probit model, how the probability of children attending school changes when the household receives remittances and when other variables are accounted for. Data from the 2010 Ecuadorean Housing and Population Census was used to examine this relationship. The results suggest that, mainly, due to the inequality in the distribution of remittances and current consumption patterns, remittances are not having an important positive impact on human capital formation in Ecuador, when measured through the likelihood of school attendance.

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Chapter 1: Introduction

When talking about financial flows to developing countries, people typically think about corporations, governments and organizations sending foreign direct investment and official development assistance to the most needed countries in the world (Yang, 2011). Nevertheless, according to the 2009 World Bank World Development Indicators, for a significant number of countries, the remittances sent by their citizens living abroad are larger than the official development assistance and official aid these countries receive. In 2009, the total flow of remittances was \$264.7 billion, while official aid and assistance accounted for only \$127.6 billion (The World Bank, 2012)¹. The effect of development assistance and aid has been closely monitored and studied since it is governments, state agencies, and international organizations the ones providing these funds. Alternatively, the effect of remittances on development has not been widely analyzed and its figures are likely underreported. It has been argued that remittances facilitate development as they enable investment, consumption, and entrepreneurial activities for the poor. Additionally, since remittances are received directly by the people, bureaucratic costs and delays are avoided. Finally, they might act as countercyclical mechanism due to the fact that citizens of a country are more likely to migrate and send back remittances when the country is facing adverse economic conditions.

¹ Figures reported in 2009 US dollars

In Ecuador, as in many other developing countries, some social indicators have improved over the past decades, while others have stagnated or have even declined². Poverty levels, and infant and maternal mortality decreased, the net rate of enrollment in primary education stagnated, the percentage of the population with access to safe and drinking water improved (León, Rosero, & Vos, 2008), and real GDP per capita increased from \$1,291 in 2000 to \$1,728 in 2010. Sixty years ago, almost half of the population over 15 years could not write or read. As of 2001, the illiteracy rate had gone down to 9%. However, in 2009 the percentage of illiterate people increased to 15.8% (The World Bank, 2011).

Due to the deplorable situation of many Ecuadoreans, and despite the improvement in some social indicators, the country continues to be poor and underdeveloped. Even though Ecuador is not among the world's poorest countries, its economic situation is not vaunted to anyone. In a joint effort to address the pain that poverty and underdevelopment inflict every day on millions of Ecuadoreans, the country voted in favor of adopting the Millennium Development Goals (MDGs) as a benchmark to reach. These goals, which have to be achieved by the year 2015 include: among other things, eradicating extreme poverty, promoting gender equality, improving access to education and health care, and combating HIV/AIDS and other diseases (United Nations General Assembly, 2000). This should guarantee a nation-wide effort to reach a level in which the majority of the population lives under, at least, decent conditions. The purpose was, and still is, to create opportunities and benefits to support people living in extreme poverty (Overseas Development Institute, 2010).

² As reported by the Ecuadorean Central Bank, the United Nations Development Programme (UNDP) annual Human Development Reports (UNDP, 1990-2010), and León, Rosero, & Vos (2010).

The United Nations Millennium Development Goal 2 focuses on education. Its target is to “ensure that by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling.” (Department for International Development, 2011). The international community has devoted its attention to education because improvements in this area translate into a higher know-how, productivity, proactivity, income generation, and access to other goods and services. In other words, with more education, people will produce more and will do it with a better know-how. This will allow beneficiaries to earn a higher income, which will ultimately grant them access to more opportunities. In addition, proactive individuals generate opportunities for other people. Education is so important that some authors have strongly stated that “the importance of human capital investments for economic development is difficult to overstate” (Amuedo-Dorantes, Georges , & Pozo, 2010).

There are many factors that might affect child schooling and the capacity of the parents to invest in human capital, like for instance household income, household size, family wealth, parent’s education, socio economic status, local literacy level, presence of a school, among others (Burney & Irfan, 1995; Edwards & Ureta, 2003; Hanson & Woodruff, 2003; Amuedo-Dorantes, Georges, & Pozo, 2010). Most, of these factors can be potentially affected by international migration.

The issues of migration and remittances are of great relevance to Ecuadoreans and to the country as a whole. According to the survey “*Ecuador en perspectiva*” (CEDATOS, 1999), at the turn of the last century, only 8% of Ecuadoreans believed in the possibility of a better future for themselves. This is not surprising since only 10% of individuals considered plausible the possibility of finding a job. Furthermore, a mere 7%

of the population believed that the country could come out of the crisis, and just 12% of individuals affirmed to be living in a situation of wellbeing. This was the feeling of the population after a severe economic crisis hit the country in 1998. As a consequence of the crisis, a generalized exodus of Ecuadoreans began. When a tragedy like this one hits a country, the priorities and perceptions of people change. If instead of a safe job, stable currency, prices and wages, and real opportunities; a country offers a contracting GDP, real wages, and investment; a skyrocketing poverty level, inequality, unemployment, and inflation, people will desperately look somewhere else. Individuals want stability and security in their own and in their family's lives. Producers want to be able to sell their products. Parents want healthy and educated children. This is the rationale that triggered the exodus of Ecuadoreans and the justification for the present work.

The purpose of the present thesis is to assess if in fact there has been an effect of remittances on child schooling in Ecuador. The household financial opportunities could considerably rise with the reception of remittances; nevertheless, the departure of a relative might create instability and increase vulnerability of the family left behind. The present study works with a first hypothesis, which poses that the reception of remittances has a positive effect on the probability of a child attending school as household income increases. Looking into the child characteristics, a second hypothesis suggests that, in terms of schooling, on average, boys tend to benefit more than girls from remittance receipt as they might be able to stop working to support their families or because households treat boys and girls differently (Binder , 1998). A third hypothesis that is tested is that remittances benefit more low-income children than high-income children as

they might represent the difference between being able to cover schooling costs or not. For both low- and high-income individuals the effect is expected to be positive.

The relationship between development and migration has been widely discussed; however, the approach of the present paper is rather recent. Current focus has turned to the consequences on children living in households where a close relative has migrated (Antman F. M., 2011). There are scholars who consider that, in developing countries, household expenditures on education increase with remittances (Acosta P. , 2011; Yang & Martinez, 2005). They advocate for a positive effect of remittances and migration on schooling by arguing that the extra income contributes to capital accumulation in the families, implying that the odds of a child attending school are higher if the household receives remittances. On the other hand, research has shown that migration might have a detrimental effect on education. It can lead to school dropout even when financial resources are available if the child has to replace sacrificed labor force or if children have to take over domestic chores (Acosta P. , 2011; Amuedo-Dorantes, Georges, & Pozo, 2010). Evidence shows that migration and remittances can both encourage and discourage schooling of children who are left behind when someone in their household migrates. These two opposing points of view come from evidence that has been found in studies carried out in developing countries. Consequently a question arose: how are remittances affecting child schooling in Ecuador?

To answer this question, data from the 2010 National Population and Housing Census¹ was used. The *Instituto Nacional de Estadísticas y Censos* (National Institute of Statistics and Censuses, INEC) prepared a questionnaire on various topics, such as

¹ Censo Nacional de Población y Vivienda 2010

housing, employment, ethnicity, household composition, education, among others. This questionnaire had to be filled out by every individual in the country. The data of interest to the present research referred to the age, gender, presence of a disability, ethnicity, languages spoken, parents' education, household characteristics, and remittance receipt. The data were processed in STATA to: 1) obtain descriptive statistics; 2) calculate the Pearson correlation coefficient for instrumental variables; and 3) to model a probit regression that would calculate the probability of school attendance. Results do not indicate that international remittances increase the likelihood that a child in Ecuador has of attending school, except if he/she is low-income. The effect of remittances according to gender has mixed results. Finally, the results indicate that remittances have a stronger effect on low-income individuals than on high-income children.

This thesis has been organized into six chapters. The first one includes an introduction to the importance of remittances in development, the elements that have an impact on child education, and the reasons of why these topics are relevant for Ecuador. The second chapter contains a background to the historical causal mechanisms and economic events that instigated the last migration wave and its relevance, and a literature review of the research in the field. The third chapter presents the theoretical background that supports the relationship between remittances and the education of children. This chapter also covers the empirical models that have been proposed by other studies to explore this relationship in more detail. Chapter 4 is a description of the source, the data and the variables used in this thesis, and it also includes an explanation of the initial findings that motivated the continuation of the analysis. The fifth chapter includes the empirical results and estimates obtained with the use of the proposed models. There is a

clarification of what the results mean in terms of the effect of remittances on child schooling in Ecuador. Finally, there is a chapter with conclusions and suggested policy recommendations.

Chapter 2: Background

Ecuador is a country that has been witnessing since the last years of the previous century what some scholars have called a “migratory stampede” (Acosta, López, & Villamar, 2006). The purpose of this chapter is to provide a background to the reasons and consequences behind this process by making a historical recount of events. I argue that it was chronic economic problems hitting bottom what triggered the mass migration of Ecuadoreans. This chapter also makes a survey of the literature on the topic of migration and remittances and their effect on child outcomes, such as education. I find that several approaches have been taken and that various conclusions have been reached.

2.1 Case Study Description

In 1981, the Import Substitution and Industrialization (ISI) model in Ecuador reached a sudden end when President Jaime Roldós Aguilera died in a plane crash. This event coincided with the end of the country’s petroleum boom, which had been the support of the development model. Roldós Aguilera’s vice-president took office, and almost immediately implemented an economic stabilization program aimed at reducing the government expenditure, controlling inflation, and at improving the balance of payments. Then, in 1984 President León Febres Cordero took office. He campaigned for the liberalization and deregulation of the economy. However, the deregulation was partial and government subsidies of export-led industries increased. This process was called “the nationalization of neoliberalism” (Montúfar, 2000). The government was forced to increase its expenditures, which were financed by foreign debt and by borrowing from

the Central Bank. Inflation rose throughout the 1980s, and peaked in 1989 at 76% (International Monetary Fund, 2011). It was little what the next government could do for a country with the burden of a large fiscal deficit.

The government further liberalized the economy by introducing monthly adjustments to gasoline prices, wage increases, and subsidy eliminations. This scheme introduced speculation and promoted inflation. The growth rate of GDP was lower than the population growth rate. By 1994, the per capita income was even lower than in 1981. Domestic and foreign investment stagnated. Throughout the 1980s the purchasing power of people was eroded away by inflation and currency devaluation. By 1970, 40% of the population lived below the poverty line. Twenty years later, by 1990, this figure had climbed up to 65% of the population. Despite the harsh economic conditions, the migration pattern continued to be permanent and generalized with a modest upward trend (Ramírez Gallegos & Ramírez, 2005), but not massive. However, a strong rural-urban migration started to become evident as poor peasants looked for better opportunities in the cities.

During the 1990s, Ecuador went through the worst economic crisis in its history. A book written by Ramírez Gallegos & Ramírez (2005) explains that in 1992 President Sixto Durán Ballén took office with a neoliberal stabilization agenda. Some of the measures included the privatization of state-owned enterprises, the devaluation of the currency, the reduction in mandatory bank reserves, and a reduction of the electricity and gasoline subsidies. The first results of these policies were positive. The inflation rate dropped, the fiscal deficit turned to surplus, and the economy appeared to recover (Araujo, 1999). The neoliberal agenda gained momentum and Durán Ballén pushed

forward with the structural reforms. Ecuador abandoned the OPEC, the fuels market was deregulated, and laws to limit public spending were enacted. However, in 1994, the credibility of the regime was severely affected by social unrest, the bankruptcy of a major bank and by corruption scandals at the highest levels of government. The political instability prevented the president from continuing with his stabilization program, which would have included the deregulation of the labor market as well. The economic results of the following years showed that the situation in the country was deteriorating. The migration flow to developed countries started to rise even when the unemployment and inflation rates were not as bad as during the 1980s (Ramírez Gallegos & Ramírez, 2005).

The political and socioeconomic crisis hit bottom between 1997 and 2000. During this time, five governments led the country, including a military-indigenous junta, and two presidents were ousted from power and fled the country on corruption charges. The same year, the International Monetary Fund announced its concern over the fragility of the financial system and on the vulnerability of the fiscal sector. Following this recommendations, authorities continued to offer limitless aid to commercial banks. Nevertheless, the bailout did not prevent several banks from going out of business because of deposits mismanagement and the common practice of offering loans without collateral to firms that were associated to the largest banking groups. The permissiveness of the laws and the ineffectiveness of the authorities led to the contagion of the crisis to an increasing number of institutions (Ramírez Gallegos & Ramírez, 2005).

The tipping point was reached in March, 1999, when in a desperate measure President Jamil Mahuad froze all bank deposits in the financial system for almost a year to prevent a massive bank run and additional bank failures. The same year, Ecuador

became the first country to default on Brady debt⁴. According to Acosta , López, & Villamar (2006), the economy grew at an annual average of just 2.5% from 1981 through 1998; but in 1999 the economy contracted by 7.3%, if measured in Sucres⁵, and 30.1%, if measured in US dollars. On January 9th, 2000, Mahuad announced the official dollarization of the economy at an exchange rate of 25,000 Sucres per USD \$1 (Desperation in Ecuador, 2000). He was overthrown from power 12 days later. This had deep repercussions on the majority of the population as they hold their savings in Sucres, while only the elite had theirs on U.S. dollars and out of the country. Inequality and poverty went through the ceiling. Between 1995 and 2001, the Gini coefficient in urban areas went from 0.49 to 0.62 (as cited in Ramírez Gallegos & Ramírez, 2005, p. 55). In 1990, the poorest 20% of the population held 4.6% of the income, while in 2000 they held less than 2.5%. The proportion of the population living in poverty increased by more than 133%. The share of the total population living in extreme poverty more than doubled. The income per capita decreased by 30% from USD\$2,035 in 1998 to USD\$1,429 a year later, a figure that represented only 43% of the Latin American average (Acosta, López, & Villamar, 2006). The severe economic depression initiated a new process of migration of an unprecedented magnitude and speed. In the next section, I will describe trends and important figures of international migration and remittances in Ecuador.

⁴ In 1989, Brady bonds were issued by developing countries, mostly Latin American, in exchange of restructuring private bank loans on which many of them defaulted.

