

Spring 3-12-2013

# Migration and Children's School and Labor: Evidence from El Salvador

Zachary Intemann  
zpintemann@usfca.edu

Follow this and additional works at: <http://repository.usfca.edu/theses>

 Part of the [International Economics Commons](#)

---

## Recommended Citation

Intemann, Zachary, "Migration and Children's School and Labor: Evidence from El Salvador" (2013). *Master's Theses*. Paper 63.

This Thesis is brought to you for free and open access by the Theses, Dissertations, Capstones and Projects at USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. It has been accepted for inclusion in Master's Theses by an authorized administrator of USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. For more information, please contact [repository@usfca.edu](mailto:repository@usfca.edu).

# Migration and Children's Schooling and Labor: Evidence from El Salvador

Master's Thesis  
International and Development Economics

Zachary Intemann

Department of Economics  
University of San Francisco  
2130 Fulton St.  
San Francisco, CA 94117

e-mail: [zpintemann@usfca.edu](mailto:zpintemann@usfca.edu)

May 2013

Abstract: This paper examines the impact of parental migration on schooling outcomes for children left behind in El Salvador. Using cross sectional data collected in 2012, outcomes for children are observed for children with migrant parents; the outcomes are also analyzed by gender of the migrant parent who left his or her child behind. With instrumental variables estimations, as well as a seemingly unrelated regression to estimate the impact of migration on a child's time allocation, observations are also compared by subsample to examine the impact of the presence or absence of remittances in the household when a parent has migrated. Results show that children with a migrant parent will complete more years of school, more so if the migrant is a mother. Migration has no significant influence on time allocation, except in the absence of remittances, which can cause a child to work more and study less. This paper studies the impact of both migration and remittances on a child's schooling behavior. Results suggest that the same factors that affect schooling may have strong correlation with the propensity to migrate as well.

The author would like to thank Elizabeth Katz for being a great advisor for this thesis project, Sarah Reynolds for insight and feedback, Brendan Janet for being the field coordinator, The Calvo Family for their care in El Salvador, and Robin Purvis, Randy Purvis and Emmaly Wiederholt for support

## **Section I: Introduction**

El Salvador's greatest export is people, while its primary import is remittances. In fact, remittances in El Salvador exceed the amount of incoming foreign direct investment (FDI) and make up approximately 18% of Gross Domestic Product (GDP), which is a result of the estimated 35% to 45% of total Salvadoran population that emigrates (Gammage, 2006). According to 2010 US Census data, more than 1.6 million Salvadorans reside in the United States, an increase from 655,165 in 2000 and these numbers are likely underestimates. The number of Salvadoran citizens in the United States represents around a quarter of the total population in El Salvador. Thus, there are many Salvadoran parents living in the United States, and having a migrant parent away may have consequences for the child left behind.

How does having a migrant parent abroad affect children's schooling? The common hypothesis for migration and education is that a member of the household migrates, works, and sends home money to assist the family income. Thus, children in the family will be able to attend school, either by having the money to afford school uniform or by no longer risking the opportunity cost of work instead of school. On the other hand, a missing parent can cause emotional damage or behavioral issues for a child; migration may result in a child being unsupervised, unprotected, and potentially poorly behaved (de la Garza, 2010). A lack of parental supervision could be harmful to a child's schooling. In addition migration can also decrease the amount of available labor in the household, which could cause a child to work more and deter him or her from attending school.

This paper will use two estimation methods: an instrumental variable estimation to measure the impact of parental migration on completed years of schooling, and a seemingly unrelated regression model for time allocated to school and labor by children. The first independent variable of interest will be a dummy indicating if the child has a parent who has migrated and lives away. Children will be observed by comparing different samples depending on if a child lives in a household that receives remittances from any source or not. Observations will also be interpreted by compare effects of mothers who have migrated and fathers who have migrated on their children. Children with migrant parents will complete a fraction more of a year of completed school than children who do not have a migrant parent, and remittances have little to do with that. In addition, a seemingly unrelated regression will be used to estimate the

impact of parental migration on the time devoted to both work and school by the child left behind. Migration has no impact on time allocation of children, except in the absence of remittances, which can cause a child to work more and attend school fewer hours.

This paper uses data collected in four development regions of El Salvador to contribute to the literature by examining the impact of both migration and remittances on children's education and labor as well as their impact on children's time allocation. Section II will give a review of the literature, Section III will explain the data and methodology, Section IV will show the results, and Section V will provide a discussion.

## **Section II: Literature Review**

A large sample of literature exists on the impact of migration on children left behind. Starting with research on budget allocation, Adams and Cuecuecha (2010) conclude in Guatemala households receiving remittances spend less on food, but more on education and housing. In terms more specific to children, Antman (2010) finds that if a Mexican father migrates and then returns, spending on education and durable goods for boys is lower when the father is present than when the father is away. The effect is insignificant for girls. For adults, Acosta (2007) finds that remittance recipients in El Salvador are more likely to own a business or be self-employed. Female labor is reduced significantly. Similarly, Damon (2009) finds that working hours decreases with remittances in El Salvador, while both men and women enjoy more leisure time.

An interesting component of this paper is the ample sample size of both female and male migrants as opposed to only male migrants in some studies. Remittance behavior of the migrant may vary by gender. Cortes (2010) finds that male migrants from the Philippines will remit more and stay away longer than females will. In Thailand, female migrants are more likely to remit than males (Osaki, 2009). Additionally, Thai women remit more altruistically than contractually, while Thai male migrants remit more contractually, meaning that women remit out of care for the family, while men are more likely to remit because they are legally required to (Vanwey, 2004). Abreigo (2009) argues that Salvadoran households with a mother migrant away are better off since, though they may not earn as much as males, migrant females will remit more consistently. Fathers send less consistently and, in some cases, stop remitting altogether.

