Parent Migration and Education Outcomes of Children Left Behind in El Salvador

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Abstract

Nearly one quarter of El Salvador's population resides abroad as a result of historically high levels of violence, which have led to increasing family disintegration and many children being left behind in country of origin. Parental migration can have both positive and negative consequences on children left behind, where there are opposite forces taking place simultaneously. Remittances sent by migrant parents can increase financial resources previously unavailable which can be invested toward children's health and education. However, parental absence due to migration represents lower supervision, guidance and emotional support, which can have negative effects on children's developmental outcomes and increase their vulnerability to exploitation and recruitment into criminal activities. This study analyzes the impact of parent international migration on educational outcomes of children left behind. I find that children with migrant parents exhibit a lower probability of attending school, where the effect is stronger for older boys between 13 to 17 years of age. Some of the mechanisms explaining lower school attendance among children with migrant parents include a higher likelihood of working and a higher intention of future migration. Although remittances play an important role in decreasing financial hardship in Salvadoran households, they do not fully compensate for the adverse consequences of parental absence due to migration.

Keywords: International Migration, Education, Left Behind, Child Labor, El Salvador, Central America
JEL I25, O15, F22

1 Introduction

El Salvador has historically experienced high international migration particularly to the U.S., where approximately one quarter of its population, 1.3 million, resides (U.S. Census Bureau, 2015). Violence has been a constant migration push factor since the country's civil conflict that took place from 1980 to 1992 to current high levels of gang-related violence.[1] Migration has led to increasing family disintegration where many children are living without one or both parents, which creates an unstable environment for them to grow and develop. In El Salvador, children and youth represent a highly vulnerable population who face poor economic opportunities, are direct targets of gang recruitment and are forced to migrate.[2] Parent migration may constitute a disruptive family transition with multiple costs to children who remain in country of origin, which can put them at higher vulnerability. This paper investigates how parental absence due to migration impacts children's education and the labor adjustments that come as a result.

Parent migration can have positive and adverse consequences on children left in country of origin. On one hand, remittances sent from abroad by migrant parents increase financial resources previously unavailable, which can be invested toward children's health and education. Remittances are an important source of income in El Salvador where around 20 percent of households are recipients, and they represent 17 percent of the GDP (BCR, 2017). Although many migrants send sizable remittances to families, these may not begin for months or years after a migrant's departure, and they are often important but incomplete substitutes for the emotional, caregiving, and disciplinary roles filled by the presence of both parents (Nobles, 2013). Parent migration represents lower supervision, guidance, protection and emotional support for children, which can have negative consequences on their development. Little evidence exists on the effect of parent migration on children left behind in northern Central America, a subregion characterized by high migration to the U.S., high levels of poverty and violence. Understanding how migration of family members affect those left behind can allow the implementation of policies that mitigate any potential negative effects particularly for children living in vulnerability.

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[1] El Salvador exhibits one of the highest homicide rates in the world. Just in 2015, it exhibited 103 homicides per 100,000 inhabitants compared to a global average homicide rate of 6.3 (UNODC, 2019).

[2] Recent migration trends from El Salvador and other Central American countries show an alarming steep increase in the number of children migrating unaccompanied driven by high levels of gang-related violence in countries of origin (UNHRC, 2014).

In this study, I provide empirical evidence of the effect of parent migration on left-behind children's school attendance and educational lag in El Salvador. I find that parental migration affects children's schooling outcomes differently depending on their gender and age. Children with at least one migrant parent have a lower probability of attending school, where the effect is strongest for older boys ages 13 to 17 but no effect is found on girls. Moreover, this paper does not find strong evidence that parental migration has an effect on the likelihood of children lagging behind in school. Several mechanisms could be behind the negative effect of parental migration on children's school attendance. On one hand, parental migration can lead to labor readjustments within and outside the household. This study finds that older boys are replacing school for work, while girls are more likely to be inactive, neither working nor studying, due to carrying out more domestic work. Parent migration also represents an incentive for children to seek migration themselves for family reunification purposes or to seek better economic opportunities. Having a migrant parent reduces the cost of migration through the strengthening of migrant networks. As a consequence, older boys may reduce schooling and increase work as a step toward eventual migration. In addition, older boys in marginalized and poor areas in El Salvador are at risk of being recruited into gangs, and parent absence due to migration puts them at higher vulnerability. In many cases, children drop out of school to join gangs or opt to migrate to flee gang persecution and violence.[3]

One of the main challenges of estimating the causal effect of parent migration on children's outcomes is that the migration decision is endogenous. On one hand, the reasons that might drive one or both parents to migrate, such as a negative household economic shock, a natural disaster, local violence, might be the same reasons that prevent children from attending school. Moreover, migration is not random and individuals with specific characteristics self-select into migration, which can also influence the schooling decisions they make for their children. Previous studies analyzing the effect of parent migration on children's outcomes address endogeneity issues by employing historical migration rates at the state level (Hanson and Woodruff, 2003; McKenzie and Rapoport, 2006) or city economic conditions at destination country (Amuedo-Dorantes et al., 2008; Yang, 2008; Amuedo-Dorantes and Pozo, 2010;

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[3] Recent press coverage shows that youths in secondary school in El Salvador are increasingly dropping out of school driven by migration and violence. For instance, in the department of La Unión, characterized by high migration to the U.S., around 4,000 secondary school students dropped out of school in 2019 where the main drivers identified are migration to the U.S. to reunify with their parents as well as violence and insecurity, including threats by gangs, in certain municipalities (Mendoza, 2019).

Antman, 2011), where most of the existing evidence is on Mexico. To get around the endogeneity of migration, I employ a shift-share/Bartik instrument design to obtain a plausibly exogenous source of variation of migration outflows of Salvadorans at the canton level. Studies on El Salvador that investigate the effect of parent migration on children are largely descriptive or do not fully address endogeneity issues, likely due to data unavailability of nationwide historical migration rates. The closest analysis to this paper is done by Intemann and Katz (2014) who address endogeneity using wage earnings and employment rates in city of destination, but they do so only for four small communities in El Salvador. The present paper overcomes data limitations by using a novel application of shift-share instruments to provide causal evidence that is representative at the country level.

This paper makes several contributions to the literature. The study of migration has focused predominantly on the impact of immigrants in country of destination, but less evidence exists on its effects in country of origin of immigrants. Within the analysis of the effects of migration in country of origin, there is an extensive literature assessing the impact of remittances sent from household members residing abroad, which alleviate financial constraints and can have several positive effects on children and other household members (Amuedo-Dorantes and Pozo, 2010; Cox and Ureta, 2003; Adams and Cuecuecha, 2010; Bouoiyour and Miftah, 2015). The present study instead focuses on how parental migration affects children left behind, which encompasses the effect of remittances but also the effects of having an absent parent. This study not only investigates the effects of parent migration on children's educational outcomes but also looks at the labor readjustments within the household that come as a result. Moreover, this paper contributes to the study of migration in El Salvador, an understudied country where children and youth represent a highly vulnerable population for being direct targets of gang recruitment and in many cases are being forced to migrate. Derived policy implications are not only relevant for El Salvador but also for other Central American countries experiencing similar migration and violence trends.

The rest of the analysis is organized as follows. Section 2 reviews the related literature on the effect of family structure and parent migration on children's well-being. Section 3 describes the data and summary statistics. Section 4 reviews the empirical strategy employed and possible threats to the identification strategy. Section 5 presents the OLS and IV results along with an

analysis of heterogeneous effects by child's gender, age and area of residence. Section 6 discusses mitigating effects and possible mechanisms behind findings and section 7 concludes.

2 Related Literature

This study is directly linked to the literature assessing how parent international migration impacts left-behind children's education outcomes in developing countries. But it also provides evidence of how changes in family structure including family dissolution events leading to sole-parent households affect children. In this section, I first provide a review of the trends and existing evidence of the impacts of single parenthood on children in developed and developing nations and later describe the existing evidence that specifically relates to parental migration.

2.1 Changes in Family Structure

Children across the world continue living predominantly with both parents, yet they are increasingly living in single-parent households arising from being born in sole-parent households or as a result of divorce or separation (IFS and STI, 2017). The proportion of single-parent families is very heterogeneous across developed and developing nations. For instance, among OECD countries, the proportion of children living with one parent only varies from 24 percent in the United States, 19 percent in the United Kingdom and Denmark, to 11 percent in Spain and 9 percent in Italy (Chapple, 2009). Changes in family structure and living arrangements can have negative consequences on children's cognitive, social and emotional development (Amato, 2005; Brown, 2010; Astone and McLanahan, 1991). Children living with both parents exhibit on average better development outcomes than those who live in single-parent households. Evidence from developed nations shows that children living in single-parent households experience more economic hardships, lower quality of parenting, lower emotional support and higher exposure to stress and disruption compared to children living with both parents (Amato, 2005; Amato, Patterson and Beattie, 2015). This translates into poorer educational outcomes (Mahler and Winkelmann, 2004; Fronstin, Greenburg and Robins, 2001; Jonsson and Gahler, 1997), higher propensity of mental illness (Hansagi, Brandt and Adreasson, 2000) higher risk of serious emotional disorders (Chase-Lansdale, 1995), higher likelihood of exhibiting behavioral problems (Huurtig et al., 2005) including alcoholism (Hansagi, Brandt and Adreasson, 2000; Hope, Power and Rodgers, 1998) and later violent criminality (Sauvola et al., 2002), increased risk of

mortality and injury (Weitoft et al., 2003) and higher risk of sexual activity and teenage pregnancy among children living in non-intact two-parent households.[4]

An adverse impact of single parenthood on children's education has been found across many developed nations. In the U.S., several studies have found that children living in single-parent families have a lower probability of completing high school and attending college and complete fewer years of schooling (Coleman, 1988; Astone and McLanahan, 1991, Haveman and Wolfe, 1995). Evidence from the U.K, Sweden and Germany also shows that children experiencing family dissolution and single parenthood exhibit lower educational attainment compared to children from intact families which can be driven by reductions in social capital and aspirations by the absent parent (Jonsson and Gahler, 1997) and by lower resources available for the child in terms of income and time (Mahler and Winkelmann, 2004). Hence, in many OECD countries, there is consistent evidence supporting the adverse impact of single parenthood on children's education outcomes.

