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**Essays on Violence-Driven Migration and its Impact on Immigrants' Origin
Countries**

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Abstract

Rampant gang-related violence in the Northern Triangle of Central America is increasingly pushing both children and adults to make the risky migration journey to the north. Simultaneously, as a result of the strengthening of U.S. immigration enforcement policies, an increasing number of Central Americans are being repatriated to their countries of origin. This dissertation presents a collection of essays that evaluate the consequences of these migration flows in the country of origin of immigrants providing evidence from El Salvador, a country with nearly one quarter of its population residing abroad and exhibiting one of the highest homicide rates in the world. Chapter 2 advances understanding on the formation, development and consequences of gangs in Central America by bringing together multi-disciplinary evidence. These studies show that gangs are the result of internal conflicts and violence, marginalization, migration, social exclusion, rapid urbanization and lack of economic opportunities for youths, which have existed in these countries for decades. Central American gangs, whose origin can be traced to the U.S. deportation of Salvadorans with a criminal background, grew in power and organization through the implementation of tough-on-crime or *Mano Dura* policies. Gangs are now evidenced to adversely impact the communities they govern by hindering economic and human capital development. Chapter 3 empirically examines how recent deportations of Salvadorans with and without a criminal background impact local gangs and violent crime. This study finds that in municipalities dominated by gangs, the repatriation of Salvadorans without a criminal background leads to an increase in homicides, whereas criminal deportations lead to a reduction in violent crime. These contrasting effects are explained by three main mechanisms: most-serious criminal deportees continue contributing to gang membership and gang-related violence; less-serious criminal deportees have a positive contribution to the local labor market, which decreases their likelihood of re-offending and in turn reduces violent crime; young male non-criminal deportees are becoming the victims of violent crime as they represent the perfect target for gang recruitment. Lastly, Chapter 4 evaluates the impact of parent international migration on educational outcomes of children left behind in El Salvador. This study evidences that children with migrant parents exhibit a lower probability of attending school, where the effect is driven by older boys and girls, ages 13 to 17. Although remittances play an important role in decreasing financial constraints in Salvadoran households, they do not fully compensate for the adverse consequences of parental absence due to migration. As a result, there are labor readjustments within the household where boys are replacing school for work and girls are more prone to be inactive, likely carrying out more housework.

Keywords: International Migration, Left-behind, El Salvador, Central America, Organized Crime, Human Capital, Gangs

Chapter 1

Introduction

The immigrant population living in the United States from the Northern Triangle of Central America - El Salvador, Guatemala and Honduras - has risen substantially in the last decade, by approximately 25 percent (Cohn, 2017). This trend is accompanied by an alarming increase in asylum-seekers and unaccompanied children apprehended at the U.S. border fleeing violence in their communities of origin (UNHCR, 2014; UNHCR, 2020).¹ Migration to the U.S. is not a new phenomenon for northern Central Americans. There are currently nearly 3 million immigrants from the Northern Triangle living in the U.S. as a result of previous migration episodes particularly due to civil wars and natural disasters (MPI, 2015). However, this time around, Central Americans are not only seeking better economic opportunities, but are mainly escaping crime and violence exerted by gangs. Local violence is reflected in high homicide rates perceived in these countries, where for instance in 2015, El Salvador exhibited one of the highest homicide rates in the world with 103 homicides per 100,000 inhabitants (UNODC, 2019). These countries are additionally impacted by an increase in the influx of repatriated persons as a result of the strengthening of U.S. immigration enforcement. The present dissertation provides evidence of the consequences of these different migration flows in the country of origin of immigrants focusing on the case of El Salvador.

The empirical study of migration has largely concentrated on its consequences in destination countries and less is known about its impact on immigrants' sending countries. This dissertation contributes to the study of the latter by using quasi-experimental methods and administrative data to provide empirical evidence on the impacts of out-migration and forced return migration of Salvadorans in immigrants' origin country. This thesis addresses the following research questions: What are the determinants of gang development and growth in Central America? What is the impact of U.S. immigration policies on crime in the country of origin of immigrants? How

¹Nearly 200,000 children were apprehended by U.S. authorities between 2011 to 2016 and there have been around 120,000 asylum applications recorded from the Northern Triangle since 2014 (IOM, 2018; UNHCR, 2020; TRAC, 2020).

have U.S. deportations of Central Americans contributed to the development of gangs in this sub-region? Are deported persons the perpetrators or victims of crime? How does parental absence due to migration impact children left behind? In order to aid the reader navigate through these interrelated questions, the chapters of this thesis are structured in a way that move from providing a survey of the literature to describing a micro-level empirical analysis. More precisely, this dissertation starts by reviewing the literature on the determinants of Central American gangs' development and strengthening, to then providing an empirical analysis at the municipality level of the link between deportations, gangs and violent crime and ends with a micro-level empirical study of the effects of parental migration on the human capital of children left behind. In this way, the author seeks to delve into the above-mentioned questions and provide a deep understanding of such salient interrelated issues affecting northern Central American countries.

This thesis is structured as follows. Chapter 2 seeks to advance understanding on the formation, development and consequences of gangs in Central America by bringing together evidence from the fields of Sociology, Criminology and Economics. Central American gangs are found to be the result of a combination of factors including internal conflicts and violence, marginalization, migration, social exclusion, dysfunctional families, rapid urbanization and lack of economic opportunities for youths that have persisted in these countries for decades. The economic study of criminal organizations has allowed tracing the origin of gangs to the U.S. deportation of Salvadorans with a criminal background who were exposed to violence and gangs in the U.S. and brought this criminal capital back to their places of origin. However, it was actually state action what influenced their growth and organization. Tough-on-crime policies implemented in El Salvador in the early 2000s, which led to the massive incarceration of gang members, contributed to gangs' organization, recruitment of members and power growth. As a result, criminal gangs govern many communities from prison and directly impact their economic development and growth. Gangs are evidenced to have several adverse consequences in the communities they control such as hindering economic and human capital development, increasing extortion and violent crime and influencing electoral outcomes. Building theoretical and empirical evidence on the causes, consequences and functioning of these criminal organizations is crucial to the formulation of more effective policies that address organized crime in Central America.

Chapter 3 empirically explores the effects of recent deportations of Salvadorans with and without a criminal background on violent crime and further analyzes how this effect varies by the presence of gangs. In order to empirically test this link, I employ a difference-in-differences strategy combined with an instrumental variable approach and use monthly data at the municipality level on the total number of deportations of Salvadorans from the U.S. and homicides, as well as a unique dataset of the universe of prisoners affiliated to gangs. This chapter evidences that in gang-dominated municipalities, an increase in deportations of Salvadorans without a

criminal background leads to an increase in violent deaths, while an increase in criminal deportations of Salvadorans leads to a reduction in homicides. These contrasting effects can be better understood by exploiting heterogeneity of victims of violent crime and deportees by their demographic characteristics and level of seriousness of criminal offense. In turn, the observed effects of deported Salvadorans on violent crime can be explained by three main channels. First, the deportation of Salvadorans who have committed most serious crimes continues contributing to gang membership and turf wars between rival gangs, which leads to an increase in gang-related violence. Second, deported Salvadorans who have committed less-serious crimes can actually have a positive contribution to the local labor market, which decreases their likelihood of re-offending and in turn reduces violent crime. Lastly, the deportation of young males without a criminal background to gang-dominated areas increase homicides by deportees becoming the victims of violent crime as they represent perfect targets for gang recruitment. The findings of this study speak about the unintended consequences of U.S. immigration policies, which are not succeeding at their objective of deterring further illegal migration but are instead contributing to fueling violence-driven migration from the Northern Triangle.

Lastly, Chapter 4 evaluates the impact of parent international migration on educational outcomes of children left in El Salvador. This study employs a shift-share instrument design and multiple sources of data including household survey, census and IPUMS data to test this effect. This article finds that parental migration adversely impacts children's schooling, where the magnitude of the effect varies by children's gender and age. More specifically, this study shows that children with at least one migrant parent have a lower probability of attending school, where the effect is driven by older boys and girls ages 13 to 17, and no effects are found on younger children or on the likelihood of children lagging behind in school. Although remittances play an important role in decreasing financial constraints in Salvadoran households, they do not fully compensate for the adverse consequences of parental absence due to migration. These findings show that the short-term effect of migration is financial hardship, which results in older children assuming work responsibilities outside or inside the household to compensate for the absence of the parent. In addition, in this context, parent migration puts children at higher vulnerability where many of them likely drop out of school to join gangs or opt to migrate to flee gang persecution and violence.

The present dissertation has at its core children and youth, who represent a highly vulnerable population in Central America. It starts by describing the determinants of criminal gangs development and strengthening where the marginalization and abandonment of youths by society have contributed to their growth. It then moves to evaluating the reality that many young undocumented immigrants in the U.S. face, being deported back to their countries of origin where they can become victims or perpetrators of crime. And it ends with evaluating the adverse

consequences that migration of family members can have on children left behind. In examining these different perspectives, this dissertation seeks to provide relevant and current evidence for the formulation of policies that address the different threats to security that Central American children and youth face, which can contribute to breaking the violence-driven migration cycle.

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Chapter 2

The Origins and Consequences of Gang Rule in Central America: A Review

Abstract

The Northern Triangle of Central America exhibits some of the highest homicide rates in the world, largely driven by gang-related violence in the region. Central American gangs started out as local street youth gangs; however, a combination of historical and socio-economic factors as well as state action have contributed to their growth and strengthening into transnational criminal organizations. This article seeks to advance understanding on the formation, development and consequences of gangs in Central America by bringing together evidence from the fields of Sociology, Criminology and Economics. The sociological study of gangs shows that Central American gangs are the result of a combination of factors including internal conflicts and violence, marginalization, migration, social exclusion, dysfunctional families, rapid urbanization and lack of economic opportunities for youths that have existed in these countries for decades. The economic analysis of criminal organizations has allowed tracing the origin of gangs to the U.S. deportation of Salvadorans with a criminal background who were exposed to violence and gangs in the U.S. and brought this criminal capital back to their places of origin. However, it was actually state action what influenced their growth and organization. Tough-on-crime policies implemented in early 2000s, which led to massive incarceration of gang members, contributed to gangs' organization, recruitment of members and increase in power. As a result, gangs now have the power to govern many communities from prison and directly impact their economic development and growth. Gangs are evidenced to hinder economic and human capital development, increase extortion and violent crime and influence electoral outcomes. Building more theoretical and empirical evidence on the causes, consequences and functioning of these criminal organizations is crucial to the formulation of more effective policies to address organized crime in Central America.

Keywords: Gangs, Central America, Organized Crime, Economics of Crime, Tough-on-crime Policies

1 Introduction

Latin America and the Caribbean (LAC) is the most violent region in the world with approximately 17.2 homicides per 100,000 inhabitants, against a global average of 6.1 homicides per 100,000 people (UNODC, 2019). This trend is largely driven by high homicide rates in the Northern Triangle of Central America - El Salvador, Guatemala and Honduras - attributed to organized crime, namely MS-13 (Mara Salvatrucha) and 18th Street gangs (UNODC, 2019). For instance, El Salvador exhibits one of the highest homicide rates in the world, 103 per 100,000 individuals, where young males are the main victims and perpetrators of gang-related violent crimes (UNODC, 2014).¹ As a result, gang-related violence is pushing Central Americans to flee, contributing to a self-enforcing cycle of out-migration, forced return migration and further violence in origin countries. Much is known about the origins and development of gangs from a sociological perspective, but less theoretical and empirical evidence exists on their collective economic impact and growth as criminal organizations. In order to advance understanding on Central American gangs, this article surveys the literature across different fields of study, Sociology, Criminology and Economics, on the origins of Central American gangs, the factors that have contributed to their development and strengthening and their economic consequences.

Central American gangs have changed drastically in the last two decades. They are now involved in a wide range of crimes including extortions, drugs and arms trafficking, smuggling of migrants, and are largely responsible for most violent crimes (UNDOC, 2019). In the case of El Salvador, they represent such a threat to society that the National Supreme Justice Court classified gangs MS-13 and 18th Street as terrorist groups in 2015 (Cruz, 2017), likewise since 2012 the U.S. labeled MS-13 a transnational criminal organization on a par with the Zetas, Camorra and Yakuza (Rubenfield, 2012). The extent of their impact is also evident in its effect on out-migration, where people are fleeing their origin countries to escape gang-related violence. Frequently, Central Americans prefer to risk crossing the border, itself a life-threatening journey, over staying home and being at the mercy of gangs. A clear indicator is the high rate of unaccompanied children who have migrated to the United States since 2014 to escape gang extortions, pressure to join gangs, threats of sexual assault, and other types of violence (Margesson, Meyer, Ribando Seelke and Taft-Morales, 2015).² Young individuals, particularly young boys, are an extremely vulnerable population in northern Central America, being the main victims and perpetrators of gang-related violence.

Violence is not new to northern Central America, as this subregion has historically experienced episodes of violence and conflict. Guatemala and El Salvador underwent long-lasting civil

¹The homicide rate of males is 296 per 100,000 individuals ages 15 to 29, among the highest in the world.

²Between 2011 and 2016, there have been 178,825 children, ages 17 and under, apprehended by U.S. authorities from El Salvador, Guatemala and Honduras traveling unaccompanied without an adult relative or visa (IOM, 2018).

wars for approximately 40 and 12 years, respectively. One of the many consequences of these internal conflicts was the massive emigration of Central Americans particularly to the United States in the 80s and 90s. Many Central American immigrant families fleeing war, settled in low-income marginalized communities of Los Angeles and other big cities that were already characterized by drugs, crime, and gang activity. Many Central American youths who were adapting to a new culture, language, and in many cases were left alone by parents who worked more than one job, found in local street gangs a family and companionship. As a result, some Central American youths joined the existing 18th Street gang, which welcomed immigrants from all nationalities, while the Mara Salvatrucha or MS-13 was formed later in the 1980s by Salvadoran immigrants (Fogelbach, 2005; Seelke, 2008; Rodgers and Baird, 2015). These children of the war found in the Los Angeles street gangs a sense of belonging and identity in the middle of chaos and change.

Simultaneously, gangs are not a new phenomenon in Central America. Gangs were already present in some Central American capitals since the 1960s where episodes of violent encounters between rival school gangs were common to occur (Santacruz and Concha-Eastman, 2001). However, gangs in Central America grew and gained strength as a result of their intersection with gangs in Los Angeles. In the 1990s, the U.S. implemented several immigration enforcement laws, such as the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA), which led to the massive deportation of undocumented immigrants with a criminal background particularly from Mexico and Central America (Manwaring, 2007). Through this mechanism, many Central American youths with irregular status who were part of L.A. gangs and had committed crimes were deported back to their countries of origin. Once they were repatriated, the gang culture and its dynamics were exported to their countries of origin.

The economic study of Central American gangs also provides evidence in support of their origin being traced back to the U.S. deportation of Salvadorans with a criminal background who were exposed to violence and gangs in the U.S. and brought criminal capital back to their places of origin. However, it was actually state action what influenced their growth and organization. In the early 2000s, the Salvadoran government implemented a set of tough-on-crime policies and declared the war on gangs, which led to the massive incarceration of gang members. Qualitative and empirical studies evidence that these repressive measures only contributed to their organization and empowering. On one hand, these tough-on-crime policies exacerbated the social exclusion experienced by vulnerable youths, which pushed them to join gangs in the first place. In addition, massive-incarceration policies provide the environment for gangs to organize internally, take control over prisons, recruit new members and intensify their criminal skills. These criminal organizations now have a direct impact on the communities they govern where gangs are evidenced to hinder economic and human capital development, increase extortion and violent crime and influence electoral outcomes, to mention a few. The economic study of Central

American gangs is relatively new, which shows the need for theoretical and empirical evidence on the causes, consequences and functioning of these criminal organizations.

This article brings together multi-disciplinary evidence to advance understanding of the formation, development and consequences of gangs in El Salvador, which can help identify priority areas for policy interventions and where future research should be directed to. The rest of this study is organized as follows: Section 2 reviews the evidence in Sociology and Criminology on the origins of gangs in the U.S. and Central America, the socio-economic factors that explain their proliferation and the policies implemented to address the phenomenon. Section 3 surveys the existing theoretical and empirical evidence on the economics of criminal organizations that evaluate the emergence of gangs, the role of tough-on-crime policies in contributing to their organization and their economic and political consequences. And Section 4 concludes.

2 Central American Gangs: A Sociological Approach

Sociologists have defined gangs as “an interstitial group formed spontaneously and then integrated through conflict” (Thrasher 1927: 57). This definition locates the origin of gangs to being born in the interstices or empty, abandoned, spaces of the city where conflict is the glue that brings them together. A more comprehensive definition of gangs describes them as “a self-formed association of peers, bound together by mutual interests, with identifiable leadership, well-developed lines of authority, and other organizational features, who act in concert to achieve a specific purpose or purposes which generally include the conduct of illegal activity and control over a particular territory, facility, or type of enterprise” (Miller 1977: 121). Gangs are present in different forms in most part of the world including the Americas, Europe, Asia, Africa and Australia (Decker and Pyrooz, 2010). However, whether gangs in some contexts can be classified as criminal organizations is a topic of debate. As Morselli (2009) explains, one should not confuse an organization of criminals with a criminal organization. There are two main theoretical strands on gang organization: the instrumental-rational perspective and the informal-diffuse perspective (Decker and Pyrooz, 2014). The instrumental-rational perspective argues that gangs “have a vertical structure, enforce discipline among their members, and are quite successful in defining and achieving group values” (Decker and Curry (2000, p. 474)). Whereas the informal-diffuse perspective argues that gangs “are diffuse, self-interested and self-motivated aggregations of individuals, most of whom sell drugs for themselves” (Decker and Curry (2000, p. 474)). Some gangs that started out as disorganized and diffused groups of youths can achieve higher level of organization with greater involvement in criminal activities within and across countries. This type of gangs can be evidenced in different contexts, particularly in Central America, where street gangs morphed into criminal organizations over time, and now rule over entire territories. In this section, I review the

literature in Sociology and Criminology on the origin of Central American gangs and the factors that have contributed to their development and growth.

2.1 The Emergence of Central American Gangs

The origins of Central American gangs can be located to a combination of historical, social and economic factors including internal conflicts and violence, marginalization, rapid urbanization and lack of economic opportunities for youths that have existed in these countries for decades.