Another point to consider is that if relocating to the United States, migrant women often find service jobs that pay less than those of male migrants (Cohen, 2011), which could

affect health or schooling outcomes back home. Some economists such as Antman (2010), point out that a household may have better health or schooling outcomes if the father migrates, since the mother's decision making power in the household will increase, thus allowing more expenditures to be spent on children's wellbeing. Malone (2007) uses a two-stage Stackelberg game in Mexico to see how much migrants will remit and how the remittances will be spent; he concludes that a father's absence will have a positive impact on investment in children's schooling while a mother's absence has no impact.

There are two forms in which previous literature has examined the impact of migration and outcomes of children left behind. The first manner looks to consider effects when a parent or other household member has migrated. The second way generally uses a dummy variable simply stating whether or not the child's household receives remittances. Not all households with a migrant away receive remittances, and not all recipient households necessarily have a migrant member. Thus, results can vary depending on which independent variable is being used.

Beginning with schooling for children with a migrant parent, Antman (2010) measures time allocation of children (like this study). She shows that Mexican children, especially boys, will experience a decline in schooling and increase in work outside of the home if their father migrates. Also in Mexico, McKenzie and Rapoport (2006) find that a household having a migrant member lowers the chances for both boys and girls of completing high school and increases their chances of entering the labor force.

In Peru, Robles and Oropesa (2011) measure household risk of migration and find that having a household member migrate creates disruption and has a negative effect on children's schooling. Hanson and Woodruff (2003) from Mexico show that children in migrant households will significantly complete fewer years of school. In addition, interestingly they find that the migrant from the household is correlated with more schooling for children with mothers with lower education levels.

However, Mansuri (2006) finds in Pakistan that children will finish more years of school, more so for girls, if they live in a household with a migrant living abroad. A reason for different results than results from Latin America is likely that migration in Pakistan is more seasonal while migration in Latin America is more permanent. Another possible reason for mixed results in the literature could be that it commonly uses the migration variable as a

dummy if there is a migrant from the household, while others simply identify if a child's father resides abroad (particularly in the cases in Mexico).

Most similar to this study, Acosta (2011) does include the gender of the migrant in the study in El Salvador (though not necessarily the parent of a school age child); he discovers using ordinary least squares and household fixed effects, that female migration likely reduces child labor in domestic and non-domestic activities, while male migration stimulates it. Contrastingly, female migration will reduce the likelihood that a child stays in school, while male migration does not impact schooling. His study is unique in that he disaggregates the sample of children depending on age, obtaining results for children ages 6-11 and 12-18. Unlike this study, Acosta finds that a female migrant from the household will reduce the likelihood of a younger child being in school. His key finding is that female migration will reduce the likelihood of a child performing non-domestic labor, which he suggests is not driven by remittances from female migrants, but alternative possible explanations.

Acosta's paper is most similar to this study in that it measures the likelihood of children attending school or working in El Salvador, yet it has different results than those of this study. Acosta's variables of interest are if the household has a migrant member and a male migrant or female migrant member in separate regressions, but his study does not include the relationship of the migrant to the child, while this study has information on migrant's relationship to the children as well as their basic living information in their destination location. This paper uses instrumental variable and seemingly unrelated regression estimations to observe the effects of parental migration and receiving remittances on children.

There can be a noticeable difference for a child's educational outcome if an older sibling migrates or if a parent migrates and remits. For this reason, the literature focusing on remittances may likely have more mixed results. Migration may increase or decrease children's school enrollment, depending if the income effects from remittances offset the effects of household disruptions (Hanson & Woodruff, 2003). Contrastingly to the previously mentioned research in Mexico, Malone (2007) finds that a father's absence due to migration is likely to have a positive impact on children's schooling. This makes sense when Malone shows that, as a result of remittances, women are more likely to see education as one of the primary uses of the extra income from abroad.

Funkhouser (1992) explores the behavior of remitters and found some key conclusions: time since migration is negatively correlated with the amount remitted; a migrant will remit

more if he or she left his or her spouse behind, and education is negatively correlated with the likelihood of remitting, but of the remitters, more educated migrants will remit larger amounts. He also finds significant evidence in Nicaragua that remittances will increase self-employment, especially for males.

Cox Edwards and Ureta (2003) use a Cox Proportional Hazards Model to detect the likelihood of a child leaving school in El Salvador, and found that remittances have a negative effect on schooling, especially in rural areas. However, Amuedo-Dorantes and Pozo (2010) examine the impact of remittances on school attendance in the Dominican Republic and observe that girls and younger children, in general, benefit the most from remittances, but schooling is negatively affected when the sample is expanded to include children with family members abroad. In a similar study in Haiti, Amuedo-Dorantes et. al (2008) also found that remittances will increase school attendance. These cases generally show that remittances improve schooling outcomes of children, depending on the relationship of the migrant to the child. Not recognizing if the child is the migrant's son or daughter can mislead the outcome of children's schooling from migration and remittances. It is very possible that a household receives remittances from distant relatives or even friends.

This paper looks at the impact of migration on education of children left behind using evidence from El Salvador to examine the impact of migration on a child's education and labor. Most literature focuses on either migration or remittances. Papers use the variable of interest as either a dummy indicating if the child has a migrant parent or migrant member from the household or a binary variable for if the child lives in a home that receives remittances. It appears that more positive impacts are found when the variable of interest is living in a remittance receiving household; results are more mixed if the variable of interest is having a migrant parent or living in a household with a migrant member. However, this paper attempts to distinguish the difference between the impact of migration and impact of remittances on children left behind in El Salvador by measuring children's years of school completed and time allocation.