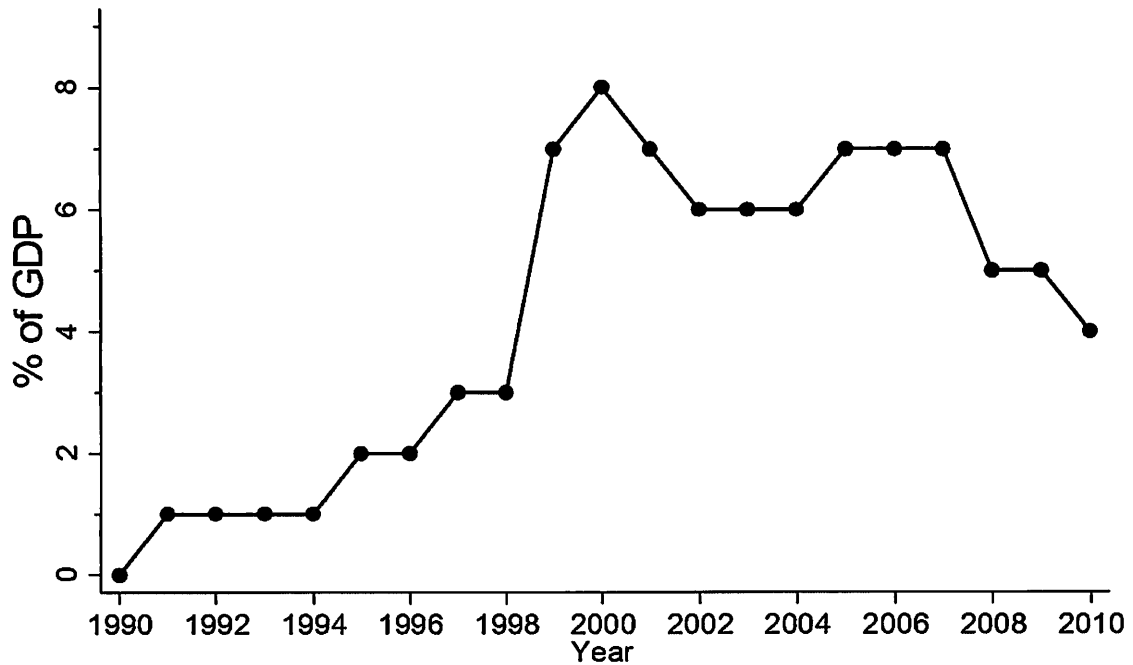
⁵ The national currency

2.2 Migration and Remittances in Ecuador

According to some estimates, between 2000 and 2004, more than a million Ecuadoreans migrated out of the country (Acosta, López, & Villamar, 2006). This means that almost 10% of the population left the country in the first four years after the crisis reached its worst moment. In recent years, the migration flow has lost speed and magnitude due mainly to the 2008 global financial crisis, and to the fact that some people have returned back to Ecuador. However, some approximations have calculated that more than 10.8% of the national population is still living abroad (Comisión Especial Interinstitucional de Estadísticas de Migraciones en el Ecuador, 2008).

Remittances are an important issue for Ecuador. From a microeconomic point of view, the income level of the households that receive them improves. From a macroeconomic perspective, remittances represent an important share of the Ecuadorean GDP. Figure 1 shows how the flow of remittances has evolved since 1990. It shows that the remittance receipt as percentage of GDP moved with a mild upward trend throughout the 1990s, from near 0% to approximately 3% eight years later. However, after the crisis hit in 1998, the share of remittances as percentage of GDP dramatically increased 5% in two years. Remittances roughly maintained this level until 2007, when they started decreasing. As of 2010, remittances represented 4% of the GDP. It is important to consider that between 2005 and 2007 remittances as a share of GDP neared 7%, that is, higher than the share of GDP generated by the value-added tax and equal to the share of GDP generated by Ecuador's number one export, petroleum (Roca, 2009). This is why studying the impact that remittances have on education is crucial.

Figure 1: Remittance receipt in Ecuador as share of GDP (1990-2010)



Source: The World Bank, December 2010, <http://data.worldbank.org/country/ecuador>

The effect of remittances on child schooling becomes even more relevant if the gender and age of the people who receive them, and the condition of people who send remittances before migrating is considered. Citing again INEC data, as of 2006, 21.7% of people who received remittances were younger than 18. Individuals in age of attending school were the second group to receive the largest share of remittances. Certainly, this income is having an impact on their consumption and investment patterns, including investment in human capital. When gender is analyzed, statistics show that 78.2% of the people who received remittances were females, while 21.8% were males. This is especially important when it is considered that studies have shown that women are more likely than men to invest on their children's education (World Savvy Monitor, 2009). This finding suggests that remittances should have a positive effect on schooling in

Ecuador. Furthermore, remittances might have a stronger impact on the investment in human capital if they are income that was not being generated in Ecuador. The same 2006 INEC figures showed that 45.4% of the people who sent remittances were not employed before moving abroad. This means that they are not replacing lost resources, but that they are generating additional income that could be used in child education, for example. It might seem like if gender and age of people who receive remittances and the condition of people who send them before migrating accentuates the positive impact of remittances on child schooling, but that is not the entire story.

Like income, the distribution of remittances across the Ecuadorean society is highly unequal. Further statistics from INEC report that in 2006 the poorest 40% received barely over 5% of the total remittances, while the wealthiest 20% received over 34% of them. It is worrisome to know that the people who needed the additional income the most were the ones getting the least of it. Additionally, for the most underprivileged group of the population, remittances represent a higher portion of their total income. This means that people for which remittances might be the difference between sending their children to school or not are the ones receiving the smallest chunk of it. Sadly, the problems with inequality do not stop here. If the period of reception of remittances, measured in years, is analyzed another worrisome fact is noted. The poorest 40% are receiving remittances for an average period of 4.4 years, while the wealthiest 20% are receiving them for almost 7 years (INEC, 2006). Both primary and secondary school in Ecuador last for 6 years each. This means that children in the bottom 40% are, on average, not getting remittances for the entirety of primary or secondary school. Surely, this might impact school dropout as families might become incapable of sending their kids to school once they stop receiving

remittances. If the child is in the first two grades of primary or secondary school at the time of the relative's migration, on average, the household would stop receiving the extra income before the child completes the sixth year. On the other hand, the wealthiest 20% of households receive remittances for a period that is longer than primary or secondary school. Even if they needed the remittances to send their children to school, they would receive them for a period longer than the six years that it takes to complete either primary or secondary school. Even if remittances per se have a positive impact on child schooling, the highly unequal distribution of remittances might prevent them from delivering all their potential benefits. However, before the paper moves into the next section, the characteristics of the Ecuadorean migration have to be described as well.

There is a common perception that a significant large proportion of international migrants tend to be males (Jolly & Reeves, 2005). However, what has been observed from the last Ecuadorean migration flow is that women account for almost half of the total number of migrants. Official figures showed that male migration in 2001 was slightly higher than women, 53% to 47%, respectively (Ortiz-Moya & Guerra-Páez, 2008). According to the 2010 Housing and Population Census data, out of the total migrant population, 53.8% were men and 46.2% women. It is observable that the trend in gender difference has remained stable for almost 10 years, with women representing almost half all the entire migrant population. This is important for this thesis because there is no gender bias on the average effect of migration on child schooling.

It is also important to identify the countries that serve as leading destinations for migrants. In descending order, the largest communities of Ecuadoreans are located in Spain (48%), the United States (30%), Italy (8%), Chile (2%), Colombia (1%),

Venezuela (1%), and the rest of the world (10%) (INEC, 2006). It points out the fact that the top three destinations are developed countries, which, on average, enjoy a better quality of living, wages, health, and education than Ecuador. The other destinations are chosen by their geographical proximity. Sending remittances from a developed country could impact the migrants' child school attendance in two ways. It could be the case that a child perceives that it is not necessary to be educated to be able to move to a developed country and earn higher wages there. This would discourage child school attendance. Alternatively, it could be the case that the migrant family member introduces the child to all the opportunities that could come with education. This would encourage child school attendance.

Another element to be examined in migration is the main reason people have for moving to another country. The motive might help determine the type of activity that the migrant will carry out at the destination country. It was estimated that 65% of Ecuadorean migrants move because of work, 18% do so with family reunification purposes in mind, 12% travel for study reasons, and 5% for other reasons (INEC, 2006). People who move because of work or family reunification have a higher likelihood of sending remittances back home than people who move for academic reasons. However, since the 2008 global financial crisis, the proportion of people who migrated looking for better job opportunities has started to decline as finding employment has become increasingly difficult (Migrantes Ecuador, 2011).

This massive migration wave did not happen without deep repercussions in the demographic composition of the country and in the households' structure. A study (Camacho & Hernández, 2008) estimated that one or both of the parents have migrated in

24.3% of the families with a migrant living abroad. As a consequence, there are four effects that have been recorded by the same study. First, there are mono-parental households that change their life objectives. This effect is stronger if the mother is the person who has migrated. Second, if both parents migrate, sometimes, the oldest brother or sister will take over the responsibilities of head of household. This will severely affect the family structure and the roles and responsibilities of each member. Third, often, the extended family assumes the role of 'tutor family' of the family members that are left behind. Fourth, there are families that will keep strong bonds with the migrant and will not change their life projects. It is important to note that, on average, each migrant left behind two children under the age of 18 (Camacho & Hernández, 2008). These are vulnerable households with a precarious economic situation. Schooling might not be a priority anymore when it is a challenge to afford basic services. For all the reasons exposed in this background, a strong relationship between remittances and child schooling in Ecuador is expected to be observed. The following section includes a literature review on some of the most recent studies in the area.

2.3 Literature Review

Development economics literature holds the belief that social development and poverty reduction is attainable through the simultaneous improvement in health, education, income distribution, gender equality, and quality of the environment (Franko, 2007). As people become healthier, more educated and are treated with more equality, the more they are expected to be more productive, proactive and generators of income.

Several studies ratify this connection between the additional income of remittances and poverty alleviation. In a research paper by Adams & Page (2003), two questions were addressed. First, what is the impact of migration and remittances on the poverty levels of developing countries? Second, how do migration and remittances affect poverty levels in different regions of the developing world? It was hypothesized that there was a positive effect of international remittances and migration on a country's poverty reduction. It was argued that remittances have a positive impact on the quality of living of people in Asia, Africa, Latin America, and the Middle East, as they are much higher than the total official aid flows to the developing countries (Adams & Page, 2003). The focus was on 74 low- and middle-income countries for which data on migration, remittances and development indicators were available. The countries were selected by their standing on the world income scale, and by the availability of the information. The data set was compiled with information from the 1990 and 2000 U.S. Population Censuses, the European Data Trends in International Migration publication, the International Monetary Fund Balance of Payments Statistics Yearbooks, and the World Bank Global Poverty Monitoring database. The methodology used in the research was an OLS model of the logarithm of a measure of poverty in country i as a function of the logarithm of mean per capita income, the logarithm of income distribution, the logarithm of a measure of international migration and remittances. The logarithms were used so that the results could be interpreted as elasticities of poverty with respect to the variable in question (Adams & Page, 2003). An OLS model was appropriate to use in the study because the level of poverty is a continuous variable. The results of the study pointed to two key findings that are pertinent to the present study. First, international migration has

a strong statistical impact in poverty reduction. It was estimated that if the number of migrants as a proportion of the total population of a country increases by 10%, the share of people living in poverty will decline by 1.9% (Adams & Page, 2003). Second, remittances sent by international migrants also have a strong statistical impact in reducing poverty. It was calculated that if the share of remittances as a proportion of the GDP of a country increases by 10%, the share of people living in poverty will decline by 1.6 % (Adams & Page, 2003). These findings supported their hypothesis that international remittances and migration have a positive effect in poverty reduction in developing countries because; although, on average, migrants are not poorest in society, the remittances they send to their countries of origin helps to increase the mean income and to decrease the incidence and severity of poverty (Adams & Page, 2003). The main limitation to the research was data availability. It was noted that most developing countries do not publish statistics on international migration, even if the data is collected. Also, the IMF data on remittances underestimates the true amount because it only counts money transfers through official and financial institutions. This is the reason why, in the present study, special attention was put to the representativeness of data.

Besides the effect of remittances on poverty levels it is important to determine the consequence of adverse events on child schooling. In a recent research article by Vásquez and Bohara (2010), they explore the effect of household shocks on child labor and schooling in Guatemala. The sample consisted of 7,332 children between the ages of 5 and 16 belonging to high-, medium-, and low-income households (Vásquez & Bohara, 2010). They tested the hypothesis that Guatemalans use child labor, consequently reducing child schooling, to deal with the effect of natural disasters and socioeconomic

shocks. Households may use the income invested on a child's education to recover from an adversity, or the child may have to contribute to the household income after a disaster has occurred. In the analysis section, two models are included. First, factor analysis was used to estimate the latent propensity of households to suffer natural disasters and socioeconomic shocks. Second, the study included a bivariate probit model to examine the determinants of child labor and schooling (Vásquez & Bohara, 2010). The results indicate that there is no statistical evidence that suggests that households use child labor and schooling reduction to get through shocks. However, they do indicate that low-income households are more likely to use these strategies. Overall, the results do not support the hypothesis because it was found that socioeconomic shocks do not have an effect on children dropping out of school in Guatemala (Vásquez & Bohara, 2010). A limitation of the study is that other ways households cope with shocks were not explored. These findings support the validity and robustness of the database used in the present thesis because it eliminates potential collinearity between the decision of a person to migrate and the reason to pull a child out of school.

Next, the effects on children schooling and labor that arise from gender differences in migration are addressed by taking into account the characteristics of the migrant. The research article by Acosta (2011), attends a specific question: are there gender differences on the effect on child schooling and labor with migration? Four surveys were used to draw the sample. The number of households used from each survey changed: 739, 624, 647, and 641 households from the 1995, 1997, 1999, and 2001 surveys, respectively. Only children between the ages of 6 and 18 were used. An OLS regression was used to model child school attendance, controlling for child demographic

characteristics and for household characteristics, including whether the child has experienced the migration of a relative. The study reached three main findings. First, there seems to be differences in the impact of migration depending on the gender of the child. This suggests that the gender of the child should be included in the model of the present study as the likelihood of staying in school is influenced by it. The second finding is that there is no statistical gender difference in the likelihood of migrants sending remittances back to their communities of origin. Third, it seems that male migration has a null or slightly positive effect on child schooling, and that female migration reduces the likelihood of child schooling (Acosta, 2011). The results answer the paper question by showing that the gender of a migrant has an effect on the likelihood of a child's school attendance or labor, but it is not as strong as the child's gender effect.