Gangs in Central America started out as difused street gangs in the 1960s but have evolved over time to become criminal organizations present in several countries and continents.³ In order to fully understand the evolution of gangs in Central America, it is necessary to start by analyzing the history of these countries. In the present study, I focus predominantly on the Salvadoran case.⁴ El Salvador underwent a civil war from 1979 to 1992, which was caused by a combination of acute social inequities and oppressive military governments in power since the 1930s. For over 12 years, the country experienced massacres, the forceful recruitment of young children into the military and the guerilla forces, assassinations of public figures, and kidnappings, to mention a few. It is estimated that approximately 75,000 people were killed during the civil conflict, at least one million were displaced and thousands more dissappeared (United Nations, 1993).⁵ The conflict came to an end in 1992 when the peace accords were signed and a transition from war to peace was initiated.

As a result of the civil war, thousands of Salvadorans emigrated to other Central American countries and particularly to the U.S. to find safe shelter. More than 650,000 Salvadorans migrated to the U.S. during the civil war, and this trend continued throughout the years that followed the end of the war (Damon, 2008). The net migration rate reached its lowest point in 1997, with an outflow of over 300,000 Salvadorans in just one year (World Bank, 2020).⁶ Migration flows to the U.S. continued increasing in the next decade particularly after Hurricane Mitch in 1998 and two earthquakes that hit the country in 2001 (Cruz, 2015). Salvadoran immigrants in the U.S. frequently settled in lower-income and marginalized communities of Los Angeles and other big cities that were already characterized by drugs, crime, and gang activity.

On the other hand, the development of gangs in the U.S. is a history of migration (Decker and Pyrooz, 2014). The combination of migration, social marginalization, and concentrated disadvange influenced their emergence, their involvement in criminal activities, and shaped their structure and organization (Decker and Pyrooz, 2014). The 18th Street gang was formed in

³The Mara Salvatrucha or MS-13 gang is now present in several countries outside the U.S. and El Salvador including Guatemala, Honduras, Mexico, Spain and Italy (Dudley, Avalos and Martinez, 2018).

⁴El Salvador is the Central American country with the highest number of gang members, despite being the smallest in Central America, as well as the one with the strongest expressions of violence (UNODC, 2019).

⁵To put this figure into perspective, El Salvador had a population of 5.4 million in 1992.

⁶Net migration rate is the total number of immigrants less the annual number of emigrants.

Los Angeles in the 1960s by Mexican youths and later also included young hispanic immigrants from other nationalities (Rodgers and Baird, 2015). The *Mara Salvatrucha* or MS-13 was formed later in the 1980s by Salvadoran immigrants fleeing the civil conflict as a mechanism of defense against other local gangs (Fogelbach, 2005; Seelke, 2008; Rodgers and Baird, 2015). MS-13 and 18th Street gangs became immediate rivals, which lasts to date. Over time, L.A. gangs have expanded across the U.S. where the 18th Street gang is present in 20 states, and MS-13 is active in 46 states and the District of Columbia (Seelke, 2008).

Migration flows between the U.S. and Central American countries enabled the connection between gangs present in Central America and those in L.A. More specifically, the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA), signed into law in September 1996, and the policies that followed led to a significant increase in the deportation of irregular Mexican and Central American immigrants predominantly with criminal backgrounds (Bruneau, 2014).⁷ Through this mechanism, many undocumented gang members who committed crimes in the U.S. and had completed their sentences returned to their country of origin, for many a foreign country. The criminal background of deportees was not revealed to Salvadoran authorities, and gang members returned to Salvadoran society without the needed guidance for a productive reintegration. The deportation of Central American immigrants combined with challenging socio-economic conditions returnees found in their countries of origin facilitated the conditions for gangs to grow and better organize. Gangs offered not only a livelihood, but also shelter and protection, a sense of belonging, power and status to those who found themselves as foreigners in their own country. Central American gangs now have clear hierarchical structures⁸ and are involved in a wide range of crimes, increasingly in drug trafficking.⁹

2.2 Determinants of Gang Proliferation

MS-13 and 18th Street gangs are the result of not only the civil war, poverty and migration but also of various socio-economic factors and policy interventions that contributed to their strengthening and evolution into the transnational criminal organization they are today. Ethnographic studies that include interviews with active and former gang members identify a set of factors that have contributed to the growth and evolution of gangs in El Salvador (Cruz, 1998, 2007, 2005, 2004). These studies find that gangs in Central America are the result of "permanent social dynamics, in which it matters who gang members are and the environment where they live, but

⁷IIRIRA significantly changed the immigration enforcement system in the U.S. influencing the criminalization of immigrants, furthering the barriers faced by asylum seekers and separating immigrant families.

⁸Dudley, Avalos and Martinez (2018) depict the hierarchical structure of MS-13 in El Salvador, which includes the hierarchy within prisons, by organization and those who are not in prison.

⁹Since the early 2000s there has been an increase in regional drug trafficking through Central America, which has facilitated the opportunity for gangs to become involved in the drug trade and has in turn given them strength and additional financial opportunities. Cocaine shipments moving to the north through Central America increased from 23 percent in 2006 to 84 percent in 2011 (Albanese and Reichel, 2013).

it also matters what societies, through its leaders and government, have done or stopped doing for their youth" (Cruz, 2005, p. 1158). Better understanding the reality, obstacles and needs of Salvadoran youth particularly those living in economically and socially excluded areas is essential to understanding the origin and evolution of gangs. Cruz (2005) provides a comprehensive overview of some of the main factors associated with the formation and proliferation of gangs in El Salvador under an ecological model.¹⁰ These factors can be grouped into four broad categories: social, community, relational and individual. I describe the evidence on some of these factors.

Living in poverty is an important determinant of gang formation; however, poverty alone does not push youths to join gangs. What influences this decision is the combination of poverty and high levels of inequality which are reflected in people's neighborhoods, communities and everyday life. More specifically, what pushes young individuals to join gangs is social exclusion that translates into youths not having access to healthcare, education and job opportunities, which marginalizes and isolates them without better life prospects. A reflection of social exclusion can be observed in the proportion of youth who are inactive. El Salvador has one of the highest proportions of youths who neither work nor study in Latin America, along with Honduras and Guatemala. Nearly 27 percent of youths between the ages of 15 to 24 in El Salvador are idle, and nearly 42 percent of those are in the lowest income quintile, the highest rate in Latin America (Sociometro-BID, 2020).¹¹ Inactivity among youths is a common indicator of gang membership. A study by Santacruz and Concha-Eastman (2001) on gangs in El Salvador evidences that most gang members interviewed had achieved some level of primary or secondary education and only 7.7 percent were currently attending school. The study also details that 64.5 percent of those interviewed were not working. Those who are more likely to become involved in gangs are predominantly young males who are idle, neither working nor studying.

The association between inactivity and gang membership runs in both directions as those associated to gangs are also more prone to be idle because the society excludes them from education and employment opportunities. Cruz (2005) evidences in interviews with gang members that some of them who dropped out of school would like to return but they are no longer allowed because they had tattoos. A similar situation is found with respect to employment, where they can get fired or are not given the opportunity to work because they have the profile of a gang member, i.e. tattoos, baggy clothes. Hence, there is a self-enforcing mechanism of social exclusion where even if young individuals would like to leave the gang and take part of education or work, society has stigmatized them and does not give them the opportunity to become productive members of society.

¹⁰The Ecological model was developed by prominent scholars from the Chicago School, who focused on urban sociology and criminology where human behavior is analyzed as being influenced by social structures and physical environmental factors, instead of solely on genetics, personal traits and characteristics (Park, 1915; Anderson, 1959; Thrasher, 1928).

¹¹In the case of Guatemala and Honduras, nearly 28 percent of youth neither work nor study.

Moreover, gangs are also the result of a culture of violence embedded in the environment where many youths grow and develop in El Salvador. As mentioned previously, El Salvador and other Central American countries have experienced long-lasting civil conflicts, where to a certain degree violence has become part of interpersonal and social relationships. Hence, there exists a culture of violence where violence has been legitimized in its direct or structural forms (Galtung, 1990). In many Central American countries, violence has become normalized over time where it can be used frequently as a disciplinary mechanism within the household and in schools, particularly among the economically disadvantaged. For instance, a recent study on child punishment in Central America finds that 42% of women and 62% of men were beaten as punishment when they were children and those physically punished were also more likely to beat their own children (Speizer et al., 2008). There is an intergenerational transmission of violence where it becomes a means of solving conflicts and interacting with others (Cruz, 2005). Violence is essential to gangs, it is part of their *modus operandi*, it is used to test new members and as a mechanism of cohesion and camaraderie (InSight Crime and CLALS, 2018). Gangs' expression of violence is to a certain degree the result of a culture of violence that has been normalized and reproduced over time in some Central American societies.

Another ingredient that has contributed to the formation of gangs particularly in Latin America is the accelerated urbanization that the region has undergone in the last decades. An early study on Salvadoran gangs shows that gangs developed in urban environments characterized by overcrowding, lack of recreational spaces for children, and low quality of public services in their communities, which are the result of the rapid growth with little planification of cities (Smutt and Miranda, 1998). LAC is in fact the only developing region where the majority of its population, 77 %, resides in urban areas and its urbanization process has progressed more rapidly than in any other region (Lora, van Praag and Sanguinetti, 2010). Urbanization has had the negative consequences of increasing urban poverty, inequality, and social segregation. As a result, many cities in Latin America that have experienced a desorganized and rapid urbanization growth also exhibit higher violence and crime (Gaviria and Pagés, 2002). An accelerated urbanization process has led to higher social exclusion and community disorganization, which generates the appropriate environment for criminal organization to expand and gain greater territorial control.

Furthermore, one of the most important factors that influence adolescents to get involved in gangs is their family environment. Family shapes to a large extent the future prospects of children. Youths who are involved in gangs frequently come from unstable, dysfunctional and problematic families. In the case of El Salvador, due to high migration and death of many male family members during and after the civil war, living in disintegrated families became the reality of many youths, particularly of those more vulnerable and economically disadvantaged (Menjívar, 2006). The absence of one or both parents in environments characterized by poverty and

weak state capacity increases children's vulnerability to join gangs. In fact, ethnographic evidence shows that family problems is one of the key factors that drive youths to become involved in gangs (Santacruz and Concha-Eastman, 2001). Furthermore, a recent study by Cruz (2017), where he interviews 1,196 current gang members, shows that 54 percent of them do not live with both parents. Children living in dysfunctional families where there is constant violence, abuse or absence, makes children not only accustomed to living in violent and conflictive environments but also to look for the respect, affection, and protection they do not receive at home somewhere else (Cruz, 2005). In many cases, the gang fills the void and provides the protection and affection that the family cannot guarantee.

Lastly, youths join gangs to obtain a sense of belonging and identity. The friends or "brothers" they find in the gang constitutes one of the main drivers of gang membership. In many cases, the gang becomes their closest or only reference group of other youths (Cruz, 2005). In his study of gangs, Cruz (2007) finds that nearly half of gang members joined because they wanted to hang out with other young people and many agreed that the gang provided friends and brothers. Hence, gangs offer not only a livelihood, but also shelter and protection, a sense of belonging, power and status, which is particularly important during the adolescence years. The gang represents the place where socially and economically excluded children and youth feel that they belong.

The causes of gang formation discussed in this section are certainly not exhaustive or exclusive, and are also interrelated. However, these factors show that gangs have multiple social, economic, historical and familial roots. Gangs are dynamic and continue constantly changing, for which they should be studied taking into account their multidimensional nature.

2.3 Anti-Crime Policies

Several studies argue that the implementation of *Mano Dura* or zero tolerance anti-crime policies consolidated the organization of Central American gangs (Cruz, 2005; Cruz, 2017; Hume, 2008). In this section, I review some of the tough-on-crime policies that have been implemented in El Salvador since the early 2000s and how these contributed to the organizational and structural changes of gangs.

In 2003, under the government of President Francisco Flores, El Salvador implemented the first *Mano Dura* or Iron Fist plan to combat the high levels of gang-related violence perceived. The legislation aimed at incarcerating young individuals who were caught committing crimes or were thought to be gang members. In many cases, this selection was made based on physical characteristics associated with gangs, that is, tattoos, specific body and verbal language, clothing, and particular behaviors (Villamariona, 2006). This policy was discriminatory as it aimed at arresting not only criminals but mainly young men that fit the gang profile. The *Mano Dura*

policy was quickly declared unconstitutional, but it was later replaced by the *Super Mano Dura* or Super Iron Fist policy implemented by the new government of President Antonio Saca in 2004. These tough-on-crime measures enhanced police power and resulted in the massive incarceration of young males, which led to prison overcrowding. As a result, El Salvador has now one of the highest prison rates in the world, 590 per 100,000 inhabitants, second only to the United States; where a prison system built for 18,000 individuals holds over 38,000 persons (Institute for Crime & Justice Policy Research, 2018). These policies were nothing more than a superficial solution to the problem and actually exacerbated the security crisis. These measures only gave gang members the time and space to reorganize and become stronger. Likewise, overcrowded prisons leave no space and opportunity for inmates to rehabilitate but instead they become the perfect environment for gang recruitment and transmission of criminal capital.

Later in 2012, the first left-wing president, Mauricio Funes, negotiated a truce between the government and the two main gangs, MS-13 and 18th Street. As part of the truce, the government agreed to transfer high-ranking gang leaders in maximum-security prisons to lower-security prisons in exchange for a cease in killings and victimization of the Salvadoran population (Seelke, 2016). While the truce was in place, homicide rates plummeted, five to six homicides were committed daily compared to 14 daily before the truce (Whitfield, 2013). However, the government's negotiation with criminal groups received large opposition, as the effects are very unpredictable and could result in the strengthening of these groups. Negotiations with criminal groups are regarded as unlikely to work because they legitimize the existence of gangs, reinforce the authority of gang leaders, and promote increased gang cohesion, which could eventually backfire (Malcolm, 1995). As a matter of fact, the gang truce ended in 2013 and, since then, extremely high levels of homicides have been reported. Just in 2015, El Salvador exhibited a homicide rate of 103 per 100,000 people, one of the highest in the world, which surpassed the homicide rate prior to the truce and even to that during the civil war. Negotiations with criminal groups were clearly unsuccessful and instead they legitimized gangs and gave them time and space to further organize.

The following government led by President Salvador Sanchez Cerén argued against negotiations with gangs and returned to repressive measures (Cruz, 2017). Now the current government led by President Nayib Bukele has resorted once again to tough-on-crime policies deploying the army to the streets of San Salvador and declaring the war against gangs. His tough-on-crime and extreme measures, particularly during the pandemic, have raised concerns of how he might pose a threat to Salvadoran democracy.¹² These measures continue eroding an already fragile democracy while reinforcing repression and violence. In El Salvador and other Central American

¹²As an example, during the current COVID-19 health crisis, humiliating images of close-to-naked prisoners stacked against each other as a punishment circulated, which raised concerns about the protection of prisoners' human rights particularly in the middle of a health crisis.

countries, tough-on-crime policies continue being the preferred approach to combat crime and violence, despite the evidence against them. There is certainly no easy fix to such a complex social and economic problem. However, it is crucial to depart from policies that have been proven inefficient and detrimental to ensuring public safety and instead aim at formulating strategies that address the multidimensional nature of structural crime and violence in El Salvador.

3 The Economics of Criminal Gangs

Qualitative and ethnographic studies described in the previous section combine evidence from the fields of Sociology and Criminology on the origins and proliferation of gangs in Central America. The study of Central American gangs as criminal organizations is relatively new. In this section, I review the growing theoretical and empirical evidence on the economics of criminal gangs, focusing on their origin, factors that contributed to their organization and power, and their economic and political impacts. Given the recentness of the economic study of Central American gangs, I complement and contrast this analysis to existing evidence on other criminal organizations in order to identify gaps and opportunities for future research.

3.1 Tracing Back the Origin of Central American Gangs

As described by qualitative and ethnographic evidence, the emergence of gangs in El Salvador can be traced back to the intersection between a combination of factors including migration of Salvadorans to the U.S., their settling into areas where gangs were present and U.S. deportations of Salvadorans in the 1990s. Three recent studies empirically evaluate this link (Kalsi, 2018; Ambrosious, 2021; Sviatschi, 2020). Kalsi (2018) provides one of the first empirical analyses that establishes a causal link between the U.S. deportation of Salvadorans with a criminal background and the growth of gangs in El Salvador. She employs time variation of criminal deportations and geographical intensity of gangs to assess how deportations of Salvadorans with a criminal background impact homicides in municipalities where gangs are present. She identifies municipalities with high gang presence relying on their potential of profitability for gangs, where municipalities with greater business density in 1992 were more prone to gang-related extortions later.¹³ She finds that in the period of analysis, 1999 to 2011, the deportation of Salvadorans with a criminal background increased homicides in municipalities with high gang activity.

Moreover, Ambrosious (2021) complements these results by employing data on migration corridors between the U.S. and El Salvador and estimating the exposure of Salvadoran migrants at the Salvadoran municipality level to violent crime at destination counties in the U.S. The author finds that the inflow of deported Salvadorans increase gang-related homicides along migration

¹³Gang's main economic activity is the extortion of businesses (Cruz, 2010).

corridors where the mechanism that explains the transnational contagion of violence is the deportation of Salvadorans with a criminal background who were exposed to violence and gangs in the U.S. Lastly, Sviatschi (2020) provides further robust evidence in support of this mechanism of exportation of criminal capital from the U.S. to El Salvador employing a difference-in-difference strategy combined with an instrumental variable approach, where she instruments for the presence of gangs using the municipality of birth of gang leaders. The empirical analysis of the origins of gangs provides support of them emerging as the result of U.S. immigration enforcement, which served as a mechanism of exportation of criminal capital. There are certainly other factors that have contributed to their growth and development into criminal organizations, for which further evidence is needed.