### **Section III: Data and Methodology**

#### *Data:*

The data comes from a survey taken in 2012 in four different areas of development programs (ADPs), regions corresponding to the mapping of World Vision's child sponsorship program, and includes twenty nine different communities in El Salvador. The choice for

communities was made according to recent donations policies in the communities by World Vision, and is unrelated to migration. The survey has more than 900 households with 2171 children ages 6-16 for this study. The key components of the survey are health, education and household characteristics, but questions related to migration are included. Questions in the migration section include if the child has a migrant parent, the migrant's gender, location, time since migration, occupation, and if he or she has sent aid back to the household in the previous year. In addition, the survey also asks if the household has any other migrant members away and if they have sent aid in the past year.

The survey also consisted of a time use diary (TUD), which the head of household was asked to fill out for one child in the household between the ages of 6 and 12. Parents could mark how much time their children spend at school, working, doing chores, doing homework, collecting wood or water, sleeping, playing, or other. If a child in the household had a migrant parent away, the head of household was asked to fill out the TUD specifically for that child. Although only one TUD was distributed per household, it was still filled out for 718 children, including 120 children with migrant parents. Summary statistics are compared between TUD participant and non-participants ages 6-12 and no significant differences are found, suggesting that selection of TUD participants was random except for children with migrant parents who were purposefully chosen.

#### *Methodology:*

The goal is to observe and estimate the effect of parental migration and remittances on children's schooling. Thus a simple estimation equation is used measuring years of school completed by a child:

$$1.) S_{if} = \alpha + \beta \text{MigrantParentGender}_i + \chi' X_{if} + \varepsilon_{if}$$

where S represents the outcome variable schooling for child i living in household f.

*MigrantParentGender<sub>i</sub>* is a dummy indicating whether the child has a parent who has migrated. It will be specified whether any parent, or specifically the mother, father, or both parents of the child migrated. The vector  $X_{if}$  is set to include all variables that are considered to determine a child's potential educational outcomes. These factors include child characteristics such as age and gender. Characteristics of the household also account for children's schooling such as the number of children in the household, a dummy indicating if there is a child aged zero to five,



and the years of schooling completed by the head of the household. The number of children in a home can influence the investment in education for a child. Similarly, the presence of a young child or baby between the ages of zero and five may potentially change the expected role of a child in the household since time of an adult's time spent working may change. Also, since wealth plays a factor in labor and schooling for a child, a proxy indicating the wealth level of the household is used, which in this case will be a dummy specifying if the household has electrical service.

Additional controls will be used to measure the impact on children's schooling. Employment status of the head of household can influence a child's school attendance (Amuedo-Dorantes & Pozo, 2010). Also, Hanson and Woodruff (2003) argue that the order of birth of a child in a family can influence the investment that is put into that child's education; this paper uses a dummy indicating if the child is the oldest. Since this paper has acknowledged that female decision making power may increase if a male migrates, which can affect the outcome of interest, gender of the head of the household is also controlled for (Acosta 2011). It is assumed that the migrants left for the United States, but of the population of migrant parents, there is a notable amount of migrants who migrated to another location within El Salvador. This could have a different effect on a child's outcomes since the risk of migration is smaller and the child will likely see the migrant parent more frequently; therefore, another control is used for if the migrant is in El Salvador instead of the United States.

This paper also investigates the impact of migration on time allotted to school and to work in a given week. Since time working takes away from school time and vice versa, the standard errors of these outcomes will be correlated. For this reason, using the TUD, a seemingly unrelated regression (SUR) estimation will be used, which can also be written as:

$$2.) Y_{ih} = X_{ih}\beta_h + u_{ih} \quad h = 1, \dots, H \text{ and } i=1, \dots, N$$

Equation (2) shows that child  $i$  can spend time  $h$  working or schooling, where  $Y_{ih}$  is the child's time spent for one activity (either school or work) and  $H$  is fixed for any value of 24 or lower since there can only be 24 hours in a day. Since there is a correlation between the standard errors, they will be adjusted instead of the coefficients (Cameron & Trivedi, 2005). Schooling hours include attending school and doing homework, and work includes household chores, collecting food or water, or any other form of work; these variables are multiplied by 5 to

interpret on a weekly basis. Equation (2) will be applied using both parental migration and other controls for determining a child's schooling in the vector X. Lastly, this paper will divide children into subsamples of children in recipient households and non-recipient households to see how extra income for the family affects schooling outcomes when a child has a migrant parent away.

### *Endogeneity*

It is imperative to address the issue that there is an observable bias in the decision for a household member to migrate. A migrant household may vary in terms of motivation, ability, income, or concern for their children's well-being. Therefore there is a need for an instrumental variable. Previous migration studies have used historical state-level migration data as an instrument to predict a household's networks in the destination and potential migration behavior (Hanson & Woodruff, 2003; McKenzie & Rapoport, 2006). The access to migration networks can ease migration costs by creating access to information about the US, obtaining employment, and housing; households with stronger networks will be more likely to send a migrant (Hanson & Woodruff, 2003).