In Latin American and the Caribbean (LAC), there is limited evidence of how family structure has changed over time and its impact on children outcomes. On one hand, in LAC, there has also been a decline in the proportion of children living with both parents and an increasing trend in single parent households. However, there is a lot of heterogeneity across the region. For instance, around 68 percent of children live with both parents and 25 percent with one parent only in Colombia whereas in Peru 78 percent of children live with both parents and 20 percent live in single-parent household (Robles and Duryea, 2016). As I will show later in this study, the proportion of children living with both parents is even lower in El Salvador, around 59 percent. Divergence in family trends across Latin American countries can be attributed to several historical and economic factors. On one hand, Latin America and the Caribbean is one of the most unequal regions in the world where the richest 10 percent accumulates 48 percent of total wealth (De Ferranti et al., 2004). Differences in family trends and its effects on children within and across countries can be explained to a large extent by educational and income gradients. In addition, unlike many European countries, marriage was never widely institutionalized in LAC. Increasing cohabitation rates and lower union stability in the region are not only the result of secularization but also of historical family arrangements where

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[4] For a meta-analysis of the impact of sole-parent families on different dimensions of child well-being in the U.S., see Amato (2000) and for non-U.S. OECD countries see Chapplin (2009).

cohabitation, union instability and female headship were the common family life (Esteve and Florez-Paredes, 2018). Central America has historically exhibited the highest levels of cohabitation in LAC, which are explained by historical tradition, high poverty levels and deprived socio-economic conditions where consensual unions were the predominant union type among the disadvantaged social strata (Lesthaeghe and Esteve, 2016). Family structure varies widely within and across countries in the region and so does their impact on children well-being.

A few studies examine the effect of changes in family structure on children's development in Latin America and these also find an adverse effect of single-parenthood on children's health and education. Arends-Kuenning and Duryea (2006) provide empirical evidence from Brazil, Ecuador, Nicaragua and Panama and find that adolescents living in single-mother families exhibit a lower probability of school attendance and attainment than those living with both parents. In Brazil, Ayllón and Ferreira-Batista (2015) find that children living with single mothers exhibit lower height-for-age z-scores, or stunting, than children who live with both parents.[5] Finally, recent evidence on Ecuador shows that children ages 8 to 17 living with both parents have a lower probability of school delay, while younger children have a lower probability of incomplete vaccinations and stunting than those living in single-parent families (Duryea and Robles, 2016). This evidence shows that living in single-parent families often has a negative impact on children in terms of financial resources available, quality and quantity of parental time, emotional guidance and support that can translate into poorer health and education.[6] However, there is little existing evidence in LAC mixed with high heterogeneity across countries to make any generalizations of findings.

2.2 Parent Absence due to Migration

In Latin America and the Caribbean, an increasing number of children are living without at least one parent due to migration, where it is often the father who migrates. However, there is little evidence of the proportion of children with migrant parents across LAC countries. A recent cross-country study finds that the prevalence of parental absence due to migration in the region ranges from 7 percent in Peru to 21 percent in the Dominican Republic (DeWaard, Nobles and

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[5] Although the mechanisms are difficult to disentangle, the authors suggest that these findings could be driven by single mothers suffering higher levels of stress and depression, which affects their capacity to care for their children.
[6] The observed negative effect of living in single-parent households does not take into account cases where the presence of one parent might be detrimental to the child's well-being such as when the parent exhibits substance-abuse or criminal behavior.

Donato, 2018). This same study also finds that in El Salvador, approximately 1 in 6 children have a migrant parent. However, in the case of El Salvador, this study uses a very small sample constituted of four small predominantly rural communities, hence estimates are not representative at the country level. The present study provides nationally representative estimates and finds that this figure is smaller where approximately 6 percent of children live without at least one parent due to migration in El Salvador.

When parental absence is caused by migration, there is no general consensus on the overall effect on children's well-being as there are many forces taking place simultaneously. On one hand, remittances sent by migrant parents increase the financial resources available in the household, which can be invested toward children's health and education. Several studies find a positive effect of remittances in reducing poverty, improving health outcomes, increasing school attendance and lowering school dropout and child labor (Acosta, 2006; Cox, Edwards & Ureta, 2003 Lopez-Cordoba, 2005; Yang, 2006; Bouoiyour and Miftah, 2016; Coon, 2016). For instance, in El Salvador, young boys and girls who live in remittance-recipient households are more likely to be enrolled in school than those living in non-remittance-recipient households (Acosta, 2006) and remittances have a significant impact on lowering the hazard of dropping out of school (Cox, Edwards & Ureta, 2003). In Mexico, as the proportion of households that receive remittances increase, infant mortality falls, children's school attendance rises, illiteracy drops and population living in poverty is reduced (Lopez-Cordoba, 2005). As remittances sent from abroad increase in the Philippines and Morocco, children in remittance-recipient households are more likely to attend school, less likely to drop out, child labor decreases and households' expenditure in education increases (Bouoiyour and Miftah, 2016; Yang, 2006). Hence, remittances sent by migrant household members are found to have an overall positive effect as they alleviate financial constraints, which can help improve health outcomes and increase educational opportunities for children.

On the other hand, parental absence due to migration can have several negative consequences on children left behind including labor supply readjustments within the household and an incentive for future migration, which can negatively impact education decisions and can outweigh the positive effects of remittances (Antman, 2011; McKenzie and Rapoport, 2011; Amuedo-Dorantes and Pozo, 2010; Cortes, 2015; Schemeer, 2009). To start, migrants may not be able to send remittances for some time after migration and family members in home country

might need to financially support the migrant while compensating for their lost income, where children bear the costs of such adjustments. An analysis of the short-run effects of fathers migration to the U.S. on children's schooling outcomes in Mexico, finds that children reduce study hours and increase work hours due to the immediate financial hardship after father leaves (Antman, 2011). In many cases, older children are forced to abandon school and work instead to compensate for the lost income of the migrant parent who may not be able to send remittances for some time right after migration. Alternatively, children, particularly older girls, may need to take additional household chores including taking care of younger siblings in response to the mother increasing work hours. Evidence from rural Mexico shows that living in a household with at least one migrant parent decreases the likelihood of boys completing junior high school by 22 percent and of boys and girls completing high school by 13 and 15 percent, respectively, due to increased migration of boys and increased housework for girls (McKenzie and Rapoport, 2011). Hence, there can be domestic and non-domestic labor adjustments within the household as a consequence of parent migration, which can result in children replacing school with work.

In addition, parent migration entails longer-term absence, leading to lower parental supervision, guidance and emotional support, which can increase youth vulnerability. Vasquez (2014) finds that children who where left behind by one or both parents in Mexico and El Salvador are easy prey for exploitation, recruitment into criminal activity such as gangs or cartels because their parents were not present to provide guidance, education and protection.[7] The current increase in violence in the Northern Triangle of Central America – El Salvador, Guatemala and Honduras – can be partially attributed to family disintegration. In the case of El Salvador, due to high migration and death of many male family members during and after the civil war from 1980 to 1992, living in disintegrated families became the reality of many youths, particularly of those more vulnerable and economically disadvantaged (Menjivar, 2006). The absence of one or both parents in environments characterized by poverty and weak state capacity increases the vulnerability of children and youth, which can push them to join gangs. In fact, a recent study by Cruz (2017) on Salvadoran gangs shows that 53.9 percent of the 1,196 gang members interviewed for the study do not live with both parents which represents a risk factor for Salvadoran youth. Properly addressing the adverse impact that migration can have on

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[7] Vasquez (2014) provides qualitative evidence of interviews with adults who where left behind by one or both parents as children in Mexico and El Salvador.

families and particularly on vulnerable children can also contribute to reducing the high risk youth face to join gangs or become involved in criminal groups.

Previous studies that investigate the impact of household member migration from El Salvador predominantly provide evidence of the positive effect of remittances on those left behind (Acosta, 2006; Cox, Edwards & Ureta, 2003). One recent paper by Intemann and Katz (2014) is the closest to the present study in analyzing the effect of parental absence via migration on children's schooling. They employ 2012 time-use data and instrumental variable estimation in four of the poorest communities in El Salvador and find that children with migrant parents complete more years of school, while there is no significant effect on work time but a decrease in time allocated to education. Instead, the present study provides evidence of an overall negative effect of parental migration on children's schooling and an increase in work. Contrasting results can be attributed to differences in scope of study and identification strategy employed. In terms of the scope, the present study provides evidence at the national level including both urban and rural areas while the paper by Intemann and Katz (2014) analyze a small sample of four rural communities. Moreover, Intemann and Katz (2014) use destination country wages and employment rates as instruments for parent migration taking advantage of their survey, which allows them to connect city of origin and destination of migrants for the four communities studied. Nationwide historical migration data that allow connecting city of origin in El Salvador and destination in the U.S. are unavailable, which represents a challenge to provide nationally representative estimations. To overcome this data limitation, I employ a shift-share instrument where I predict migration outflows at the canton level to account for the endogeneity of migration for all municipalities and cantons. Shift-share or Bartik instruments were introduced by Bartik (1991) and estimate the differential effect of a set of national industry shocks, or shifters, on units exposed to them, and whose exposure depends on a set of local industry weights, or shares. Many influential studies have employed variations of this instrument design mainly in the trade and migration literature (Altonji and Card, 1991; Card, 2001; Bianchi et al., 2012; Autor, Dorn and Hanson, 2016; Peri, 2016). This paper seeks to complement previous studies on El Salvador by providing more recent evidence of the educational effects of parental migration that are representative at the national level.

3 Data

This study uses data from three sources. The main data source I employ is El Salvador's national household survey, Encuesta de Hogares de Propósitos Múltiples (EHPM, for its Spanish acronym) for years 2016 to 2017. The household survey is a cross-section survey representative at the national and department level as well as for the 50 largest municipalities and rural/urban areas.[8] It provides data on children's household composition, number of household members, parent presence within the household, migration status of parent, demographic characteristics of the child such as age, gender and schooling outcomes.

One of the key advantages of the household survey is that starting in 2010, it includes a question on whether any child younger than 18 within the household has their mother and/or father absent and if so, to indicate the reason for parent absence between abandonment, death, migration or other reasons.[9] In addition, from 2016 onward, the survey includes a question that identifies who is the father and mother of any children younger than 18 within the household, which allows directly matching children with their father and mother within the household using household member identification number, or identifying their absence. I employ both of these questions to identify children's household structure and reasons for parental absence, and use years 2016 and 2017 only for the analysis.[10] Based on whether the mother and father are present, I divide children's family structure into living with both parents, living with mother only, living with father only and living in a different family arrangement when neither parent resides in the same household as the child. A disadvantage of the data on migration is that one can only identify if the child's parent is absent due to migration but one is not able to determine when the parent left or where the parent migrated to. This last piece of missing information on migrant destination can be overcome by the fact that it is estimated that 88 percent of Salvadorans abroad live in the U.S., hence the U.S. is the most likely migrant destination country (IOM and UN Population Division, 2015). On the other hand, an advantage of the household survey is that one can estimate the impact of parent migration in both rural and urban settings, providing nationally

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[8] El Salvador has 14 departments and 262 municipalities, which are each divided into urban areas and rural areas or cantons. This study is restricted to the 212 municipalities that are included in both 2016 and 2017 household surveys.