The study of other criminal organizations sheds light on other factors that have caused the emergence of organized crime. Most scholarly explanations identify the origin of the Sicilian Mafia to lie in the intersection between the latifundia, growth of urban markets and local political conflicts where an industry that specialized in the supply of protection found an opportunity (Gambetta, 1993).¹⁴ More recent evidence also links natural resources and weak institutions to the rise of Mafia (Buonanno et al., 2015; Pinotti, 2015; Acemoglu et al., 2020, Bandiera, 2003). Moreover, organized crime has emerged as a result of migration and the economic opportunities exploited. Interestingly, a recent study traces the location of current Mexican cartels to the places where Chinese migrants settled at the beginning of the 20th century (Murphy and Rossi, 2017). The authors argue that Chinese migrants had a comparative advantage in the illegal market of opium because they brought the raw material, they had an expertise in producing and consuming it and they specialized in the smuggling of compatriots to the north, which later enabled the use of these networks for drug trafficking. These elements also coincided with the U.S. regulation on narcotics and weak institutions present in Mexico, which created an opportunity for Chinese immigrants to exploit this illicit trade. Lastly, criminal organizations have been the result of policies implemented by the state to address crime. Brazil has had a steep increase in the incarceration rate in the last two decades placing the country among the highest incarceration rates in the world (Dias & Sala, 2013). Brazilian prison-based gang *Primeiro Comando da Capital* (PCC), one of the most powerful prison gangs in the world, emerged within the prisons of Sao Paulo in 1993 as a result of increasing tough-on-crime policies that led to extreme prison overcrowding and inhumane prison conditions (Lessing and Willis, 2019).

These criminal organizations may differ in structure, economic activities, the length of existence, but they share some commonalities: they rose under weak states and employ mechanisms of violence and extortion to maintain power. I dedicate next section to discussing one key factor

¹⁴The Sicilian Mafia is one of the oldest criminal organizations, which has been dated by most scholars to the period of the Unification of Italian States of 1860, but it is argued that it can be traced back to an even earlier period (Gambetta, 1993)

that contributed to Salvadoran gangs' organization and rise in power, where further theoretical and empirical evidence is needed.

3.2 Tough-on-Crime Policies: the Fertilizer to Gangs' Organization

As discussed previously, street gangs in El Salvador began expanding as they came into contact with deported Salvadorans who were involved with criminal gangs in the U.S and brought back gang criminal and cultural capital. However, what contributed tremendously to gangs' organization and consolidation into the criminal organizations they are today were a series of tough-on-crime or *Mano Dura* policies that started being implemented in El Salvador in the early 2000s, as reviewed in Section 2. In a recent interview by InSight Crime with one of the most prominent Salvadoran gang leaders, "El Viejo Lin", he asserts that mass incarceration policies have made gangs grow. When asked about what the impact of mass incarceration on gang members has been, he responds "... the persecution of our brothers has been the fertilizer that has made the gangs grow. They capture five this week. Within a month, there are ten more. They put the father in jail, his kids are next. When those kids grow up, then the grandkid is next. He has a wife, she gets pregnant, that kid is already part of it. Do they achieve anything massacring or jailing us? We doubt it..." (InSight Crime, 2013). *Mano Dura* policies that concentrated on mass incarcerations changed the rules of the game and provided a meeting place for gangs to organize and recruit members. A few recent studies shed light on the impact that these massive incarceration policies have had on strengthening gangs' organization, structure and economic activities inside and outside of prisons.

But how precisely can mass-incarceration policies contribute to gangs' growth and strengthening? Lessing (2016) addresses this question for the case of three notorious prison gangs: those of Los Angeles, Brazil and El Salvador. He argues that there are three dimensions in which mass-incarceration policies contribute to prison gangs' growth. First, mass incarceration causes even lower staff-to-prisoner ratios where gangs consolidate their power by taking control over important aspects of prison life and management and achieve the capacity to reward or punish other inmates. Second, many of these tough-on-crime policies segregate inmates by type of gang to avoid prison massacres, which gives gangs absolute power over new inmates and enables organization and communication. For instance, in El Salvador, the three existing gangs, MS-13 and 18th Street Southerners and Revolutionaries are separated by prison and are usually not mixed with non-gang-affiliated prisoners. Lastly, these incarceration policies lead to prison-gang propagation through the release and re-imprisonment of prisoners, or transfer between prisons. Hence, prisons become the perfect hub for gangs to acquire power, recruit more members, transfer criminal capital and propagate outside the prisons.

However, the real problem of prison-based gangs is not only the power they have within pris-

ons but their ability to project power outside the prisons (Lessing, 2015). They can do this in many ways. On one hand, prison gangs can exert power on outside gang members, paradoxically, through the anti-crime policies in place themselves. Lessing (2017) develops a game-theoretical model of the conditions under which changes in anti-crime policies strengthen prison gangs' power on the street. The author models how different anti-crime policy types including harshening and crackdown policies (and degree of crackdown policies)¹⁵ can impact two outcomes of gang's power: the intensive margin, which refers to "gang's ability to impose taxes and other burdens on members" and the extensive margin, which refers to "their ability to recruit new members." (Lessing, 2017, pp. 7)). This model shows that more intensive anti-gang or massive incarceration policies increase the likelihood of non-incarcerated individuals to be (re-)incarcerated, which influences them to follow gang-leaders' orders while outside out of fear of being at their mercy when incarcerated.

There are some clear examples of gangs' projection of power that have resulted from the implementation of mass incarceration policies in Brazil and El Salvador. In El Salvador, in repeated occasions particularly in 2010 and 2015, gang members from MS-13 and 18th Street appeared on press conferences aired by different TV channels threatening to set buses on fire if they were circulating in the next 72 hours while asking for improved prison conditions and to veto a recent anti-gang policy (Wolf, 2012; Lemus, 2010; BBC Mundo, 2015). Although gang members were not fully successful at achieving their objectives, these actions resulted in a 3-day public transport halt, which evidences gangs' power as well as the collaboration that can exist between rival gangs when working toward common goals. A similar case was observed in Brazil in 2006, when the PCC gang launched several attacks across prisons as well as to buses and public buildings which paralyzed the city for five days until government officials met with PCC leaders and stroke a deal for better prison conditions and less severe sentences (Lessing, 2016, Prada, 2006).

Prison-based gangs' ability to project power outside of prisons, shows that these criminal organizations have become the relevant authority in different communities and for different daily activities. This is an exemplification of the concept of criminal governance, which can be broadly defined as "the imposition of rules or restriction on behavior by a criminal organization" (Lessing, 2020, pp.3). Many communities around the world live under some type of criminal organization rule including drug cartels, the Mafia, street gangs or prison-based gangs (Lessing, 2020; Blattman et al., 2021). Qualitative and journalistic evidence provides some hints of the impacts of different forms of criminal governance in the context of Latin America. Interestingly, recent journalistic pieces show that criminal governance can also play a role in achieving positive outcomes for the communities they control, even if the reasons behind them are driven by self interests. The cur-

¹⁵*Harshening* policies include longer sentences, solitary confinement, reduced privileges, or worsening conditions—increase the pain of prison, while *Crackdown* policies include anti-gang laws, increased arrests and prosecutions, and mandatory sentencing—increase the likelihood of imprisonment (Lessing, 2017)

rent COVID-19 crisis evidenced the ability of criminal organizations in Latin America to impose their rules in their neighborhoods. Gangs in El Salvador (Linthicum, O’Toole and Renderos, 2020; Rivard Piché, 2020), Brazil (Muggah, 2020; Gagné-Acoulon, 2020; Nugent, 2020) and Colombia (Nugent, 2020) as well as cartels in Mexico (Nugent, 2020) imposed curfews, mask mandates and other measures to slow down the spread of COVID-19. These cases evidence the power and control criminal organizations have over communities.

Although gangs and other criminal organizations emerge in spaces where the state is absent, paradoxically, it is state actions such as mass incarceration policies that can facilitate their organization, empowerment and rule. The theoretical model on gang projection and mass incarceration discussed in this section allows moving in the direction of empirically testing the adverse consequences that different repressive or tough-on-crime policies can have on empowering prison gangs. Further research is needed on their impact as well as on the effect of more novel policy approaches such as negotiations with gangs.

3.3 Economic and Political Consequences of Gangs

The question of how criminal organizations impact the economic development and growth of the communities they govern has been addressed empirically in the context of the Italian Mafia, drug cartels and more recently gangs. On one hand, several studies have found that the Sicilian Mafia has had a negative effect on the economic development of regions exposed to them (Pinotti, 2015a, 2015b; Acemoglu et al., 2020). For instance, Pinotti (2015b) evidences that regions in Southern Italy that were exposed to Mafia activity after the 1970s and with current Mafia presence exhibit a 16 percent lower GDP per capita compared to regions significantly not exposed to them, where the effect is driven by the reallocation of private economic activity to public investment. Similarly, Acemoglu et al. (2020) develop a theory of Mafia spread in the 1990s in Sicily, predicted by the rise of the Peasant Fasci movement in the 1900s, and estimate their short- and long-term effects. The authors document a negative effect of the Mafia on development associated with a reduction in literacy and public good provision, and an increase in infant mortality in the 1910s and 1920s. Contrary to the negative economic effect associated to Mafia activity, Mexican cartels have been found to have a rather positive effect on socioeconomic outcomes ((Murphy and Rossi, 2017; Gutiérrez Romero and Oviedo 2014). Murphy and Rossi (2017) demonstrate that the presence of cartels leads to a reduction in marginalization and illiteracy rates and to higher salaries. While further evidence also shows that the presence of cartels leads to a reduction in inequality in areas where they are active (Gutiérrez Romero and Oviedo, 2014).

Recent empirical analyses show that gangs in El Salvador hinder economic and human capital development and increase violence in areas where they are present. Employing a spatial regression discontinuity design, Melnikov, Schmidt-Padilla and Sviatschi (2020) find that individuals

living in areas controlled by gangs MS-13 or 18th Street, exhibit lower education, material well-being and income than individuals living just outside gang territory. The authors find that a key mechanism behind this effect is the power of gangs to restrict mobility in order to maintain territorial control and extract rents from extortion, which in turn limits people's labor market options. Moreover, gangs have a negative effect on children's education and life opportunities, particularly on young boys, who in turn are more vulnerable to join gangs or out-migrate (Kalsi, 2018; Sviatschi, 2019, 2020). The age when children are exposed to gangs is highly relevant as children who were exposed at a young age exhibit less years of schooling (Sviatschi, 2019) and lower school completion (Kalsi, 2018) than those who were exposed at an older age. Boys in gang-controlled areas particularly exhibit a larger loss in schooling. Some of the mechanisms behind this effect include the expansion of gangs leading to a reduction in returns to schooling in those areas and young boys getting involved in gangs (Kalsi, 2018). This last channel is further explored by Sviatschi (2020) who finds that children who were in primary-school age when gangs started arriving to El Salvador around 1996 have a higher likelihood of being incarcerated when adults, which could be driven by gang association. Children's gang recruitment is in turn one of the main reasons for child migration, which is evidenced in the increased number of unaccompanied children apprehended at the U.S. border from the Northern Triangle.¹⁶

Moreover, gangs are directly responsible for the increase in homicides and generalized violence in El Salvador in the last two decades (ICG, 2017a, 2017b). Gangs employ violence as a recruitment mechanism, for group cohesion, and to delimit their territory particularly for the extraction of extortion rents (InSight Crime and CLALS, 2018). The financial base of gangs is the extortion of businesses and individuals located in the territories they control, out of whom they extract *la renta* collected weekly or monthly as a percentage of their income (InSight Crime and CLALS, 2018). El Salvador's Central Bank has estimated the cost of extortions to small and medium enterprises at US\$7.5 million, which accounts for 3 percent of GDP (Peñas et al. 2016). Transportation companies are particularly vulnerable to gang extortion, which have now normalized the payment of extortion rents accounting for 10-25 % of their earnings, otherwise if opposed, gangs have burned buses or killed transportation companies' owners and workers for not paying the rent (Martínez et al. 2016, Parkinson, 2014, Avelar, 2016). Although most homicides relate to turf wars between rival gangs over extortion territories, gangs have been found to have the ability to collude in order to maximize their profits from extortion. Sviatschi et al. (2020) document that a recent non-aggression pact between gangs MS-13 and the two fractions of 18th Street to stop homicides, led to a 20 percent increase in extortion rates in municipalities where gangs were previously competing. The ability to collude when necessary has also been evidenced

¹⁶El Salvador and other Central American countries exhibit an alarming steep increase in the number of children migrating unaccompanied driven by high levels of gang-related violence in countries of origin, where between 2011 and 2016, 178,825 children were apprehended (UNHRC, 2014).

in other criminal organizations such as drug cartels (Castillo and Kronick, 2020), which shows that these criminal organizations resemble cooperation pacts between profit-maximizing firms to protect themselves from competitors, with the important difference that gangs use violence to ensure protection.

Salvadoran gangs are thought to also be involved in drug-trafficking; however, qualitative and journalistic investigations suggest that their participation in the international drug market is not significant. Salvadoran gangs are involved in the *narcomenudeo* or the sell of illegal drugs in small quantities. Some gang leaders are attempting to get more directly involved in the distribution, buying and selling of drugs; however, their main business pertains largely to imposing a rent on local traffickers (InSight Crime and CLALS, 2018). Their little involvement in drug-trafficking can result from the fact that serious drug-trafficking organizations do not trust them as they are considered unreliable and volatile (Martínez et al. 2016). Although their control over extortion rents has increased over time, Central American gangs and their members do not have financial power, they continue being relatively poor. An investigation by the New York Times and El Faro, a Salvadoran digital investigative newspaper, found that the average amount of money collected by gangs in a week was US\$600,000, which may seem a lot but divided by their estimated 40,000 members it results in US\$15 a week or approximately US\$65 a month (Martínez et al. 2016). These are rough estimates of their profits but they show that Salvadoran gangs, although powerful in exerting violence and extracting extortion rents, are very far from being financially sound as billion-dollar criminal organizations such as the Zetas of Mexico or Yakuza of Japan (Martínez et al. 2016). Hence, an important question for future research is how these criminal organizations have so much power and control and yet they are so poor.

Lastly, criminal organizations not only have an economic impact on the communities they govern but they also influence political outcomes. The Italian Mafia has been evidenced to influence political elections in Sicily where the strongest party is able to secure Mafia's electoral support in exchange for economic advantages in Mafia's activities such as in the construction sector (De Feo and De Luca, 2013) or for more favorable policies toward them (Buonanno et al., 2014). Moreover, criminal organizations frequently employ violence before or after elections as a strategy to influence political outcomes and to achieve their economic objectives. For instance, regions in Sicily that are Mafia-dominated, exhibit increases in homicide rates before elections, where electoral violence is used as a tool to discourage honest politicians from running (Alesina et al. 2019; Pinotti, 2012). Violence is also used by Mafia post-elections to condition government's activities and to prove that they are influential since the beginning of the political term (Daniele and Dipoppa, 2017). Similarly, in Mexico, public officials and political candidates are more likely to become victims of violent attacks by cartels in areas where there is higher drug-related violence, political vulnerabilities and opportunities as a mechanism to establish criminal governance

regimes (Trejo and Levy, 2021).

There is no empirical evidence on whether Central American gangs influence politics or the strategies that they employ to do so, which is crucial to shedding light on the channels through which gangs are gaining greater power. However, journalistic investigations particularly from *El Faro* show that gangs have strong political influence and that all political parties have negotiated with them for political support across time (Martínez et al. 2020; Martínez, 2020a, 2020b; Martínez and Valencia, 2016). The most evident case was the 2012 gang truce between the first left-wing government and the three main gangs, where the actors involved negotiated a drop in homicides in exchange for the transfer of gang leaders from high-security prisons to regular ones and other carceral benefits (Martínez and Valencia, 2016). Although the gang truce was ended by the government in 2014, the FMLN continued negotiating with them underground particularly asking for their electoral support in the next presidential elections, where effectively their candidate won after tight elections (Martínez and Valencia, 2016; Martínez, 2020q).¹⁷ Likewise, the right-wing political party, ARENA, attempted negotiations for the same presidential elections (Martínez, 2020a). More recent investigations show that the current Salvadoran president Nayib Bukele has also negotiated with gangs since the period when he was Governor of San Salvador to his current presidency. Recent penitentiary registries evidence that Nayib Bukele and his political party *Nuevas Ideas* negotiated with gangs for their support in the 2021 elections for Congress in exchange for many concessions including receiving better food, undoing the mixing of different gangs in the same prison, softening the maximum security regime and other benefits (Martínez, 2020b; Martínez et al. 2020). *Nuevas Ideas* effectively won overall majority in Congress in 2021 earning 56 out of 84 seats, excluding allies, compared to zero seats they had before. The mechanisms and consequences of these negotiations with gangs for electoral support deserve further analysis, where violence is evidently a bargaining weapon.

The existing evidence sheds light on the adverse socio-economic impacts of transnational criminal gangs, which have been found to decrease economic and human capital development, to increase extortions and violent crime, and to influence electoral outcomes. The empirical study of the economic and political impacts of Central American gangs is relatively new, which poses an opportunity for developing further theoretical and empirical work.

4 Conclusion

The Northern Triangle of Central America exhibits some of the highest homicide rates in the world, largely driven by gang-related violence. Central American gangs started out as local street youth gangs; however, a combination of historical and socio-economic factors as well as

¹⁷Frente Farabundo Martí para la Liberación Nacional (FMLN) was the political party of the presidential candidate in office and the one who negotiated the truce with the gangs in 2012.

state action have contributed to their growth and strengthening into transnational criminal organizations. This article sought to advance understanding on the formation, development and consequences of gangs in Central America by bringing together evidence from the fields of Sociology, Criminology and Economics.

The ample sociological study of gangs evidence that Central American gangs are the result of a combination of factors including internal conflicts and violence, marginalization, migration, social exclusion, dysfunctional families, rapid urbanization and lack of economic opportunities for youths, present in these countries for years. Gangs in Central America started out as difused street gangs in the 1960s but have evolved over time to become criminal organizations present in several countries and continents. The U.S. deportation of Central American immigrants combined with challenging socio-economic conditions returnees found in their countries of origin facilitated the conditions for gangs to grow and develop.

The economic study of criminal organizations has allowed empirically locating the origin of gangs to the U.S. deportation of Salvadorans with a criminal background who were exposed to violence and gangs in the U.S. and brought criminal capital back to their places of origin. However, it was actually policies implemented to address crime what influenced their growth and organization. Tough-on-crime policies implemented in the early 2000s, which led to the massive incarceration of gang members, contributed to gangs' organization, recruitment of members and increase in power. As a result, gangs have the power to govern many communities from prisons and directly impact their economic development and growth. The literature finds that gangs hinder economic and human capital development, increase extortions and homicides and influence political outcomes. The economic study of gangs is relatively new, which evidences the need for further theoretical and empirical work on the factors contributing to their origin, their effect on development and politics, the role of tough-on-crime policies on their expansion and organization and the impacts of their criminal governance.