This study does not have strong variation across Salvadoran regions, since it was not a national level survey, but does include questions on the characteristics of the migrant which infer strength of the migrants' networks. Working with the time since emigration helps to provide the best instrument. El Salvador saw great emigration rates due to the civil war conflict from 1980 to 1992, but even after the war ended, migration has continued strong, suggesting that migrants have been taking advantage of migration networks that had been created (Menjivar, 2007). The introduction of this paper notes that the population of Salvadorans in the United States nearly doubled from 2000 to 2010. Lindstrom and Lopez Ramirez (2010) write that migration can be divided into three phases: the pioneer stage, the takeoff or early adaptive stage, and the mature or late adopter stage. In the pioneer stage, migration is more selective, since the costs and risks are higher and incentives for migration may be more limited. In the second stage, migration is facilitated by social networks and is no longer an individual but a social phenomenon; as migration spreads, costs become lower and the number of migrants continued to increase. El Salvador is in this stage and labor market conditions at the time and destination of migration for their particular occupation can be used as an Instrument Variable (IV), implying that migration decisions are encouraged through

networking. Other papers have used labor market conditions in the United States as IV's for migration remittances (Antman, 2010; Amuedo-Dorantes & Pozo, 2010; Amuedo-Dorantes et. al, 2008). Two instruments will be used for this study: the average wage earnings per occupation for location of the migrant at the time of migration, along with the employment rate at the time of migration in the migrant's respective location, gathered from the Bureau of Labor Statistics (BLS). The wages are adjusted with the level of inflation. These instruments comply with the exclusion rule since they will highly influence the chances of a person migrating in the first stage, but are not correlated with a child's education or labor outcomes.

#### **Section IV: Results**

The summary statistics can explain a lot about behavior of households and their propensity to send a migrant. Table 1 shows that 14% of the children in the total sample have at least one migrant parent, and of those migrant parents, about 80% send remittances back home. Nearly a third of the children live in a household with any migrant, whether it's a parent or another member of the household, and 20% of the children live in homes that receive remittances from any source. 90% of the children in the sample currently attend school. Interestingly, there are statistically significant differences between children who have migrant parents and those who do not. For example a higher percentage of children with migrant parents are enrolled in school, live in homes with electricity (used as a wealth proxy), and have more educated parents. Non migrant households are significantly less likely to have a child aged zero to five in the home. This makes sense since migration decisions may be based on the circumstances of children living at home, however these differences accentuate the need for an instrument variable.

Table 2 examines details of the parents who have migrated. Part a shows that of the children with at least one migrant parent, 80% of the children have at least a father away, 35% have at least a mother away, while for 17% of the sample of migrant children both parents are away. All of the parents migrated to the United States except for 13% who migrated within El Salvador. Part b of Table 2 compares outcomes statistics depending on the gender of the migrant parent. Instead of merging the sample of children with both parents away, a third separate category is used for children who have both parents away as a result of migration. In Table 2b, the descriptive statistics do not appear vary different across the gender of the parent. It is worth noting that the entire sample of 54 children with both parents away currently

attends school. There also appears to be a significant difference between the completed years of school outcome at the 90% confidence level, Children do appear to have more years of completed schooling if the migrant is female, yet this difference does not take age of the child into account. Statistically, children with migrant mothers complete almost a year more of school than children with migrant fathers. These differences in Table 2b exclude the sample of children with both parents away. There is no statistically significant difference in the time use variables between children with migrant parents and those who do not, but table 2a shows that children of migrants in El Salvador on average spend more time attending school or doing homework and less time working, while children with no migrant parents away on average spend more time doing chores or some form of work and less time studying.

Next are results of completed schooling for all children in the sample. All estimations are estimated using the labor market conditions of the location along with the likely wage for the migrant upon arriving in the United States as instruments, and the IV's are estimated using second stage least squares. With years of completed schooling as the dependent variable Table 3 shows the impact of having a parent has migrated. These estimates are clustered at the household level, which includes 976 family clusters for robustness purposes. Column 1 shows that a child will complete 0.25 more years of school than children with no migrant parent. It is also important to note that the test for endogeneity is 5.556 and the Hansen J-stat for over-identification is 0.573, verifying that the instruments used are valid and not over-identifying.<sup>1</sup> The coefficient for child of a migrant stays small in columns 1 through 7, varying from 0.19 to 0.25 depending on the controls but maintains its significance. Also important, the instruments remain valid in columns 1 through 5. Interestingly, in Column 5, a child with a parent who has migrated to another location in El Salvador instead of to the United States will complete nearly half of a year less schooling, and that number is significant. Columns 6 and 7 show similar results using OLS estimations.

The next step in identification is to understand what role remittances may have in a child with a migrant parent's increase in completed schooling. In addition, it is important to see the differences between outcomes of children with migrant mothers and the outcomes of children with migrant fathers. Similar to Table 3, Table 4 shows the effect of having a mother

---

<sup>1</sup> The null hypothesis for the Endogeneity test is that the variable being instrumented is exogenous and not endogenous. With clustering, the test for endogeneity is lower than the Wu-Hausman F test which has the same null hypothesis. The null hypothesis for the Hansen J test is that the instruments used are valid and the model is not over-identified.

has migrated versus not having a mother who has migrated. Column 1 indicates that a child with a migrant mother will complete more than an entire year of education with a significant t-stat. The test for endogeneity and Hansen test confirm the same instruments' validity. In order to identify the impact of remittances, the children are divided into subsamples. Column 2 includes the children in households that receive remittances (whether from that parent or from another relative) and Column 3 contains children in households who live in a household that do not receive remittances from any source. Children living in a home with a mother migrant will finish more than a year of school, while children in non-remittance homes will finish more than 2 more years of school; however neither of these numbers is significant. In all three columns of Table 4 the instruments used stay valid.

Table 5 uses the same method as Table 4 but uses the dummy for children with a father migrant as the new variable of interest, still clustering at the household level. In Column 1, children with father migrants will complete 0.39 more years of school than children without a father migrant. Results lose significance, however, when children are split into the remittance and non-remittance subsamples. The instruments are noticeably strong in Column 1, but lose their validity in Column 3 when only children in remittance receiving households are included in the sample.