[9] The household survey assigns a main respondent, who is in most cases the household head followed by the spouse, to answer questions on housing, migration and parental absence.

[10] The household survey includes 76,264 individuals and 20,609 households in 2016 and 75,133 individuals, and 20,645 households in 2017.

representative evidence, where the majority of previous studies provide evidence from rural settings only.

The main outcome variables of interest are school attendance and educational lag. School attendance refers to whether a child is currently studying and attending school. And educational lag refers to whether a child is at least two years behind the school grade they should be attending given their corresponding age for children. I focus on children who are in schooling age, so my overall sample consists of 33,713 children who are 6 to 17 years of age. Moreover, the treatment group is children who have at least one migrant parent, including the mother, father or both. And the control group refers to children who do not have a migrant parent including those who live with both parents as well as children who have an absent parent due to death, abandonment or other reasons.

In order to construct the instrumental variable, I first employ the 2007 Salvadoran Census, Censo de Población y Vivienda 2007, which contains information on the number of international migrants per household and allows me to obtain the share of migrants per canton in 2007. Although the census covers all 262 municipalities, this study focuses on the 212 municipalities and the 797 cantons that are represented in both the 2016 and 2017 household surveys. Lastly, I use the U.N. Population Division Trends in International Migrant Stock (U.N., 2017) to obtain the change of stock of immigrants from Central America living in the U.S., including Guatemala, Honduras, Costa Rica, Nicaragua and Panama from 2005 to 2017, and excluding El Salvador. I employ these two sources of data to construct the instrumental variable that predicts the outflow of Salvadorans to the U.S. at the canton level.

3.1 Summary Statistics

I first provide some descriptive statistics of the sample of children under study including their household composition, educational outcomes, parent migration status and other characteristics. In El Salvador, 59 percent of children live with both parents, while 31 percent live with their mother only, 2 percent with their father only and 8 percent in a different family arrangement (EHPM, 2016, 2017).[11] Compared to OECD or other Latin American countries where around 70

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[11] A recent study by FUSADES and UNICEF (2015) that looks at changes in the Salvadoran family from 1992 to 2012, estimates that in 2012, 64.5 percent of children ages 6 to 17 lived with both parents in a nuclear or extended family; 28.3 percent lived in a single-parent family, where no distinction is made between living with mother only or father only, and 7.2 percent of children lived in a different family arrangement. The figures reported in the present

to 80 percent of children live with both parents, El Salvador exhibits a very low percentage of children living in two-parent households. Among the 41 percent of children who live without at least one parent, the main reason for parental absence is abandonment, 78 percent, followed by migration, 12 percent, death, 8 percent, and other reasons, 2 percent. Parental absence due to migration is predominantly caused by the migration of fathers. In most of the cases, 68 percent, the father has migrated, followed by the mother, 20 percent, and in 12 percent of the cases both parents have migrated.

Moreover, the main educational outcomes of analysis are school attendance and educational lag. Figure 1 shows the proportion of children who attend school and are lagging behind in school by child's age, gender and parent migrant status.

Figure 1. Schooling Outcomes by Child's Gender and Parent Migrant Status
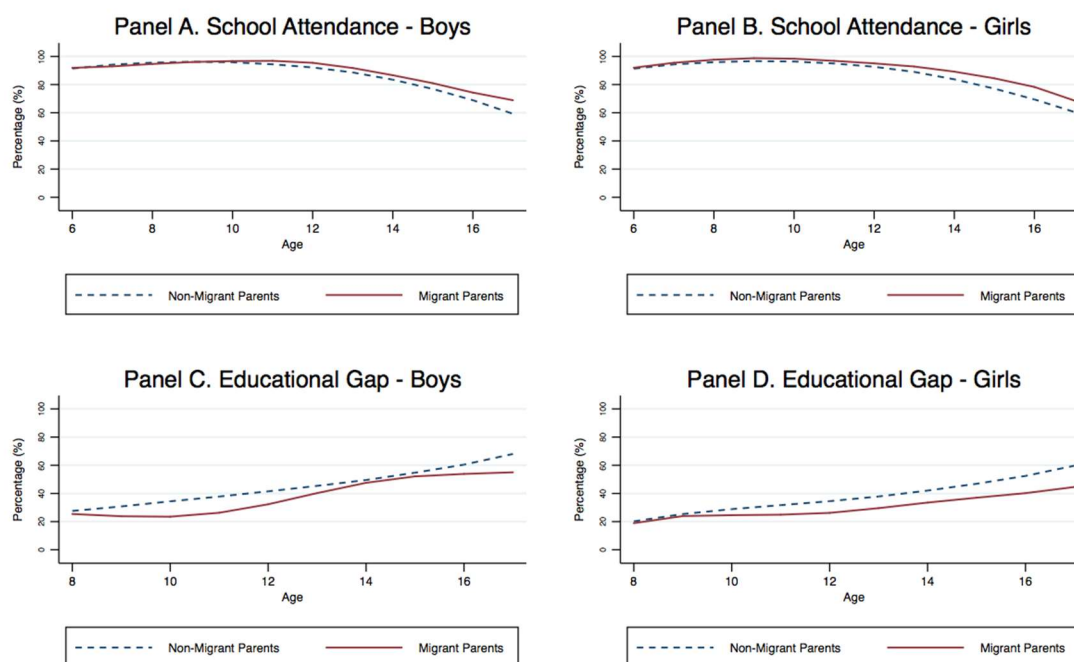
Source: Author's calculations using EHPM (2016, 2017).

On average, around 88 percent of children between the ages of 6 to 17 attend school. Primary and secondary school attendance can be broadly divided into children ages 6 to 12 and those ages 13 to 17 attending school, respectively. Primary education is nearly universal in El Salvador with 96 percent of children ages 6 to 12 attending school; whereas, 79 percent of

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study differ very little from those provided by UNICEF, which can be the result of employing different definitions of family structure and of the 5-year difference in data.

children attend secondary education.[12] Figure 1 shows that there are some differences in school attendance between boys and girls but these are small for both primary and secondary education. However, children with migrant parents exhibit slightly higher secondary school attendance than children with non-migrant parents.

On the other hand, 41 percent of children ages 8 to 17 have some schooling lag. Although school attendance has increased widely in Latin America and the Caribbean, the main issue is not coverage but education quality (Robles and Duryea, 2016). Children with migrant parents, particularly girls, exhibit lower educational lag than children with non-migrant parents. Educational gap increases with children's age and boys exhibit higher schooling lag than girls. These figures are in line with evidence showing that girls finish and attend school at the same rate or higher than boys in Latin America and the Caribbean, but boys continue outperforming girls in standardized learning assessments (Arias and Bornacelly, 2017). These statistics are informative of the observed differences in educational outcomes between boys and girls with migrant and non-migrant parents. However, these differences could arise due to other factors influencing both parent migration and schooling outcomes simultaneously. The empirical analysis will determine whether the differences observed are caused by parent migration.

Table 1 shows the descriptive statistics of the total sample of children ages 6 to 17 as well as disaggregated by migrant status of parent.[13] On average, children live in a household with approximately 5 members, 57 percent of them live in an urban area and 51 percent are male. Around 5.9 percent of children have a migrant parent, 3.6 percent a migrant father, 1.6 percent a migrant mother and for a small percentage of 0.7, both parents have migrated. Moreover, there are some differences between children with migrant and non-migrant parents. Children with migrant parents are slightly older than those with non-migrant parents, which could also indicate that parents of older children are more likely to migrate. And children with migrant parents have on average a higher household income, fewer number household members and have more years of schooling than children with non-migrant parents.

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[12] These statistics are in line with evidence showing that primary school attendance is close to universal in Latin America and the Caribbean, around 98 percent, and secondary education averages 84 percent (Robles and Duryea, 2016).

[13] Table 2 in the Appendix provides more detailed summary statistics of children including employment and inactivity indicators by gender and migrant status of parent as well as some characteristics of their mothers when the father is the migrant.

Table 1. Descriptive Statistics Children Ages 6 to 17

Variable	All Children		Migrant Parents		Non-Migrant Parents	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Migrant Parent	0.06	0.25				
Migrant Father	0.04	0.20				
Migrant Mother	0.02	0.13				
Both Parents Have Migrated	0.01	0.09				
Number of Household Members	5.18	2.00	4.56	1.89	5.23	2.00
Living in an Urban Area	0.49	0.50	0.42	0.49	0.49	0.50
Average Household Income	109.09	114.02	126.35	89.25	107.88	115.46
Age	11.81	3.47	12.02	3.41	11.79	3.48
Gender (Boy)	0.51	0.50	0.50	0.50	0.51	0.50
Years of Schooling	4.31	3.18	4.71	3.19	4.28	3.17
School Attendance (6-17)	0.88	0.32	0.90	0.30	0.88	0.32
School Attendance Boys (6-17)	0.88	0.32	0.88	0.32	0.88	0.32
School Attendance Girls (6-17)	0.88	0.32	0.92	0.28	0.88	0.33
School Attendance (6-12)	0.96	0.20	0.96	0.20	0.96	0.20
School Attendance Boys (6-12)	0.96	0.21	0.94	0.23	0.96	0.20
School Attendance Girls (6-12)	0.96	0.19	0.97	0.16	0.96	0.19
School Attendance (13-17)	0.79	0.40	0.84	0.37	0.79	0.41
School Attendance Boys (13-17)	0.80	0.40	0.83	0.38	0.80	0.40
School Attendance Girls (13-17)	0.79	0.41	0.85	0.35	0.78	0.41
Educational Gap (8-17)	0.41	0.49	0.34	0.47	0.41	0.49
Educational Gap Boys (8-17)	0.44	0.50	0.38	0.48	0.44	0.50
Educational Gap Girls (8-17)	0.37	0.48	0.30	0.46	0.38	0.48

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).

4 Empirical Strategy

4.1 Identification Strategy

In order to assess the effect of having a migrant parent on children's schooling outcomes I estimate the following equation:

$$schooling_i = \alpha + \beta(migrantparent_i) + \gamma(X_i) + \varphi_d + \varphi_t + \varepsilon_i \qquad (1)$$

where the dependent variable $schooling_i$ of child *i* could equal: (1) school attendance, a dummy variable equal to 1 if child between 6 to 17 attends school, 0 otherwise; or (2) schooling lag, a dummy variable equal to 1 if child between 8 to 17 is at least 2 years behind the school grade they should be attending given their corresponding age for children, 0 otherwise. The

independent variable of interest is $migrantparent_i$, which is a dummy variable equal to 1 if a child has at least one parent absent due to migration, 0 otherwise. It is worth noting that the control group captures children who live with both parents as well as children whose parents are absent due to abandonment, death or other factors. Given that the education outcomes analyzed are dichotomous variables, my main estimation method is a linear probability model (LPM) to obtain the likelihood of attending school or lagging behind in school. I also employ maximum-likelihood estimation and report the average marginal effects of a probit model for comparability. The vector of covariates X_i includes child characteristics such as gender, age, whether the child resides in an urban or rural area, number of household members. φ_d captures department fixed effects to control for time-invariant unobserved characteristics at the department level that could impact both parent migration and schooling outcomes. And φ_t refers to time fixed effects.