Building empirical evidence on the causes, consequences and functioning of these criminal organizations is crucial to the formulation of more effective policies to address organized crime. Policy-makers ought to also acknowledge the multidimensional nature and impact of criminal gangs in the region and that as such they cannot be contained solely with repressive measures. Youth inactivity is a salient problem in El Salvador and other Northern Triangle countries, where understanding and addressing the economic and social challenges that youths face is crucial to preventing them from joining gangs. The use of repression can be needed to contain extreme demonstrations of violence, but these measures should be more strategically targeted in order for them to be effective. Addressing prison overcrowding is just as relevant, as current prison conditions only contribute to the generation of new criminal capital, they enhance gang cohesion and organization and eliminate the possibility of rehabilitation. Hence, the pacification of Central

American gangs requires the formulation of integral policies that incorporate crime prevention for youths at risk, better targeting of policing, rehabilitation of ex-convicts and gang members as well as criminal justice system reform, to mention a few.

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Chapter 3

Forced Return Migrants and Violence: Perpetrators or Victims of Crime?

Abstract

Over three million immigrants from Mexico, El Salvador, Guatemala and Honduras have been removed from the U.S. since the Obama Administration (TRAC, 2020). Despite these large flows of returnees, little is known about their overall impact in their countries of origin. This study examines whether recent deportations of Salvadorans with and without a criminal background impact violent crime and how this effect varies by the presence of gangs. I find that in municipalities dominated by gangs, the repatriation of Salvadorans without a criminal background leads to an increase in homicides, whereas criminal deportations lead to a reduction in violent crime. These contrasting effects can be better understood by exploring heterogeneity of deportees and victims of violent crime, where there are three main mechanisms in place. First, the deportation of Salvadorans who have committed most serious crimes continues contributing to gang membership, which increases gang-related violence. Second, deported Salvadorans who have committed less serious crimes can actually have a positive contribution to the local labor market, which decreases their likelihood of re-offending and in turn reduces violent crime. Lastly, the deportation of young males without a criminal background to gang-dominated areas increase homicides by deportees becoming the victims of violent crime as they represent perfect targets for gang recruitment. The policy implications that emerge from this study are relevant for immigrants' sending and host countries. On one hand, U.S. immigration policies that aim at deterring further irregular migration have failed at doing so and are instead contributing to fueling a cycle of violence-driven migration while exposing deportees to death and abuse. On the other hand, as more immigrants are being forced to return, programs of assistance to returnees are key to their proper reintegration into society and to taking advantage of their productive potential.

Keywords: Forced Return Migration, Violence, Central America, Organized Crime, Gangs.

1 Introduction

The last two decades have seen a significant increase in the number of U.S. removals of immigrants particularly from Latin America and the Caribbean (LAC) as a result of the strengthening of immigration enforcement. Over three million immigrants from Mexico, El Salvador, Guatemala and Honduras have been removed from the U.S. since the Obama Administration (TRAC, 2020). Despite these large flows of returnees, little is known about their overall socio-economic impact on their countries of origin.

The Illegal Immigration Reform and Immigration Responsibility Act (IIRIRA) implemented in the 1990s and the policies that followed, have led to increasing deportations of undocumented immigrants with a criminal background, which have adversely affected immigrants' origin countries (Manwaring, 2007). Recent empirical evidence show that U.S. deportations served as a mechanism of exportation of criminal capital to Central America, which in turn has contributed to the proliferation of gangs and violence in immigrants' countries of origin (Kalsi, 2018; Ambrosious, 2021; Sviatschi, 2020).¹ As a result, northern Central American countries exhibit some of the highest homicide rates in the world, largely attributed to turf wars between the two major gangs *Mara Salvatrucha* (MS-13) and *Barrio 18* (18th Street).² Just in 2015, El Salvador exhibited 103 homicides per 100,000 inhabitants, one of the highest homicide rates in the world outside a war zone (UNODC, 2019). These flows of returnees have changed in magnitude and composition over time, where further empirical evidence is needed on how they impact origin countries.

In this study, I address two main research questions in the context of El Salvador. I examine whether recent deportations of Salvadorans with and without a criminal background impact violent crime and whether this effect varies by the presence of gangs. In order to empirically address these questions, I exploit time variation in the arrival of deportees and geographic variation in the presence of gangs across the 262 Salvadoran municipalities from 2012 to 2019.³ I proxy for deportees' municipality of relocation employing their known municipality of birth. On the other hand, I take advantage of a series of tough-on-crime policies implemented since the early 2000s that led to the massive incarceration of gang members to proxy for the presence of gangs across the 262 Salvadoran municipalities. It is important to note that I do not employ deportees' municipality of birth and early gang presence as instruments for deportees' municipality of relocation and current gang presence, respectively, as data on the latter are either unexistent or confidential. Consequently, I carry out reduced-form estimations to address both research questions.

¹The Mara Salvatrucha or MS-13 gang is now present in several countries outside the U.S. and El Salvador including Guatemala, Honduras, Mexico, Spain and Italy (InSight Crime and CLALS, 2020).

²MS-13 and 18th street gangs are responsible for a wide range of crimes including extortions, drug trafficking, smuggling of migrants, human trafficking, and money laundering.

³This period also marks historic high levels of U.S. deportations.

The empirical analysis shows that most recent deportations of Salvadorans continue having a significant impact on violent crime, predominantly through the presence of gangs. The timing of the effect is pretty immediate after the deportation of Salvadorans but it can experience up to a one-year lag, when the magnitude of the effect is larger. More specifically, I find that a monthly 10 percent increase in U.S. removals of Salvadorans without a criminal background leads to a 1.5 percent increase in monthly homicides in municipalities where gangs are present. In addition, I find that a 10 percent increase in criminal deportations leads to a 2 percent increase in homicides in municipalities where gangs are not present and a 1.3 percent reduction in homicides in gang-controlled areas. These effects are largely driven by the deportation of men, which mostly impacts the homicide rate of males and young individuals.

In order to better understand the mechanisms behind the observed effects, I exploit heterogeneity of deportees and victims of violent crime and further analyze the reasons behind gangs' use of violence. The observed impact of deported Salvadorans on violent crime can be explained by three main channels. First, the deportation of Salvadorans who have committed most serious crimes continues contributing to gang membership and turf wars between gangs, which increase gang-related violence. Second, deported Salvadorans who have committed less serious crimes can actually have a positive contribution to the local labor market, which decreases their likelihood of re-offending and can in turn reduce violent crime. Lastly, the deportation of young males without a criminal background to gang-dominated areas increase homicides by deportees becoming the victims of violent crime as they represent perfect targets for gang recruitment.

This article makes several contributions. First, to the best of my knowledge, this is the first study that separately evaluates how the deportation of Salvadorans with and without a criminal background impact local crime, where most evidence has concentrated on the effects of criminal deportations. Assessing both effects is becoming increasingly relevant as non-criminal deportations have risen to represent 63 percent of total deportations and could also potentially have a positive effect on the revitalization of their communities of origin. In addition, this article provides more up-to-date empirical evidence on how recent U.S. deportations continue having an impact on the strengthening of gangs nearly two decades after the deportation of the first gang members in the 1990s. Lastly, this study also provides a more complete description of who deported Salvadorans are with the objective of contributing to their destigmatization as criminals. Changing this rhetoric is key to reducing the discrimination and exclusion deportees face upon return and can in turn contribute to their better reintegration into Salvadoran society.

The policy implications that emerge from this study are relevant for countries of origin and destination of immigrants. On one hand, U.S. immigration enforcement policies implemented with the objective of deterring further illegal migration have achieved the opposite as evidenced by the increasing number of illegal border crossings as well as asylum-seekers from the Northern

Triangle in the last years (Hackman and Caldwell, 2021). In addition, increasing deportations expose immigrants to the conditions they initially fled from, violence and persecution, contributing to the cycle of violence-driven migration. On the other hand, as a higher number of immigrants continue being deported to origin countries, improved programs of assistance to returnees are key to their proper reintegration into society. In order to interrupt the cycle of violence-driven migration toward the U.S., policy-makers should depart from solely implementing untargeted massive deportation strategies, and instead prioritize policies that address its root causes as well as safeguarding those who choose to migrate.

The outline of the paper is as follows. Section 2 reviews the U.S. immigration enforcement laws implemented in the last decades and surveys the literature on return migration and its socio-economic impacts. Then, Section 3 describes the data used and provides summary statistics. Section 4 presents the methodology and empirical strategy employed, while the main results are summarized in Section 5. Section 6 discusses possible mechanisms and section 7 concludes.

2 Background

In this section, I first provide a review of the U.S. immigration enforcement laws implemented since the 1980s, which have changed the size and composition of deportations. Then, I survey the literature on the economic consequences of return migration.

2.1 U.S. Immigration Laws: A Review

In the last decades, the United States has considerably intensified their immigration enforcement in securing their borders, removing immigrants with a criminal background and deterring further illegal migration. As a result of these changes in immigration enforcement, there has been a steep increase in the removal of immigrants particularly from Mexico and Central America. I review some of the most relevant policies and their impact on removals in the last decades.⁴

In 1986, the administration of president Reagan signed the Immigration Reform and Control Act (IRCA), which had the major implication of prohibiting the employment of immigrants with illegal status. This was the first step toward penalizing the employment of undocumented immigrants. The two main enforcement mechanisms employed by IRCA were the I-9 system, which allowed employers to verify the employment authorization of employees and the employers' sanctions program where employers knowingly hiring undocumented immigrants could be fined up to US\$10,000 (Larson, 2012). Following IRCA, the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA) was signed to law in September 1996, which sought to address IRCA's

⁴Table A.1 provides a detailed description of the immigration policies implemented in the U.S. across time and the major changes associated with each policy, starting with the Immigration Reform and Control Act (IRCA) in 1986 to the most recent modifications of the Secure Communities program.

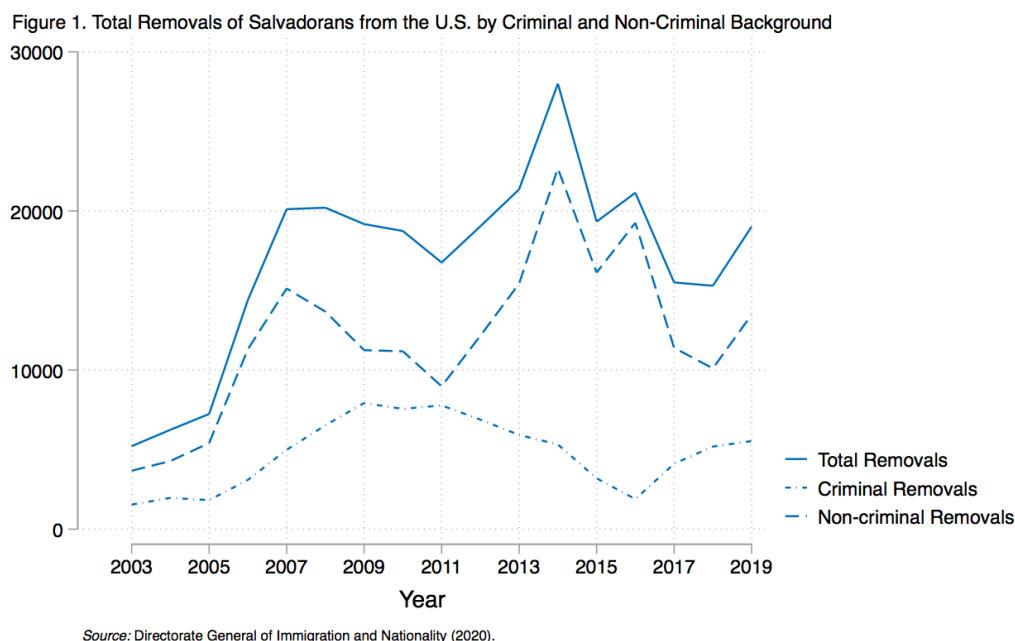
shortcomings (Kerwin, 2018). IIRIRA has had an enormous impact on changing the immigration enforcement system through the different programs created, for which it has been deemed the "formidable deportation machinery" (Meissner et al., 2013). IIRIRA changed U.S. immigration enforcement in many profound ways. On one hand, funding destined toward border and interior immigration enforcement increased significantly, such that U.S. immigration enforcement budget rose from nearly US\$3 billion in 1997 to US\$21.1 billion in 2018 (Kerwin, 2018). Moreover, IIRIRA expanded the crimes that were considered an aggravated felony from murder, trafficking of weapons, and controlled substance offenses to also including smuggling, money laundering, and crimes of violence or theft (Morris, 1997). After IIRIRA, many immigration-related offenses were considered crimes such as false claims to citizenship, high-speed flight from an immigration checkpoint, and illegal re-entry to mention a few (Kerwin, 2018). Finally, as part of IIRIRA and as consequence of the 9/11 terrorist attacks, the U.S. Department of Homeland Security (DHS) was created in 2002 to protect Americans from terrorist threats. IIRIRA significantly changed the immigration enforcement system in the U.S. influencing the criminalization of immigrants, furthering the barriers faced by asylum-seekers and separating immigrant families.

The Secure Communities program was initiated by ICE in 2008, and it granted state or local enforcement agencies immigration enforcement authority. The Program was fine-tuned during the Obama administration where it went from being voluntary to requiring state and local enforcement agencies' cooperation with federal immigration authorities (Johnson, 2017). As a result of this, in the first six years of the Obama presidency, removals through the Secure Communities program spiked to record high levels of 400,000 non-citizens a year (Johnson, 2017). Oppose to its objective of removing immigrants with a criminal background, ICE showed that approximately 79 percent of removals through the Secure Communities program had no criminal record or had committed offenses of low-level. In addition, around 96 percent of total removals were of immigrants from Mexico, El Salvador, Guatemala and Honduras (Johnson, 2017). The program was deemed successful in the removal of undocumented aliens; however, there was much criticism evidencing that immigration agents largely employed racial profiling to remove immigrants as most individuals removed were Latino. The program also had a harsh impact on families and communities of immigrants which led to its dismantling in 2014.

Immediately after ending the Secure Communities Program, the Obama Administration created the Priority Enforcement Program (PEP). PEP concentrated its efforts on the removal of the most serious criminal offenders and it significantly decreased the number of federal immigration detainers demanded of state and local law enforcement agencies (Johnson, 2017). More specifically, PEP focused on targeting individuals convicted for major criminal offenses or who otherwise posed a threat to public safety (ICE, 2019). The Trump Administration discontinued PEP, and put into place the Secure Communities program again since 2017 to the end of his ad-

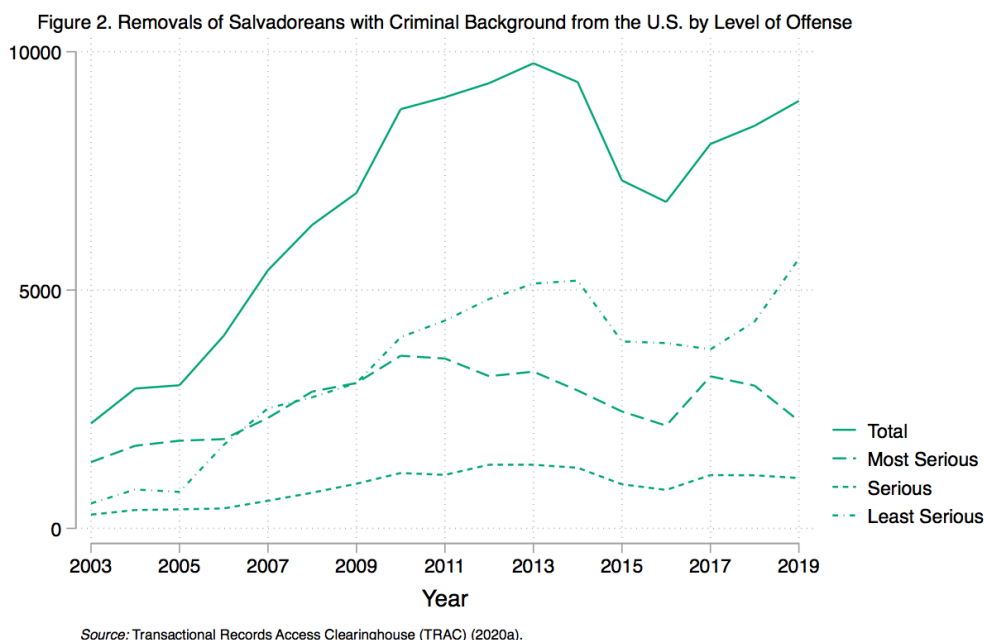
ministration. These immigration policies have exacerbated social inequities among immigrants by eliminating due process from the majority of removal cases, establishing the concept of ‘criminal alienhood’, dividing families with different migratory status and condemning immigrant families to a life of marginalization and insecurity (Kerwin, 2018; Abrego et al., 2017; Lopez, 2017).

As a result of these immigration enforcement changes, the number of removals from the U.S. increased drastically over time reaching its highest peaks in 2009 and 2014 with 391,283 and 405,589 total removals, respectively. In the case of El Salvador, approximately 300,000 Salvadorans have been removed from the U.S. from 2003 to 2019 and returned to their country of origin. Although the purpose of these interior enforcement laws is the removal of immigrants with a criminal background, after the early 2000s, a large portion of removals have been of immigrants without a criminal background. Figure 1 below presents the total number of removals of Salvadorans by criminal status from 2003 to 2019. It shows that up to 2005, the proportion of criminal and non-criminal removals were similar, but this changed particularly after 2011 when the large majority of removals of Salvadorans have been of individuals without a criminal background. For instance in 2007 and 2016, around 75 percent of removals were of immigrants without a criminal background, which is the predominant trend currently.