Additionally, outcomes are used to measure the impact on children's education when both parents have migrated. Column 1 of Table 6 shows that a child with both parents away will complete more than a year and a half more schooling than the rest of the sample. Although the results are large in Columns 2 and 3, they are not significant. The instruments remain effective in all three of the columns. It can be concluded that remittances have little influence on a child's education. However, this likely implies that it is not the impact of remittances that influence schooling, but the other factors such as wealth, parental education, and other household characteristics correlated with education, which are likely correlated with migration since there are many household factors can cause a household to have a migrant member.

Next, a seemingly unrelated regression estimation is used to measure the impact of migration on children's time devoted to work and school. This method still estimates the same instrument variables using second stage least squares. Table 7 displays the effects on work and study time. Columns 1 and 2 includes results for the entire sample of children who participated in TUD, and it can be seen that having a migrant parent has little impact on children's time used for studying or working. A son or daughter of a migrant will work 0.31 hours less and

study 1.07 hours more per week. As anticipated, children with parents who have migrated will work more and study less, but these figures are not significant.<sup>2</sup>

Similarly to the method that years of completed schooling is observed by putting children in recipient and non-recipient homes in Tables 4 through 6, Table 7 also includes subsamples of children in households that receive and do not receive remittances. The absolute values of the coefficients are larger for children with migrant parents in Columns 3 and 4, but still not significant. Columns 5 and 6 show the amount of hours studying or working for children in non-recipient homes. In the absence of remittances, working hours change from negative to positive and school hours change from positive to negative. Children with migrant parents that live in homes with no remittances will work nearly 4 and a half more hours per week. This value is significant at the 95% level. Children with migrant parents that live in homes with no remittances will spend almost 5 hours less attending school or doing homework per work than children that do not have any migrant parents nor live in non-recipient households, and this coefficient holds at the 90% level.

## **Section V: Discussion**

It can be inferred that while parental migration is correlated with a positive impact on children's schooling, it is unlikely that remittances have little effect on the years of schooling outcome, suggesting that other characteristics that influence education outcomes may also influence a household having a migrant member, such as wealth or education of the adults in a household. This paper uses labor market conditions in the United States at the time of migration as instruments for the likelihood of a parent migrating suggests that a parent will make migration decisions based on networks. Children with migrant parents will complete more schooling than children with non-migrant parents, and the difference is stronger if the migrant leaving a child behind is a mother. The same factors that influence children's education likely influence migration. Hence data from the United States is used as an IV to show that migration also relies on networking and US economic conditions.

Using seemingly unrelated regressions, it is evident that migration has insignificant on time allocation, except for children who live in homes that do not receive any remittances.

---

<sup>2</sup> Because the sample size of children with migrant parents who participated in TUD is only 120, it is doubtful that results comparing the gender of the migrant parent will be robust. Therefore seemingly unrelated regression with the gender of the migrant parent are not included in this paper.

In the absence of remittances, children with migrant parents will put more time into work and less time into work.

## References

- Abreigo, L. (2009). Economic Well-Being in Salvadoran Transnational Families: How Gender Affects Remittance Practices. *Journal of Marriage and Family*, 71(4), 1070-1085.
- Acosta, P. (2011). Female Migration and Child Occupation in Rural El Salvador. *Population Research and Policy Review*, 30(4), 569-589.
- Adams, R. H., & Cuecuecha, A. (2010). Remittances, household expenditure and investment in Guatemala. *World Development*, 38(11), 1626-1641.
- Amuedo-Dorantes, C., & Pozo, S. (2010). Accounting for remittance and migration effects on children's schooling. *World Development*, 38(12), 1747-1759.
- Amuedo-Dorantes, C., Georges, A., & Pozo, S. (2008). Migration, remittances and children's schooling in Haiti.
- Antman, F. M. (2010). International migration, spousal control, and gender discrimination in the allocation of household resources. *University of Colorado at Boulder Department of Economics Working Paper*, (10-15).
- Antman, F. M. (2011). The intergenerational effects of paternal migration on schooling and work: What can we learn from children's time allocations? *Journal of Development Economics*, 96(2), 200-208.
- Cameron, A. C., & Trivedi, P. K. (2005). *Microeconometrics: Methods and applications*. Cambridge: Cambridge University Press.
- Cohen, J. H. (2011). Migration, Remittances, and Household Strategies\*. *Annual Review of Anthropology*, 40, 103-114.
- Cortes, P. (2010). *The Feminization of International Migration and its effects on the Children Left behind: Evidence from the Philippines*. Working Paper. Boston University School of Management. Boston, MA, USA.
- Damon, A. (2009). *Household Labor Allocation in Remittance-Receiving Households: The Case of El Salvador*. mimeo.



de la Garza, R. (2010). Migration, development and children left behind: A multidimensional perspective. *Social and Economic Policy Working Paper, New York: UNICEF.*

Edwards, A. C., & Ureta, M. (2003). International migration, remittances, and schooling: evidence from El Salvador. *Journal of development economics*, 72(2), 429-461.

Funkhouser, E. (1995). Remittances from international migration: A comparison of El Salvador and Nicaragua. *The review of economics and statistics*, 137-146.

Gammage, S. (2006). Exporting People and Recruiting Remittances A Development Strategy for El Salvador?. *Latin American Perspectives*, 33(6), 75-100.

Hanson, G. H., & Woodruff, C. (2003). Emigration and educational attainment in Mexico. *Documento de Trabajo del IR/PS. Disponible en [http://irpshome.ucsd.edu/faculty/gohanson/working\\_papers.htm](http://irpshome.ucsd.edu/faculty/gohanson/working_papers.htm).*

Lindstrom, D. P., & Ramírez, A. L. (2010). Pioneers and followers: Migrant selectivity and the development of US migration streams in Latin America. *The Annals of the American Academy of Political and Social Science*, 630(1), 53-77.