One concern with estimating equation (1) through OLS estimation is that the coefficient of interest, β, is endogenous. On one hand, the reasons that might drive parents to migrate, such as a negative household economic shock, a natural disaster, local violence, might be the same reasons that prevent children from attending school or lagging behind. On the other hand, migration is not random and there might be specific characteristics of the migrants that make them more likely to migrate such as education, ambition, ability, skills, migrant networks abroad and other unobservable characteristics. Individuals endowed with certain characteristics may self-select into migration and these characteristics may also influence their children's education outcomes.

I account for the endogeneity of having a migrant parent by using a shift-share instrument that provides a source of exogenous variation in migration outflows of Salvadorans at the canton level. Shift-share or Bartik instruments were introduced by Bartik (1991) and estimate the differential effect of a set of national industry shocks, or shifters, on units exposed to them, and whose exposure depends on a set of local industry weights, or shares.[14] The present study uses a variation of this instrument design predicting migration outflows, instead of migration inflows. More specifically, this paper instruments for parent migration in El Salvador by estimating the predicted outflow of Salvadorans into the U.S. using the historic share of Salvadoran migrants in 2007 at the canton level interacted with the aggregate change of stock of immigrants in the U.S.

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[14] Many influential studies have employed variations of this instrument design mainly in the trade and migration literature (Altonji and Card, 1991; Card, 2001; Bianchi et al., 2012; Autor, Dorn and Hanson, 2016; Peri, 2016).

from Central America, excluding El Salvador, from 2005 to 2017. The change of stock of immigrants from Central America, excluding El Salvador, living in the U.S. is potentially correlated with migration outflows from El Salvador but is not correlated with specific characteristics of cities or individuals in El Salvador that could have an impact on both migration decisions and education outcomes. The instrument predicts migration outflows that are independent of economic or demographic differences across cantons in El Salvador in order to obtain an exogenous source of variation in the distribution of Salvadoran migrants.

Employing IV estimation, the migration status of the parent is estimated using the following first-stage regression:

$$migrantparent_i = \beta \Pr(outflow\ of\ Salvadorans\ to\ U.S.)_{cm} + \gamma(X_i) + \varphi_d + \varphi_t + \varepsilon_i \quad (2)$$

where the predicted outflow of Salvadorans to the U.S. in canton c of municipality m is given by:

$$\Pr(outflow\ of\ Salvadorans\ to\ U.S.)_{cm}$$
$$= \left[\frac{1}{Population_{cm,2007}} ((\Delta\ immstockCA - ESA)_{2017-2005} \times \theta_{cm,2007}) \right]$$

and,

$$\theta_{cm,2007} = \frac{migrants_{cm,2007}}{\sum_{cm} migrants_{cm,2007}}$$

where $\theta_{cm,2007}$ is the share of migrants in canton c of municipality m out of the total migrants in El Salvador in 2007. $Population_{cm,2007}$ is the total population in canton c of municipality m in 2007. And $(\Delta immstockCA - ESA)_{2017-2005}$ is the change of stock of immigrants from Central America living in the U.S. excluding El Salvador from 2005 to 2017.[15] The Central American countries included are Guatemala, Honduras, Nicaragua, Costa Rica and Panama. X_i is again a set of control variables including child's gender and age, whether the child resides in an urban or rural area, and the number of household members. And φ_d and φ_t capture department and year fixed effects, respectively. Moreover, I cluster the standard errors at the municipality level to allow for arbitrary correlation within municipalities.

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[15] The migrant share is estimated in 2007 using the last Salvadoran census available, and the change of stock of immigrants from Central America to the U.S. is estimated from 2005 given that the U.N. Population Division reports trends in international migrant stock every five years.

To start, I assess the relevance and strength of the instrumental variable employed. Table 2 below presents the results of the first-stage regression in equation (2) using a linear probability model for the entire sample of children between the ages of 6 to 17. Table 2 shows that a 1 percent increase in the predicted outflow of Salvadorans into the U.S. leads to a 14.7 percent increase in the probability of having a migrant parent which is statistically significant at the 1 percent confidence level. Moreover, the F-statistic on the excluded instruments is 12.69, which is above the threshold of 10. These first-stage results support the relevance of the instrumental variable.

Table 2. Parent Migration First Stage Regression

VARIABLES	Migrant Parent
Predicted Outflow Rate of Salvadorans	0.147***
	(0.034)
Observations	33,713
R-squared	0.028
Number of Municipalities	212
Year FE	✓
Department FE	✓
Controls×Year FE	✓
F-test	12.69

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).

Note: Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.10$

4.2 Threats to Identification

Although shift-share instruments have been widely used in the migration literature, recent studies have discussed several limitations associated mainly with the exclusion restriction. Goldsmith-Pinkham et al. (2018) argue that the exogeneity of the Bartik instrument comes mainly from the shares not from the growth rates. The authors suggest checking the extent to which the initial local shares are correlated with potential confounders such as initial period characteristics driving migration. Therefore, it is recommended to check whether economic conditions prior to 2007, which pushed more or less migrants out of certain areas in El Salvador, have predictive power on educational outcomes and where migrants are leaving from in the present. In order to account for this, I control for push factors of migration in El Salvador, namely poverty and

violence, prior to 2007 at the municipal level.[16] And I interact them with time fixed effects to flexibly control for municipal-specific drivers of migration over time. I add these controls to equation (1) throughout the entire analysis. As the results show in the following section, controlling for these determinants of migration do not alter my estimates.

Furthermore, Jaeger et al. (2018) argue that shift-share instruments capture not only the short-term impact of migration but also the longer-term adjustment process of previous migration flows. This could be the case if less developed municipalities with high migration in 2007, exhibit better education outcomes 10 years later due to the positive impact of remittances sent by migrants which have led to higher development in those municipalities over time. An alternative case would be, if cantons with a higher proportion of migrants in 2007 exhibited then worse schooling outcomes than municipalities with lower migrants due to the low return to education associated with the prospect of migration (McKenzie and Rapoport, 2005), which has persisted over time.[17] Hence, it is important to check if the instrument is correlated with economic conditions in the past and present. I perform several falsification exercises following Mayda et al. (2018) to address some threats to identification.[18] First, I regress the predicted migration rate estimated by the instrument on prior and current economic characteristics which allow me to test the exclusion restriction that the instrument has an impact on current schooling outcomes only through its effect on parent migration. Table 3 in the Appendix shows the results of regressing the predicted outflow of Salvadorans on school attendance and school attainment in 2007, both controlling for violence and poverty prior to 2007 and without controls. And Table 4 in the Appendix regresses the instrument on current school attendance, educational lag and school attainment with and without controls. The results of tables 3 and 4 in the Appendix show that past and current educational outcomes have no significant effect on the predicted outflow of Salvadorans. Hence, the instrument does not seem to capture long-term adjustments of education outcomes as a result of previous migration flows. Moreover, using 2007 to identify the past share

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[16] A recent report by the Salvadoran Ministry of Foreign Affairs (MRREE, 2017) identifies that the four main drivers of Salvadoran migration are economic reasons, family reunification, insecurity and violence.

[17] McKenzie and Rapoport (2005) find a negative or disincentive effect of migration on schooling particularly for boys in Mexico driven by the low return to education associated with the prospect of carrying out intermediate- and low-skill jobs in destination country which decreases average education levels in highly migrant rural areas.

[18] Mayda et al. (2018) investigate the impact of immigration to the United States on the vote share for the Republican Party from 1990 to 2010 and employ an extension of the shift-share instrument to achieve identification. In order to address some threats to identification, the authors carry out several falsification tests, I incorporate and adapt some of these tests to the present study.

of migrants is broad enough to avoid exogeneity problems in terms of education outcomes 10 years later. In fact, several studies using shift-share instruments employ lags of one decade, which mitigates the possibility of the instrument capturing long-term adjustments as responses to migratory flows (Altonji and Card, 1991; Card, 2009).

Finally, I carry out a falsification test to check if the instrument is actually capturing parent migration or parent absence in general. In order to do this, I regress the predicted migration outflows measured by the instrument on a dummy variable that equals 1 if a child has a parent absent due to abandonment, death or other reasons and 0 if living with both parents. Table 5 in the Appendix shows that the instrument has no effect on predicting parent absence, confirming that the instrument predicts migration outflows. These tests give me confidence that the shift-share instrument allows me to identify the causal effect of parent migration on educational outcomes of children left behind in El Salvador.

5 Results

5.1 OLS Results

Table 3 reports the OLS results of equation (1) for school attendance and educational lag. Columns (1) and (3) present results with no controls, in columns (2) and (4) I control for child's gender, age, area of residence and household size. Table 3 shows that having a migrant parent increases children's likelihood of attending school by 4 percent and decreases their probability of lagging behind in school by 7.1 percent. These results do not change significantly when I control for child characteristics such as gender, age, area of residence and household size.[19]

Moreover, child's age, gender, area of residence and household size are all important determinants of children's schooling outcomes. Table 3 shows that boys exhibit a lower probability of attending school, and a higher probability of falling behind in school than girls, although this effect is not statistically significant for school attendance. As children get older, they have a lower probability of attending school and a higher probability of lagging behind in school where the magnitude of the coefficients becomes larger as age increases. In fact, 17-year

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[19] I also estimate equation (1) additionally controlling for whether extended family such as grandparents live in the same household and for household income. The presence of extended family does not significantly impact children's schooling outcomes; however, household income does have a positive and significant effect on children's education. I do not include these results in the analysis as the presence of extended family is not statistically significant and household income is endogenous, but results can be made available upon request.

olds exhibit a 30 percent lower probability of attending school and a 40 percent higher likelihood of lagging behind in school than six-year olds. Moreover, children living in urban settings exhibit better schooling outcomes than those living in rural areas. And having a higher number of household members has a negative effect on children's schooling.