In addition, one of the most important changes of immigration enforcement policies was the widening of the list of crimes considered for removal. Data provided by El Salvador’s Directorate General of Immigration and Nationality does not disaggregate criminal deportations by different levels of seriousness of crime. However, I take advantage of national-level data provided by the Transactional Records Access Clearinghouse (TRAC) to describe the differences in seriousness of criminal deportations of Salvadorans across time. Figure 2 shows the total number of de-

ported Salvadorans with a criminal background disaggregated by three levels of seriousness of criminal offenses. Level 1 refers to the most serious crimes considered aggravated felonies such as homicides, assault, drug trafficking, fraud; level 2 or serious crimes refers to other felonies such as larceny, illegal re-entry and level 3 or least serious crimes refers to misdemeanors, including petty and other minor violations of the law such as traffic offense and illegal entry to the country (TRAC, 2020). Figure 2 evidences that from 2002 to 2009 most immigrants deported with a criminal background had committed most serious and least serious offenses; whereas from 2010 onward, most immigrants deported had committed least serious offenses. Consequently, since 2010, the large majority of repatriated Salvadorans have been individuals without a criminal background or immigrants who have committed minor violations of the law. Given these changes in the magnitude and composition of deported Salvadorans particularly in the last decade, it is pertinent to analyze how these flows of returnees impact their communities of origin.



2.2 Return Migrants and their Impact on Communities of Origin

As the number of return migrants from Central America continues rising, how and whether they affect their communities of origin is becoming an increasingly relevant research question. Their impact on origin countries may depend on a wide variety of factors including whether these are voluntary or forced returnees; the time they spent in the host country; whether they have a criminal background; social ties in origin countries, and the programs of reintegration for return migrants that countries of origin have in place, to mention a few. All of these factors influence the social and human capital returnees bring back to their communities of origin and how easily they are able to reintegrate and contribute to the local economy and social cohesion.

A growing number of studies evaluate how voluntary return migrants have a positive impact on their communities of origin. In Mexico, return migrants have been found to decrease violent crime (Bucheli et al., 2018), to improve household income, school attendance, literacy rate, to decrease infant mortality and to influence electoral participation in their local communities (Wadell and Fontela, 2015).⁵ Similar positive effects have been found outside of Latin America where returnees also generate economic opportunities and influence political outcomes. For instance in Egypt, when compared to those who never migrated, return migrants experience a wage premium (Wahba, 2015), exhibit an increased probability of becoming entrepreneurs (Wahba and Zenou, 2012) and also perceive a higher likelihood of surviving as entrepreneurs (Marchetta, 2012). In addition, a study in Mali finds that migrant returnees increase voter turnout and electoral competitiveness in their communities (Chauvet and Mercier, 2014). Return migrants have accumulated human, social, cultural and financial capital, which can be invested toward revitalizing their communities of origin.

On the other hand, the study of how forced return migrants impact their countries of origin has largely concentrated on the effects of criminal deportations. There are a few cross-country and country-specific studies that have particularly evaluated their effect on crime and violence. Cross-country descriptive evidence shows that criminal deportations are associated with an increase in homicides in Central America (Jakubowski, 2010) and across 123 countries, driven to a large extent by deportations to Latin America and the Caribbean (Ambrosius & Leblang, 2018). Country-specific studies provide evidence from Mexico and El Salvador predominantly. In Mexico, Rozo et al. (2021) find that an increase in deportations of Mexicans leads to an increase in the levels of violence in municipalities where repatriation centers are located.⁶ Moreover, the closest analyses to the present study evidence that the deportation of Salvadorans with a criminal background in the 1990s contributed to the development of gangs in El Salvador, which has also led to an increase in homicides (Kalsi, 2018; Ambrosius, 2021; Sviatschi, 2020). Gangs in Central America, that developed as a result of criminal deportations, have been evidenced to have several adverse consequences on the overall economic development of communities under gang-dominance (Melnikov, Schmidt-Padilla and Sviatschi, 2020) and also on children's human capital development (Kalsi (2018); Sviatschi, 2018).

Little is known about how forced return migrants without a criminal background impact their countries of origin. To the best of my knowledge, the present study is the first one to analyze the effects of non-criminal deportees on crime and to consider different alternative channels through which deportees impact crime and other economic outcomes. Returnees, who are predominantly

⁵The case of Mexico is peculiar as in the last decade it has experienced a migration reversal where there are more people returning voluntarily to Mexico than migrating to the U.S.

⁶Rozo et al. (2017), however, do not differentiate between criminal and non-criminal deportees, but rather estimate the effect of total deportees.

young males, are the perfect target for gang recruitment and can potentially also become their victims. Simultaneously, just like voluntary return migrants positively contribute to their communities of origin, non-criminal deportees who have gained social, human and financial capital while abroad can potentially also have a positive impact on their communities of origin. The closest study that provides evidence in this direction is done by Bandiera et al. (2020) who evidence that total deportations of Salvadorans have a positive effect on firm growth as shown by an increase in exports, number of new branches and value-added per worker. This strand of the literature on the impacts of forced criminal and non-criminal return migrants is very recent, which poses an opportunity for further research.

3 Data and Descriptive Statistics

This study employs three main sources of data. First, I use monthly municipal-level data on the total number of victims of violent crime or homicides provided by the National Civil Police from 2007 to 2019 (PNC, for its Spanish acronym). These data consist of monthly and annual counts of total victims of homicides. In order to explore heterogeneity of victims of violent crime, I complement these homicide data with monthly data on violent deaths by gender and age group of the victim provided by the General Attorney Office. These two measures of violent crime are very similar despite coming from two different sources.⁷

Second, I employ monthly data on the total number of removals of Salvadorans from the U.S. by their municipality of birth from 2012 to 2019 obtained from the Directorate General of Immigration and Nationality (DGME). These data are further disaggregated by criminal and non-criminal status, gender and child/adult classification of returnees. Non-criminal deportations refer largely to immigrants who reside in the U.S. without documentation but have not committed serious crimes, which includes individuals who entered the country legally and overstayed,⁸ a civil offense,⁹ and those who entered the country without authorization. Although deported Salvadorans classified as not having a criminal background have committed at least the crime of residing without documentation in the country, classifying them as non-criminals is a more accurate representation of the type of capital they bring back to origin countries. On the other hand, criminal deportations encompass immigrants who have committed criminal offenses of different levels of seriousness including larceny, assault, drug trafficking and homicides (TRAC, 2021). Categorizing deported Salvadorans into having a non-criminal or criminal background

⁷The average monthly homicide and violent death rates are 4.52 and 4.51, and the yearly rates are 54.23 and 54.10, respectively.

⁸At least half of undocumented immigrants entered the country legally and then overstayed (Pew Research Center, 2008).

⁹A report by the Congressional Research Service (2006) describes that "being illegally present in the U.S. has always been a civil, not criminal, violation of the Immigration and Nationality Act, and subsequent deportation and associated administrative processes are civil proceedings."

allows to estimate more precisely how non-criminal and criminal capital impact violence and gangs in their country of origin.

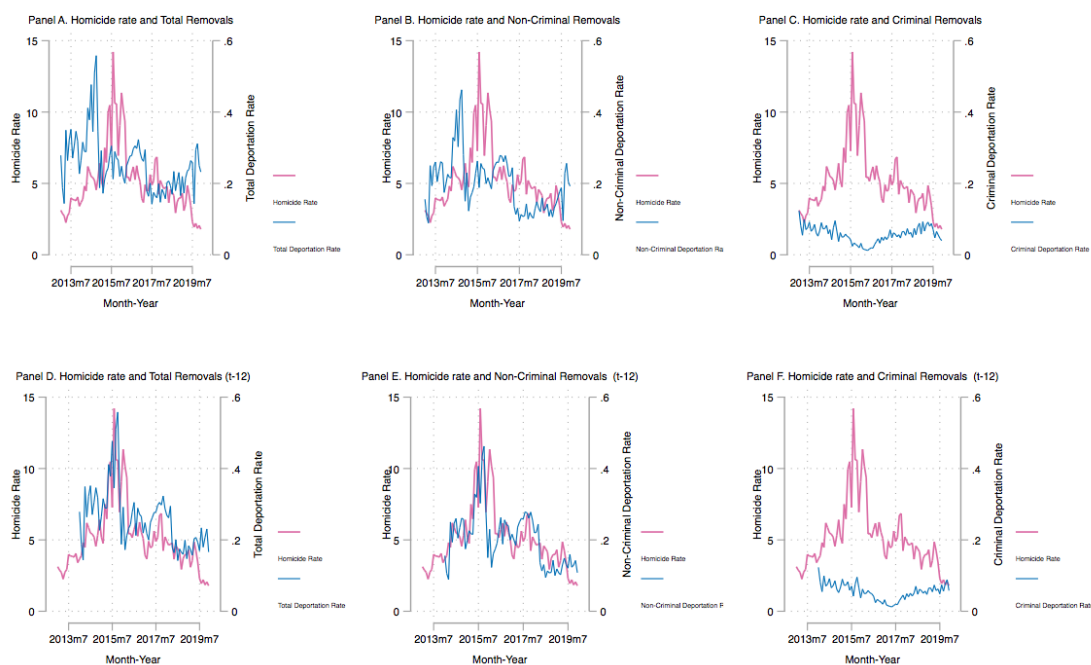
I would like to note that the DGME data on deportees employed in the present study differs from the data on removals reported by the Department of Homeland Security (DHS) on one key aspect. DHS classifies deportees who entered the country illegally as having a criminal background whereas the DGME does not classify them as such. This is an important distinction as in more recent years, under DHS data, approximately 25 percent of deported Salvadorans are classified as criminals because they entered the country illegally. To better understand this difference and its change over time, Figure A.1 shows the total number of removals of Salvadorans by criminal status from 2003 to 2019 from DHS and DGME data. It also includes data from the Transactional Records Access Clearinghouse (TRAC) by Syracuse University to provide an additional data check.¹⁰ Figure A.1 evidences that the total number of removals by the three sources of data are very similar across time. However, the DHS and DGME data differ particularly after 2011 when disaggregated by criminal and non-criminal removals due to different classifications of persons who entered the country illegally. In addition, Table A.2 presents the top 5 deportable crimes from 2003 to 2019 as classified by DHS data. And it shows that the most common deportable crime has changed over time from serious crimes such as assault and selling drugs in 2003 to entering the country illegally in 2019. Although these individuals have broken the law by entering the country without authorization, grouping them in the same category as persons who committed more serious crimes is an overestimation of the criminal capital sent back to countries of origin. Consequently, the categorization employed by DGME represents an advantage of the data to the present study as it allows measuring more accurately non-criminal capital.

In order describe the data employed in the present study, Figure 3 first presents monthly homicide rates along with total, criminal and non-criminal deportation rates at time T and 12 months prior, T-12. Figure 3 evidences that homicides and total deportations exhibit a very similar trend over time, particularly between 2003 and 2017 with some lag. This similar trend is largely driven by non-criminal deportations rather than criminal deportations. Homicides reached a peak in 2015 with 103 homicides per 100,000 inhabitants and over 28,000 Salvadoran immigrants were repatriated just in in 2014. Moreover, descriptive statistics of monthly and annual homicides and deportations at the municipality level are provided in Table 1. On average, there are nearly 16 homicides per year or 55 homicides per 100,000 individuals at the municipality level. In terms of deportations, there is an average of 79 repatriated persons per municipality which translates into a repatriation rate of 4.4 per 1,000 inhabitants. Repatriations represent a small percentage of total municipal population, 0.5 percent, but in very few municipalities they can represent up

¹⁰The Transactional Records Access Clearinghouse (TRAC) is a data gathering, data research and data distribution organization at Syracuse University that uses the Freedom of Information Act (FOIA) to provide information to users.

to 4 percent. The large majority of repatriations are of adults, with less than 1 percent being of children and 87 percent of total repatriations are of men. On average, deportations that took place in the period of study have been predominantly of persons without a criminal background, where non-criminal deportations represent 80 percent of total removals.

Figure 3. Homicides and Deportations per Month



Source: National Civil Police (2020) and Directorate General of Immigration and Nationality (2020).

Table 1. Descriptive statistics

Variable	Monthly			Annual		
	Obs.	Mean	St. Dev.	Obs.	Mean	St. Dev.
Homicide rates (per 100,000 indiv.)	25,152	4.52	10.14	25,152	54.23	54.97
Total removals (per 1,000 indiv.)	25,152	0.37	0.40	25,152	4.40	3.29
Total removals adults (per 1,000 indiv.)	25,152	0.36	0.40	25,152	4.37	3.27
Total removals children (per 1,000 indiv.)	25,152	0.00	0.04	25,152	0.03	0.14
Non-criminal removals (per 1,000 indiv.)	25,152	0.29	0.35	25,152	3.44	2.77
Non-criminal removals adults (per 1,000 indiv.)	25,152	0.28	0.35	25,152	3.41	2.76
Non-criminal removals children (per 1,000 indiv.)	25,152	0.00	0.04	25,152	0.03	0.14
Criminal removals (per 1,000 indiv.)	25,152	0.08	0.14	25,152	0.95	0.90

Source: National Civil Police (2020) and Directorate General of Immigration and Nationality (2020).

The last source of data employed in this study comes from the General Directorate of Penal Centers on the universe of persons who entered the penitentiary system between 2000 and 2018. This micro-level dataset includes information on prisoners' age, gender, date of birth, years of education, crime committed, municipality of birth and residence, and gang affiliation. Table A.3 provides some descriptive statistics of the total number of prisoners per year. This table evidences that the prisoner population has increased drastically in El Salvador starting from 2003 due to the implementation of *Mano Dura* or tough-on-crime policies. These anti-crime measures led to

increasing incarceration predominantly of young males associated to gang membership (Wolf, 2017).¹¹ The large majority of prisoners are males and the average age of inmates has decreased over time signaling that young individuals are being increasingly incarcerated. I use these data on the universe of prisoners to construct a proxy for gang presence.

4 Empirical Strategy

The present study exploits time variation in the arrival of deportees and geographic variation in the presence of gangs across municipalities to address two main research questions. First, I examine whether the deportation of Salvadorans with and without a criminal background have a direct impact on violent crime in their country of origin and estimate the following Equation (1):

$$\begin{aligned}
 Crime_{m,t} = & \alpha + \beta_1(NoncriminalDeportation_{m,t}) \\
 & + \beta_2(CriminalDeportation_{m,t}) \\
 & + \gamma_m + \varphi_{t \times y} + \sum_{c \in X_m} \delta(c \times \varphi_{t \times y}) + \varepsilon_{m,t}
 \end{aligned} \tag{3.1}$$

where $crime_{m,t}$ corresponds to the homicide rate per 100,000 inhabitants per municipality at time t . Crime data usually suffers from high under-reporting. In the crime literature, this problem is usually dealt with by taking logarithms of crime rates and including geographical and year fixed effects which take away the measurement error that is constant within geographic areas across time (Ehrlich, 1996; Levitt, 1996; Bianchi et al., 2012). The logarithm of the reported crime rate is in turn a proxy for the logarithm of the actual crime rate. Although homicide data usually does not suffer from this problem, I account for this possible bias by employing an inverse hyperbolic sine transformation of homicide rates. As evidenced in Figure A.2., the inverse hyperbolic sine transformation approximates the natural logarithm of a variable and allows retaining zero-value observations.

Furthermore, $Non-criminalDeportation_{m,t}$ and $CriminalDeportation_{m,t}$ refer to the monthly U.S. deportation rate per 1,000 inhabitants of Salvadorans without and with a criminal background, respectively, per municipality at time t . The municipality of relocation of deportees once in El Salvador is endogenous as their choice may depend on a wide range of factors. In order to account for this, I use the municipality of birth of deported Salvadorans as a proxy for their municipality of relocation. I then carry out a reduced form estimation of Equation (1). X_m refers to a set of pre-determined socio-economic characteristics at the municipality level interacted with

¹¹As a result of these mass incarceration policies, El Salvador has one of the highest rates of incarceration in the world with 492 per 100,000 persons (Muggah and De Boer, 2019)

month-by-year fixed effects. Finally, γ_m and $\varphi_{t \times y}$ correspond to municipality and month-by-year fixed effects, respectively.¹² Municipality fixed effects account for time-invariant characteristics at the municipality level that could impact crime and repatriations simultaneously. While month-by-year fixed effects control for seasonality of crime and deportations and for specific time shocks impacting these simultaneously. Standard errors are clustered at the municipality level to account for serial correlation.

The second research question addressed in this study is whether the effect of deportations on violent crime varies by the presence of gangs, estimated by the following Equation (2):

$$\begin{aligned}
 \text{crimerate}_{m,t} = & \alpha + \beta_1(\text{GangPresence}_m \times \text{NonCriminalDeportation}_{m,t}) \\
 & + \beta_2\text{NonCriminalDeportation}_{m,t} \\
 & + \beta_3(\text{GangPresence}_m \times \text{CriminalDeportation}_{m,t}) \\
 & + \beta_4\text{CriminalDeportation}_{m,t} \\
 & + \gamma_m + \varphi_{t \times y} + \sum_{c \in X_m} \delta(c \times \varphi_{t \times y}) + \varepsilon_{m,t}
 \end{aligned} \tag{3.2}$$

where GangPresence_m is a dummy variable equal to 1 if gangs have some presence in any given municipality. Data on the number of gang members and their territorial control across all Salvadoran municipalities are confidential. Rough estimates approximate gang membership in El Salvador at 30,000 members with presence in both urban and rural areas (Perez, 2013). In order to overcome this data limitation, I take advantage of a series of tough-on-crime or *Mano Dura* policies implemented in El Salvador in the early 2000s, which aimed at incarcerating predominantly gang members, to identify where gangs are present across all 262 municipalities nearly one decade before the period of study. More specifically, gangs are predicted to be present in any given municipality if there is at least one gang member who was born in that municipality and was incarcerated between 2003 to 2005. Furthermore, I control for municipality and month-by-year fixed effects, and standard errors are clustered at the municipality level. I carry out reduced-form estimations for both deportations and gang presence in equation (2).

The following sub-sections discuss the relevance of the proxies for deportations and gang presence and address possible threats to their validity.

4.1 Deportations

The removal of immigrants from the U.S. is a plausible exogenous shock to immigrants' sending country as it is driven by the strengthening of immigration enforcement in the U.S. and not by deportees' decision to return to their country of origin. However, once in El Salvador, deported

¹²El Salvador is divided into 14 departments and 262 municipalities.