The topic of the effects of migrant gender is also addressed through a different framework. In a research paper by Antman (2011), a fixed effects and instrumental variable approach explores the short-run effects of a father's migration to the United States on his children's schooling and labor. First, the individual child level fixed effects are used to deal with the fact that fathers and children may share characteristics that could influence the father's decision to migrate and the child's schooling or work. Second, employment conditions in specific industries in several U.S. cities are used as instrumental variable to help predict father migration because, as noted, it is reasonable to assume that the same incentives that encouraged the father to migrate are preventing the children from attending school. One of the main arguments in this study is relevant to the central topic of this paper. It is stated, as conventional wisdom believes, that a migrant father sends home remittances that are higher than the wage he could have earned at the

country of origin, thus increasing the likelihood of his children attending school. The sample is a panel data set at the household level of 22,642 children, taken from Mexico's *Encuesta Nacional de Empleo Urbano* (ENEU), which collected detailed information about urban labor and education. Information for every household member above 12 years old is included. The results show that a father living in the U.S. reduces a child study hours by about 35.6 hours per week and increases work hours by approximately 60 hours per week. The decrease in study hours is less severe for older boys, and the increase in work hours is smaller for older girls. This study is in accordance with the results of Acosta (2011) because it shows that the gender of the child does matter for the schooling and labor outcome. Once again, this suggests that the present paper should include the gender and age of the child as variables in the model. One limitation to the study is that there is no data to assess the long-run effects.

The paper by Antman (2011) presents a fixed effects and instrumental variable approach to explore the effects of migration on both the schooling and labor outcomes of a child. There are other studies that examine the effect of migration on the labor outcome of children. The purpose of a research article written by Nguyen & Purnamasari (2011) is to explore how international migration and remittances in Indonesia affect labor supply behavior in households that have a migrant member. The sample was drawn from the nationally representative Indonesia Family Life Surveys (IFLS). These surveys were divided into four waves. The first one was done in 1993, and it included 7,216 households. Subsequent waves tried to capture as many households of the first wave as possible. The final data set included information for 6,128 households. The survey included questions about consumption, international migration, human development

outcomes, labor supply, and household assets. The study uses the surveys that were carried out in 2000 and 2007 because they focus more on international migration. The fixed effects and instrumental variable approach modeled the number of work hours for household members, children's school enrollment, and child labor supply as function of an indicator for household migration and remittances receipt, household asset ownership, and community characteristics (Nguyen & Purnamasari, 2011). Historical migration networks instrument for migration and remittance receipts. The results showed that, in Indonesia, migration tends to reduce the number of work hours for the household members, including children. Individuals living in migrant-sending households work 26 hours less per week than individuals living in households without migrants. The effect is greater if the person who migrates is a male. In percentage terms, the proportion of children in migrant households who work is 7% less than in households without migration (Nguyen & Purnamasari, 2011). In terms of this thesis, the relevance of this finding relies on the idea that a decrease in child labor is a potential increase in schooling as children have more time to study. One limitation of the research is the quality of the data related to migration. More information on this topic would allow for a better examination of how remittances affect children.

The topic of schooling effect in communities with a high incidence of out-migration is addressed by testing the impact of remittances in migrant and non-migrant households. In the research article by Amuedo, Georges & Pozo (2010), it is hypothesized that the effect of remittances will be different for households with migrants than for households without migrants, as one obtains the additional income but has to cope with the migration of a relative, while the others receive remittances without

enduring the disruptive effect of the absence of a loved one. The sample consisted of 328 children between the ages of 6 and 17 from three Haitian communities. The data was obtained from the Latin America Migration Project (LAMP) . This research collected detailed social, demographic, and economic information from about 100 households in 2000 and 200 more in 2002. They used an instrumented probit model to avoid correlation between remittances and household income. The results yielded from the probit models, showed that in some cases remittances raised children's schooling. In one of the communities remittances raised school attendance for every child, regardless of whether they had a migrant relative. However, in the other two communities this effect was only observed among children who lived in households without migration (Amuedo-Dorantes, Georges , & Pozo, 2010). This confirmed the hypothesis because remittances had different effects on children depending on whether they lived in a household with migration or without. These results highlight the importance of studying this topic with the inclusion of household and child characteristics. The main limitation of the research was that the data specifically targeted communities with a high migration incidence, meaning that the results could not be assumed to represent the entire Haitian population.

Finally, a study done by Olivie & Ponce (2008) uses an instrumented variable and OLS approach to estimate the impact of remittances on the balance of payments and poverty reduction in Ecuador. The data came from the 2006 Ecuador Living Standard Measurement Survey (LSMS), which collected information on consumption patterns, education, health, housing conditions, and asset ownership. The authors used a representative sub-sample of 937 individuals, and used the information in three models. The first model only related remittances to different development outcomes. The second

model included child, parent and household characteristics. The third model used parochial characteristics, including the local average years of schooling, per capita income and dummy variables. The OLS results for the three models show that remittances have a positive and significant effect on school enrollment. However, when the instrumental variable approach was used to deal with endogeneity between remittances and schooling, the results were only positive and significant for Model 1 (remittances as the only independent variable). They conclude that there are no significant effects of remittances on school enrollment. The present thesis follows a similar process as the initial analysis shows a relationship, through the use of graphs, between school attendance and remittance reception (see Figures 2, 3, 4, 5). Later on, I include child, parent and household characteristics into the model and estimate the effects of remittances on education.

Overall, the results and findings in the literature suggest that international migration and remittances are factors that tend to have an influence on a child's likelihood of attending school, education, and; therefore, poverty (Acosta P. , 2011; Adams & Page, 2003; Amuedo-Dorantes, Georges, & Pozo, 2010; Antman, 2011; Nguyen & Purnamasari, 2011; Vásquez & Bohara, 2010). Children who live in households that receive remittances tend to have a higher probability of attending school. It can be assumed from these six literature reviews that the effect that remittances have on child schooling will depend on characteristics of the child, of household members, and of the household overall. Studies that consider a longer time span, a larger sample size, and that take into account migrant characteristics, besides gender, should be done. They would

account for different conditions in the country. That would make their results applicable to broader situations, increasing their representativeness.

Chapter 3: Theory

The purpose of this chapter is to use a Stackelberg-type approach, as proposed by González-König & Wodon (2007), to develop a simplified utility maximization function for the members of a hypothetical Ecuadorean household. Additionally, the econometric method that has been used to determine the effect of remittances on child schooling is also explained in this chapter. The method calculates the probability of a child attending school when remittance reception and other characteristics are taken into account.

3.1 Theoretical Model

Our hypothetic household has three members. There is a migrant (say, the father f) who lives in another country, the migrant's spouse (say, the mother m), and a child c , who is too young to make his own decisions. The utility of each parent depends on their own consumption and on their child's education.

The child can only use his time to work or study. This time is normalized to 1 and the mother decides how it is allocated. Since the child cannot make any decision on how to use his time, his utility is only taken into account as a determinant on his parents' utilities, which are given by:

$$\begin{aligned} U^f &= U^f(x^f, e) && \text{for the father} \\ U^m &= U^m(x^m, e) && \text{for the mother} \end{aligned} \tag{1}$$

where x^i is the consumption of each parent $i \in \{f, m\}$, e is the time the child spends studying. Consequently, $(1 - e)$ is the time the child spends working.

Each period, the father sends remittances r , which determine his consumption level and maximize his utility. With r , the mother also maximizes her utility by choosing a consumption level for herself and the *studying* and *working* time allocation for her child. The budget constraint for the mother is:

$$x^m = w^m + (1 - e)w^c + r, \quad (2)$$

where w^m and w^c are the wages paid to the mother and the child, respectively.

Stage equilibrium

With this, it is possible to maximize the utility of the mother for the period through the use of a Lagrangean

$$\mathcal{L} = U^m(x^m, e) - \lambda(x^m - w^m - r - (1 - e)w^c) \quad (3)$$

The next step is to obtain the First Order Conditions:

$$\frac{\partial \mathcal{L}}{\partial x^m} = \frac{\partial U^m}{\partial x^m} - \lambda = 0 \quad (4)$$

$$\frac{\partial \mathcal{L}}{\partial e} = \frac{\partial U^m}{\partial e} - \lambda w^c = 0 \quad (5)$$

$$\frac{\partial \mathcal{L}}{\partial \lambda} = x^m - w^m - r - (1 - e)w^c = 0 \quad (6)$$

These lead to the optimal condition:

$$\frac{\partial U^m}{\partial e} = \frac{\partial U^m}{\partial x^m} w^c \quad (7)$$

From this equation, it can be implied that if the child wage w^c increases, the time a child spends in school will decrease. Equation (7) also allows for the calculation of the Marshallian demand curves:

$$x^m = x^m(m, w^c) \quad e = e(m, w^c) \quad (8)$$

where $m = w^m + w^c + r$ is the total income for the mother. The impact of an increase in remittances on the time a child spends in school is equal to the increase of the mother's wage due to the fact that $\frac{\partial e(m, w^c)}{\partial r} = \frac{\partial e(m, w^c)}{\partial m}$. Assuming that the mother's wage remains constant, the amount of child schooling would only depend on the level of remittances.

$$e = f(r, ch, par, hh) \quad (10)$$

where ch , par , and hh are child, parent, and household characteristics, respectively, are additional factors expected to have an effect on a child's likelihood of attending school according to Amuedo-Dorantes, Georges, & Pozo (2010), Edwards & Ureta (2003), Hanson & Woodruff (2003), and Vásquez & Bohara (2010). Given this theoretical relationship between remittances, child, parent and household characteristics, and child schooling, the following hypotheses were established:

H₁: Remittances received by a household increase the likelihood of a child attending school.

H₂: Remittances benefit more the low-income children than the high-income children as the effect on the likelihood of attending school for the first group is higher than for the latter one.

The last hypothesis that was tested derived from a general interest on how different development variables affect boys and girls.

H₃: There is a gender difference in the effect that remittance reception has on the likelihood of attending school.

3.2 Probit Framework

From Equation (10) and the literature review section, we theoretically and qualitatively assume that there is a potential effect of remittances on the education of the child. To quantify this effect, and to test the first hypothesis, a probit regression is used to model schooling as a dichotomous response variable, as it was done in the Vásquez & Bohara (2010) paper. Because the main goal of this work is to estimate the effect of remittances on child schooling, the following relationship is established:

$$probit(P(S_{i,t} = 1)) = \alpha + \beta_1 R_t + \beta_2 C_{i,t} + \beta_3 P_t + \beta_4 HH_t + \varepsilon_{i,t} \quad (11)$$

where the dependent variable, $S_{i,t}$, is the probability of the child i in household t of attending school. The dichotomous independent variable R_t is equal to 1 if the household receives remittances, and equals 0 otherwise. The explanatory variables $C_{i,t}$, P_t and $HH_{i,t}$ represent vectors of child, parent and household characteristics, respectively.

The present analysis uses an instrumental variable approach, which is in accordance with the treatment that current research (Amuedo-Dorantes, Georges, & Pozo, 2010; Antman F. M., 2011; Nguyen & Purnamasari, 2011) has given to the type of

data and variables that are used here. This was done to reduce potential sources of endogeneity, and to obtain the correct standard errors.

The data did not have actual figures for the income level of individuals or on the amount that each household receives as remittances. Having this information would have allowed to estimate the effect of migration and remittances on different income levels. However, a solution to this issue is proposed in the next chapter.

Chapter 4: Data

The previous chapter was dedicated to the development of the theoretical model. This chapter presents all the variables and data needed to perform the empirical analysis. The first section presents an explanation of the source from where the information came and the second part contains a description of all the necessary variables.

4.1 Data Description

The present research uses data generated by the 2010 Population and Housing Census⁶. The government agency responsible for conducting censuses is INEC, which carries one out on the entire Ecuadorean population every 10 years. The last one was conducted on November 28th, 2010⁷. The government declared a one-day curfew on the entire territory to minimize the movement of people so that the pollsters could carry out their activities. One of the objectives was to determine through continuous, categorical, and binary variables the size, structure, growth and distribution of the population and its economic, social and demographic characteristics. Another objective was to determine the volume and characteristics of the dwellings in which people live, and the basic services available to them in order to assess current conditions and the specific housing and services requirements.

The census consisted on filling out a questionnaire with the answers to about 80 questions for every individual in the country (see Appendix 1). The answers provided the

⁷ It took additional days to survey the most remote areas. The census officially concluded on December 5th, 2010.

specific data on schooling and remittances at the household and individual level needed for the present study (INEC, 2011). The census provided data for 14,483,499 individuals (Ecuador's entire population). Since this thesis only pertains to those individuals who are in the age of attending school, only the observations for people between the ages of 6 and 17 were used. For this age group, the census provided data for 3,613,625 persons. By using the entire group observations, this research uses the population rather than a sample. From the 6 through 17 years-old people, 6.9% live in a household that received remittances. Table 1 shows the frequency of individuals who are in the age of attending primary school. Table 2 is the frequency table of individuals who are in the age of attending secondary school.

Table 1: Frequency table for children in the age of attending primary school

Child's age	Frequency	Percent
6	293,868	15.66
7	303,722	16.19
8	316,105	16.85
9	313,352	16.70
10	335,645	17.89
11	313,781	16.72
Total	1,876,473	100

Source: 2010 Housing and Population Census

Table 2: Frequency table for children in the age of attending primary school

Child's age	Frequency	Percent
12	283,219	16.3
13	297,407	17.12
14	296,910	17.09
15	288,773	16.62
16	283,077	16.3
17	287,766	16.57
Total	1,737,152	100

Source: 2010 Housing and Population Census

There are 1,876,473 children in Ecuador who are in the age of attending primary school. The population of youths in the age of attending secondary school is 1,737,152. One of the first things done to the dataset was to plot it so that the effect of remittances on education by socio-economic group could be identified. Since the census did not collect actual dollar amounts for income, I used the individuals' access to technology, services, conditions and materials of their dwellings, and their parent's education as proxies for income level. Remittance reception was not included in the wealth estimation as it is not known what impact they are having on the household wealth. I considered low-income individuals as people who used inadequate materials for their dwellings, who did not have access to cellphones, a computer or internet; people whose dwellings did not have proper basic services, or whose parents were not very well educated. In contrast, high income individuals were considered to be those whose indicators opposed those of the low-income population. In the end, I ended up with about 20% of the population in each extreme of the income categories. Because migration might have introduced bias to the effect of remittances, the plots were also divided between individuals who had a migrant relative in their household and those who do not.

Figures 2 and 3 show the level of school attendance for each age group between 6 and 17 years who fall in the category of high-income individuals. Figures 4 and 5 show the same information, but for individuals who are considered low-income.