Table 3. Children's Educational Outcomes and Parent Migration, OLS Regression

VARIABLES	School Attendance		Educational Gap	
	(1)	(2)	(3)	(4)
Migrant Parent	0.040***	0.042***	-0.071***	-0.063***
	(0.007)	(0.007)	(0.014)	(0.014)
Child's a Boy		-0.004		0.067***
		(0.004)		(0.006)
Age 7		0.060***		
		(0.007)		
Age 8		0.073***		
		(0.007)		
Age 9		0.072***		0.034***
		(0.007)		(0.012)
Age 10		0.068***		0.086***
		(0.007)		(0.012)
Age 11		0.061***		0.111***
		(0.007)		(0.013)
Age 12		0.043***		0.110***
		(0.008)		(0.012)
Age 13		-0.001		0.167***
		(0.011)		(0.014)
Age 14		-0.031***		0.231***
		(0.010)		(0.013)
Age 15		-0.108***		0.250***
		(0.012)		(0.014)
Age 16		-0.200***		0.305***
		(0.016)		(0.014)
Age 17		-0.300***		0.399***
		(0.016)		(0.013)
Urban Area		0.079***		-0.116***
		(0.007)		(0.011)
Household Size		-0.005***		0.020***
		(0.001)		(0.002)
Observations	33,713	33,713	28,662	28,662
Number of Municipalities	212	212	212	212
Year FE	✓	✓	✓	✓
Department FE	✓	✓	✓	✓

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).

Note: Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.10$

OLS estimation shows that children who have a migrant parent exhibit overall a higher likelihood of attending school and a lower probability of lagging behind in school than children with non-migrant parents. These findings are in line with the positive impact of remittances on children's educational outcomes found by several studies (Acosta, 2006; Cox, Edwards & Ureta, 2003 Lopez-Cordoba, 2005; Yang, 2006; Bouoiyour and Miftah, 2016; Coon, 2016).

5.2 2SLS and Reduced Form Results

Tables 4 and 6 present the results of the IV analysis of the effect of parent migration on school attendance and educational lag, respectively. In each table, columns (1) and (4) present the linear probability model results of equation (1) for comparability. Columns (2) and (5) give the reduced form estimates. Columns (3) and (6) report the 2SLS results. And columns (7) and (8) present the marginal effects of Probit and IV Probit estimations. In both Tables 4 and 6, columns (4) to (8) flexibly control for municipal-level drivers of migration over time, which I consistently control for in the rest of the analysis.[20]

Table 4 shows that once accounting for the endogeneity of migration, children ages 6 to 17 who have a migrant parent exhibit a lower probability of attending school. This negative effect is consistent across reduced form, 2SLS and IV-Probit estimations, where the magnitude of the effects through Probit and IV-Probit estimation are also consistent with the results obtained through OLS and 2SLS, respectively. Results do not change significantly once I flexibly control for municipal-level drivers of migration over time. The sign change of the coefficient of interest from OLS to IV estimation suggests that children whose parents have migrated have unobserved characteristics that directly impact their schooling decisions. For instance, it could be that migrant parents care a lot about the education of their children which might be one of the reasons that drive them to self-select into migration. But once I account for this, the overall effect of parental absence due to migration on schooling outcomes becomes negative. Other studies analyzing the impact of parent migration on children's education have also found a negative effect on school attendance (Antman, 2011, McKenzie and Rapoport,

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[20] Addressing one of the critics of shift-share instruments associated with the exogeneity of the instrument coming mainly from the shares (Goldsmith-Pinkham et al., 2018), I check if the initial migration shares in 2007 are correlated with any potential confounders. In order to account for this, I control for poverty and violence, both determinants of migration in El Salvador (MRREE, 2017), and interact them with time fixed effects to establish whether economic conditions before 2007, which pushed more or less migrants out of certain cantons in El Salvador, have predictive power on educational outcomes and where migrants are leaving from in the present.

2011) and have also reported a sign change from OLS to IV estimation (McKenzie and Rapoport, 2011).

Table 4. Migrant Parents and School Attendance, Children 6-17

VARIABLE	(1) LPM	(2) RF	(3) 2SLS	(4) LPM	(5) RF	(6) 2SLS	(7) Probit	(8) IV-Probit
Migrant Parent	0.038***	-0.076**	-0.463**	0.042***	-0.081***	-0.553**	0.042***	-0.425***
	(0.007)	(0.031)	(0.228)	(0.007)	(0.030)	(0.218)	(0.008)	(0.124)
			First-stage			First-stage		
Predicted Outflow Rate of Salvadorans			0.148***			0.147***		
			(0.033)			(0.034)		
Observations	33,713	33,713	33,713	33,713	33,713	33,713	33,713	33,713
Number of Municipalities	212	212	212	212	212	212	212	212
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls×Year FE				✓	✓	✓	✓	✓
F-statistic			19.49			19.04		
Mean Dependent Variable	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).

Note: Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.10$

I further analyze whether parent migration affects children differently depending on their age. I divide the analysis of school attendance into two age groups, children between the ages of 6 to 12 and those between the ages of 13 to 17, which broadly capture primary and secondary school attendance. Table 5 presents the OLS, reduced form and 2SLS results for the two age groups. Table 5 shows that both younger and older children with migrant parents exhibit a lower probability of attending school through IV estimation, but the effect is stronger in significance and magnitude for older children. These results show that older children are more negatively affected by the migration of parents, which is consistent with other studies finding a stronger negative effect on education for older children (McKenzie and Rapoport, 2011; Antman, 2010).

Table 5. School Attendance and Parent Migration, Children 6-12 and 13-17

	Children 6-12			Children 13-17		
	(1)	(2)	(3)	(4)	(5)	(6)
	LPM	RF	2SLS	LPM	RF	2SLS
Migrant Parent	0.008	-0.045*	-0.355*	0.077***	-0.134**	-0.787**
	(0.006)	(0.024)	(0.205)	(0.012)	(0.062)	(0.382)
			First-stage			First-stage
Predicted Outflow Rate of			0.128***			0.170***
Salvadorans			(0.035)			(0.041)
Observations	18,261	18,261	18,261	15,452	15,452	15,452
Number of Municipalities	212	212	212	212	212	212
Year FE	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓	✓
F-statistic			13.25			17.15
Mean Dependent Variable	0.96	0.96	0.96	0.79	0.79	0.79

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).

Note: Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.10$

Table 6 presents the OLS, IV and Probit results of the effect of parent migration on educational lag of children ages 8 to 17. The reduced form and 2SLS estimates show that children with migrant parents exhibit a higher probability of lagging behind in school, but the effect is not statistically significant. However, the direction of the effect is consistent with existing evidence finding a negative impact of parent migration on children's schooling lag in the Philippines (Cortes, 2015).[21] Results do not change significantly when flexibly controlling for economic characteristics prior to the current migration flow.

The magnitudes of the coefficients through 2SLS estimation are large particularly for school attendance. This is not due to having a weak instrument, as the first-stage results show that the instrument is relevant. Instead, it is the result of having a very peculiar group of compliers with high incentives of dropping out of school to work or migrate. The reduced form estimates capture the intention to treat (ITT) or the effect of being assigned to treatment on educational outcomes for the entire population of children. While the 2SLS estimates capture the local average treatment effect for compliers only. The group of compliers has high labor market

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[21] Cortes (2015) finds evidence that children in the Philippines with a migrant mother have a higher probability of lagging behind in school compared to children with a migrant father, which is largely driven by lower parental inputs when the mother is absent.

incentives abroad as well as strong migrant networks that highly influence their schooling decisions. Moreover, unobservable characteristics of migrants such as ambition, being risk-takers, valuing success, are characteristics that can also be shaped by the area where they live through the experience of previous migrants. In this way, this group of compliers may assign a higher value to work than to school as a result of an expected lower return to education when abroad. Other studies analyzing the effects of parent migration on educational outcomes using IV estimation, although a different instrument, find similar large effects. For instance, Antman (2011) analyzes the short-run effects of a father's migration on children's schooling and work outcomes in Mexico and finds that father's migration decreases children's probability of participating in school by 0.46 for all children, and by 1.13 and 0.83 for boys and girls ages 12 to 15, respectively.[22] Hence, large effects can be expected on such a particular group of compliers.

Table 6. Schooling Lag and Parent Migration, Children Ages 8-17

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	LPM	RF	2SLS	LPM	RF	2SLS	Probit	IV-Probit
Migrant Parent	-0.063***	0.033	0.217	-0.063***	0.041	0.273	-0.063***	0.269
	(0.014)	(0.057)	(0.382)	(0.014)	(0.058)	(0.394)	(0.014)	(0.351)
Predicted Outflow Rate of Salvadorans			First-stage 0.152*** (0.034)			First-stage 0.152*** (0.034)		
Observations	28,662	28,662	28,662	28,662	28,662	28,662	28,662	28,662
Number of Municipalities	212	212	212	212	212	212	212	212
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls×Year FE				✓	✓	✓	✓	✓
F-statistic			20.25			19.79		
Mean Dependent Variable	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

5.3 Heterogeneous Effects

The impact of migration on children's schooling may vary with child's gender, age and area of residence. Tables 7 to 9 report the results of OLS, reduced form and 2SLS estimation of the effect of parent migration, interacted with the gender, age and area of residence of the child. Table 7 shows that boys and girls with migrant parents between 6 to 12 years of age exhibit a

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[22] Antman (2011) uses as an instrument the city economic conditions in migrant destination country

lower probability of attending school than girls with non-migrant parents; but the effect is not statistically significant. However, there are significant differences in school attendance between older boys and girls. Boys ages 13 to 17 with a migrant parent exhibit a 68 percent lower probability of attending school than girls with non-migrant parents. Older girls with migrant parents also show a lower probability of attending school than girls with non-migrant parents but this effect is not statistically significant.

Table 7. Schooling Outcomes and Parent Migration by Child's Gender

	School Attendance 6-12			School Attendance 13-17			Schooling Lag 8-17		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	LPM	RF	2SLS	LPM	RF	2SLS	LPM	RF	2SLS
Gender(Boy=1)×									
Migrant Parent	-0.013	-0.022	-0.079	-0.031	-0.170**	-0.684**	0.022	0.093*	0.421*
	(0.011)	(0.035)	(0.161)	(0.022)	(0.066)	(0.305)	(0.026)	(0.055)	(0.248)
Migrant Parent	0.015**	-0.035	-0.317	0.092***	-0.049	-0.387	-0.074***	-0.005	0.061
	(0.007)	(0.025)	(0.218)	(0.018)	(0.073)	(0.395)	(0.019)	(0.064)	(0.368)
Gender(Boy=1)	-0.003	-0.002	-0.000	-0.003	0.015	0.042**	0.066***	0.056**	0.041**
	(0.003)	(0.005)	(0.011)	(0.008)	(0.011)	(0.021)	(0.006)	(0.009)	(0.017)
Observations	18,261	18,261	18,261	15,452	15,452	15,452	28,662	28,662	28,662
Number of Municipalities	212	212	212	212	212	212	212	212	212
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
F-statistic			8.806			16			11.62
Mean Dependent Variable	0.96	0.96	0.96	0.79	0.79	0.79	0.41	0.41	0.41

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).
Note: Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.10$

Although no effect was found previously on schooling lag, this analysis shows that boys ages 8 to 17 with migrant parents exhibit a 42 percent higher probability of lagging behind in school, effect that is only significant at the 10 percent level. No statistically significant effect is found on schooling lag for girls. The magnitude of the effect of parent migration on school attendance of older boys is particularly large.