Malone, L. (2007). Migrants' remittances and investments in children's human capital: The role of asymmetric preferences in Mexico. Job Market Paper. University of California, Santa Cruz.

Mansuri, G. (2006). Migration, school attainment, and child labor: evidence from rural Pakistan. *World Bank Policy Research Working Paper*, (3945).

McKenzie, D. (2005). Beyond remittances: the effects of migration on Mexican households. *International migration, remittances and the brain drain, McMillan and Palgrave*, 123-47.

McKenzie, D., & Rapoport, H. (2006). Can migration reduce educational attainment? Evidence from Mexico. *Evidence from Mexico (June 1, 2006). World Bank Policy Research Working Paper*, (3952).

Moon, H. R., & Perron, B. (2006). Seemingly unrelated regressions. *The New Palgrave Dictionary of Economics*.

Osaki, K. (1999). Economic interactions of migrants and their households of origin: are women more reliable supporters?. *Asian and Pacific Migration Journal*, 8(4), 447-472.

Taylor, J. E., Rozelle, S., & De Brauw, A. (2003). Migration and incomes in source communities: A new economics of migration perspective from China\*. *Economic Development and Cultural Change*, 52(1), 75-101.

US Census Bureau 2011 American Community Survey B03001 1-Year Estimates HISPANIC OR LATINO ORIGIN BY SPECIFIC ORIGIN retrieved January 29, 2013 from <http://quickfacts.census.gov>.

Vanwey, L. K. (2004). Altruistic and contractual remittances between male and female migrants and households in rural Thailand. *Demography*, 41(4), 739-756.

Waters, M. C., Ueda, R., & Marrow, H. B. (Eds.). (2007). *The new Americans: A guide to immigration since 1965*. Harvard University Press.

Table 1: Summary Statistics for Children with migrant parents

Variable	All Children			Migrant parent			No Migrant parent			Diff	t-stat
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.		
<b>Independent Variables</b>											
Male	2171	0.52	0.50	296	0.52	0.50	1875	0.52	0.50	0.00	(0.03)
Age	2171	10.81	2.88	296	10.40	2.61	1875	10.88	2.92	-0.48	(-2.65)
Currently Attend School	2171	0.91	0.29	296	0.97	0.18	1875	0.90	0.30	0.07***	(3.81)
Oldest child in Household	2171	0.34	0.47	296	0.37	0.48	1875	0.33	0.47	0.03	(1.16)
Has a parent who has migrated	2171	0.14	0.34								
Has received remittances from the parent	2171	0.11	0.32	296	0.83	0.38					
Migrant from the Household	2171	0.11	0.32	296	0.21	0.41	1875	0.10	0.30	0.11***	(5.74)
Household receives remittances	2171	0.20	0.40	296	0.87	0.34	1875	0.10	0.30	0.77***	(40.14)
Amount of Children in the Household	2171	3.30	1.43	296	3.20	1.55	1875	3.32	1.41	-0.12	(-1.32)
Education of head of Household (years)	2171	7.53	2.67	296	8.04	2.75	1875	7.45	2.64	0.59***	(3.57)
Zero to five year old in Household	2171	0.42	0.49	296	0.36	0.48	1875	0.43	0.50	0.08*	(-2.45)
Home has electric service	2171	0.68	0.47	296	0.84	0.37	1875	0.66	0.47	0.18***	(6.24)
Gender of Head of Household	2171	0.58	0.49	296	0.33	0.47	1875	0.62	0.48	-0.29	(-9.61)
Employment status of head of Household	2171	0.59	0.49	296	0.39	0.49	1875	0.62	0.49	-0.23	(-7.63)
<b>Dependent Variables</b>											
Years of School Completed	2171	3.91	2.43	296	3.93	2.32	1875	3.90	2.45	0.02	(0.16)
Total School Hours per Week	718	27.07	8.85	120	28.36	7.96	598	26.81	9.00	1.55	(1.76)
Total Work Hours per week	718	8.59	6.96	120	7.67	7.16	598	8.77	6.91	-1.09	(-1.57)
							t statistics in parenthe * p<0.05, ** p<0.01, *** p<0.002				

Table 2a: Statistics on Migrant Population

Variable	Obs	Mean	Std. Dev.
Have sent home aid	296	0.83	0.38
Mother Migrant	296	0.17	0.38
Father Migrant	296	0.65	0.48
Both Parents Migrated	296	0.18	0.39
Migrated within El Salvador	296	0.14	0.35

---

2b. Statistics by gender of migrant parent

---

Variable	If Mother Migrated			If Father Migrated			Diff	t test	Both Parents Migrated		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.			Obs	Mean	Std. Dev.
Years of completed schooling	54	4.65	2.53	191	3.66	2.14	0.98** (2.82)		54	4.17	2.63
Currently attends school	54	0.98	0.14	191	0.95	0.22	-0.05 (-1.67)		54	1.00	0.00
Total hours per week working	24	8.12	6.81	74	7.93	7.72	-0.20 (-0.11)		22	6.34	5.49
Total School hours per week	24	28.14	6.36	74	28.06	9.06	-0.08 (-0.04)		22	29.62	5.21
Parent has sent home aid	54	0.83	0.38	191	0.80	0.40	-0.09 (-1.41)		54	0.91	0.29