Figure 2: Percentage of High-Income Individuals Attending School when there is Migration in their Household

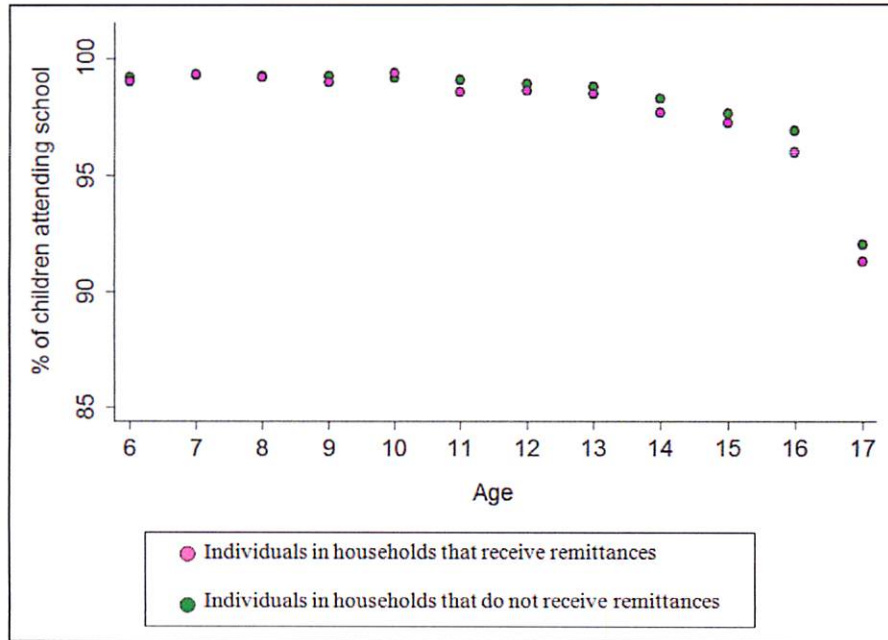
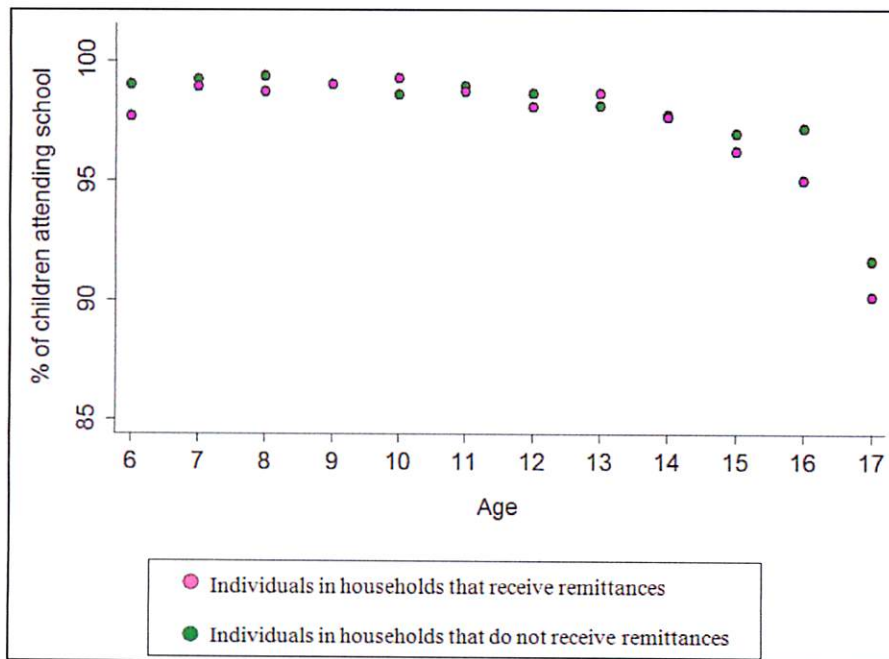


Figure 3: Percentage of High-Income Individuals Attending School when there is no Migration in their Household



Source: 2010 Ecuadorean Housing and Population Census

Figures 2 and 3 show that the, among high-income individuals, the difference is minimal in school attendance between children that live in migrant households and those who do not, independently of whether they receive remittances (color magenta) or not (color green). The dots on the graphs are almost similar when the migration and non-migration cases are compared. This finding supports the perspective of this thesis when it comes to focusing on the effect of remittances alone. Additionally, it was found that in almost every age group, the individuals who live in households that do not receive remittances attend school in a higher proportion than children who live in households with remittance reception.

Figures 2 and 3 also show that in primary school, when children are between the ages of 6 and 11, the difference between the two groups of children is little. Schooling in both groups is close to 100%. Nevertheless, the difference in child schooling between the two groups slightly increases when children move into the 12-17 age range. At age 12 the difference is less than 1%, but at age 17 it goes up to about 3%, without ever falling below 90%. This means that there is a visually verifiable negative effect of remittances on high-income children school attendance. For this subset, children at any age have a higher percentage of school attendance if they come from a household without remittances.

As it will be shown on the following figures, the relationship between remittance reception and child education among low-income individuals is the opposite of what is evident from the high-income group.

Figure 4: Percentage of Low-Income Individuals Attending School when there is Migration in their Household

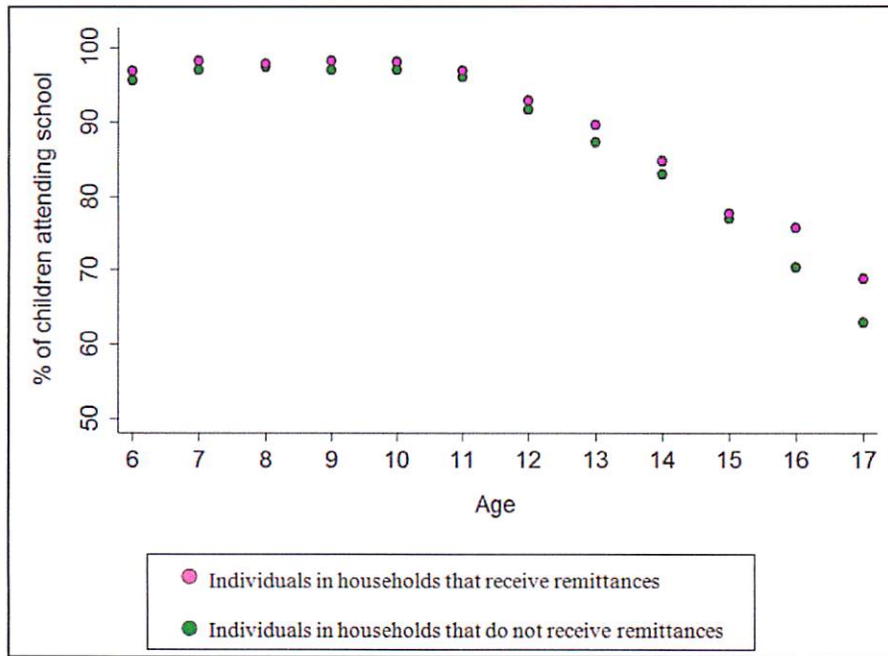
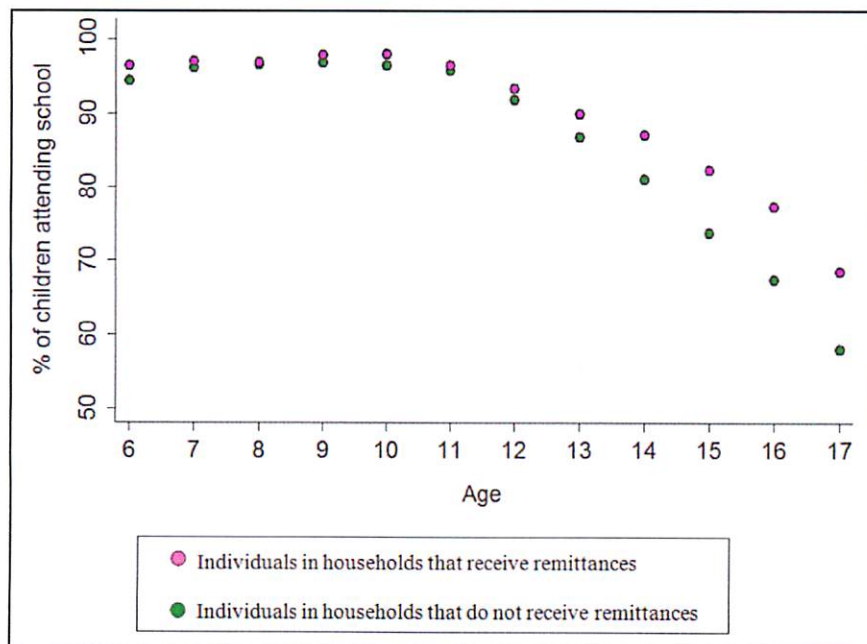


Figure 5: Percentage of Low-Income Individuals Attending School when there is no Migration in their Household



Source: 2010 Ecuadorean Housing and Population Census

Figures 4 and 5 show two things that are relevant to the present analysis. The first one is that, among low-income individuals, there is a difference in school attendance between children who live in households with remittances (color magenta), and those who live in households without remittances (color green). In primary school, when children are between the ages of 6 and 11, the difference is not so dramatic. Both groups have around 97% of school attendance. However, when children move into the 12-17 age range⁸, there is a great divergence among the two groups. This discrepancy accentuates as the individuals become older. At age 12 the difference is less than 1%, but at age 17 it climbs up to almost 10%. This means that there is a potential effect of remittances and migration on low-income children school attendance. The second relevant thing that Figures 4 and 5 show is that there is a higher and more constant primary school attendance at around 96%. In Figure 5, secondary school attendance drops quickly from around 93% to below 57%. However, for every low-income case, children from households with remittances have a higher percentage of attendance than children who come from households without remittances, regardless of whether there is migration in the household or not. It is important to note that the households might be receiving remittances even if they do not have a migrant living abroad. They could be receiving them from friends or from distant relatives (Amuedo-Dorantes, Georges , & Pozo, Migration, Remittances, and Children's Schooling in Haiti, 2010).

If we examine the relationship between remittance reception and child schooling across socio-economic levels, we notice that the effect has an opposite sign. While

⁸ According to the *Sistema Integrado de Indicadores Sociales del Ecuador* (SIISE, 2009), the official ages are 6-11 for primary school and 12-17 for secondary school.

remittances seem to have a positive impact on low-income individuals, it looks like they have a negative effect on the schooling of high-income children.

4.2 Variables Description

In order to carry out an empirical analysis, we know from Equations 11 that we need to include information on school attendance, remittance reception, child, parent, and household characteristics in the probit model. Fortunately, almost all the required information was found in the census database.

Table 3 presents the summary statistics of the variables that have been included in the model. In the instrumented probit framework, the dependent variable is whether the child attends school or not (*SCHOOLING*). The independent variable is *REMITT*. The control variables include the child characteristics (*AGE, GENDER, AFRO, MONT, INDIG, WHITE, CILANG, CFLANG, DISABILITY*); the parent characteristics (*ADU_EDUC*), and the household characteristics (*INFANT, WEALTH, RURAL*). The instruments for *REMITT* are *MIGRANTS, USAC, and EUROPE*. As mentioned before, the census database did not contain actual income figures; therefore, a wealth index (*WEALTH*) was created by taking into account twenty variables that contained information on access to basic services and technology, and materials, services and condition of the dwelling.

Table 3: Definition of Variables

<i>Variables</i>	<i>Definition</i>	<i>Mean</i>	<i>SD</i>	<i>Min.</i>	<i>Max.</i>
<i>SCHOOLING</i>	The child attends school (1=yes, 0=otherwise)	0.900	0.300	0	1
<i>REMITT</i>	Does the child's household receive remittances? (1=yes, 0=otherwise)	0.069	0.253	0	1
<i>AGE</i>	Age of the child in years	11.407	3.419	6	17
<i>GENDER</i>	The child is a girl (1=girl, 0=otherwise)	0.507	0.500	0	1
<i>INFANT</i>	Number of children younger than 5 living in the household	0.556	0.792	0	10
<i>WEALTH</i>	Continuous wealth index (0=poorest, 1=wealthiest)	0.661	0.148	0.18	1
<i>ADU_EDUC</i>	The highest level of education reached by an adult in the household (1=none, 2=literacy center, 3=preschool, 4=primary, 5=secondary, 6=9th grade, 7=graduated high school, 8=some college, 9=college degree, 10=graduate school)	5.950	2.164	1	10
<i>RURAL</i>	The child lives in a rural area (1=yes, 0=no)	0.405	0.491	0	1
<i>AFRO</i>	The child's ethnicity (1=afro-descendant, 0=otherwise)	0.045	0.207	0	1
<i>MONT</i>	The child's ethnicity (1=montubio, 0=otherwise)	0.068	0.252	0	1
<i>INDIG</i>	The child's ethnicity (1=indigenous, 0=otherwise)	0.082	0.275	0	1
<i>WHITE</i>	The child's ethnicity (1=white, 0=otherwise)	0.055	0.228	0	1
<i>CFLANG</i>	Does the child speak a foreign language? (1=yes, 0=otherwise)	0.019	0.136	0	1
<i>CILANG</i>	Does the child speak an indigenous language? (1=yes, 0=otherwise)	0.054	0.226	0	1
<i>DISABILITY</i>	Does the child have a disability? (1=yes, 0=otherwise)	0.032	0.176	0	1
<i>MIGRANTS</i>	Number of people who migrated from the household	0.066	0.362	0	7
<i>USAC</i>	The migrant moved to the US or Canada	0.015	0.122	0	1
<i>EUROPE</i>	The migrant moved to Europe	0.024	0.152	0	1

Source: 2010 Ecuadorean Housing and Population Census

Chapter 5: Empirical Results

In this chapter, I started by carrying out a correlation test between the response and the endogenous variable with the potential instrumental variables to make sure I had relevant instruments. I used the cross-sectional data from the census to estimate, through a probit regression, the likelihood that Ecuadorean children have of attending school whenever their households received remittances or not, and by controlling for additional variables.

5.1 Selection of Instrumental Variables

From the literature review, it is expected that remittance receipt will be an endogenous variable in the schooling model as the factors that encourage a migrant to send money to the origin country might prevent a child from going to school. For example, a migrant will be more likely to remit if the adults in his family are unemployed. If they are unemployed, then the likelihood of schooling decreases. The correlation between these variables could result in inconsistent and biased estimates of the effects of remittances on child education (Amuedo-Dorantes, Georges , & Pozo, 2010). To minimize this endogeneity we need instruments that are correlated with remittances and uncorrelated with schooling. Based on Acosta (2011), who uses migration in the household as an instrument, I used the number of migrants in the household; and based on Antman (2011), where the author uses information about the migrant's destination, I used dummy variables for the main destination countries of Ecuadorean migrants as covariates to determine remittance receipt. The following table

presents the correlation test of schooling and remittances with the number of migrants in the household, and the US-Canada and Europe dummy variables that represent the destination of the migrants. I made US-Canada and Europe to interact with the number of migrants in the household so that a person who did not migrate or that migrated somewhere else would not have the same statistical effect. The table also contains information on the significance level or p-value that determines whether we reject or not the hypothesis that the coefficient equals zero.