As a robustness check, I carry out the same analysis additionally controlling for unobserved heterogeneity within the household for a subsample of children living in households where there are at least two children. Table 6 in the Appendix reports OLS, reduced form and 2SLS results of the effect of parental absence on school attendance and schooling lag by gender of the child additionally controlling for household fixed effects. Table 6 shows that the strong

negative effect for boys persists where boys with migrant parents have a 54 percent lower probability of attending school than girls. In this case, no significant gender differences are found for schooling lag.

Moreover, I divide children into three age groups, 6 to 9, 10 to 13, and 14 to 17 to further explore how parent migration impacts children's school attendance and schooling lag by their age. Table 8 shows that children with a migrant parent ages 10 to 13 and those ages 14 to 17 have a lower probability of attending school than children ages 6 to 12 with non-migrant parents. The magnitude of the effect is strongest for the eldest group of children. On the other hand, the effect of having a migrant parent on lagging behind in school is positive for older children ages 14 to 17 and negative for children ages 10 to 13, but both of these effects are not statistically significant.

Table 8. Schooling Outcomes and Parent Migration by Child's Age Group

	School Attendance			Schooling Lag		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	LPM	RF	2SLS	LPM	RF	2SLS
Age10_13×Migrant	0.018	-0.101**	-0.453**	-0.035	-0.018	-0.104
	(0.012)	(0.040)	(0.206)	(0.030)	(0.121)	(0.527)
Age14_17×Migrant	0.064***	-0.312***	-1.238**	-0.038	0.055	0.170
	(0.018)	(0.094)	(0.504)	(0.034)	(0.097)	(0.435)
Migrant Parent	0.012	0.068*	0.132	-0.032	0.020	0.199
	(0.011)	(0.040)	(0.252)	(0.029)	(0.070)	(0.421)
Age10_13	-0.011***	0.003	0.021*	0.105***	0.104***	0.106***
	(0.004)	(0.005)	(0.012)	(0.009)	(0.015)	(0.033)
Age14_17	-0.218***	-0.176***	-0.129***	0.283***	0.273***	0.265***
	(0.010)	(0.014)	(0.033)	(0.010)	(0.014)	(0.028)
Observations	33,713	33,713	33,713	28,662	28,662	28,662
Number of Municipalities	212	212	212	212	212	212
Year FE	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓	✓
F-statistic			15.30			15.58
Mean Dependent Variable	0.88	0.88	0.88	0.41	0.41	0.41

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

I check if these results prevail once controlling for time-invariant unobserved household heterogeneity. Table 7 shows that once I control for household fixed effects, children between 14 and 17 years of age who have a migrant parent exhibit a lower probability of attending school than children 6 to 9 with non-migrant parents. In this case, I do not find a significant effect for children ages 10 to 13, signaling a persistent negative effect of parent absence due to migration on older children who should be attending secondary school. Again, no significant effect is found on schooling lag across all age groups. These results reinforce previous findings that particularly older children's education is adversely impacted by parent migration.

In addition, it is possible that there are differences in how children with migrant parents are affected depending on whether they live in rural or urban settings. To start, overall school attendance of children between the ages of 6 to 17 is higher in urban areas, 93 percent, than in rural areas, 83 percent. And there is a higher percentage of children with migrant parents living in rural areas, 6.7 percent, than in urban areas, 5.2 percent. Table 9 presents the OLS, reduced form and 2SLS results of the effect of the interaction between area of residence and parent migration on school attendance and schooling lag. Table 9 shows that both younger and older children living in rural areas exhibit a lower probability of attending school where the effect is stronger in magnitude and significance for older children. On the other hand, older children living in urban areas exhibit a higher likelihood of attending school and a lower probability of falling behind in school than children with non-migrant parents living in rural areas. These results show that parent migration has a positive effect on education outcomes of children living in urban areas, and a strong negative effect on children living in rural areas.

The observed effect could be a combination of better schooling outcomes and a lower proportion of children with migrant parents in urban settings. Controlling for department fixed effects accounts for time-invariant heterogeneities at the department level, but does not fully account for differences between rural and urban settings within departments. As a robustness check, I carry out the same analysis additionally controlling for canton fixed effects, which allows accounting for rural and urban differences within municipalities.[23] The results are detailed in Table 8 of the Appendix and show that once I control for time-invariant observed and unobserved characteristics between rural and urban areas, children with migrant parents living in

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[23] There are 262 municipalities in El Salvador, which are divided in urban areas and different cantons comprised of rural divisions.

urban areas do not exhibit better educational outcomes than children in rural areas. In fact, the effect of parent migration is negative across all specifications, but it is not statistically significant. Hence, parent migration impacts children's schooling differently depending on whether they live in rural or urban areas, but these contrasting effects can be largely attributed to differences in the level of development between rural and urban areas.

Table 9. Schooling Outcomes and Parent Migration by Child's Area of Residence

	School Attendance 6-12			School Attendance 13-17			Schooling Lag 8-17		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	LPM	RF	2SLS	LPM	RF	2SLS	LPM	RF	2SLS
Area×Migrant	-0.003	0.041	0.140	-0.029	0.359***	1.113***	-0.040	-0.427***	-1.544***
	(0.011)	(0.052)	(0.201)	(0.023)	(0.112)	(0.379)	(0.025)	(0.121)	(0.466)
Migrant Parent	0.009	-0.052*	-0.383*	0.090***	-0.196***	-1.038***	-0.046***	0.112*	0.586
	(0.008)	(0.027)	(0.214)	(0.018)	(0.063)	(0.391)	(0.017)	(0.060)	(0.425)
Area(Urban=1)	0.014***	0.009	0.003	0.147***	0.102***	0.063**	-0.111***	-0.060***	-0.012
	(0.004)	(0.008)	(0.013)	(0.013)	(0.018)	(0.028)	(0.012)	(0.020)	(0.032)
Observations	18,261	18,261	18,261	15,452	15,452	15,452	28,662	28,662	28,662
Number of Municipalities	212	212	212	212	212	212	212	212	212
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
F-statistic			18.56			17.57			19.84
Mean Dependent Variable	0.96	0.96	0.96	0.79	0.79	0.79	0.41	0.41	0.41

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).
Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

6 Discussion

I have found consistent evidence that parent absence due to migration adversely impacts particularly older boys who exhibit a lower probability of attending school and a higher likelihood of lagging behind in school.[24] Given these findings, in this section I explore some factors that could mitigate the negative effect of parent migration and discuss the possible mechanisms that could be driving older boys to not attend school.

First, I analyze how parent migration impacts the financial resources available in the household by looking at its effect on remittances and household income. Around 20 percent of Salvadoran households receive remittances and 87 percent of children with migrant parents live

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[24] The effect on schooling lag is weaker as it is only significant at the 10 percent confidence level and it is not consistently significant across age groups.

in a remittance-recipient household. Remittances sent from abroad can mitigate to a certain extent the adverse effect of parental absence if these are consistent and substantial. Remittances could help pay for children's school fees, supplies, tutors, which can increase school attendance and performance.

The literature shows that the size and consistency of remittances may also depend on the gender of the migrant parent as a result of gender differences in wages in migrant host country and parental responsibilities (Abrego and LaRossa, 2009).[25] Women face more limited labor market options, lower pay and fewer opportunities for upward mobility than men. However, even though migrant mothers earn less, they are more consistent in sending remittances than fathers and might even deprive themselves to send substantial remittances (Abrego and LaRossa, 2009). As migrant fathers represent the majority of migrant parents, the negative effect on children's schooling could be partly attributed to lower financial resources available in the household if fathers do not send consistent and substantial remittances. I look at a subsample of children with a present mother and a migrant father in order to exploit information about the mother that could help explain the observed effects. Out of the sample of children whose father is absent due to migration, and live with their mother only, 94 percent of the mothers indicate that they are separated from the child's father. Hence, most children with a migrant father have parents who were not married but rather cohabiting or living separately prior to migration.[26] Child support obligations can be difficult to enforce when the non-custodial parent is in a different country.[27] In turn, the observed negative effect on children's schooling could be due to an absence of child support from fathers in the form of remittances.

Table 9 in the Appendix reports the effect of parent migration on household income and remittances. Results show that children with migrant parents live in households that receive higher remittances per capita than children with non-migrant parents, and this effect prevails through OLS and IV estimation. Therefore, even if parents are separated, parent abroad

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[25] Abrego and LaRossa (2009) provide qualitative evidence from transnational Salvadoran families in the U.S. and El Salvador on remitting behavior by gender of the migrant parent.

[26] Due to data limitations, it is not possible to establish whether parents were separated before migration or if separation came as a result of migration.

[27] El Salvador, is part of the Child Support enforcement Program, ratified in 2007 by the Hague Convention, which establishes reciprocal agreements regarding child support enforcement between the U.S. and 14 countries (Congressional Research Service, 2016). Enforcement is certainly not perfect and many parents get away with not paying child support, but it does make it more difficult for parents abroad to completely avoid responsibilities with children left in country of origin.

continues supporting the child financially. These results provide evidence of how migration does not represent abandonment of familial relationships but rather a commitment to those left behind (Nobles, 2011).[28] Table 9 in the Appendix also shows that although remittances are higher among children with migrant parents, household income per capita is lower compared to children with non-migrant parents, but this effect is not statistically significant.[29] Children with migrant parents are not economically more advantaged than children with non-migrant parents and remittances do not seem to be sufficiently large to have a positive effect on children's education.

Another possible factor that could mitigate the adverse impact of parent absence due to migration is the presence of other caretakers such as grandparents and other relatives who can act as parent figures. Grandparents and other relatives can provide emotional, financial and time support to the single parent, which can be beneficial for children. In Table 10 in the Appendix, I report whom children in El Salvador live with when father, mother or both parents have migrated, as well as when parents are absent due to abandonment and death.[30] Table 10 in the Appendix shows that when the mother has migrated and the father is present, 85 percent of children live with extended family where 68 percent live with grandparents and 17 percent with other relatives. When both parents have migrated, most children live with other relatives, 99 percent, where the majority live with grandparents, 76 percent, and 25 percent live with other relatives. Moreover, when the father is absent due to migration, 53 percent of children live with their mother only and 47 percent of them have a relative living with them, where 31 percent live with grandparents and 16.6 percent with other relatives. Hence, when the father has migrated, which is the predominant case, most mothers are raising their children alone, without the support of other relatives. This entails that the responsibility of supporting financially and emotionally children as well as providing guidance, supervision and protection falls solely on the mother.

