



# Remittances, Liquidity Constraints and Human Capital Investments in Ecuador

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**Summary.** — Over the last decade Ecuador has experienced a strong increase in financial transfers from migrated workers. This paper investigates how remittances *via* trans-national networks affect human capital investments through relaxing resource constraints and facilitate households in consumption smoothing by reducing vulnerability to economic shocks. Our results show that remittances increase school enrollment and decrease incidence of child work, especially for girls and in rural areas. Furthermore, we find that aggregate shocks are associated with increased work activities, while remittances are used to finance education when households are faced with these shocks.

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## 1. INTRODUCTION

Ecuador has experienced a strong increase in financial transfers from migrated workers during the last decade. Since 1999 these resource flows constitute the second largest source of foreign income in Ecuador after oil exports, amounting to 6.4% of GDP in 2005 (Inter-American Development Bank, 2006). Despite the magnitude of this remittance inflow, there is relatively little empirical research that examines the role of remittances on the economy of Ecuador and livelihoods and behavior of remittance receiving households.

In general, the literature on international migration and remittances does not provide an unambiguous picture on the outcomes for the receiving economy. A number of studies point out negative effects of remittances as they may discourage labor supply and effort of recipient households (Funkhouser, 1992) or finance current consumption promoting dependency of receiving countries (e.g., Taylor *et al.*, 1996a, 1996b). On the other hand, more recent empirical evidence emphasizes the role of remittances in encouraging economic growth and development by enabling recipients to overcome liquidity constraints and finance productive investments (see Rapoport and Docquier (2006), for an extensive literature review).

Taking a cue from the latter line of research, this paper investigates the potential role of remittances in influencing human capital accumulation in Ecuador. Resource constraints and imperfect capital markets play a notable role in households' decisions concerning investment in children's human capital in Ecuador (e.g., Moser, 1996; Moser & Felton, 2007; Ponce, Bedi, & Vos, 2003). By reducing financial constraints, remittances can promote schooling investment and increase child reservation wages, thereby reducing children's labor force participation. In addition, trans-national social networks provide income diversification strategies and alternative coping mechanisms for consumption smoothing, through

remittances, in response to economic shocks. In the context of imperfect financial markets, investments in human capital are typically compromised by income variability (e.g., Beegle, Dehejia, & Gatti, 2006; Dehejia & Gatti, 2005; Jacoby & Skoufias, 1997).

Several studies have found evidence that remittances and international migration are associated with increased educational attainment and reduction in child labor supply. For example, using migration networks and household migration history as instruments for remittances, for El Salvador, Acosta (2006) finds that girls and boys under 14-years-old from recipient families are more likely to attend school than those from non-recipient households, while remittances also seem to reduce child labor supply. In a similar vein, also based on data from El Salvador, Cox and Ureta (2003) find that remittances reduce school dropout hazard rates. Borraz (2005) instruments remittances using historical migration patterns and distance to the United States and finds that remittances have a positive but small effect on schooling for boys and girls with low educated mothers and who reside in cities with less than 2,500 inhabitants. Hanson and Woodruff (2002) use migration patterns to instrument migration and find that having a migrated family member has a positive effect on educational outcomes for girls in Mexico (aged 10–15) whose mothers have a very low level of education. Using a similar empirical strategy, Mansuri (2006) finds strong positive effects of temporary economic migration on investments in children's schooling in Pakistan, especially for girls.

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However, other findings present mixed results of the effect of migration and remittances on child schooling. In a study on 11 Latin American countries, Acosta, Fajnzylber, and López (2007), also using migration networks as an instrument, find that remittances are associated with increased educational attainment in only six countries (Nicaragua, Guatemala, Honduras, Ecuador, Haiti, and El Salvador), the effect being larger for children whose mothers have a low level of education. Similarly, using historical migration rates to instrument current migration, McKenzie and Rapoport (2006) find a negative effect of migration on schooling attendance and education attainment among 16–18-year-old girls and 12–18-year-old boys, but a positive effect for younger girls with uneducated mothers in rural Mexico. They attribute these outcomes to side effects of migration. For instance, the absence of parents in the household due to migration could lead to reduced investment in their children's education and an increase in the incidence of child work. Relying on rainfall data as instrument for remittances, López-Córdova (2005) shows that these effects are especially relevant for secondary school age children in Mexico, as receiving remittances positively affect school attendance for children aged 6–14, but negatively for boys and girls aged 15–17.