Table 3. Migration and Completed School

VARIABLES	(1) Years of schooling IV	(2) Years of schooling IV	(3) Years of schooling IV	(4) Years of schooling IV	(5) Years of schooling IV	(6) Years of schooling OLS	(7) Years of schooling OLS
<b>Child of migrant parent</b>	0.250*** (2.74)	0.196** (2.11)	0.203** (2.17)	0.192** (2.06)	0.250** (2.48)	0.208** (2.30)	0.215** (2.18)
Male	-0.0484 (-0.78)	-0.048 (-0.77)	-0.045 (-0.72)	-0.045 (-0.73)	-0.042 (-0.68)	-0.049 (-0.79)	-0.043 (-0.70)
Age	0.420*** (4.59)	0.421*** (4.60)	0.418*** (4.57)	0.422*** (4.61)	0.418*** (4.57)	0.422*** (5.15)	0.420*** (5.13)
Age squared	0.010** (2.29)	0.010** (2.27)	0.010** (2.31)	0.010** (2.18)	0.010** (2.21)	0.010*** (2.71)	0.010*** (2.63)
# of children in HH	-0.036 (-1.40)	-0.033 (-1.26)	-0.034 (-1.32)	-0.0101 (-0.38)	-0.0127 (-0.47)	-0.036 (-1.50)	-0.0123 (-0.48)
Zero-five year	-0.130* (-1.74)	-0.128* (-1.73)	-0.123* (-1.67)	-0.158** (-2.06)	-0.164** (-2.13)	-0.131* (-1.91)	-0.165** (-2.35)
Educ. of head	0.146*** (10.15)	0.149*** (10.42)	0.150*** (10.46)	0.157*** (10.36)	0.156*** (10.30)	0.147*** (12.36)	0.157*** (12.85)
Electricity in HH	0.188*** (2.59)	0.173** (2.39)	0.176** (2.44)	0.177** (2.47)	0.173** (2.40)	0.192*** (2.86)	0.175*** (2.60)
Male head of HH		-0.186*** (-2.68)	-0.225*** (-3.05)	-0.200*** (-2.69)	-0.197*** (-2.64)		-0.200*** (-2.80)
Head employed			0.0864 (1.13)	0.0745 (0.98)	0.072 (0.95)		0.0704 (1.00)
Oldest child in HH				0.199** (2.51)	0.201** (2.54)		0.202*** (2.80)
Migrant in El Salvador					-0.487** (-2.30)		-0.458* (-1.90)
Number of Household Clusters	976	976	976	976	976		
IV Test for endogeneity Chi-sq(1) P-val	5.556 0.018	5.574 0.018	5.431 0.020	5.437 0.021	3.973 0.46		
Hansen J test for over- identification Chi-sq(1) P-val	0.573 0.449	0.442 0.506	0.481 0.488	0.506 0.477	0.300 0.584		
Constant	-2.973*** (-6.20)	-2.876*** (-6.00)	-2.894*** (-6.03)	-3.064*** (-6.25)	-3.021*** (-6.15)	-2.980*** (-6.59)	-3.027*** (-6.63)
Observations	2,171	2,171	2,171	2,171	2,171	2,171	2,171
R-squared	0.656	0.657	0.658	0.659	0.659	0.656	0.660

Table 4. Mother Migration and Completed School

VARIABLES	(1) Years of schooling IV	(2) Years of schooling if household receives remittances IV	(3) Years of schooling if household does not receive remittances IV
<b>Child of migrant mother</b>	1.382** (2.45)	1.054* (1.76)	2.623* (1.85)
Male	-0.031 (-0.49)	-0.029 (-0.23)	-0.014 (-0.20)
Age	0.417*** (4.55)	0.366* (1.96)	0.421*** (4.01)
Age squared	0.010** (2.17)	0.015* (1.66)	0.009* (1.72)
# of children in HH	-0.001 (-0.05)	-0.024 (-0.54)	0.018 (0.55)
Zero-five year	-0.167** (-2.18)	-0.038 (-0.23)	-0.196** (-2.28)
Educ. of head	0.159*** (10.36)	0.084*** (2.60)	0.178*** (10.19)
Electricity in HH	0.163** (2.25)	0.187 (0.97)	0.143* (1.81)
Male head of HH	-0.220*** (-2.98)	-0.169 (-1.13)	-0.230*** (-2.75)
Head employed	0.057 (0.76)	-0.105 (-0.70)	0.0958 (1.10)
Oldest child in HH	0.219*** (2.75)	-0.0531 (-0.33)	0.291*** (3.17)
Migrant in El Salvador	-0.511** (-2.30)	-0.682*** (-2.61)	-0.147 (-0.47)
Number of Household Clusters	976	219	789
IV Test for endogeneity Chi-sq(1) P-val	2.542 0.117	0.471 0.493	4.104 0.043
Hansen J test for over- identification Chi-sq(1) P-val	0.291 0.590	0.031 0.860	1.211 0.271
Constant	-3.034*** (-6.11)	-2.381*** (-2.62)	-3.188*** (-5.52)
Observations	2,171	445	1,726
R-squared	0.657	0.705	0.646

Table 5. Father Migration and Completed School

VARIABLES	(1) Years of schooling IV	(2) Years of schooling if household receives remittances IV	(3) Years of schooling if household does not receive remittances IV
<b>Child of migrant father</b>	0.393** (2.41)	0.413 (1.56)	0.515* (1.79)
Male	-0.044 (-0.71)	-0.059 (-0.43)	-0.033 (-0.47)
Age	0.416*** (4.53)	0.357* (1.87)	0.424*** (4.08)
Age squared	0.010** (2.24)	0.017* (1.77)	0.009* (1.72)
# of children in HH	-0.016 (-0.59)	-0.068 (-1.48)	0.0107 (0.32)
Zero-five year	-0.167** (-2.17)	-0.029 (-0.17)	-0.207** (-2.41)
Educ. of head	0.156*** (10.24)	0.083*** (2.59)	0.174*** (10.07)
Electricity in HH	0.173** (2.40)	0.201 (0.96)	0.165** (2.12)
Male head of HH	-0.186** (-2.44)	-0.038 (-0.21)	-0.221*** (-2.65)
Head employed	0.073 (0.95)	-0.059 (-0.37)	0.099 (1.14)
Oldest child in HH	0.189** (2.36)	-0.126 (-0.70)	0.265*** (2.93)
Migrant in El Salvador	-0.465** (-2.08)	-0.521* (-1.76)	-0.396 (-1.01)
Number of Household Clusters	976	219	789
IV Test for endogeneity Chi-sq(1) P-val	13.589 0.000	7.890 0.005	1.425 0.059
Hansen J test for over- identification Chi-sq(1) P-val	0.206 0.650	0.134 0.714	3.563 0.059
Constant	-3.004*** (-6.11)	-2.412*** (-2.58)	-3.156*** (-5.55)
Observations	2,171	445	1,726
R-squared	0.657	0.691	0.652