Table 4: Pearson Correlation Coefficients

<i>Potential Instruments</i>	<i>Variable</i>	
	<i>EDUCATION</i>	<i>REMITTANCES</i>
<i>MIGRANTS</i>	0.0092***	0.3297***
<i>MIGRANTS X US & CANADA</i>	0.0041***	0.2679***
<i>MIGRANTS X EUROPE</i>	0.0129***	0.2818***

*p< .10; **p< .05; ***p< .01

On the one hand, the table shows that the number of migrants per household and the migrants' destinations are weakly correlated with child school attendance. On the other hand, it shows that the covariates have a positive correlation with household remittance reception, meaning that higher number of migrants per household and having the US-Canada or Europe as destination is statistically correlated with receiving remittances. Note that all the correlation coefficients are statistically different from zero

at the 1% level or better. Consequently, the final two-stage instrumented probit model looks like this:

$$probit(P(REMITT_t = 1)) = \alpha_0 + \alpha_1 MIGRANTS_t + \alpha_2 USAC + \alpha_3 EUROPE + u_t \quad (12)$$

The second stage comes from Equation (10):

$$probit(P(SCHOOLING_{i,t})) = \beta_0 + \beta_1 \widehat{REMITT}_t + \sum_{j=2}^n \beta_j Z_{i,t} + \varepsilon_{i,t} \quad (13)$$

where Z includes the child, parent, and household characteristics.

5.2 Probit Model

Four indicators of a child's characteristics are assumed to affect the likelihood of schooling. These indicators are age, gender, ethnicity (Vásquez & Bohara, 2010), languages spoken besides Spanish, and the presence of a disability. For parental characteristics, the highest level of education reached by either parent was taken as an indication of their education and background. Finally, the indicators of household characteristics are the number of infants in the household, dwelling region, wealth, and remittances reception (Amuedo-Dorantes, Georges, & Pozo, 2010). Table 5 presents the marginal effects of the instrumented probit models described in Equations 12 and 13. Six models were considered. Model 1 included only girls in the age of attending school. Model 2 took into account only boys. Model 3 used the low-income individuals. Model 4 analyzed the high-income children. Model 5 included the entire population between the ages of 6 and 17, and Model 6 considered individuals in the age of attending secondary school (11-17).

In support of H_1 (see Page 29), the estimated marginal effects of REMITT on SCHOOLING are only significant for the wealthiest 20% of the population, as noted in Model 4, and for people in the age of attending secondary school, as shown through Model 6. Model 4 shows that the likelihood of attending school that children in wealthy households have with remittance reception decreases by 1.5% in comparison with those households that do not receive income from abroad. Model 6 shows that there is a weak negative effect of remittances on secondary school attendance; however, the marginal effect for the interaction term REMITTANCES \times FEMALE is positive and significant, meaning that girls who receive remittances are more likely to attend secondary school. This could imply that Figures 2, 3, 4 & 5 show such a notorious difference in school attendance between children who receive remittances and those who do not because endogeneity had not been taken care of yet. Altogether, the results suggest that when the entire country is considered, remittances, on average, do not have a strong positive significant effect on the likelihood that a child has of attending school, or that there are other factors that are swamping the impact of remittances. These findings are consistent with the results that Amuedo-Dorantes & Pozo (2010) estimated for the Dominican Republic, that Olivié & Ponce (2008) calculated for Ecuador, and that Amuedo-Dorantes, Georges , & Pozo (2010) derived for Haiti. They explain that the potential effects of remittances might be offset by the negative impacts of migration and that there are examples in which remittances only benefit those who do not experience migration in their households. This is an extension of the study which was not considered in the present thesis, but that could be explored and analyzed in further research.

Table 5 Marginal Effects on Child Schooling

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Boys, 6-17	Girls, 6-17	Poorest 20%	Wealthiest 20%	Full dataset	Secondary school, 11-17						
Remittances	0.002 (0.0021)	0.001 (0.0020)	-0.011 (0.0174)	-0.015 (0.0038)***	-0.001 (0.0030)	-0.017 (0.0062)**						
Remittances x Female	-	-	0.012 (0.0156)	0.008 (0.0018)***	0.004 (0.0029)	0.022 (0.0052)***						
Female	-	-	-	-	0.0001 (0.0003)	-0.004 (0.0007)***						
Age	0.030 (0.0004)***	0.028 (0.0004)***	0.063 (0.0010)***	0.013 (0.0004)***	0.029 (0.0003)***	-0.046 (0.0031)***						
Age ²	-0.002 (0.0000)***	-0.002 (0.0000)***	-0.004 (0.0000)***	-0.001 (0.0000)***	-0.002 (0.0000)***	-0.0001 (0.0001)						
Infant count	-0.101 (0.0002)***	-0.014 (0.0002)***	-0.018 (0.0006)***	-0.006 (0.0003)***	-0.012 (0.0002)***	-0.030 (0.0004)***						
Wealth index	0.211 (0.0018)***	0.198 (0.0018)***	0.299 (0.0088)***	0.079 (0.0039)***	0.205 (0.0014)***	0.420 (0.0028)***						
Highest level of parents' education	0.012 (0.0001)***	0.011 (0.0001)***	0.022 (0.0003)***	0.003 (0.0001)***	0.011 (0.0001)***	0.225 (0.0002)***						
Lives in rural area	0.004 (0.0004)***	-0.002 (0.0004)***	-0.010 (0.0012)***	0.004 (0.0005)***	0.001 (0.0003)**	-0.010 (0.0007)***						
Afro-descendant	-0.021 (0.0011)***	-0.017 (0.0010)***	-0.017 (0.0026)***	-0.021 (0.0019)***	-0.019 (0.0008)***	-0.030 (0.0015)***						
Montubio	-0.014 (0.0008)***	-0.013 (0.0008)***	-0.015 (0.0015)***	-0.015 (0.0020)***	-0.013 (0.0006)***	-0.030 (0.0012)***						
Indigenous	0.012 (0.0009)***	0.001 (0.0010)	0.026 (0.0020)***	-0.020 (0.0027)***	0.007 (0.0007)***	0.009 (0.0015)***						
White	-0.014 (0.0010)***	-0.016 (0.0010)***	-0.021 (0.0029)***	-0.007 (0.0008)***	-0.015 (0.0008)***	-0.027 (0.0015)***						

(continued)

Table 5 (continued)

	Model 1 Boys, 6-17	Model 2 Girls, 6-17	Model 3 Poorest 20%	Model 4 Wealthiest 20%	Model 5 Full dataset	Model 6 Secondary school, 11-17
Speaks foreign language	0.015 (0.0014)***	0.018 (0.0012)***	0.006 (0.0055)	0.008 (0.0007)***	0.017 (0.0010)***	0.036 (0.0019)***
Speaks indigenous language	0.012 (0.0011)***	0.003 (0.0011)**	0.014 (0.0023)***	-0.016 (0.0035)***	0.007 (0.0008)***	0.020 (0.0017)***
Has a disability	-0.121 (0.0017)***	-0.114 (0.0018)***	-0.139 (0.0030)***	-0.093 (0.0027)***	-0.118 (0.0013)***	-0.132 (0.002)***
Observations	1,809,182	1,756,286	731,402	719,077	3,565,468	1,706,663
Wald χ^2 test	141990.06	142010.41	96344.54	14909.85	259525.09	163178.31
Prob > χ^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

*p< .10; **p< .05; ***p< .01

In support of H_2 (see Page 29), the estimated marginal effects in Model 4 do show that the effects of remittances on the probability of education for the low-income children is *less* negative than for high-income children, although it is not statistically significant. Research carried out by Mueller & Shariff (2009) in India determined that remittances had a stronger positive effect on teenagers that belonged to the lower castes or that were considered low-income individuals. However, there are no findings that would support a negative effect of remittances alone on low-income individuals. One possible explanation is that even with the aid of remittances the poorest of the poor are still unable to invest in human capital. Another explanation could even be the difficulty that low-income individuals have getting to a school. The fact that their income increases a little bit does not mean that the walking distance to the closest school shrinks. Further examination is strongly required in this area.

For H_3 (see Page 30), the majority of models provide no evidence to support the hypothesis. Model 6 shows a positive significant effect on girls in the age of attending secondary school and that receive remittances. Model 4 shows that for the wealthiest 20% of the population $REMITTANCES \times FEMALE$ had a significant positive marginal effect, meaning that, in this income group, girls who receive remittances are not as unlikely to study as boys. This finding is consistent with publications in the development economics literature, which state that there seems to be differences in the impact of remittances on child education according to the gender of the child. Lloyd, Mete, & Grant (2009) carried out a study in Pakistan and determined that there are different factors that contribute to school dropout for boys and girls. The factors they determined that would decrease the likelihood of education for girls are: unwanted births in the

family and access exclusively to public schools. The factors that increase the probability of schooling include availability of secondary education, an educated mother and a wealthier household. For boys, school quality, and local level of development increase the likelihood of education; while losing the reception of remittances decreased the probability of attending school (Lloyd, Mete, & Grant, 2009). Since the factors that were found to have an impact on girls' education do not include remittances reception, perhaps, that is the reason why we see a weak effect of remittances on education.

Besides the results for remittances, income level, and gender effects, Table 5 also contains the marginal effects for all the variables that were included in the model as child characteristics. Age seems to have a positive and significant effect on the likelihood of education in all the models. In Model 1, which only considers boys, age increases the probability of attending school at a rate of 3% with every additional year. Model 2 shows a similar result for girls. Models 3 and 4, which take into account income level, also show that age has a positive effect; however, the effect of age among the low-income individuals (6.3%) is almost five times the effect among high-income children (1.3%). Vásquez & Bohara (2010) explain this by saying that as age increases, the probability of school attendance goes up at a decreasing rate. When the entire dataset is analyzed through Model 5, we see a positive effect of age on education as well. It reports similar results that those in Models 1 and 2. Model 6 is the only one that shows a negative effect of age on the likelihood of secondary school attendance. This could be due to the fact that parents might perceive that the marginal utility of an additional year in school is not as high as the marginal utility of having an additional member in the household working and

earning income. Overall, the results for age are consistent with the findings in Vásquez & Bohara (2010).

Ethnicity also plays an important role when estimating the probability of child schooling. Models 1, 2, 3, 5 & 6 agree that if the child belongs to an ethnicity different than mestizo or indigenous, then the likelihood of education decreases by up to 2%. Model 4 is the only one that estimated negative marginal effects for all the ethnicities. The results for all the models were significant at the 1% level. Even the maternal languages that the child speaks influence his/her probability of attending school. All the models show that if the student was raised speaking a foreign language, then he/she is anywhere from about 1 to almost 2% more likely to study. The estimates are significant for all the models, with the exception of Model 3. Speaking an indigenous had a smaller effect than speaking a foreign language, yet the results were positive and significant as well. A study by McEwan & Trowbridge (2007) also determined that there are differences in the education of children when ethnicity is taken into account. Finally, the strongest negative effect of an individual characteristic was estimated for DISABILITY. The significant results showed that if the child suffers from a disability of any type, the likelihood of school attendance drops by around 10%.

When the parent characteristics are considered, it can be seen that the highest level of education achieved by one of the parents is statistically significant in every case. The strongest effect estimated is for the low-income group as every additional level of education of the parents translates into a 2.2% increase in the probability of attending school.

Finally, Table 5 provides results for the effects that household characteristics have on the probability of child education. The number of children below the age 5, accounted by INFANT COUNT, also has a negative and significant impact on the probability that children have of attending school. All the models show a decrease in the likelihood of schooling as the infant count increases. The reason behind this could be the fact that older children sometimes have to take care of younger siblings when the parents work, or that they might have to assume the role of head of household if the parents have migrated. In any case, this is a very strong indicator of the probability of education (Nguyen & Purnamasari, 2011). Another household characteristic that was analyzed is the region in which the household is located. The figures are a little bit ambiguous. Models 1, 4 & 5 show that boys and wealthier individuals who live in rural areas have a 0.4% higher probability of being educated. Models 2, 3 & 6 show that, for girls, poor people and children in the age of attending secondary school, living in a rural area decreases the probability of attending school by 1% or less. The results for this category are statistically significant in every model.

Finally, Table 5 reports the effects of the wealth index. It shows that, when we control for gender in Models 1 and 2, as the level of wealth rises, the likelihood of attending school increases by 20%. However, when the income level is controlled for in Models 3 and 4, we see that the effect of an increase in wealth for the poorest individuals increases the likelihood of child schooling by 30%. The rise in the probability of education for the wealthiest children is about 8%. As it was stated before, this shows the fact that for some people remittances might be the difference between being able to send their children to school or not. Model 6 shows that, for people between the ages of 11 and

17, if wealth goes up, their likelihood of attending secondary school can rise by up to 42%.

5.3 Further Analysis of the Results

The empirical results showed that the model described in section 3.1 of Chapter 3 does not fit the information available for Ecuador. It predicted that remittances were an important determinant of the probability of a child attending school, but the marginal effects in Table 5 do not support this framework. Certainly, this requires a closer look at the situation of remittances in the Ecuadorean society. In this section two elements are analyzed: who receives remittances and what are remittances used for.

It is mentioned in section 2.2 that 2006 INEC figures show that the poorest 40% of Ecuadoreans received slightly over 5% of international remittances, while the wealthiest 20% of the population received more than a third of them. This highly unequal distribution of remittances is preventing the poor people from maximizing the benefits they could be obtaining from the additional income if it was evenly distributed across income groups. We see that the people who receive the largest portion of remittances are the ones who need them the least. These are people who did not depend on the extra income to invest in human capital formation in the first place. The households that are receiving the smallest chunk of remittances are the ones who would see their living conditions significantly improve.

In section 2.2, it is also referenced from the 200 INEC figures that the poorest 40% of households receive remittances for an average of 4.4 years, while the wealthiest

quintile is receiving them for almost 7 years. Even if poor people received a considerable amount of the income sent from abroad, they would not receive it for an extended period. This could lead to dropout or it could even prevent other children in the household from starting school.

The second issue worth analyzing is the use that people who receive remittances are giving them. The *Facultad Latinoamericana de Ciencias Sociales* (Latin American School of Social Science) and the United Nations Population Fund jointly published a report that included the statistics for the Ecuadorean international migration. They document that 87.8% and 92.4% of remittances received by men and women, respectively, are used for current expenditure (FLACSO & UNFPA, 2008). Another study (Olivié & Ponce, 2008) determined that 43.55% of remittances in Ecuador are used to purchase food. Education and human capital formation expenditures account for only 18% of total remittances. Debt repayment ranks third, followed by expenditures in health, which account for only 7.63% of total remittances. The remaining 22.4% is used for clothes, real state, savings, vehicles, appliances, special occasions, others, and investing in a business (1%). If we combine these figures with the ones presented in the previous paragraph, we realize that the two poorest quintiles of the Ecuadorean population receive only 5% of remittances, from which less than 18% of it is spent on education. This suggests that the potential effects of remittances are not only being eroded away by unequal distribution, but also by the expenditure patterns. Consequently, non-poor people receive the largest percentage of migrant-sent income, which is apparently not having a positive impact on the development indicators in Ecuador. Olivié & Ponce (2008) reached a similar conclusion from their study on Ecuadorean migration.