Recent empirical work also brings to light the importance of remittances as a coping mechanism against shocks. Yang and Choi (2007) exploit exogenous variation in rainfall to identify an insurance motive for international migration among households in the Philippines, as they find a negative relationship between remittances and income variation for migrant households. Using panel data, Halliday (2006) provides evidence that agricultural shocks, particularly livestock loss and harvest loss, result in an increment of remittances received by Salvadorian households. Miller and Paulson (2007) show that in Thailand remittances respond to aggregate (rainfall and GDP) and idiosyncratic shocks (medical expenditures), in particular when recipient households face negative shocks, suggesting that remittances are used as a risk management strategy.

The main contribution of this paper is linking the two strands of literature discussed above, by evaluating: (i) the direct contribution of remittances to investment in human capital, (ii) the effects of shocks on these investments, and (iii) the role of trans-national networks as coping mechanisms (through remittances) for households in dealing with these shocks. Similar to other studies on remittance and human capital, we focus on outcomes such as school enrollment and child labor. In addition, we probe further by examining the effect of remittances on the quality of these investments, as reflected in the substitution between public and private education.

Caution is required when interpreting estimated effects of remittances on school enrollment and child work as causal relations because of the endogenous nature of remittances. In this paper, identification relies on instrumental variables that exploit information on source countries of remittances and regional variation in the availability of bank offices that function as formal channels for receiving remittances. These instruments capture information on transfer costs and accessibility to channels of transmission, which partly determine the volume and frequency of funds transferred, while they are not expected to affect school enrollment and child labor. While details are discussed later in the text, we find that the instruments provide strong support for identification and that the validity of the instruments is not rejected by tests of over-identifying restrictions. In addition, the results are robust to the choice of instruments and a variety of alternative specifications.

Our results show that remittances increase school enrollment and decrease incidence of child work, especially for girls

and in rural areas of Ecuador. We further find that aggregate shocks are associated with increased work activities, while remittances are used to smooth education investments when households are faced with these shocks. This suggests that liquidity constraints and vulnerability to covariate risk are especially relevant in rural areas, as it affects household's investments in human capital of school age children. In this context both child labor and remittances function as coping mechanisms.

The paper is organized as follows: Section 2 describes the data used in the analysis, while Section 3 illustrates the context of education, migration and remittances in Ecuador. Our empirical strategy is set out in Section 4 and the results are presented and discussed in Section 5. Section 6 concludes.

## 2. THE DATA

Our analysis draws on a nationally representative living standard household survey for Ecuador from 2005 to 2006, *Encuesta Condiciones de Vida—Quinta Ronda* (ECV). The ECV covers a wide range of socio-economic indicators for households and individuals, including school enrollment and work activities in the previous week. We focus on work activities that contribute to household income (non-domestic work) and domestic work, for which information is collected for children 10 years and older. To elaborate, non-domestic work is defined as having worked at least 1 h in the week prior to the survey, either for cash, remuneration in kind, or unremunerated work that directly increases household income (e.g., helping other household members in a family business or farm). Domestic work refers to household chores that do not directly increase household income.

Information on remittances includes the size of cash transfers received from abroad, the country where the remittances come from and how they were spent (e.g., construction, investment, non-durable consumption, food, housing, education, and health care). The survey also asks questions regarding unexpected events and shocks that have affected households' income during the last year. These include idiosyncratic shocks such as severe illness, accidents, or death of a household member, and covariate shocks such as natural disasters, droughts, insect plagues, and unexpected periods of frost.

The 2005–06 survey includes 55,666 individuals from 13,581 households and is representative at the province level. We restrict our analysis to children of school going age and in the age group for whom information on labor market participation is collected in the survey. This yields a sample of 8,600 children of age 10–17 of which 14% live in a household that receives remittances.<sup>1</sup> Table 1 presents descriptive statistics for the sample separately for children from recipient and non-recipient households.

## 3. REMITTANCES, EDUCATION, AND CHILD WORK IN ECUADOR

### (a) *Migration and remittances*

Over the last decade Ecuador has experienced a large international out-migration motivated primarily by economic factors and facilitated by networks of earlier migrants. The financial and foreign exchange crisis during 1999 and the dollarization process in 2000 led to a severe deterioration of living standards and disrupted labor markets. GDP declined from 23,255 million dollars in 1998 to 16,674 million dollars in

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