Table 6. Completed School if both parents migrate

VARIABLES	(1) Years of schooling IV	(2) Years of schooling if household receives remittances IV	(3) Years of schooling if household does not receive remittances IV
<b>Both parents of child migrated</b>	1.367** (2.16)	1.186 (1.58)	6.762 (1.24)
Male	-0.044 (-0.70)	-0.050 (-0.37)	-0.029 (-0.41)
Age	0.426*** (4.65)	0.399** (2.01)	0.432*** (4.12)
Age squared	0.009** (2.11)	0.014 (1.47)	0.00811 (1.61)
# of children in HH	-0.012 (-0.42)	-0.055 (-1.11)	0.016 (0.47)
Zero-five year	-0.147* (-1.88)	0.063 (0.37)	-0.200*** (-2.32)
Educ. of head	0.156*** (10.17)	0.082*** (2.54)	0.176*** (10.13)
Electricity in HH	0.179** (2.49)	0.265 (1.29)	0.140* (1.75)
Male head of HH	-0.207*** (-2.78)	-0.108 (-0.70)	-0.245*** (-2.90)
Head employed	0.084 (1.09)	0.011 (0.07)	0.096 (1.10)
Oldest child in HH	0.229*** (2.85)	0.0412 (0.23)	0.297*** (3.19)
Migrant in El Salvador	-0.538** (-2.19)	-0.686** (-2.41)	-0.886 (-0.96)
Number of Household Clusters	976	219	789
IV Test for endogeneity Chi-sq(1) P-val	4.549 0.033	2.124 0.145	5.015 0.025
Hansen J test for over-identification Chi-sq(1) P-val	0.398 0.582	0.021 0.884	0.010 0.922
Constant	-3.077*** (-6.23)	-2.731*** (-2.75)	-3.197*** (-5.57)
Observations	2,171	445	1,726
R-squared	0.654	0.685	0.640

Table 7 Migration and Children's Time Allocation

VARIABLES	(1) Work hours per week	(2) School hours per week	(3) Work hours per week (Household Receives Remittances)	(4) School hours per week (Household Receives Remittances)	(5) Work hours per week (Household does not receive remittances)	(6) School hours per week (Household does not receive remittances)
<b>Child of a migrant</b>	<b>-0.314</b>	<b>1.070</b>	<b>-1.655</b>	<b>2.282*</b>	<b>4.467**</b>	<b>-4.879*</b>
	(-0.42)	(1.10)	(-1.58)	(1.83)	(2.35)	(-1.91)
Male	-0.910*	-1.766***	-1.833*	-0.825	-0.638	-1.959***
	(-1.84)	(-2.73)	(-1.92)	(-0.73)	(-1.13)	(-2.58)
Age	0.284	4.533**	-0.920	-4.354	0.153	6.993***
	(0.17)	(2.04)	(-0.25)	(-1.00)	(0.08)	(2.74)
Age squared	0.034	-0.213*	0.120	0.259	0.0381	-0.342**
	(0.38)	(-1.82)	(0.61)	(1.12)	(0.38)	(-2.55)
# of children in HH	0.670***	-0.233	1.736***	0.364	0.372	-0.529
	(2.67)	(-0.71)	(3.83)	(0.68)	(1.26)	(-1.33)
Zero-five year in HH	-0.678	0.564	-1.318	0.0692	-0.178	0.914
	(-1.19)	(0.76)	(-1.24)	(0.06)	(-0.27)	(1.03)
Educ. of head	-0.262***	0.0593	-0.569***	-0.0525	-0.185*	0.0745
	(-2.95)	(0.51)	(-3.23)	(-0.25)	(-1.81)	(0.55)
Electricity in HH	-1.401***	2.015***	-2.442**	1.329	-1.348**	2.133***
	(-2.61)	(2.87)	(-1.98)	(0.91)	(-2.27)	(2.68)
Male head of HH	-0.951*	0.322	0.423	-2.049	-1.183*	0.537
	(-1.68)	(0.43)	(0.36)	(-1.49)	(-1.85)	(0.63)
Head employed	1.410**	-1.873***	0.422	1.146	1.530**	-2.674***
	(2.56)	(-2.59)	(0.37)	(0.85)	(2.46)	(-3.20)
Oldest child in HH	0.309	-0.977	2.197**	-2.765**	-0.349	-0.825
	(0.53)	(-1.28)	(1.96)	(-2.08)	(-0.52)	(-0.92)
Migrant in El Salvador	-1.237	-0.150	-1.940	-1.854	-4.902	7.261*
	(-0.75)	(-0.07)	(-1.04)	(-0.84)	(-1.52)	(1.68)
Constant	4.241	4.434	8.617	44.33**	5.179	-5.908
	(0.54)	(0.43)	(0.51)	(2.20)	(0.59)	(-0.50)
Observations	718	718	162	162	556	556
R-squared	0.111	0.055	0.281	0.114	0.098	0.070