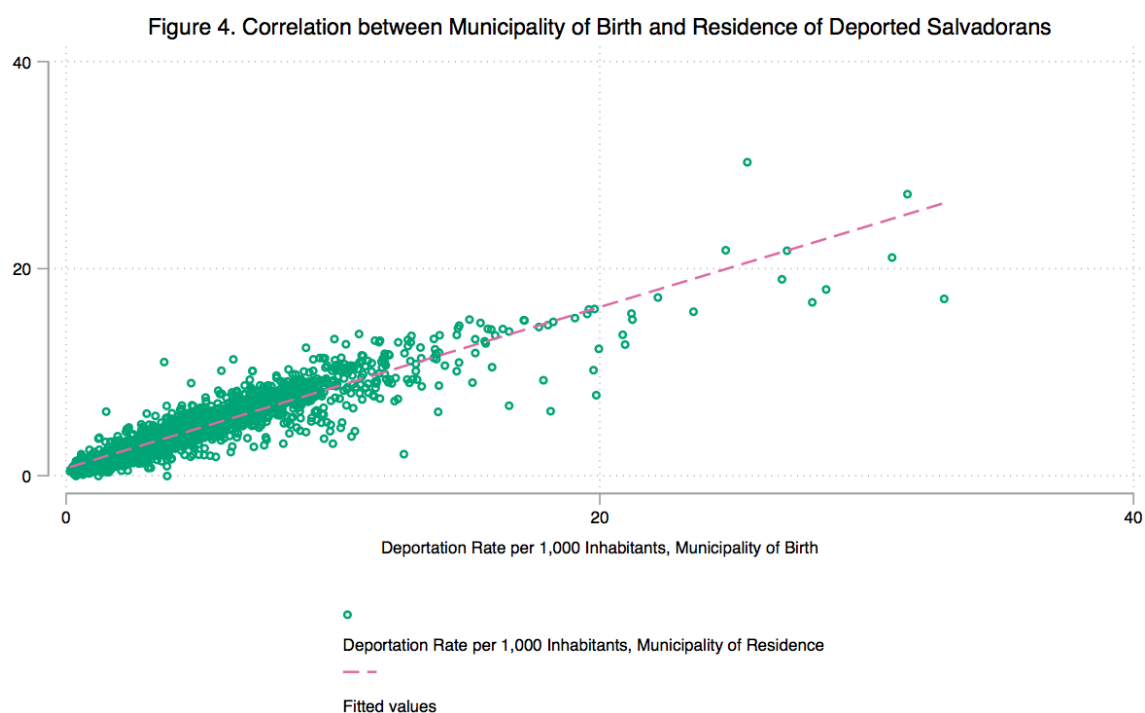
persons may decide to relocate to a specific municipality driven by social ties, violence levels, labor market conditions, and other factors. Thus, the place where deportees choose to relocate to is endogenous. I proxy for their municipality of relocation using deportees' municipality of birth.

The relevance of the proxy variable relies on the assumption that the municipality of birth of deportees can predict their municipality of relocation. I support the plausibility of this assumption with several pieces of evidence. First, in the absence of data on deported Salvadorans' municipality of relocation, analyzing how mobile Salvadorans were prior to their emigration can shed light on this relationship. Figure 4 presents the correlation that exists between their municipality of birth and their municipality of last residence. It evidences that there is a high correlation of 0.96 between the municipality of birth and residence of deportees. Hence, Salvadorans exhibit a low likelihood of relocating to areas other than their municipality of birth prior to their international migration. The geographic distribution of deported Salvadorans by their municipality of birth and residence is also shown in Figure A.3, where it can be observed that most deported Salvadorans were born and were residing in the north-eastern part of the country. In fact, the existence of social networks represents an insurance to the successful reintegration process of the returnee, which highly influence their relocation choice (Batista and Umblijs, 2016; Dostie and Léger, 2009; and Batista, McIndoe-Calder, and Vicente, 2016). Lastly, a recent empirical study that investigates the impacts of Salvadoran deportations on local businesses documents that more than 70 percent of deportees relocate to their municipalities of birth (Bandiera et al., 2021). Consequently, deported Salvadorans' municipality of birth is their most likely place of relocation.

On the other hand, there are a few possible threats to the exogeneity of the measure, which relies on the assumption that the municipality of birth of deportees has an impact on current homicides only through its prediction on where deportees will resettle once back in El Salvador. One possible violation to this assumption is if individuals were born in highly violent municipalities, which pushed more people out, and due to U.S. immigration enforcement targeted to areas with higher proportions of immigrants, more individuals return to those same poor and violent municipalities worsening economic conditions and increasing crime. This concern is addressed by controlling for municipality fixed effects throughout the entire analysis, which accounts for violence persistence over time, as well as for other time-invariant characteristics at the municipality level.

Alternatively, it can be the case that U.S. immigration enforcement is targeted to areas with a higher concentration of Salvadorans who are from certain municipalities only, which results in Salvadorans from those municipalities experiencing a higher likelihood of being deported. In this case, the measure of deportees' place of relocation would not induce random variation in the allocation of deportees. I address this concern in two stages. First, I check where immigration

enforcement is directed to in the U.S. and where total immigrants and Salvadorans predominantly reside. A report by the Migration Policy Institute (MPI, 2010) shows that the majority of Salvadorans in the U.S. reside in six states, Maryland, Virginia, Washington, DC, New York, California and Texas, with over 50 percent of them residing just in California and Texas. Furthermore, Figure 5 below presents scatterplots of four different types of correlations by U.S. State: A. Share of Total Immigrants vs. Salvadoran Immigrants; B. Share of Salvadoran Immigrants vs. Deported Salvadorans; C. Share of Total Deportations vs. Share of Total Immigrants and D. Share of Deported Salvadorans vs. Total Deportations. Figure 5 shows that as expected, there is a high correlation between where total immigrants live and where Salvadorans live as well as where total immigrants and Salvadorans are being deported from. However, there is a low correlation between where Salvadorans reside and where they are deported from. Most deportations of all immigrants take place in the states of California, Texas and Arizona, where many Salvadorans reside, but there is also a high proportion of Salvadorans residing in the east coast where deportations are low. Therefore, U.S. Immigration enforcement targets states with a higher proportion of immigrants, but these are not always the states with the highest proportions of Salvadorans as the latter represent only about three percent of total immigrants in the U.S.

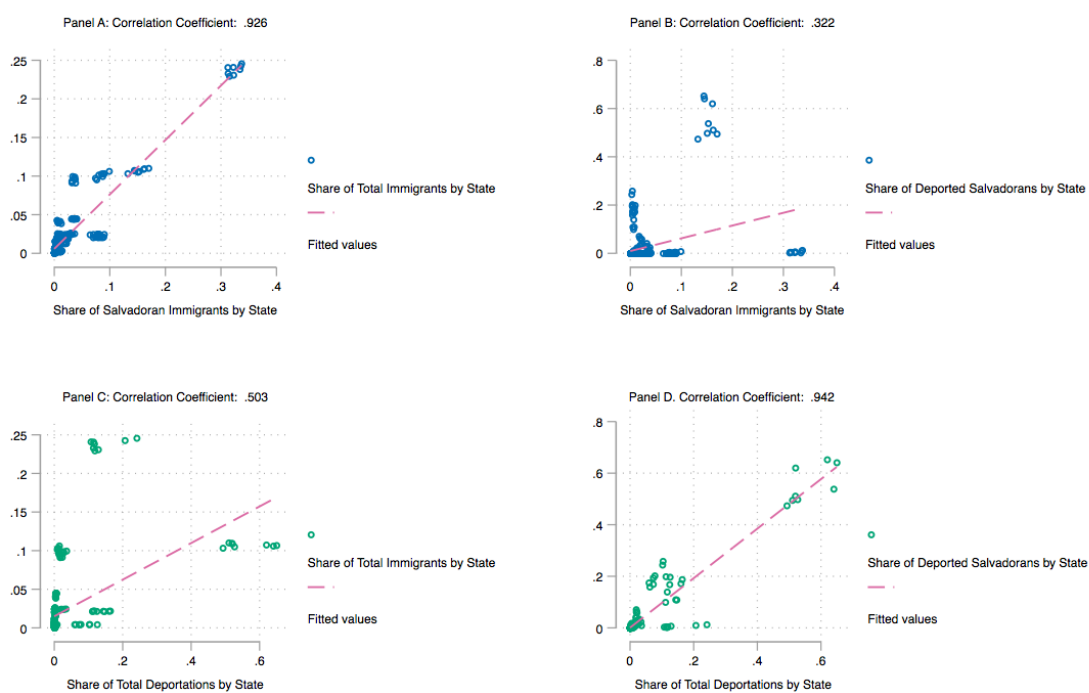


Source: Directorate General of Immigration and Nationality (DGME) (2020).

Second, due to U.S. immigration enforcement being targeted to certain states, I check if Salvadorans who are from some specific municipalities only are being deported at a higher rate. In order to test this, it would be ideal to have information on the municipality of origin of

Salvadorans and the state of residence in the U.S. from which they are being deported. In the absence of these data, information on origin and destination of remittances can allow us to establish this link. A recent report by the Salvadoran Central Bank (Banco Central de Reserva, 2014) provides information on the origin and destination of remittances for the six states where Salvadorans predominantly live. The report shows that most remittances sent from the state of California arrive to the central and western zones of El Salvador, particularly San Salvador, Santa Ana and Cabañas. Remittances sent from the states of Texas, New York, Virginia and Maryland, arrive predominantly in the eastern and central zone of El Salvador, particularly San Salvador, La Unión, San Miguel and Usulután. Evidence on origin and destination of remittances effectively shows that Salvadorans residing in the U.S. not only concentrate in areas where other Salvadorans live but also where Salvadorans from their same department of origin reside. If U.S. immigration enforcement concentrates in certain states, it is likely that Salvadorans from certain municipalities are being deported at a higher rate. However, I argue that this is not the case for El Salvador as both states where most deportations take place, California and Texas, each hosts Salvadorans from different areas of El Salvador, which overall leads to the removal of Salvadorans from all departments at a similar rate. Consequently, the municipality of birth of deported Salvadorans does not influence the likelihood of being deported at a higher rate.

Figure 5. Total and Salvadoran Immigrants State of Residence and Deportation



Source: IPUMS USA (2021).

4.2 Gang Presence

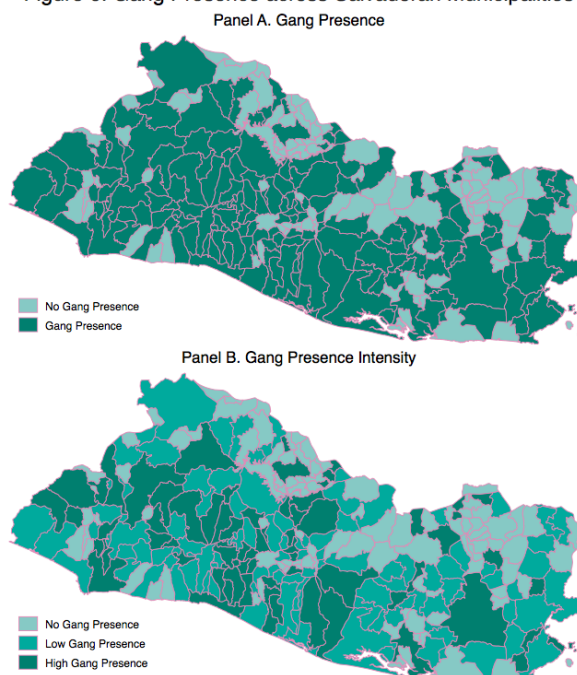
In order to identify the presence of gangs across the 262 Salvadoran municipalities, I take advantage of a policy intervention aimed at reducing gang-related crime in El Salvador that took place in early 2000s. In 2003, the Salvadoran government started implementing a set of *Mano Dura* or tough-on-crime policies that led to the incarceration of many young males who were associated to gangs (Law Library of Congress, 2012). In turn, the measure of gang presence predicts that municipalities where a higher number of individuals affiliated to gangs were incarcerated in the early 2000s, nearly 10 years before the current period of analysis, are more likely to have stronger gang presence today as policing efforts were directed toward these areas. More precisely, the proxy for gang presence is a dummy variable equal to 1 if there is at least one gang member who was born in that municipality and was incarcerated between 2003 and 2005, 0 otherwise. In Figure 6 below, Panel A shows the geographic distribution of gang presence estimated by the proxy measure. For comparability, Panel B presents the level of intensity of gang presence, which is estimated as 0 where gang prison rate is 0, Low if the gang prison rate in that given municipality is below or equal to the median and greater than 0 and High if the gang prison rate is above the median. As shown, gangs have a stronger presence in the central region of the country, where its capital San Salvador is located and where gang membership is the largest. However, gangs are present in most municipalities in El Salvador and have different degrees of territorial control.¹³

In order to show that *Mano Dura* policies implemented since the early 2000s significantly impacted the prison population of gang members, which allow the identification of gang presence, I carry out an event study analysis. Figure 7 shows an event study plot of the gang-related prison rate by their municipality of birth from 2000 to 2018. After 2003, which corresponds to $t=0$ the time period when the policy started being implemented, the gang-related prison rate rose significantly and it grew at an even higher rate the following years. At times $T=9$ and $T=10$, which correspond to years 2012 to 2013, there is an observable small decrease in gang-related incarcerations largely driven by a gang truce established between the two main gangs and the government in 2012, where gangs negotiated, among other things, a reduction in incarcerations. The gang truce ended in 2013, and shortly after from 2014 onward, there is a noticeable increase in gang-related incarcerations. By 2012, gangs had gained such level of strength that they could directly influence the impact of tough-on-crime policies on the incarcerations of their members. I focus on the early period from 2003 to 2005, when iron-fist policies had just started being implemented and those apprehended were predominantly gang members. Nearly 20 years ago, gangs did not possess the level of territorial control and organization they currently have to directly

¹³A recent report by the U.N. suggests that gangs have some presence in 247 of the 262 Salvadoran municipalities (UN Human Rights Office of the High Commissioner, 2018).

influence the impact of repressive measures on their incarceration rate, as they do today.

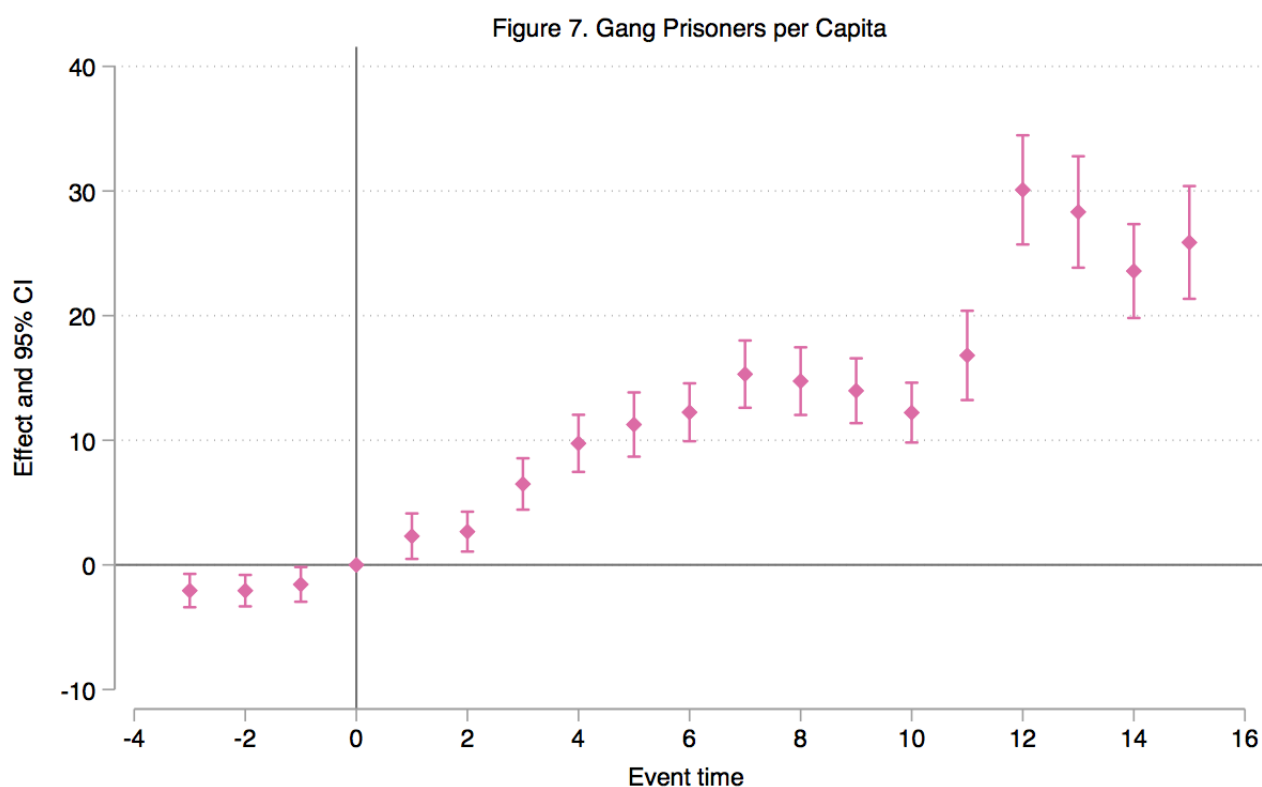
Figure 6. Gang Presence across Salvadoran Municipalities



Source: Directorate General of Penal Centers (2019).

A possible threat to the validity of the measure of gang presence is if opposite to what is expected, there is a lower proportion of gang members incarcerated in municipalities where gangs have strong territorial control due to gangs' capability to govern territories and avoid policing. The ample literature on criminal governance evidences that violence and presence of police is low in areas controlled by criminal organizations (Blattman, Duncan, Lessing and Tobón, 2019; Pinotti, 2015b; Alesina et al., 2016; Dell, 2015; Megaloni, Franco Vivanco and Melo, 2020). I argue that this is certainly the case in El Salvador in the present; however, nearly 20 years ago, gangs in El Salvador did not have the power and organization they do today. In fact, the massive incarceration of gang members that resulted from *Mano Dura* policies was actually the fertilizer to the organization and strengthening of gangs within prisons from where they now direct their criminal activities (Dudley and Bargeant, 2017; Dudley and Martínez, 2017). The direct effect of tough-on-crime policies on the development and growth of organized crime has been evidenced in other contexts including Brazil where prison-based gangs have transformed penitentiary institutions into headquarters for their criminal activities (Lessing, 2010, 2017; Lessing and Willis, 2019). Therefore, I expect that where a higher proportion of individuals associated to gangs were incarcerated in the early 2000s, there are lower levels of violence and incarceration today as gangs now have direct control over these outcomes. To check if this is the case, Figure 8 below reports the correlation that exists between the proxy for gang presence and the homicide and gang-related prison rate in 2018. This figure shows that the correlation between the measure of gang presence and current homicide rate is low, 0.04, which evidences gangs capacity to maintain

violence levels low in the areas they govern. On the other hand, the correlation between the proxy measure and current gang member incarceration is slightly higher, 0.19, but the correlation is still low. This higher correlation reflects that although gangs are present across almost all 262 municipalities, they still have weak control over the effects of policing in some of them. These additional checks evidence that the early incarceration rate of gang members by their municipality of birth induces exogenous variation of where gangs are more likely to be present today, nearly 20 years later.