The results derived from the analysis in this thesis are consistent with other studies that have looked into the situation in Ecuador. In 2005, a work done by Ramírez, Domínguez, & Morais, for the United Nations Entity for Gender Equality and the Empowerment of Women (UN-WOMEN) and for the International Research and Training Institute for the Advancement of Women (UN-INSTRAW), reported data from the World Bank, and determined that an average 10% increase in remittances received by a country as a share of its GDP would translate into a 1.6% reduction in the population living below the poverty line for that country. Further research should be aimed at the creation of policies that would re-orient and encourage investment in human capital formation and child schooling.

Chapter 6: Conclusion and Policy Recommendations

6.1 Conclusions

This thesis determined that remittances in Ecuador do not have a strong positive effect on the likelihood of a child attending school. The theoretical model that was tested in this thesis

$$e = f(r, ch, par, hh)$$

was partially consistent with the results. The instrumented probit analysis showed that child, parent, and household characteristics have a significant effect on the probability that a child has of being educated. It was noted that the magnitude of the effect depended on the gender and income level of the child. Overall, boys, regardless of remittance reception, are more likely to attend school than girls. Likewise, high-income individuals have a higher likelihood of being educated, but the probability for low-income children increases at a higher rate. Ethnicity played an important role as the odds of studying for mestizos and indigenous were found to be higher than for any other group. The presence of a disability was the factor that lowered the likelihood of attending school the most. These findings uncovered deep problems of racial differences, gender inequality and inequality overall, that still ravage Ecuador. These problems were evident when a closer look was taken at the dynamics of remittances over the entire school-age population. It is worrisome to note that similar studies carried out in other developing countries showed a positive effect of remittances on human capital formation, while this phenomenon was not detected for Ecuador.

The use of an instrumented probit model was appropriate according to the characteristics of the data. The use of binary indicators required a method that would enable the calculation of probabilities. Furthermore, by instrumenting endogenous variables we were able to eliminate potential bias and to produce consistent and unbiased estimates of the effects of migration on the likelihood of schooling.

Several limitations were noted throughout the realization of this work. One of the limitations of this study is that it did not use smaller administrative divisions within the country. Having this information would allow to examine the same relationship between migration and education at a more local level and at communities with a higher incidence of remittances. This would help identify the location-specific issues that need to be addressed so that the additional income that households receive from abroad maximizes their current and future utility. Another limitation relates to the data and the depth of the census questions. An analysis on different income levels and socioeconomic statuses could not be performed due to this limitation. More specific data would allow tracking changes and responses over time so that the dynamics of remittances and development indicators are better identified. A third limitation of the study was that there is no data on how the quality of living in a household and its members changes once they start receiving remittances. This would allow for behavioral analysis under relaxing budget constraints.

Although extensive research has been done around the topic of remittances and schooling, there are still many unexplored areas. An element that remains to be analyzed for the Ecuadorean case is child labor. It would be very useful to carry out studies that

report the way in which families use child labor to cope with the loss of remittances. Additionally, analyzing the consumption patterns of households headed by youths, after their parents have migrated, could be helpful in the creation of support networks and to assess the real impact of parent migration on children. Continuation on this topic would promote the formulation of state policies aimed at the long-run creation of opportunities, that migrants might find somewhere else, at home.

6.2 Policy Recommendations

Ecuador needs to create a development policy that includes remittances and encourages their productive use. However, before this is done, we have to recall that remittances come from the exodus of Ecuadoreans that left the country because of a lack of institutions, adequate economic conditions, and the perceived impossibility of a better future. On a systemic level, the country has to build institutions that are capable of maintaining a strong market that will assure the even participation and inclusion of the entire population in the economic dynamics. If this barrier is not overcome, then any additional efforts will fall through if the underlying causes are not met.

On a more practical level, concrete projects, initiatives and policies have to be implemented so that the household utility from remittances is maximized. The government should design and implement policies aimed at decreasing the inequality in access to education for minorities. Apparent important progress has been reached among indigenous communities. This might have been accomplished by years of social struggle.

Remittances are an important source of income for the Ecuadorean economy. Support in the implementation of investment projects would prove extremely beneficial

for families that receive them. Such programs would help them decrease the vulnerability of these households. They should focus on families headed by women, the oldest brother or sister, or by grandparents. Examples of such initiatives include creating community banks, special credit lines, academic scholarships, and providing financial and technical literacy. Ideally, these projects should create the adequate conditions so that a migrant can return to Ecuador without comprising the financial stability of the household.

Appendix A

Census questionnaire

0 1 2 3 4 5 6 7 8 9

Forma correcta de registro: → X

Si en el hogar existen más de diez personas, copie los siete primeros dígitos del PRIMER CUESTIONARIO

I. UBICACIÓN GEOGRÁFICA DE LA VIVIENDA
(Copie los datos de la carpeta censal)

DIVISIÓN POLÍTICO ADMINISTRATIVA

1.1 PROVINCIA:.....

1.2 CANTÓN:.....

1.3 CABECERA CANTONAL O PARROQUIA RURAL:.....

1.4 ZONA:.....

1.5 SECTOR:.....

ÁREAS AMANZANADAS

1.6 MANZANA:.....

1.7 ÁREA DE EMPADRONAMIENTO:

ÁREAS DISPERSAS

1.8 NOMBRE DE LA LOCALIDAD, COMUNIDAD, CENTRO POBLADO, RECINTO, ANEJO, COMUNA:

USO INEC

Presentación:
Buenos días / buenas tardes, mi nombre es (...) soy el/la empadronador/a, del Censo de Población y Vivienda; pertenezco al Colegio / Escuela / Universidad (...); solicito la presencia del jefe/a del hogar o su representante y a todas las personas que durmieron la noche del 27 al 28 de noviembre del 2010; para realizarles algunas preguntas. Gracias por la colaboración.

Empadronador/a inicie su registro

III. TIPO DE LA VIVIENDA
(Registre por Observación)

VIVIENDA PARTICULAR	VIVIENDA COLECTIVA
1 Casa/ Villa	9 Hotel, pensión, residencial u hostal
2 Departamento en casa o edificio	10 Cuartel Militar o de Policía / Bomberos
3 Cuarto (s) en casa de inquilinato	11 Centro de rehabilitación social / Cárcel
4 Mediagua	12 Centro de acogida y protección para niños y niñas, mujeres e indigentes
5 Rancho	13 Hospital, clínica, etc.
6 Covacha	14 Convento o institución religiosa
7 Choza	15 Asilo de ancianos u orfanato
8 Otra vivienda particular	16 Otra vivienda colectiva

Pase a IV (Vía de acceso principal a la vivienda) Pase a sección 4 (Datos de Población)

SIN VIVIENDA USO INEC

17 Sin vivienda → Pase a sección 4 (Datos de Población)

IDENTIFICACIÓN DE LA VIVIENDA Y HOGAR
(Llene de acuerdo a su recorrido)

1.9 Número de la vivienda de acuerdo al orden de visita.....

1.10 Número de hogar censal en la vivienda

1.11 Número de cuestionario censal por hogar DE

1.12 Dirección domiciliaria: _____
_____ Camino, Carretera, Sendero, etc.

IV. VÍA DE ACCESO PRINCIPAL A LA VIVIENDA
(Registre por Observación)

1 Calle o carretera adoquinada, pavimentada o de concreto	Pase a V (Condición de ocupación de la vivienda)
2 Calle o carretera empedrada	
3 Calle o carretera lastrado o de tierra	
4 Camino, sendero, chaquiñán	
5 Río / mar / lago	
6 Otro	

II. DATOS DEL EMPADRONADOR /A
(No olvide llenar sus datos)

Nombre del empadronador/a: _____

Escuela /colegio/ universidad: _____

Fecha de empadronamiento: 1 0
Día Mes Año

Nombre de jefe/a de sector: _____

Fecha de entrega: 1 0
Día Mes Año

V. CONDICIÓN DE OCUPACIÓN DE LA VIVIENDA
(No olvide registrar según la condición que corresponda)

1 Ocupada con personas presentes →	Pase a sección 1 (Datos de la vivienda)	Recuerde llenar un cuestionario censal por cada vivienda visitada sin importar su condición de ocupación
2 Ocupada con personas ausentes		
3 Desocupada	FIN DE LA ENTREVISTA	
4 En construcción		

<p>1.- ¿El material pre dominante del techo o cubierta de la vivienda es de:</p> <p>1 Hormigón (losa, cemento)?</p> <p>2 Asbesto (eternit, eurolit)?</p> <p>3 Zinc?</p> <p>4 Teja?</p> <p>5 Palma, paja u hoja?</p> <p>6 Otros materiales?</p>	<p>6.- ¿El estado del piso de la vivienda está:</p> <p>1 Bueno?</p> <p>2 Regular?</p> <p>3 Malo?</p>	<p>11.- ¿Dispone la vivienda de medidor de energía eléctrica:</p> <p>1 De uso exclusivo?</p> <p>2 De uso común a varias viviendas?</p> <p>3 No tiene medidor</p>
<p>2.- ¿El estado del techo de la vivienda es de:</p> <p>1 Bueno?</p> <p>2 Regular?</p> <p>3 Malo?</p>	<p>7.- ¿De dónde proviene principalmente el agua que recibe la vivienda:</p> <p>1 De red pública?</p> <p>2 De pozo?</p> <p>3 De río, vertiente, acequia o canal?</p> <p>4 De carro repartidor?</p> <p>5 Otro (Agua lluvia/albarrada)?</p>	<p>12.- ¿Cuántos focos tiene en su vivienda:</p> <p>Focos ahorradores (fluorescentes)? Número</p> <p>Focos convencionales (incandescentes)? Número</p>
<p>3.- ¿El material pre dominante de las paredes exteriores de la vivienda es de:</p> <p>1 Hormigón?</p> <p>2 Ladrillo o bloque?</p> <p>3 Adobe o tapia?</p> <p>4 Madera?</p> <p>5 Caña revestida o bahareque?</p> <p>6 Caña no revestida?</p> <p>7 Otros materiales?</p>	<p>8.- ¿El agua que recibe la vivienda es:</p> <p>1 Por tubería dentro de la vivienda?</p> <p>2 Por tubería fuera de la vivienda pero dentro del edificio, lote o terreno?</p> <p>3 Por tubería fuera del edificio, lote o terreno?</p> <p>4 No recibe agua por tubería sino por otros medios</p>	<p>13.- Principalmente, ¿cómo elimina la basura de la vivienda:</p> <p>1 Por carro recolector?</p> <p>2 La arrojan en terreno baldío o quebrada?</p> <p>3 La queman?</p> <p>4 La entierran?</p> <p>5 La arrojan al río, acequia o canal?</p> <p>6 De otra forma?</p>
<p>4.- ¿El estado de las paredes exteriores de la vivienda están:</p> <p>1 Buenas?</p> <p>2 Regulares?</p> <p>3 Malas?</p>	<p>9.- ¿El servicio higiénico o escusado de la vivienda es:</p> <p>1 Conectado a red pública de alcantarillado?</p> <p>2 Conectado a pozo séptico?</p> <p>3 Conectado a pozo ciego?</p> <p>4 Con descarga directa al mar, río, lago, o quebrada?</p> <p>5 Letrina?</p> <p>6 No tiene</p>	<p>14.- Sin contar la cocina, el baño y cuartos de negocio, ¿cuántos cuartos tiene la vivienda, incluyendo sala y comedor?</p> <p>Número de cuartos.....</p>
<p>5.- ¿El material predominante del piso de la vivienda es de:</p> <p>1 Duela, parquet, tablón o piso flotante?</p> <p>2 Tabla sin tratar?</p> <p>3 Cerámica, baldosa, Vinil o mármol?</p> <p>4 Ladrillo o cemento?</p> <p>5 Caña?</p> <p>6 Tierra?</p> <p>7 Otros materiales?</p>	<p>10.- ¿El servicio de luz (energía) eléctrica de la vivienda proviene principalmente de:</p> <p>1 Red de empresa eléctrica de servicio público?</p> <p>2 Panel solar?</p> <p>3 Generador de luz (Planta eléctrica)?</p> <p>4 Otro</p> <p>5 No tiene</p> <p>→ Pase a 12</p> <p>→ Pase a 13</p>	<p>15.- Todas las personas que duermen en esta vivienda, ¿cocinan sus alimentos en forma conjunta y comparten un mismo gasto para la comida? (olla común)</p> <p>1 Si → Pase a sección 2 (Datos del Hogar)</p> <p>2 No</p>
<p>SI EN LA VIVIENDA EXISTE MÁS DE UN HOGAR, UTILICE UN CUESTIONARIO PARA CADA HOGAR, PARA LO CUAL REPITA: UBICACIÓN GEOGRÁFICA DE LA VIVIENDA, Y LLENE A PARTIR DE LA SECCIÓN 2</p>		

Sección 2: DATOS DEL HOGAR

Hogar 1 Hogar 2 Hogar 3 Hogar 4 Hogar 5 Hogar 6 o más

<p>1.- Del total de cuartos de este hogar, ¿cuántos son exclusivos para dormir?</p> <p>Número de dormitorios</p> <p>0 Ninguno</p>	<p>3.- ¿El servicio higiénico o escusado que dispone el hogar es:</p> <p>1 De uso exclusivo del hogar?</p> <p>2 Compartido con varios hogares?</p> <p>3 No tiene</p>	<p>5.- ¿Cuál es el principal combustible o energía que utiliza este hogar para cocinar:</p> <p>1 Gas (tanque o cilindro)?</p> <p>2 Gas centralizado?</p> <p>3 Electricidad?</p> <p>4 Leña, carbón?</p> <p>5 Residuos vegetales y/o de animales?</p> <p>6 Otro (Ej. Gasolina, keréx o diesel etc.)?</p> <p>7 No cocina</p>
<p>2.- ¿Tiene este hogar cuarto o espacio exclusivo para cocinar?</p> <p>1 Si</p> <p>2 No</p>	<p>4.- ¿Dispone este hogar de espacio con instalaciones y/o ducha para bañarse:</p> <p>1 De uso exclusivo del hogar?</p> <p>2 Compartido con varios hogares?</p> <p>3 No tiene</p>	

Sección 4: DATOS DE POBLACIÓN
A: Identificación de las personas

1.- ¿Cuántas personas pasaron en su hogar la noche del 27 al 28 de noviembre del 2010?