As a result, a mechanism to consider is that older children with migrant parents may be forced to drop out of school in order to work and compensate for the lost income of the absent

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[28] Nobles (2011) provides evidence from Mexico on how parent absence due to migration and parental absence due to divorce are substantively distinct where parental migration does not represent abandonment of familiar relationships such as in the case of divorce, but it rather represents a commitment to those left behind.

[29] These results can also be driven by reversed causality, as not only parent migration has an impact on household income, but also household income impacts the decision to migrate.

[30] I do not separately look at the effect on children's schooling by gender of the migrant parent, given that in the majority of the cases, 68 percent, it is the father who has migrated; hence, the overall effect of parent migration is largely capturing the impact of absent fathers due to migration. Moreover, I do not have multiple instruments that allow me to separate the effect by gender of the migrant parent.

parent. Given that the strongest negative effect on school attendance is observed on older boys, I analyze how having a migrant parent impacts the likelihood of children ages 13 to 17 to be working and/or in school by child's gender. Table 11 in the Appendix shows that boys with migrant parents are more likely to be only working, less likely to be only studying, and less likely to be neither working nor studying. Older boys are also more likely to be working and studying, but this effect is not statistically significant. Hence, older boys with migrant parents are replacing school with work. Previous evidence from Mexico also finds that older boys with migrant parents have a higher likelihood of dropping out of school and a higher probability of working instead (Antman, 2011). Children with migrant parents receive remittances but these may not be sufficient to cover household expenses, which can push particularly older boys to work.

Table 11 in the Appendix also shows that girls with migrant parents are more likely to be neither working nor studying, but no significant effect is found on their likelihood of only working or only studying. El Salvador has one of highest proportions of girls who neither work nor study, in Latin America, 38 percent, compared to a regional average of 28 percent (Arias and Bornacelly, 2016).[31] In my sample, 17 percent of girls ages 13 to 17 are neither working nor studying, and only 7 percent of boys. Recent evidence from El Salvador shows that some of the reasons that lead particularly girls to neither work nor study include teenage pregnancy, housework and taking care of dependents (PNUD, 2018). Although having a migrant parent does not have a significant effect on girls' schooling outcomes it does increase their likelihood of being inactive, neither studying nor working. These findings suggest that parent migration leads to labor readjustments within the household where girls are more likely to be carrying out domestic work and boys have a higher probability of being working outside.[32]

Another channel to consider is that due to the reduction in the cost of migration through the strengthening of migrant networks and better knowledge of the labor market abroad, boys with migrant parents can have a higher intention to migrate. Consistent with this hypothesis, several studies find evidence in Mexico that older children, ages 16 to 18, exhibit lower school attendance due to the potential of migrating (McKenzie and Rapoport, 2011; Lara, 2015). In a

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[31] Youths between the ages of 15 to 24 who neither work nor study are usually referred to as NEETs, not in education, employment or training. Comparatively, 23 percent of boys in El Salvador ages 15 to 24 are neither working nor studying against a regional average of 12 percent.

[32] Future research should further explore this channel employing time-use data to better understand how children allocate their time. .

country with high rates of male migration like El Salvador, it is possible that a similar mechanism is in place and work could be a transition step toward migration. In order to shed light on this possible mechanism, I assess the work and study status of children with absent parents for other reasons, namely abandonment and death, to explore if child labor is linked to migration or to parental absence in general. Table 12 in the Appendix shows that boys with parents absent due to abandonment exhibit a higher probability of neither working nor studying and a lower likelihood of working and attending school. Whereas girls with a parent absent due to abandonment are more likely to be working and studying and less likely to be neither working nor studying. In the case of children with absent parents due to death, no significant effect is found across all school and work statuses. Hence, children with absent parents due to abandonment are not more likely to work, but instead are more likely to be inactive, neither working nor studying. These results show that parental absence in itself does not necessarily influence children to abandon school and work. Instead, there is an additional mechanism that pushes children with migrant parents to work, which could potentially be the intention to migrate in the future to reunify with migrant parents or to seek better economic opportunities.

Lastly, children might be reducing school attendance because they are being recruited by gangs and might also migrate to flee persecution and violence. As discussed previously, most children who have a migrant father live with single mothers and no other relatives. Living with the mother only and not counting with additional support can translate into lower supervision, guidance and protection for the child. In the context of a highly violent country like El Salvador, youths are particularly vulnerable to being recruited by gangs or get involved in criminal activities. Gang membership in El Salvador is currently estimated at around 30,000 individuals formed predominantly, 59.2 percent, by young individuals ages 13 to 25 (Cruz, Rosen, Amaya and Vorobyeva, 2017). Gang violence in and around schools can push children to drop out of school, and gang-related criminal activities can offer some youth an attractive option to staying in school (Adelman and Székely, 2016). Furthermore, as an alternative to being recruited into gangs, many youths choose to migrate. In recent years, there has been an increasing number of children from El Salvador, Guatemala and Honduras migrating to the U.S. unaccompanied, which is driven by generalized-community violence in children's countries of origin (UNHCR, 2014; UNICEF, 2016). The threat of violence, poverty and the need to seek family reunification are among the main reasons Salvadoran children and youth leave their home (CGRS and UNLa,

2015). A recent study by Clemens (2017) quantifies the impact of violence in the Northern Triangle on child migration to the United States and finds that one additional homicide leads to an increase of 3.7 unaccompanied children who are apprehended in the U.S. Youths represent a very vulnerable population in El Salvador and other Central American countries, who are in many cases persecuted and migrate to escape gangs and death.

7 Conclusion

Rising migration of family members entails increasing family disintegration where many children are left behind. Parent migration constitutes a disruptive family transition with significant health and education costs for children who remain in countries of origin. Remittances sent by migrant parents can increase the financial resources previously unavailable in the household, which can be invested toward children's education and well-being. However, the absence of one or both parents entails a reduction in the quantity and quality of parental time, leading to lower supervision, protection, guidance and emotional support. This study provides evidence of the negative impacts of migration on children's schooling in El Salvador, a country where children and youth represent an extremely vulnerable population for finding themselves with low incentives to study, little work opportunities and are at risk of being targeted by criminal groups.

I find that children with at least one migrant parent have a lower probability of attending school, where the effect is strongest for older boys ages 13 to 17. Parental migration does not have an effect on girls' school attendance but it impacts their likelihood of neither studying nor working. Overall, there are no significant effects of parent migration on children falling behind in school. Although children with migrant parents receive higher remittances, their overall income is not higher than children with non-migrant parents, which leads to labor readjustments within and outside the household. I find that older boys are replacing school for work, while girls are more likely to be neither working nor studying where they could be carrying out more domestic work.

Future research should further explore some of the mechanisms behind the negative effect of parent migration on children's schooling discussed in this study. On one hand, parent migration increases the likelihood of girls to be inactive, neither working nor studying. However, due to data limitations this paper did not explore the reasons for being inactive where time-use

data could help better understand how children of migrant parents allocate their time between school, domestic and non-domestic work. On the other hand, parent absence due to migration puts youth at higher vulnerability and migration is an alternative to gang recruitment and to the poor economic conditions they face. Parent migration represents an incentive for children themselves to migrate for family reunification purposes or to seek better economic opportunities. While older boys in marginalized and poor areas in El Salvador are at risk of being recruited into gangs where many opt to migrate to flee gang violence and persecution. Little empirical evidence exists on the drivers of child migration, which points to the need to collect more detailed data on vulnerable youth to better understand how all these risk factors are intertwined and how they can be addressed.

Policy interventions that reach youths at risk, that aim at increasing secondary school education and providing opportunities for young individuals to stay in school and occupied are key to decreasing further risky migration and gang membership. Derived policies are relevant not only for El Salvador but also for other Central American countries experiencing similar migration and violence trends.

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Appendix Table 1. Variable Description

Variable	Description
Schooling Lag	Percentage of children ages 8 to 17 who are at least 2 years behind the school grade they should be attending given their corresponding age
School Attendance	Percentage of children ages 6 to 17 who study and attend school
Migrant Parent	Dummy variable that equals 1 if child has at least one parent absent due to migration, 0 otherwise
Gender	Dummy Variable that equals 1 if child is a male and 0 if female
Area	Dummy variable that equals 1 if child lives in an urban area and 0 if in a rural area
Household size	Number of household members
General Poverty Rate 2004	Percentage of population living below the poverty line in 2004 at the municipality level
Homicide Rate 2006	Homicide rate per 100,000 inhabitants in 2006 at the municipality level

Variable	All Children		Migrant Parents		No Migrant Parents	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Child has a migrant parent	0.06	0.25				
Child has a migrant father	0.04	0.20				
Child has a migrant mother	0.02	0.13				
Child's both parents have migrated	0.01	0.09				
Number of household members	5.18	2.00	4.56	1.89	5.23	2.00
Child lives in an urban area	0.49	0.50	0.42	0.49	0.49	0.50
Average household income	109.09	114.02	126.35	89.25	107.88	115.46
Child's mother's average years of education	6.25	4.66	6.62	4.47	6.23	4.67
Child's mother's age	37.69	7.76	36.84	7.56	37.72	7.76
Child's mother is employed	0.54	0.50	0.43	0.50	0.54	0.50
Child's mother is accompanied	0.30	0.46	0.00	0.07	0.31	0.46
Child's mother is married	0.40	0.49	0.00	0.00	0.41	0.49
Child's mother is a widow	0.03	0.17	0.01	0.10	0.03	0.17
Child's mother is divorced	0.01	0.09	0.01	0.08	0.01	0.09
Child's mother is separated	0.23	0.42	0.94	0.24	0.19	0.40
Child's mother is single	0.04	0.20	0.04	0.20	0.04	0.20
Child's age	11.81	3.47	12.02	3.41	11.79	3.48
Child is a boy	0.51	0.50	0.50	0.50	0.51	0.50
Child's years of schooling	4.31	3.18	4.71	3.19	4.28	3.17
School Attendance (6-17)	0.88	0.32	0.90	0.30	0.88	0.32
School Attendance Boys (6-17)	0.88	0.32	0.88	0.32	0.88	0.32
School Attendance Girls (6-17)	0.88	0.32	0.92	0.28	0.88	0.33
School Attendance (6-12)	0.96	0.20	0.96	0.20	0.96	0.20
School Attendance Boys (6-12)	0.96	0.21	0.94	0.23	0.96	0.20
School Attendance Girls (6-12)	0.96	0.19	0.97	0.16	0.96	0.19
School Attendance (13-17)	0.79	0.40	0.84	0.37	0.79	0.41
School Attendance Boys (13-17)	0.80	0.40	0.83	0.38	0.80	0.40
School Attendance Girls (13-17)	0.79	0.41	0.85	0.35	0.78	0.41
Educational Gap (8-17)	0.41	0.49	0.34	0.47	0.41	0.49
Educational Gap Boys (8-17)	0.44	0.50	0.38	0.48	0.44	0.50
Educational Gap Girls (8-17)	0.37	0.48	0.30	0.46	0.38	0.48
Employment children (6-17)	0.10	0.31	0.08	0.28	0.11	0.31
Employment Boys (6-17)	0.15	0.35	0.12	0.33	0.15	0.36
Employment Girls (6-17)	0.06	0.24	0.05	0.21	0.06	0.24
Employment children (6-12)	0.03	0.17	0.02	0.13	0.03	0.18
Employment Boys (6-12)	0.04	0.20	0.03	0.16	0.04	0.20
Employment Girls (6-12)	0.02	0.14	0.01	0.10	0.02	0.14
Employment children (13-17)	0.19	0.39	0.15	0.36	0.19	0.39
Employment Boys (13-17)	0.27	0.44	0.21	0.41	0.27	0.45
Employment Girls (13-17)	0.11	0.31	0.08	0.27	0.11	0.31
Neither work nor study (13-17)	0.12	0.32	0.10	0.30	0.12	0.33
Neither work nor study Boys (13-17)	0.07	0.26	0.08	0.26	0.07	0.26
Neither work nor study Girls (13-17)	0.17	0.38	0.08	0.27	0.11	0.31

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).