5 Results

This section presents three sets of findings. First, I evaluate the impact of deportations disaggregated by criminal and non-criminal background on homicides. Then I assess how this effect varies by the presence of gangs across municipalities. And lastly I explore heterogeneity of victims of violent crime and deportees by their gender, age group and seriousness of criminal offense.

5.1 Deportations and Crime

Estimation results for Equation 1 are presented in Table 2 where I examine how criminal and non-criminal forced return migrants impact violent crimes. The effect of deportations on homicides

Figure 8. Instrument and Current Gang Prisoner and Homicide Rate



Source: Directorate General of Prisons (2019) and National Civil Police (2020)

may not be immediate and instead may experience some lag. For this reason, I estimate a flexible lagged structure of equation (1) at times t , 3, 6, 9 and 12 months prior to current time t , where results are provided in column (1). Columns (2) through (6) further analyze each time period separately. Table 2 shows that an increase in deportations of Salvadorans without a criminal background lead to an immediate increase in homicides, whereas criminal deportations lead to a weak increase in homicides. More specifically, a 10 percent increase in monthly non-criminal deportations at time t leads to a 0.7 percent increase in the monthly number of homicides per 100,000 inhabitants at time t , while a 10 percent increase in non-criminal deportations three months prior, leads to a 1 percent increase in the monthly homicide rate at time t . No statistically significant effect is found for previous months. On the other hand, a 10 percent increase in the monthly deportation of Salvadorans with a criminal background at time t leads to a one percent increase in the homicide rate, although this effect is weakly significant. Thus, non-criminal and criminal deportations are evidenced to increase violent crime, where the effect is immediate and stronger for non-criminal deportations.

Table 2. Effects on Homicides

	(1)	(2)	(3)	(4)	(5)	(6)
NonCriminalDeportation _t	0.045 (0.039)	0.066* (0.039)				
NonCriminalDeportation _{t-3}	0.098** (0.039)		0.105*** (0.038)			
NonCriminalDeportation _{t-6}	-0.028 (0.047)			-0.017 (0.047)		
NonCriminalDeportation _{t-9}	0.055 (0.043)				0.054 (0.043)	
NonCriminalDeportation _{t-12}	0.013 (0.042)					0.017 (0.042)
CriminalDeportation _t	0.052 (0.058)	0.092* (0.055)				
CriminalDeportation _{t-3}	-0.038 (0.056)		-0.032 (0.052)			
CriminalDeportation _{t-6}	0.051 (0.060)			0.058 (0.055)		
CriminalDeportation _{t-9}	-0.103* (0.060)				-0.087 (0.057)	
CriminalDeportation _{t-12}	0.035 (0.070)					0.039 (0.072)
Observations	22,008	25,152	24,366	23,580	22,794	22,008
R-squared	0.079	0.079	0.081	0.080	0.079	0.078
Municipality FE	✓	✓	✓	✓	✓	✓
Month×Year FE	✓	✓	✓	✓	✓	✓
Controls×Month×Year FE	✓	✓	✓	✓	✓	✓

Notes: The Table shows the monthly effects of deportations on homicides. It presents the effects at different time periods together and independently. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

For robustness, I also check for the cumulative yearly effect of deportations on homicides, results are shown in Table A.4. I find that a 10 percent yearly increase in non-criminal deportations leads to a 5 percent increase in the yearly number of homicides per 100,000 inhabitants. In this case, I find no statistically significant effect of yearly criminal deportations on homicides, neither of cumulative one-year lagged criminal and non-criminal deportations on violent crime.

5.2 Deportations and Gang Presence

Furthermore, I evaluate whether the impact of deportations on violent crimes varies by the presence of gangs across municipalities by estimating Equation (2). These results are presented in Table 3 below. Column (1) shows the results of the flexible lagged structure for current period time t and the four previous quarters, while columns (2) through (6) present the results for each time period separately. I find that municipalities that experience an increase in non-criminal deportees where gangs are present exhibit a significant increase in homicides in all time periods; whereas in municipalities where gangs are not present, homicides decrease, although the latter is not statistically significant. The positive effect of non-criminal deportations in gang areas on homicides is stronger at current time t and 12 months prior. More specifically, a 10 percent monthly increase in non-criminal deportations leads to a 1.5 percent and 1 percent increase in homicides at time t and 12 months prior, respectively. I find no statistically significant effect of non-criminal deportations on homicides in municipalities with no gang presence.

On the other hand, Table 3 evidences that criminal deportations have a negative (positive) effect in municipalities where gangs are (not) present. I find that a 10 percent increase in monthly criminal deportations in municipalities where gangs are present leads to a reduction in homicides of 1.3 percent. While in municipalities where there is a 10 percent increase in criminal deportations and gangs are not present, homicides increase by nearly 2 percent. Both of these effects prevail when deportees arrived 12 months before and are in the order of similar magnitudes.

I further evaluate the cumulative one-year and one-year lagged effects of criminal and non-criminal deportations on homicides by gang presence, results are provided in Table A.5. These results provide evidence in favor of a significant and strong positive effect of non-criminal deportations on violent crime in municipalities where gangs are present. I find that a 10 percent yearly increase in non-criminal deportations in municipalities where gangs are present leads to a 7 percent increase in homicides. However, I find no statistically significant effects for criminal deportations or lagged criminal and non-criminal deportations in municipalities where gangs are present.

The observed opposite effects may be capturing several dynamics, one of them being differences in seriousness of criminal offenses committed.¹⁴ In order to better understand how heterogeneity in criminal deportations impact crime, it would be ideal to have data on the levels of seriousness of criminal offenses of deported persons at the local level. However, the DGME data does not provide this level of disaggregation at the municipality level. Alternatively, I employ yearly national counts of deported Salvadorans by the level of seriousness of crime obtained from the Transactional Records Access Clearinghouse (TRAC). I exploit yearly variation of deportations by level of seriousness of criminal offense interacted with municipal variation of gang presence from 2008 to 2019, results are presented in Table A.6. I find that a 1 percent yearly increase in criminal deportations of most serious crimes leads to a 4.6 percent increase in homicides in municipalities where gangs are present. Whereas a 1 percent increase in criminal deportations of less serious crimes leads to a 14 percent reduction of homicides in municipalities where gangs are present. On the other hand, yearly non-criminal deportations and criminal deportations of the least serious level increase homicides in municipalities where gangs are present, but the effect is not statistically significant. This analysis provides preliminary evidence that the overall effect of criminal deportations on violent crime in municipalities where gangs are present varies significantly by level of seriousness of criminal offense.¹⁵

¹⁴Someone classified as having a criminal background for driving without a driver's license should not have the same impact as someone who committed a homicide related to gang activity; however, they are all grouped under the same category.

¹⁵Some of the most common deportable crimes grouped under the most serious crimes category include assault, burglary, robbery, homicide; while those under the serious crimes category include larceny, illegal re-entry, weapon offense, hit and run; and those included in the least serious crimes are illegal entry, driving under the influence, traffic offense, drug possession (TRAC, 2020).

Table 3. Effects on Homicides by Gang Presence

Dep. Var. Homicide Rate	(1)	(2)	(3)	(4)	(5)	(6)
NonCriminalDeportation _t	-0.026 (0.045)	-0.008 (0.046)				
NonCriminalDeportation _t ×GangPresence	0.179** (0.069)	0.192*** (0.071)				
NonCriminalDeportation _{t-3}	0.051 (0.045)		0.042 (0.044)			
NonCriminalDeportation _{t-3} ×GangPresence	0.108 (0.074)		0.162** (0.077)			
NonCriminalDeportation _{t-6}	-0.067 (0.062)			-0.084 (0.061)		
NonCriminalDeportation _{t-6} ×GangPresence	0.089 (0.084)			0.172** (0.084)		
NonCriminalDeportation _{t-9}	0.014 (0.050)				-0.006 (0.050)	
NonCriminalDeportation _{t-9} ×GangPresence	0.077 (0.082)				0.153* (0.084)	
NonCriminalDeportation _{t-12}	-0.058 (0.052)					-0.078 (0.051)
NonCriminalDeportation _{t-12} ×GangPresence	0.161** (0.080)					0.241*** (0.081)
CriminalDeportation _t	0.175** (0.074)	0.226*** (0.064)				
CriminalDeportation _t ×GangPresence	-0.304** (0.130)	-0.340*** (0.127)				
CriminalDeportation _{t-3}	0.038 (0.063)		0.057 (0.060)			
CriminalDeportation _{t-3} ×GangPresence	-0.151 (0.121)		-0.226* (0.115)			
CriminalDeportation _{t-6}	0.137* (0.072)			0.169** (0.068)		
CriminalDeportation _{t-6} ×GangPresence	-0.210* (0.124)			-0.275** (0.123)		
CriminalDeportation _{t-9}	-0.017 (0.069)				0.003 (0.067)	
CriminalDeportation _{t-9} ×GangPresence	-0.186 (0.129)				-0.224* (0.129)	
CriminalDeportation _{t-12}	0.170* (0.089)					0.184** (0.090)
CriminalDeportation _{t-12} ×GangPresence	-0.332** (0.143)					-0.360** (0.148)
Observations	22,008	25,152	24,366	23,580	22,794	22,008
R-squared	0.080	0.080	0.081	0.080	0.079	0.079
Municipality FE	✓	✓	✓	✓	✓	✓
Month×Year FE	✓	✓	✓	✓	✓	✓
Controls×Month×Year FE	✓	✓	✓	✓	✓	✓

Notes: The Table shows the monthly effects of deportations on homicides by gang presence. It presents the effects at different time periods together and independently. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

5.3 Heterogeneity of Victims of Violent Deaths and Deportations

The impact of deportations on violent crime may vary not only by the criminal status of deportees but also by other characteristics such as their gender and age. In this section, I further explore heterogeneity of deported persons and violent deaths to shed light on the possible mechanisms behind the observed effects. The data on homicides provided by the National Civil Police unfortunately do not include information on the gender or age group of victims of homicides. In order to explore heterogeneity of victims of violent crime, I employ data provided by the General Attorney Office on the total number of victims of violent deaths by gender and age group.

Table 4 presents the results of estimating equation (2) additionally exploiting heterogeneity in terms of gender and age group of both victims and deported Salvadorans at time T.¹⁶ Table

¹⁶Deportations are not disaggregated by age group, instead, they are categorized into boys, girls, adult males and females; where criminal deportations include only adults.

4 shows that an increase in deportations of male and female adults without a criminal background in gang-dominated areas both increase violent deaths. Interestingly, these deportations only lead to an increase in violent deaths of males and individuals ages 18 to 40. The deportation of children has no significant effect on violent deaths, which can be partly attributed to the small proportion of children who are deported and are instead granted asylum or reunified with their family in origin country.

On the other hand, for most part, the deportation of adult males with a criminal background are responsible for the decrease in violent crimes in municipalities where gangs are present. As evidenced in Table 4, male criminal deportations have a negative effect on male, female and young victims, ages 13 to 30, of violent death. Deported females with a criminal background have no statistically significant effect on violent deaths. I also check for the cumulative effect by heterogeneity of deportees and victims of crime, results are provided in Table A.7. When employing cumulative yearly deportations, the positive effect of deportations of men without a criminal background and the negative effect of deported men with a criminal background in gang-dominated areas on male and younger individuals remain for most part.

Initially, it might seem contradictory that the deportation of males with a criminal background leads to a reduction in violent deaths. However, further exploring heterogeneity of criminal offenses and victims of violent deaths sheds light on this effect. Results are shown in Table A.8, where Panel A presents findings by the usual measure of gang presence and Panel B includes a measure of gang intensity.¹⁷ Consistent with previous results, I find that a 10 percent yearly increase in the non-criminal deportation rate in municipalities where gangs are present leads to a nearly 6.6 percent increase in the violent death rate of 18-30 year olds. The effect of criminal deportations on violent deaths vary significantly by level of seriousness of criminal offense. A 10 percent increase in the yearly criminal deportation rate of most serious crimes results in an increase in the violent death rate of males and 18-30 year-olds of around 42 and 38 percent, respectively. Whereas a 10 percent yearly increase in the criminal deportation rate of less serious or level 2 crimes in areas where gangs are present leads to a reduction in the violent death rate of males of 120 percent. Further disaggregating this analysis by gang presence intensity in Panel B, I observe that these effects are stronger in magnitude in municipalities where gangs have a strong presence and control, while there is no or weak effect in municipalities where gangs have a weak presence. I now discuss the possible mechanisms behind these effects in the following section.

¹⁷The measure of gang intensity is also instrumented employing the municipality of birth of gang members incarcerated between 2003 to 2005, it equals 0 where gangs have no presence, Low if the gang prisoner rate in that given municipality is greater than 0 and below or equal to the median and High if the gang prisoner rate is above the median.

Table 4. Heterogeneous Effects on Violent Deaths by Gang Presence

	Total (1)	Males (2)	Females (3)	0-12 (4)	13-17 (5)	18-30 (6)	31-40 (7)	41-50 (8)	51-60 (9)	61-70 (10)	71-80 (11)	81-90 (12)	90more (13)
NonCriminalDeportationBoys _{t,m}	0.033 (0.379)	0.067 (0.339)	0.044 (0.074)	0.001 (0.005)	0.081 (0.061)	0.030 (0.255)	0.089 (0.122)	0.066 (0.095)	-0.050 (0.045)	-0.003 (0.041)	0.046 (0.035)	0.007 (0.005)	-0.003 (0.006)
NonCriminalDeportationBoys _{t,m} × GangPresence _m	0.208 (0.899)	-0.254 (0.740)	0.560 (0.494)	-0.016 (0.018)	-0.158 (0.206)	1.068 (0.741)	-0.932*** (0.337)	0.061 (0.314)	-0.174 (0.143)	0.112 (0.188)	-0.038 (0.115)	-0.046* (0.027)	-0.007 (0.007)
NonCriminalDeportationGirls _{t,m}	-0.094 (0.529)	-0.043 (0.502)	-0.046 (0.085)	-0.003 (0.010)	0.040 (0.084)	-0.002 (0.304)	0.038 (0.184)	-0.033 (0.126)	0.037 (0.076)	-0.065 (0.045)	-0.014 (0.026)	0.004 (0.007)	-0.007 (0.008)
NonCriminalDeportationGirls _{t,m} × GangPresence _m	-0.091 (0.898)	0.160 (0.847)	-0.476* (0.280)	0.134 (0.116)	0.108 (0.258)	-0.249 (0.549)	-0.403 (0.473)	0.405 (0.420)	-0.084 (0.291)	-0.006 (0.142)	-0.037 (0.053)	-0.052* (0.027)	-0.005 (0.027)
NonCriminalDeportationMen _{t,m}	0.019 (0.055)	0.005 (0.051)	0.017 (0.014)	0.002 (0.004)	0.007 (0.018)	-0.010 (0.042)	0.028 (0.025)	0.000 (0.018)	0.035* (0.018)	-0.002 (0.013)	-0.008 (0.006)	0.001 (0.002)	0.000 (0.001)
NonCriminalDeportationMen _{t,m} × GangPresence _m	0.166** (0.081)	0.188** (0.076)	0.008 (0.028)	0.000 (0.005)	0.060* (0.036)	0.146** (0.064)	0.079* (0.048)	0.025 (0.032)	-0.033 (0.024)	0.006 (0.020)	0.004 (0.008)	-0.002 (0.005)	-0.001 (0.001)
NonCriminalDeportationWomen _{t,m}	-0.171** (0.069)	-0.168** (0.067)	0.010 (0.023)	0.001 (0.005)	-0.097*** (0.025)	-0.124** (0.051)	-0.078* (0.041)	0.037 (0.046)	0.003 (0.019)	0.034 (0.021)	-0.011 (0.009)	-0.002 (0.002)	-0.000 (0.001)
NonCriminalDeportationWomen _{t,m} × GangPresence _m	0.351*** (0.133)	0.330** (0.129)	0.018 (0.059)	-0.009 (0.012)	0.157*** (0.059)	0.215** (0.104)	0.188* (0.096)	-0.081 (0.076)	-0.006 (0.046)	-0.036 (0.035)	0.005 (0.018)	-0.001 (0.009)	0.001 (0.002)
CriminalDeportationMen _{t,m}	0.240*** (0.065)	0.227*** (0.064)	0.064*** (0.025)	0.003 (0.004)	0.054** (0.024)	0.172*** (0.056)	0.104** (0.041)	0.042 (0.033)	0.014 (0.018)	0.045* (0.026)	0.013 (0.013)	-0.001 (0.002)	0.000 (0.000)
CriminalDeportationMen _{t,m} × GangPresence _m	-0.353*** (0.130)	-0.298** (0.126)	-0.130*** (0.044)	0.000 (0.007)	-0.134*** (0.042)	-0.251*** (0.094)	-0.111 (0.084)	-0.056 (0.054)	-0.015 (0.032)	-0.010 (0.032)	-0.012 (0.025)	0.012 (0.008)	0.002 (0.002)
CriminalDeportationWomen _{t,m}	0.069 (0.183)	0.092 (0.175)	0.028 (0.075)	0.012 (0.017)	0.123 (0.107)	0.029 (0.136)	0.053 (0.093)	-0.029 (0.054)	-0.040 (0.034)	0.056 (0.065)	0.040 (0.039)	0.001 (0.004)	-0.004 (0.005)
CriminalDeportationWomen _{t,m} × GangPresence _m	-0.092 (0.552)	0.025 (0.547)	-0.280 (0.190)	-0.032 (0.023)	-0.331* (0.195)	-0.041 (0.427)	-0.189 (0.335)	-0.245 (0.185)	0.236 (0.201)	0.015 (0.134)	-0.011 (0.094)	-0.015 (0.021)	-0.005 (0.008)
Observations	24,890	24,890	24,890	24,890	24,890	24,890	24,890	24,890	24,890	24,890	24,890	24,890	24,890
R-squared	0.081	0.080	0.036	0.014	0.037	0.061	0.053	0.039	0.028	0.021	0.016	0.016	0.009
Municipality FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Month × Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Controls × Month × Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The Table shows the monthly effects of deportations on violent deaths by gang presence, exploiting heterogeneity in terms of demographic characteristics of deportees and victims of violent crime. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

6 Potential Mechanisms

The results described in the previous section evidence that most recent deportations of Salvadorans continue having an impact on violent crime, but the sign and magnitude of the effect varies by criminal background and presence of gangs. The results showed that in municipalities where gangs are present, an increase in U.S. removals of Salvadorans without a criminal background leads to an increase in homicides, while an increase in criminal deportations leads to varying effects on violent deaths depending on the level of seriousness of crimes. These findings evidence that in order to better understand the link between deportations, gangs and violent crime, it is necessary to further evaluate the differences that exist between non-criminal and criminal deportations and by levels of seriousness of criminal offense within the latter.