1.1 Total personas

1.2 Total hombres

1.3 Total mujeres

IMPORTANTE: Recuerde registrar a los recién nacidos, ancianos, y personas que por trabajo no durmieron la noche anterior (doctores, enfermeras, guardias, etc.)

2.- ¿Cuáles son sus nombres y apellidos?

SEÑOR EMPADRONADOR:

Registre los nombres y apellidos de cada persona, empiece por el jefe o jefa del hogar y continúe con el resto de miembros de acuerdo al recuadro

Jefe o jefa del hogar Primero

Cónyuge o conviviente

Hijo o hija (solteros, casados de mayor a menor)

Yerno o nuera

Nieto o nieta

Padres o suegros

Otro pariente

Otro no pariente

Empleado(a) doméstico(a)

Miembro del hogar colectivo

3.- ¿(...) come y duerme en este hogar?

Sí..... 1

No..... 2

SEÑOR EMPADRONADOR /A: Si el número de personas es mayor a 10 utilice otro cuestionario y siga las siguientes instrucciones:

- A) Repita en la carátula el numeral 1. (UBICACIÓN GEOGRÁFICA DE LA VIVIENDA) del cuestionario anterior, desde 1.1 hasta 1.10.
- B) En numeral 1.11 (CUESTIONARIO CENSAL POR HOGAR) de la misma carátula, registre el número de cuestionario que le corresponda utilizar.

Per No.	Nombres y apellidos	1	2
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			

C) Continúe con el registro de los miembros del hogar a partir de la sección 4 (DATOS DE POBLACIÓN / A: Identificación de las personas, pregunta 2).

RECUERDE : Antes de iniciar con las preguntas siguientes, para cada uno de los miembros del hogar, transcriba los nombres y apellidos del listado de identificación de las personas al recuadro inicial de la sección 4 DATOS DE POBLACIÓN / B: Características generales. (nombres y apellidos)

Pers No. 01

Nombres y apellidos

NO OLVIDE: La entrevista se debe realizar a cada persona de forma directa.

Observaciones:

Sección 4 : DATOS DE POBLACIÓN

Para todas las personas

B : Características generales:

Pers No. **01**

Nombres y apellidos

1.- ¿Cuál es el sexo de (...)?

1 Hombre

2 Mujer

2.- ¿Qué parentesco o relación tiene (...) con el / la jefe / a del hogar?

1 Jefe o jefa de hogar

2 Cónyuge o conviviente

3 Hijo o hija

4 Yerno o nuera

5 Nieto o nieta

6 Padres o suegros

7 Otro pariente

8 Otro no pariente

9 Empleado(a) doméstico(a)

10 Miembro del hogar colectivo

11 Sin vivienda

3.- ¿Cuántos años cumplidos tiene (...)?

Niños /as menores de 1 año registre 0

Años cumplidos.....

4.- ¿Cuál es el mes y el año en que nació (...)?

Mes.....

Año.....

5.- ¿(...) tiene cédula de ciudadanía ecuatoriana?

1 Sí → Pase a 7

2 No

6.- ¿(...) está inscrito en el Registro Civil?

1 Sí

2 No

7.- ¿(...) tiene seguro de salud privado?

1 Sí

2 No

8.- ¿(...) tiene discapacidad permanente por más de un año?

1 Sí

2 No

9 No responde → Pase a 11

9.- ¿La discapacidad de (...) es:

Admite más de una respuesta

1 Intelectual? (Retardo mental)

2 Físico – Motora? (Parálisis y amputaciones)

3 Visual? (Ceguera)

4 Auditiva? (Sordera)

5 Mental? (enfermedades psiquiátricas, locura)

10.- ¿Asiste (...) actualmente a un establecimiento de educación especial para personas con discapacidad?

1 Sí

2 No

11.- ¿En dónde nació (...):

1 En esta ciudad o parroquia rural? → Pase a 12

2 En otro lugar del país?

Provincia

Cantón

Ciudad o parroquia rural

3 En otro país? → Pase a 12

3.1 ¿En qué país nació? → 3.2 ¿En qué año llegó al Ecuador?

USO INEC

Provincia / País	Cantón	Parroquia
------------------	--------	-----------

12.- ¿En qué lugar vive habitualmente (...):

1 En esta ciudad o parroquia rural? → Pase a 13

2 En otro lugar del país?

Provincia

Cantón

Ciudad o parroquia rural

3 En otro país? → Pase a 13

¿Cuál es el nombre del país?

USO INEC

Provincia / País	Cantón	Parroquia
------------------	--------	-----------

13.- Hace 5 años (Noviembre 2005), ¿en qué lugar vivía habitualmente (...):

1 En esta ciudad o parroquia rural? → Pase a 14

2 En otro lugar del país?

Provincia

Cantón

Ciudad o parroquia rural

3 En otro país? → Pase a 14

¿Cuál es el nombre del país?

4 No había nacido

USO INEC

Provincia / País	Cantón	Parroquia
------------------	--------	-----------

14.- ¿El papá y la mamá de (...), qué idioma (s) ó lengua (s) habla (ba) habitualmente:

Admite más de una respuesta

	Papá	Mamá
1 Indígena?		
2 Castellano/ Español?		
3 Extranjero?		
4 No habla?		

15.- ¿Qué idioma (s) ó lengua (s) habla (...):

Admite más de una respuesta

1 Indígena?

15.1.- ¿Cuál es el idioma o lengua indígena que habla (...)?

USO INEC

LENGUAS: Shuar, Añeba, Awapit, Aingae, Chá'pallaa, Z'a pedee, Kichwa, Paicoca, Shuar, Tsafiki, Shwiar, Wátedede, Zapara.

2 Castellano/ Español?

3 Extranjero?

4 No habla?

16.- ¿Cómo se identifica (...) según su cultura y costumbres:

1 Indígena? → Pase a 17

2 Afroecuatoriano/a

3 Negro/a?

4 Mulato/a?

5 Montubio/a?

6 Mestizo/a?

7 Blanco/a?

8 Otro /a?

Personas de 5 años y más pase a 19

Menores de 5 años pase a 18

17.- ¿Cuál es la Nacionalidad o Pueblo indígena al que pertenece (...)?

Nacionalidades: Achuar, Awa, Cofan, Chachi, Epera, Waorani, Kichwa, Secoya, Shuar, Siona, Tsáchila, Shwiar, Zapara, Añeba.

Pueblos: Paños, Natavúta, Otavalo, Karank, Kayambi, Kutukra, Panzaleo, Chibuleo, Salasaka, Kisapichha, Tomabela, Waranka, Puruhá, Karán, Saraguro, Patas, Marita, Huancavica.

Personas de 5 años y más pase a 19

Niños / as menores de 5 años

18.- ¿El/ la niño / a (...) participa en alguno de los siguientes programas:

Admite más de una respuesta

1 Programa del INFA (CNH, CDI, Wawa kamayuk Wasi)?

2 Programa del Ministerio de Educación (CEI o EIFC)?

3 Centro infantil privado (guardería, jardín, maternal)?

4 Centro infantil público de municipio y gobierno local?

5 Otro programa?

6 Le cuida la madre, el padre, familiares o conocidos gratis

7 Paga a familiares o conocidos por el cuidado

Pase a siguiente persona

Personas de 5 años y más	Personas de 5 años y más	Personas de 12 años y más												
<p>C : Características educacionales</p> <p>19.- ¿Sabe (...) leer y escribir?</p> <p>1 Si Si sólo lee o sólo escribe marque casilla 2 "NO"</p> <p>2 No</p> <p>20.- ¿En los últimos seis meses (...) ha utilizado:</p> <table border="1"> <tr> <td></td> <td>Sí</td> <td>No</td> </tr> <tr> <td>Teléfono celular?</td> <td></td> <td></td> </tr> <tr> <td>Internet?</td> <td></td> <td></td> </tr> <tr> <td>Computadora?</td> <td></td> <td></td> </tr> </table> <p>21.- ¿(...) asiste actualmente a un establecimiento de enseñanza regular? (Centro de alfabetización, Pre escolar escuela, colegio, universidad)</p> <p>1 Sí</p> <p>2 No → Pase a 23</p> <p>22.- ¿El establecimiento de enseñanza regular al que asiste (...) es:</p> <p>1 Fiscal (Estado)?</p> <p>2 Particular (Privado)?</p> <p>3 Fiscomisional?</p> <p>4 Municipal?</p> <p>23.- ¿Cuál es el nivel de instrucción más alto al que asiste o asistió (...)?</p> <p>1 Ninguno → Pase a 27</p> <p>2 Centro de Alfabetización (EBA)</p> <p>3 Preescolar</p> <p>4 Primario</p> <p>5 Secundario</p> <p>6 Educación Básica</p> <p>7 Bachillerato - Educación Media</p> <p>8 Ciclo Postbachillerato</p> <p>9 Superior</p> <p>10 Postgrado</p> <p>24.- ¿Cuál es el grado, curso o año más alto al que asiste o asistió (...)?</p> <p>Grado, curso, año</p> <p>En pregunta 23: Alternativas de 2 a 7 pase a pregunta 27 Alternativas de 8 a 10 pase a pregunta 25</p> <p>25.- ¿(...) tiene algún título de ciclo postbachillerato, superior o postgrado?</p> <p>1 Que es reconocido por el CONESUP?</p> <p>2 Que no es reconocido por el CONESUP?</p> <p>3 No tiene</p> <p>4 No Sabe → Pase a 27</p> <p>26.- ¿Qué título tiene (...)?</p> <p>USO INEC</p>		Sí	No	Teléfono celular?			Internet?			Computadora?			<p>D : Características económicas</p> <p>27.- ¿Qué hizo (...) la semana pasada:</p> <p>1 Trabajó al menos una hora?</p> <p>2 No trabajó pero SI tiene trabajo?</p> <p>3 Al menos una hora fabricó algún producto o brindó algún servicio?</p> <p>4 Al menos una hora ayudó en algún negocio o trabajo de un familiar?</p> <p>5 Al menos una hora realizó labores agrícolas o cuidó animales?</p> <p>6 Es Cesante: Buscó trabajo habiendo trabajado antes y está disponible para trabajar?</p> <p>7 No Trabajó?</p> <p>→ Pase a 29</p> <p>28.- ¿Si NO ha trabajado (...):</p> <p>1 Buscó trabajo por primera vez y está disponible para trabajar?</p> <p>2 Es rentista?</p> <p>3 Es jubilado o pensionista?</p> <p>4 Es estudiante?</p> <p>5 Realiza quehaceres del hogar?</p> <p>6 Le impide su discapacidad?</p> <p>7 Otro?</p> <p>→ Pase a 34</p> <p>En la semana pasada o la última semana que trabajó en su trabajo principal</p> <p>29.- ¿El negocio o empresa en la que (...) trabaja o trabajó a qué se dedica o qué hace?</p> <p>USO INEC RAMA DE ACTIVIDAD</p> <p>30.- ¿Qué hace o que es (...) en donde trabaja o trabajó?</p> <p>USO INEC OCUPACIÓN PRINCIPAL</p> <p>31.- ¿En el lugar indicado (...) trabaja o trabajó como:</p> <p>1 Empleado/a u obrero/a del Estado, Gobierno, Municipio, Consejo Provincial, Juntas Parroquiales?</p> <p>2 Empleado/a u obrero/a privado?</p> <p>3 Jornalero/a o peón?</p> <p>4 Patrono/a?</p> <p>5 Socio/a?</p> <p>6 Cuenta propia?</p> <p>7 Trabajador/a no remunerado?</p> <p>8 Empleado/a doméstico/a?</p> <p>32.- ¿Cuántas horas trabajó (...) la semana pasada o la última semana que trabajó?</p> <p>Total horas.....</p> <p>33.- ¿El trabajo que realiza o realizó (...) es o fue:</p> <p>1 Dentro del hogar Menores de 12 años pase a siguiente persona</p> <p>2 Fuera del hogar</p>	<p>E : Estado conyugal y Seguridad social</p> <p>34.- ¿Actualmente (...) está:</p> <p>1 Casado/a?</p> <p>2 Unido/a?</p> <p>3 Separado/a?</p> <p>4 Divorciado/a?</p> <p>5 Viudo/a?</p> <p>6 Soltero/a?</p> <p>35.- ¿(...) aporta o es afiliado a:</p> <p>1 Seguro ISSFA ?</p> <p>2 Seguro ISSPOL? Mujeres de 12 años o más, pase a pregunta 36</p> <p>3 IESS Seguro general?</p> <p>4 IESS Seguro voluntario? Hombres continúe con la siguiente persona</p> <p>5 IESS Seguro campesino?</p> <p>6 Es Jubilado del IESS/ ISSFA / ISSPOL ?</p> <p>7 No aporta</p> <p>Mujeres de 12 años y más</p> <p>F : Fecundidad y mortalidad</p> <p>36.- ¿Cuántos hijos e hijas nacidos vivos ha tenido (...) durante toda su vida?</p> <p>Total hijos.....</p> <p>Total hombres.....</p> <p>Total mujeres.....</p> <p>99 No sabe</p> <p>0 Ninguno → Pase a siguiente persona</p> <p>37.- ¿Cuántos están vivos actualmente?</p> <p>Total hijos vivos.....</p> <p>99 No sabe</p> <p>0 Ninguno</p> <p>38.- ¿A qué edad tuvo (...) su primer hijo o hija nacido vivo?</p> <p>Edad</p> <p>99 No sabe</p> <p>39.- ¿En qué año y mes tuvo (...) su último hijo o hija nacido vivo?</p> <p>Año</p> <p>Mes.....</p> <p>99 No sabe</p> <p>40.- ¿Está vivo el último hijo o hija nacido vivo?</p> <p>1 Sí</p> <p>2 No</p> <p>9 No sabe → Pase a siguiente persona</p>
	Sí	No												
Teléfono celular?														
Internet?														
Computadora?														