Appendix Table 3. Predicted Outflow Rate of Salvadorans and Past Education

VARIABLES	(1)	(2)	(3)	(4)
School Attainment$_{2007}$	-0.003	-0.003		
	(0.00)	(0.00)		
School Attendance$_{2007}$			0.047	0.053
			(0.06)	(0.06)
Observations	797	797	797	797
R-squared	0.343	0.335	0.343	0.335
Number of Municipalities	212	212	212	212
Department FE	✓	✓	✓	✓
Controls	✓		✓	

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

Appendix Table 4. Predicted Outflow Rate of Salvadorans and Current Education

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
School Attendance	-0.022	-0.021				
	(0.039)	(0.039)				
Educational Gap			-0.003	-0.003		
			(0.027)	(0.027)		
Completed Years of Education					0.002	0.002
					(0.006)	(0.006)
Observations	797	797	797	797	797	797
R-squared	0.335	0.334	0.335	0.334	0.335	0.334
Number of Municipalities	212	212	212	212	212	212
Department FE	✓	✓	✓	✓	✓	✓
Controls	✓		✓		✓	

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).
Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

Appendix Table 5. Parental Absence Other Reasons and Predicted Outflow Rate of Salvadorans

VARIABLES	(1) Absent Parent	(2) Migrant Parent
Predicted Outflow Rate of Salvadorans	0.077	0.147***
	(0.061)	(0.034)
Observations	32,101	33,713
R-squared	0.032	0.028
No. Municipalities	212	212
Year FE	✓	✓
Department FE	✓	✓
Controls× Year FE	✓	✓

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

Appendix Table 6. Schooling Outcomes, Migrant Parent by Child's Gender

	School Attendance 6-17			Educational Gap 8-17		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	LPM	RF	2SLS	LPM	RF	2SLS
Gender×MigrantParent	-0.014	-0.130***	-0.539**	0.029	0.107	0.491
	-0.021	-0.042	-0.22	-0.034	-0.082	-0.363
Migrant Parent	0.075***			0.012		
	-0.025			-0.053		
Gender(boy=1)	-0.008	0.007	0.026*	0.064***	0.053***	0.035
	-0.005	-0.008	-0.015	-0.009	-0.014	-0.026
Observations	22394	22394	22394	17737	17737	17737
Number of Municipalities	212	212	212	212	212	212
Household FE	✓	✓	✓	✓	✓	✓
F-statistic			10.37			9.521

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

Appendix Table 7. Schooling Outcomes, Migrant Parent by Child's Age Group

VARIABLES	School Attendance 6-17			Educational Gap 8-17		
	(1)	(2)	(3)	(4)	(5)	(6)
	LPM	RF	2SLS	LPM	RF	2SLS
Age10_13×Migrant	0.010	-0.086	-0.486	-0.015	-0.145	-0.789
	(0.025)	(0.058)	(0.327)	(0.048)	(0.113)	(0.703)
Age14_17×Migrant	0.075***	-0.273***	-1.220***	-0.006	0.000	-0.172
	(0.024)	(0.097)	(0.459)	(0.051)	(0.116)	(0.734)
Migrant Parent	0.044			0.029		
	(0.028)			(0.060)		
Age10_13	-0.003	0.007	0.019	0.099***	0.116***	0.145***
	(0.005)	(0.008)	(0.018)	(0.011)	(0.017)	(0.038)
Age14_17	-0.203***	-0.167***	-0.136***	0.253***	0.253***	0.260***
	(0.012)	(0.015)	(0.025)	(0.012)	(0.017)	(0.036)
Observations	22,394	22,394	22,394	17,737	17,737	17,737
Number of Municipalities	212	212	212	212	212	212
Household FE	✓	✓	✓	✓	✓	✓
F-statistic			9.111			9.230

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

Appendix Table 8. Schooling Outcomes, Migrant Parent and Area of Residence

	School Attendance 6-17			Educational Gap 8-17		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	LPM	RF	2SLS	LPM	RF	2SLS
Area×MigrantParent	-0.015	-0.037	-0.096	-0.025	-0.084	-0.211
	(0.015)	(0.203)	(0.524)	(0.027)	(0.338)	(0.835)
Migrant Parent	0.055***			-0.050***		
	(0.011)			(0.019)		
Area(urban=1)	0.009	0.012	0.014	0.010	0.017	0.022
	(0.017)	(0.026)	(0.036)	(0.027)	(0.041)	(0.057)
Observations	33,713	33,713	33,713	28,662	28,662	28,662
Number of Municipalities	212	212	212	212	212	212
Year FE	✓	✓	✓	✓	✓	✓
Canton FE	✓	✓	✓	✓	✓	✓
F-statistic			28.72			23.20

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).

Note: Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.10$

Appendix Table 9. Parent Migration, Remittances and Household Income

	Remittances per Capita			Household Income per Capita		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	LPM	RF	2SLS	LPM	RF	2SLS
Migrant Parent	55.268***	29.421***	199.856***	17.155***	-10.044	-67.127
	(1.615)	(3.340)	(38.048)	(2.936)	(10.880)	(76.460)
Observations	33,534	33,534	33,534	33,406	33,406	33,406
Number of Municipalities	212	212	212	212	212	212
Year FE	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓	✓
F-statistic			19.21			19.87

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).

Note: Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.10$

Appendix Table 10. Children's Living Arrangement by Reason of Parental Absence

Absence	Living with Relatives	Living with Grandparents	Living with Other Relatives
Migrant Parent	63.75	47.02	16.74
Migrant Father	46.83	31.4	15.43
Migrant Mother	85.26	68.76	16.5
Migrant Both	99.51	75.95	23.55
Abandonment Parent	68.34	50.63	17.71
Abandonment Father	61.09	44.02	17.08
Abandonment Mother	67.31	51.92	15.39
Abandonment Both	96.35	75.07	21.28
Death Parent	57.53	37.46	20.07
Death Father	52.04	34.07	17.97
Death Mother	67.72	45.11	22.6
Death Both	92.91	55.09	37.82

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).

Appendix Table 11. Children's Work and Study Status and Parent Migration, Children 13-17

VARIABLES	Work and School			Only School			Only Work			Neither Work nor Study		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	OLS	RF	2SLS	OLS	RF	2SLS	OLS	RF	2SLS	OLS	RF	2SLS
Gender×Migrant	-0.025	0.074	0.300	-0.006	-0.244***	-0.984***	-0.028	0.374***	1.446***	0.059***	-0.204**	-0.761**
	(0.020)	(0.053)	(0.216)	(0.033)	(0.069)	(0.358)	(0.018)	(0.080)	(0.374)	(0.018)	(0.085)	(0.333)
Migrant Parent	-0.012	0.033	0.233	0.104***	-0.081	-0.620	-0.025***	-0.098***	-0.321	-0.067***	0.147**	0.708**
	(0.012)	(0.036)	(0.197)	(0.024)	(0.074)	(0.409)	(0.008)	(0.034)	(0.197)	(0.016)	(0.063)	(0.335)
Gender(Boy=1)	0.084***	0.074***	0.062***	-0.087***	-0.059***	-0.020	0.113***	0.067***	0.010	-0.111***	-0.082***	-0.052**
	(0.007)	(0.009)	(0.017)	(0.010)	(0.012)	(0.025)	(0.009)	(0.010)	(0.025)	(0.009)	(0.012)	(0.025)
Observations	15,452	15,452	15,452	15,452	15,452	15,452	15,452	15,452	15,452	15,452	15,452	15,452
Number of Municipalities	212	212	212	212	212	212	212	212	212	212	212	212
Years	2016-2017	2016-2017	2016-2017	2016-2017	2016-2017	2016-2017	2016-2017	2016-2017	2016-2017	2016-2017	2016-2017	2016-2017
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
F-statistic			16			16			16			16

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

Appendix Table 12. Work and Study Status by Reasons of Parental Absence, Children 13-17

VARIABLES	Work and School	Only School	Only Work	Neither Work nor Study
	(1)	(2)	(3)	(4)
Panel A. Parent Absence due to Abandonment				
Gender(Boy=1)×Abandonment	-0.040***	-0.016	-0.011	0.067***
	(0.012)	(0.017)	(0.011)	(0.013)
Abandonment	0.021**	-0.004	0.018***	-0.035***
	(0.008)	(0.014)	(0.005)	(0.011)
Gender(Boy=1)	0.095***	-0.083***	0.114***	-0.126***
	(0.008)	(0.012)	(0.009)	(0.009)
Panel B. Parent Absence due to Death				
Gender(Boy=1)×Death	-0.020	0.002	0.014	0.004
	(0.018)	(0.029)	(0.021)	(0.024)
Death	-0.009	-0.037	0.031**	0.015
	(0.013)	(0.024)	(0.013)	(0.022)
Gender(Boy=1)	0.084***	-0.087***	0.110***	-0.107***
	(0.007)	(0.010)	(0.008)	(0.008)
Observations	15,452	15,452	15,452	15,452
Number of Municipalities	212	212	212	212
Years	2016-2017	2016-2017	2016-2017	2016-2017
Year FE	✓	✓	✓	✓
Department FE	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓

Source: Author's calculations based on El Salvador's Household Survey (EHPM, 2016, 2017).

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10