Appendix B

Table 6 Probit Regression Coefficients on Child Schooling

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Boys, 6-17	Girls, 6-17	Poorest 20%	Wealthiest 20%	Full dataset	Secondary school, 11-17						
Remittances	0.002 (0.0177)	0.005 (0.0179)	-0.052 (0.0795)	-0.239 (0.0509)***	-0.005 (0.0253)	-0.080 (0.0281)**						
Remittances x Female	-	-	0.061 (0.0810)	0.1877 (0.0488)***	0.037 (0.0259)	0.117 (0.288)***						
Female	-	-	-	-	0.001 (0.0027)	-0.021 (0.0033)***						
Age	0.250 (0.0035)***	0.245 (0.0037)***	0.304 (0.0046)***	0.255 (0.0074)***	0.148 (0.0025)***	-0.225 (0.0150)***						
Age ²	-0.017 (0.0001)***	-0.017 (0.0001)***	-0.021 (0.0002)***	-0.014 (0.0003)***	-0.017 (0.0001)***	-0.0004 (0.0005)						
Infant count	-0.085 (0.0020)***	-0.125 (0.0020)***	-0.085 (0.0026)***	-0.126 (0.0058)***	-0.105 (0.0015)***	-0.145 (0.0018)***						
Wealth index	1.776 (0.016)***	1.741 (0.0160)***	1.448 (0.0427)***	1.526 (0.0755)***	1.758 (0.0121)***	2.060 (0.0136)***						
Highest level of parents' education	0.098 (0.0010)***	0.094 (0.0010)***	0.106 (0.0016)***	0.060 (0.0021)***	0.096 (0.0007)***	0.110 (0.0008)***						
Lives in rural area	0.035 (0.0036)***	-0.018 (0.0037)***	-0.047 (0.0059)***	0.092 (0.0109)***	0.009 (0.0028)**	-0.049 (0.0032)***						
Afro-descendant	-0.159 (0.0072)***	-0.135 (0.0074)***	-0.079 (0.0115)***	-0.300 (0.0210)***	-0.147 (0.0056)***	-0.136 (0.0064)***						
Montubio	-0.109 (0.0056)***	-0.103 (0.0058)***	-0.069 (0.0067)***	-0.230 (0.0248)***	-0.106 (0.0043)***	-0.139 (0.0051)***						
Indigenous	0.106 (0.0088)***	0.012 (0.0085)	0.134 (0.0108)***	-0.288 (0.0310)***	0.059 (0.0065)***	0.043 (0.0078)***						
White	-0.113 (0.0073)***	-0.013 (0.0072)***	-0.096 (0.0127)***	-0.124 (0.0128)***	-0.121 (0.0054)***	-0.122 (0.0063)***						

(continued)

Table 6 (continued)

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Boys, 6-17	Girls, 6-17	Boys, 6-17	Girls, 6-17	Poorest 20%	Wealthiest 20%	Wealthiest 20%	Full dataset	Full dataset	Full dataset	Secondary school, 11-17	Secondary school, 11-17
Speaks foreign language	0.141 (0.0145)***	0.183 (0.0148)***	0.031 (0.0278)	0.190 (0.0186)***	0.071 (0.0119)***	0.190 (0.0186)***	0.163 (0.0107)***	0.197 (0.0117)***	0.163 (0.0107)***	0.163 (0.0107)***	0.197 (0.0117)***	0.197 (0.0117)***
Speaks indigenous language	0.096 (0.0104)***	0.025 (0.0010)**	0.071 (0.0119)***	-0.243 (0.0431)***	0.071 (0.0119)***	-0.243 (0.0431)***	0.058 (0.0077)***	0.102 (0.0092)***	0.058 (0.0077)***	0.058 (0.0077)***	0.102 (0.0092)***	0.102 (0.0092)***
Has a disability	-0.656 (0.0017)***	-0.641 (0.0074)***	-0.525 (0.0094)***	-0.831 (0.0143)***	-0.525 (0.0094)***	-0.831 (0.0143)***	-0.650 (0.0050)***	-0.507 (0.0065)***	-0.650 (0.0050)***	-0.650 (0.0050)***	-0.507 (0.0065)***	-0.507 (0.0065)***
Constant	-0.597 (0.0226)***	-0.383 (0.0236)***	-0.484 (0.0343)***	-0.561 (0.0761)***	-0.484 (0.0343)***	-0.561 (0.0761)***	-0.496 (0.0167)***	2.589 (0.1094)***	-0.496 (0.0167)***	-0.496 (0.0167)***	2.589 (0.1094)***	2.589 (0.1094)***
Observations	1,809,182	1,756,286	731,402	719,077	731,402	719,077	3,565,468	1,706,663	3,565,468	3,565,468	1,706,663	1,706,663
Wald χ^2 test	141990.06	142010.41	96344.54	14909.85	96344.54	14909.85	259525.09	163178.31	259525.09	259525.09	163178.31	163178.31
Prob > χ^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

*p < .10; **p < .05; ***p < .01

Appendix C

Table 7 Coefficients on Remittances (First Stage of the Probit Model)

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Boys, 6-17	Girls, 6-17	Girls, 6-17	Girls, 6-17	Poorest 20%	Wealthiest 20%	Wealthiest 20%	Full dataset	Full dataset	Secondary school, 11-17	Secondary school, 11-17	Secondary school, 11-17
Remittances ×												
Female	-	-	-	-	0.908 (0.0034)	0.861 (0.0012)***	0.861 (0.0012)***	0.906 (0.0008)***	0.906 (0.0008)***	0.905 (0.0009)***	0.905 (0.0009)***	0.905 (0.0009)***
Female	-	-	-	-	-	-	-	-0.062 (0.0002)***	-0.062 (0.0002)***	-0.067 (0.0003)***	-0.067 (0.0003)***	-0.067 (0.0003)***
Age	0.004 (0.0004)***	0.003 (0.0004)***	0.003 (0.0004)***	0.003 (0.0004)***	0.001 (0.0002)**	0.002 (0.0006)***	0.002 (0.0006)***	0.002 (0.0002)***	0.002 (0.0002)***	0.003 (0.0015)	0.003 (0.0015)	0.003 (0.0015)
Age ²	-0.0001 (0.0000)***	-0.0001 (0.0000)***	-0.0001 (0.0000)***	-0.0001 (0.0000)***	-0.00002 (9.81e-06)**	-0.0001 (0.00002)**	-0.0001 (0.00002)**	-0.0001 (8.46e-06)***	-0.0001 (8.46e-06)***	-0.0001 (0.00005)	-0.0001 (0.00005)	-0.0001 (0.00005)
Infant count	-0.001 (0.0003)***	-0.001 (0.0003)***	-0.001 (0.0003)***	-0.001 (0.0003)***	-0.0012 (0.0002)***	0.002 (0.0006)**	0.002 (0.0006)**	-0.0004 (0.0001)**	-0.0004 (0.0001)**	0.0001 (0.0002)	0.0001 (0.0002)	0.0001 (0.0002)
Wealth index	0.220 (0.0020)***	0.220 (0.0021)***	0.220 (0.0021)***	0.220 (0.0021)***	0.032 (0.0024)***	0.013 (0.0067)**	0.013 (0.0067)**	0.122 (0.0011)***	0.122 (0.0011)***	0.132 (0.0015)***	0.132 (0.0015)***	0.132 (0.0015)***
Highest level of parents' education	-0.0013 (0.0001)***	-0.0014 (0.0001)***	-0.0014 (0.0001)***	-0.0014 (0.0001)***	-0.0002 (0.0001)	-0.0050 (0.0002)***	-0.0050 (0.0002)***	-0.0007 (0.00007)***	-0.0007 (0.00007)***	-0.001 (0.0001)***	-0.001 (0.0001)***	-0.001 (0.0001)***
Lives in rural area	-0.001 (0.0005)***	-0.002 (0.0005)***	-0.002 (0.0005)***	-0.002 (0.0005)***	0.0005 (0.0004)	-0.0088 (0.0010)***	-0.0088 (0.0010)***	-0.0008 (0.0003)**	-0.0008 (0.0003)**	-0.0002 (0.0004)	-0.0002 (0.0004)	-0.0002 (0.0004)
Afro-descendant	-0.008 (0.0009)***	-0.007 (0.0010)***	-0.007 (0.0010)***	-0.007 (0.0010)***	-0.002 (0.0006)***	-0.0001 (0.0025)	-0.0001 (0.0025)	-0.0042 (0.0005)***	-0.0042 (0.0005)***	-0.004 (0.0007)***	-0.004 (0.0007)***	-0.004 (0.0007)***
Montubio	-0.012 (0.0006)***	-0.012 (0.0006)***	-0.012 (0.0006)***	-0.012 (0.0006)***	-0.004 (0.0003)***	-0.0025 (0.0028)	-0.0025 (0.0028)	-0.0067 (0.0003)***	-0.0067 (0.0003)***	-0.008 (0.0005)***	-0.008 (0.0005)***	-0.008 (0.0005)***
Indigenous	-0.002 (0.0011)***	-0.003 (0.0011)**	-0.003 (0.0011)**	-0.003 (0.0011)**	0.001 (0.0008)*	-0.0003 (0.0043)	-0.0003 (0.0043)	-0.0007 (0.0006)	-0.0007 (0.0006)	-0.001 (0.0008)*	-0.001 (0.0008)*	-0.001 (0.0008)*
White	0.003 (0.0010)**	0.003 (0.0010)**	0.003 (0.0010)**	0.003 (0.0010)**	-0.0007 (0.0007)	0.001 (0.0012)	0.001 (0.0012)	0.0018 (0.0005)***	0.0018 (0.0005)***	0.0005 (0.0008)	0.0005 (0.0008)	0.0005 (0.0008)
Speaks foreign language	-0.006 (0.0018)***	-0.007 (0.0018)***	-0.007 (0.0018)***	-0.007 (0.0018)***	0.0006 (0.0016)	-0.0073 (0.0013)***	-0.0073 (0.0013)***	-0.004 (0.0010)***	-0.004 (0.0010)***	-0.009 (0.0011)***	-0.009 (0.0011)***	-0.009 (0.0011)***

(continued)

Table 7 (continued)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Boys, 6-17	Girls, 6-17	Poorest 20%	Wealthiest 20%	Full dataset	Secondary school, 11-17
Speaks indigenous language	0.003 (0.0012)***	0.005 (0.0012)**	-0.002 (0.0008)*	-0.013 (0.0057)**	0.0015 (0.0007)**	0.001 (0.0009)
Has a disability	0.001 (0.0009)	-0.0004 (0.0010)	0.001 (0.0006)**	0.011 (0.0022)***	0.0002 (0.0005)	0.0006 (0.0008)
Number of Migrants	0.039 (0.0021)***	0.042 (0.0021)***	0.021 (0.0037)***	0.023 (0.0021)***	0.0217 (0.0012)***	0.021 (0.0015)***
Migration to the US or Canada	0.494 (0.0049)***	0.495 (0.0050)***	0.027 (0.0098)***	0.243 (0.0052)***	0.274 (0.0029)***	0.271 (0.0037)***
Migration to Europe	0.402 (0.0043)***	0.398 (0.0043)***	0.123 (0.0088)***	0.251 (0.0045)***	0.223 (0.0025)***	0.228 (0.0032)***
Constant	-0.110 (0.0023)***	-0.107 (0.0024)***	-0.009 (0.0017)***	0.071 (0.0065)***	-0.031 (0.0012)***	-0.020 (0.0110)*
Observations	1,809,182	1,756,286	731,402	719,077	3,565,468	1,706,663

*p<.10; **p<.05; ***p<.01

Appendix D

Wealth Index Calculation

The following table contains the description of the variables that were used to calculate the wealth index.

Table 1: Definition of Variables used in the Calculation of the Wealth Index

<i>Variables</i>	<i>Definition</i>	<i>Mean</i>	<i>SD</i>	<i>Min.</i>	<i>Max.</i>
<i>W1</i>	Main access road to dwelling (0.17=other, 0.33=river, sea or lake, 0.50=path or trail, 0.67=dirt or gravel street, 0.83=cobblestone street, 1=paved or concrete street)	0.809	0.187	0.17	1
<i>W2</i>	Roof material (0.17=other, 0.33=straw, 0.5=tile, 0.67=zinc, 0.83=asbestos, 1=concrete)	0.757	0.170	0.17	1
<i>W3</i>	Condition of the roof (0.33=bad, 0.67=regular, 1=good)	0.756	0.234	0.33	1
<i>W4</i>	Exterior walls material (0.14=other, 0.29=uncoated cane, 0.43=coated cane, 0.57=wood, 0.71=adobe, 0.86=brick, 1=concrete)	0.784	0.181	0.14	1
<i>W5</i>	Condition of exterior walls (0.33=bad, 0.67=regular, 1=good)	0.774	0.224	0.33	1
<i>W6</i>	Floor material (0.14=other, 0.29=dirt, 0.43=cane, 0.57=cement, 0.71=ceramic, tile or marble, 0.86=untreated wood, 1=treated wood)	0.664	0.187	0.14	1
<i>W7</i>	Condition of the floor (0.33=bad, 0.67=regular, 1=good)	0.761	0.229	0.33	1
<i>W8</i>	Water source in dwelling (0.20=other, 0.40=tanker truck, 0.60=river or spring, 0.80=dwell, 1=public network)	0.879	0.201	0.20	1

(continued)

Table 2 (continued)

<i>Variables</i>	<i>Definition</i>	<i>Mean</i>	<i>SD</i>	<i>Min.</i>	<i>Max.</i>
<i>W9</i>	Water connection (0.25=other, 0.50=pipelines outside the lot, 0.75=exterior pipelines, 1=interior pipelines)	0.783	0.286	0.25	1
<i>W10</i>	Sewage disposal method (0.17=does not have, 0.33=latrine, 0.5=direct discharge, 0.67=dry well, 0.83=septic tank, 1=public system)	0.809	0.255	0.17	1
<i>W11</i>	Electricity source (0.20=does not have, 0.40=other, 0.60=power plant, 0.80=solar panel, 1=public network)	0.947	0.193	0.20	1
<i>W12</i>	Exclusive kitchen space (0=no, 1=yes)	0.825	0.380	0	1
<i>W13</i>	Type of toilet (0.33=does not have, 0.67=share with other households, 1=exclusive use)	0.914	0.198	0.33	1
<i>W14</i>	Bathing facilities (0.33=does not have, 0.67=share with other households, 1=exclusive use)	0.721	0.321	0.33	1
<i>W15</i>	Quality of drinking water (0.20=as is, 0.40=boiled, 0.60=chlorine added, 0.80=filtered, 1=purified water is bought)	0.453	0.292	0.20	1
<i>W16</i>	Landline telephone (0=no, 1=yes)	0.285	0.451	0	1
<i>W17</i>	Cell phone (0=no, 1=yes)	0.785	0.411	0	1
<i>W18</i>	Internet access (0=no, 1=yes)	0.116	0.320	0	1
<i>W19</i>	Computer access (0=no, 1=yes)	0.253	0.435	0	1
<i>W20</i>	Cable television (0=no, 1=yes)	0.024	0.152	0	1

Source: 2010 Ecuadorean Housing and Population Census

The Wealth Index was constructed by standardizing to 1 all the variables and their values. Although it is not too realistic, it was assumed that individuals value all the variables in the same way. This allowed for the calculation of a simple average across the values for all the variables for each individual. The formula that was used was following:

$$Wealth\ Index = \frac{\sum_{j=1}^{20} W_j}{20}$$

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