The U.S. deportation of Salvadorans can impact violent crime rates in their country of origin through different channels. On one hand, as recent studies have shown, repatriations can become a mechanism of exportation of criminal capital and contribute to the growth and strengthening of criminal organizations, which also lead to an increase in crime and violence. On the other hand, as it was discussed in previous sections, most deported Salvadorans do not have a criminal background or if they do, the majority have not committed highly serious crimes, which suggests that deported Salvadorans can potentially have a positive impact in the local labor market and even on crime reduction. Alternatively, violence is one of the main reasons why some deportees migrated in the first place, and deportations expose them to return to the same conditions they initially fled from where they can become direct targets and victims of local crime. In the following subsections I discuss the plausibility of these mechanisms.

6.1 Serious Criminal Deportations and Gang Membership

The main results showed that the deportation of Salvadorans with a criminal background leads to a reduction in homicides in municipalities with gang presence. However, when I explored heterogeneity in seriousness of criminal offenses of deported Salvadorans and victims of violent death, I found that the most serious criminal deportations actually lead to an increase in violent crime of males and young persons as evidenced in Table A.8. This positive effect is stronger in magnitude and significance in municipalities where gangs are strongly present. In turn, one possible channel through which deportations increase violent crime is that deportees with a serious criminal background could continue contributing to gang membership and related violence. I discuss how this mechanism can be explained by gangs' motives behind their use of violence.

Central American gangs employ violence for two main reasons: to delimit their territory particularly for the extraction of extortion rents and as a recruitment mechanism (InSight Crime and CLALS, 2018). The financial base of gangs is the extortion of businesses and individuals located

in the territories they control, out of whom they extract *la renta* collected weekly or monthly as a percentage of their income (InSight Crime and CLALS, 2018). Rivalry and conflicts between gangs over resources shape their patterns of violence (Brantingham et al., 2012). Deportees with a serious criminal background likely associated to U.S. gangs can initially represent a threat to local gangs, which can trigger violence over the control of local resources. Violence is gangs' main instrument to expand geographic presence and to establish control over their business activities, where deportees with a serious criminal background can directly contribute to this dynamic.

Moreover, gangs exploit their violent reputation to increase their membership and maintain cohesion within the group. Gang-related killings are retaliatory in nature and are seen as an attempt to obtain justice for their members and increase gang membership (Papachristos, 2009; Papachristos et al., 2013).¹⁸ Deported Salvadorans with a serious criminal background, who were associated to gangs in the U.S., represent the perfect pool of new gang members. The arrival of deported Salvadorans with a serious criminal background can initially create frictions between rival gangs depending on the gangs they belonged to in the U.S. and the gang that controls the territory they return to. This in turn can initially lead to an increase in violence as a result of turf wars between gangs to establish territorial control and to determine gang affiliation and loyalty. Therefore, deportations of individuals with a serious criminal background who were likely associated to gangs in U.S. cities likely continue supplying gangs with members to carry out their criminal activities. It is important to highlight that this group of deportees is small as deportees who have committed the most serious criminal offenses represent only 14 percent of total deportations in the period of study (TRAC, 2020).

6.2 Deportations Contributing to Crime Reduction and the Labor Market

As more recent deportations are predominantly of individuals without a criminal background or who have committed less serious crimes, deportees could potentially have a positive effect on their communities of origin. In this section, I argue that deported Salvadorans are making a positive contribution to the local labor market, which in turn results in crime reduction. In order to shed light on this possible mechanism, I first assess whether deportations potentially increase unemployment through their effect on property crime. And then I discuss qualitative and anecdotal evidence on deportees' labor market experience and association to crime.

Many deported Salvadorans return to their country of origin after several years of living in the U.S. where they have weak or inexistent social ties and face scarce economic opportunities and unemployment. Qualitative evidence shows that many deportees left El Salvador when they

¹⁸The use of violence to exert control and power is also found in other criminal organizations such as Mafia (Gambetta, 1993; Bandiera, 2003; Pinotti, 2015b; Alesina et al., 2016), drug cartels (Dell, 2015; Keefer and Loayza, 2010; Murphy & Rossi, 2017) and gangs in other contexts (De Souza & Millener, 2012; Barcellos & Zaluar, 2014; Zaluar, 2010).

were children and return to a country they are completely foreign to where re-integration into society and the labor market is very challenging (FUNDE, 2015). An increase in the number of deportees that arrive to any given municipality can potentially have a negative impact on the local labor market. A higher number of deported Salvadorans can increase the labor supply, and if wages are sticky, the number of job seekers will exceed the number of job openings resulting in higher unemployment for both locals and deportees. Due to data limitations, I cannot directly test this channel. However, I rely on the literature on the economics of crime to shed light on this mechanism, which shows that unemployment can lead to an increase in local crime rates particularly on property crime (Raphael and Winter-Ebmer, 2001; Dell et al., 2019; Grönqvist, 2013; Lin, 2008).¹⁹ If as a result of deportations, higher unemployment pushes individuals to commit crimes, I would expect property crimes such as thefts and robberies to rise in municipalities that experience a higher influx of deportees. In order to test this hypothesis, I check whether deportations impact robberies. Results are presented in Table A.9 and show that an increase in deportations of individuals both with and without a criminal background have no significant effect on robberies. Thus, there is no evidence that an increase in deportations leads to a rise in property crimes, which could be indicative of rising unemployment.

On the other hand, the growing empirical evidence on return migrants suggests that they can have a positive effect on employment, entrepreneurship and wages in origin countries (Wahba, 2015; Wahba and Zenou, 2012; Marchetta, 2012; Bandiera et al., 2020). Despite being forcefully returned, deported Salvadorans can also potentially have a positive effect in the local economy and in crime reduction. In fact, the present study provided evidence of a significant effect of deported Salvadorans with less serious criminal background on violent crime reduction. These results might seem contradictory at first, but better understanding who deported Salvadorans who have committed less serious crimes are and their intentions of having a crime-free life can shed light on their positive contribution to the labor market and to crime reduction.

Individuals who have committed serious or level 2 criminal offenses include predominantly those who attempted to re-enter the country illegally followed by those who committed larceny, hit and run, vehicle theft, and other similar crimes (TRAC, 2020). Many of them resided in the U.S. for several years, including the time they spent completing their sentence before being deported. The majority were brought by their parents to the U.S. as children to live in marginalized and highly violent areas where they ended up involved in gangs, drugs, thefts or drinking and driving (FUNDE, 2015). In most cases they abandoned the criminal life, but ICE later used their criminal records to find them and deport them. The majority seek to make an honest living in El Salvador as they have children to financially support in the U.S. and have

¹⁹For a recent review of this literature see Draca and Machin, 2015.

the desire to return, in fact many have attempted to do so at least once.²⁰ In addition, most of them are older, between 30 to 40,²¹ which also makes them less prone to be direct targets of gang recruitment, as these target teenagers.

Moreover, Salvadorans who have committed less serious crimes are many times able to land a job or find other work opportunities. Given that they have spent more time in the U.S., they are more likely to have accumulated human capital, such as a language skill, or financial capital, which increases their chances of finding alternative economic opportunities. One clear example of job opportunities for deportees in El Salvador is their contribution to the growing service industry of Call Centers (Goodfriend, 2018a, 2018b; FUNDE, 2015; Lajka, 2019; Renteria Meza, 2018; Blitzer, 2017). There are around 80 call centers in El Salvador that offer offshore business services including business process outsourcing (BPO) and information technology services to local and foreign companies,²² which generate over 30,000 jobs (PROESA, 2019).²³ Deported Salvadorans are an attractive pool of employees to Call Centers given that many speak proficient or native English, which gives them an advantage over locals who do not have these skills. On the other hand, Call Centers offer salaries that are above the minimum wage²⁴ and provide work opportunities to deported Salvadorans with less-serious criminal backgrounds, giving them a chance to start again.²⁵

Call centers also serve as a disciplinary mechanism that keeps deported Salvadorans away from a criminal life and reforms those who want to start again (Goodfriend, 2018). The fixed rules and structure of Call Centers particularly allow many of them to have an honest life and earn a decent salary. Anecdotal evidence from a personal conversation with a Salvadoran employee at Sykes, one of the biggest Call Centers in El Salvador, demonstrates that deportees with a criminal background working there are not interested in re-offending because they do not want to risk losing their job as they see no other alternative work opportunities. As a matter of fact, many deported Salvadorans try to remove the stigma associated with being a deportee, which in El Salvador has the connotation of being a criminal. A recent article from the New York Times that describes the story of a deported Salvadoran from California working at Sykes, evidences that deportees internally call themselves *deportistas*, which translates to athletes, as an attempt to remove the stigma of being *deportados* (Blitzer, 2017). Therefore, there is little incentive for

²⁰If they are captured re-entering the country for the third time, they can be given from 8-10 years in prison

²¹TRAC (2021) data also evidences that Salvadorans who have committed priority 2 criminal offenses are on average 30 to 34 years old.

²²Call centers in El Salvador service companies located in the United States, France, Mexico, Spain, Guatemala, Colombia, Canada, India and Argentina.

²³The largest Call Centers in El Salvador are Atento, Concentrix, Sykes, Teleperformance and Telus; which each employs around 2,500 to 5,800 people.

²⁴Effective August 1st, 2021 the monthly minimum wage in the textile sector in El Salvador was recently increased to US\$359.16 (Presidencia de la República de El Salvador, 2021).

²⁵Depending on the position and English proficiency, some employees can start earning from \$450 to US\$700 per month at a Call Center.

criminal deportees with less serious criminal backgrounds to get involved in criminal activities and get fired, as equitable decent job opportunities are scarce.

Consequently, the negative effect of deported Salvadorans with a level 2 criminal background on violent crime shows that this group of deported Salvadorans can actually contribute to crime reduction as they do not have the intention to get involved in criminal activities and are also not the exact target for gang recruitment. Moreover, the qualitative and anecdotal evidence described in this section show that deported Salvadorans with less serious criminal backgrounds can potentially have a positive contribution to the local labor market, which in turn can lead to crime reduction. Further research is needed to empirically quantify this effect.

6.3 Deported Salvadorans as Victims of Crime

Lastly, the deportation of Salvadorans can lead to an increase in homicides by them becoming direct victims of violent crime. I found evidence that deportations of Salvadorans without criminal convictions increase homicides in municipalities where gangs have a strong presence, where the victims are predominantly young individuals. In order to gain a better understanding of the characteristics of Salvadoran deportees without a criminal background in the last years, I take advantage of the individual-level survey on Central American Returnees from the U.S., *Encuestas sobre Migración en las Fronteras Norte y Sur de México* (EMIF Sur).²⁶ Table A.10 provides some descriptive statistics of deported Salvadorans' demographic characteristics and migration experience from 2010 to 2019.²⁷ The survey does not distinguish between deported Salvadorans with and without a criminal background. However, provided that the current period of analysis largely captures individuals who do not have a criminal background or have committed less serious crimes, such as having entered the country illegally, the averages shown predominantly reflect the characteristics of this population as they represent the majority of the sample. Table A.10 shows that around 90 percent of deported Salvadorans are men and their average age is 29 years, which has decreased over time. The average time spent in the U.S. decreased from 84 months or 7 years in 2010 to 33 months or nearly 3 years in 2019. These statistics evidence the intensification of U.S. Immigration Enforcement after 2010 and the changes in their targeting mechanisms, which have resulted in migrants being apprehended and deported shortly after their migration journey. Moreover, although nearly 99 percent of deportees indicate having some family in the U.S., around 37 percent of them indicate having strong ties such as children. In addition, only 15 percent of them speak English, and less than 10 percent of them indicate having the opportunity to work in the U.S. Consequently, during the period of study, this group of deported Salvadorans

²⁶The EMIF Sur is a representative survey at the yearly and country level that covers Central Americans from Guatemala, El Salvador and Honduras who have been deported from the U.S. and runs from 2008 to the present.

²⁷Each year's sample consists of approximately 2,000 individuals, representing nearly 10 percent of total yearly deported Salvadorans

are predominantly young, have not spent much time in the U.S. and have not accumulated financial assets or human capital that could make their reintegration process in El Salvador easier.

To support this descriptive analysis, data from TRAC (2020b) shows that Salvadorans without convictions who have been deported from 2012 to 2019 are predominantly young between the ages of 18 to 24. Also, the majority have been removed through an Expedited Removal order, which is a process "by which low-level immigration officers can quickly deport certain noncitizens who arrive at their border, as well as individuals who entered without authorization if they are apprehended within two weeks of arrival and within 100 miles of the Canadian or Mexican border" (American Immigration Council, 2019, pp.1). More recent expansions to the use of expedited removals by President Trump allowed immigration officers to apply expedited removals within the entire U.S. territory if individuals cannot prove that they have been present in the country for at least two years (American Immigration Council, 2019). Consequently, the majority of Salvadorans without a criminal background who have been removed in the last years are young men who have been in the U.S. for a very short period of time.

In light of these descriptive statistics, I argue that deported Salvadorans without a criminal background are highly prone to become victims for violent crime for two reasons. First, the victims and offenders of violent deaths are likely to resemble each other in terms of social and demographic characteristics (Papachristos, 2009). As mentioned previously, recent repatriated persons are predominantly young males who are on average 29 years of age. Similarly, nearly 90 percent of victims of violent deaths are males and around 50 percent are between the ages of 18 -30 (General Attorney Office, 2020). Males between the ages of 17 to 28 living in poor and marginalized neighborhoods are most likely both the perpetrators and victims of violent crime (Papachristos, 2009). Young men who are sent back to marginalized and poor communities in El Salvador where gangs are present can become direct targets of gang recruitment and violence.

Second, non-criminal deportees have spent a short period of time in the U.S., which entails that they return to the conditions they initially fled from, let that be unemployment, poverty, gang violence or all. Table A.10 shows that most deported Salvadorans in the period of analysis were not able to work in the U.S., which suggests that they did not accumulate financial or human capital that could have helped them find a job or create a business opportunity. Being unemployed and inactive in areas dominated by gangs makes them vulnerable to gang-related violence. Moreover, deported Salvadorans actually fear returning to their country of origin as evidenced by the EMIF. Table A.10 shows that at least 35 percent of deportees fear returning to El Salvador due to insecurity and violence or because of being threatened by gangs.²⁸ Similarly, a recent study by Human Rights Watch (2019) reports that there has been an increase in the

²⁸From years 2016 to 2019, the EMIF survey allows exploring the reasons why deportees left and their expectations upon return.

number of deportees being killed within months of returning to El Salvador, which points to the U.S. exposing deportees to death and abuse (Human Rights Watch, 2019).²⁹ Consequently, people who emigrated due to direct violence and are deported shortly after to their country of origin will likely return to become victims of the violence they initially escaped from.

Due to data limitations on return migrants' victimization or reintegration experience in El Salvador, I am unable to directly test these possible mechanisms. However, the findings discussed in this section evidence the need of collecting data on returnees' migration and return experience in order to better understand the needs and risks they face.

7 Conclusion

This study provided empirical evidence of the impact of recent U.S. deportations on violent crime in El Salvador. I found that the repatriation of Salvadorans continue having an impact on homicides in recent years when U.S. deportations have been at their highest levels. More precisely, this article evidences that an increase in deportations of persons without a criminal background to municipalities where gangs are present leads to an increase in violent deaths, while an increase in deportations of Salvadorans with a criminal background increase homicides in areas where gangs are not present but decrease homicides in municipalities where gangs are present. In order to better understand the mechanisms behind these effects, it is necessary to explore heterogeneity of victims of violent crime and deportees by demographic characteristics, presence of gangs, criminal background, and level of seriousness of criminal offense.

This paper discussed three main channels in place. On one hand, the results provide evidence that the U.S. deportation of Salvadorans who have committed most serious crimes continues contributing to gang membership and gang-related violence. Moreover, deported Salvadorans who have committed less serious crimes have a rather positive contribution to the local labor market, which decreases their likelihood of re-offending and in turn reduce violent crimes. Finally, the deportation of persons without a criminal background to gang-dominated areas can increase homicides by them becoming direct victims of violent crime as they represent the perfect target for gang recruitment. This article also shows that the victims of violent crimes are consistently young males ages 18 to 30, which reflects the vulnerability of this population as they are most likely both the perpetrators and victims of crime.

These findings speak about the negative unintended consequences of U.S. Immigration enforcement, which continue having an adverse impact on immigrants' communities of origin. The policy implications that emerge from this study are relevant for immigrants' sending and host countries. On one hand, U.S. immigration policies that aim at deterring further irregular migra-

²⁹Data on migratory status of victims of homicides is usually not collected; hence, the known cases are likely an underestimation (Human Rights Watch, 2019).

tion are not succeeding in doing so but are instead contributing to fueling a cycle of violence-driven migration. Moreover, the U.S. may be deporting Central Americans who fled from violence in the first place, and as they are forced to return to their home country, death, persecution and abuse awaits for them. In turn, U.S. immigration laws are exposing immigrants to death and victimization. The conditions and threats that deportees face in their home country increase the validity for granting asylum to many of them.

On the other hand, the findings of this study are also highly relevant for immigrants' countries of origin. As more immigrants are being forced to return, programs of assistance to returnees are key to their proper reintegration into society and to taking advantage of their productive potential. These programs should also be accompanied with better data collection systems on returnees' migration and victimization experience to better understand and address the immediate needs and the risks they face. Moreover, this article also sought to provide a more complete characterization of Salvadoran deportees in the hopes of removing the stigma they face as criminals, which makes their reintegration process even more challenging.

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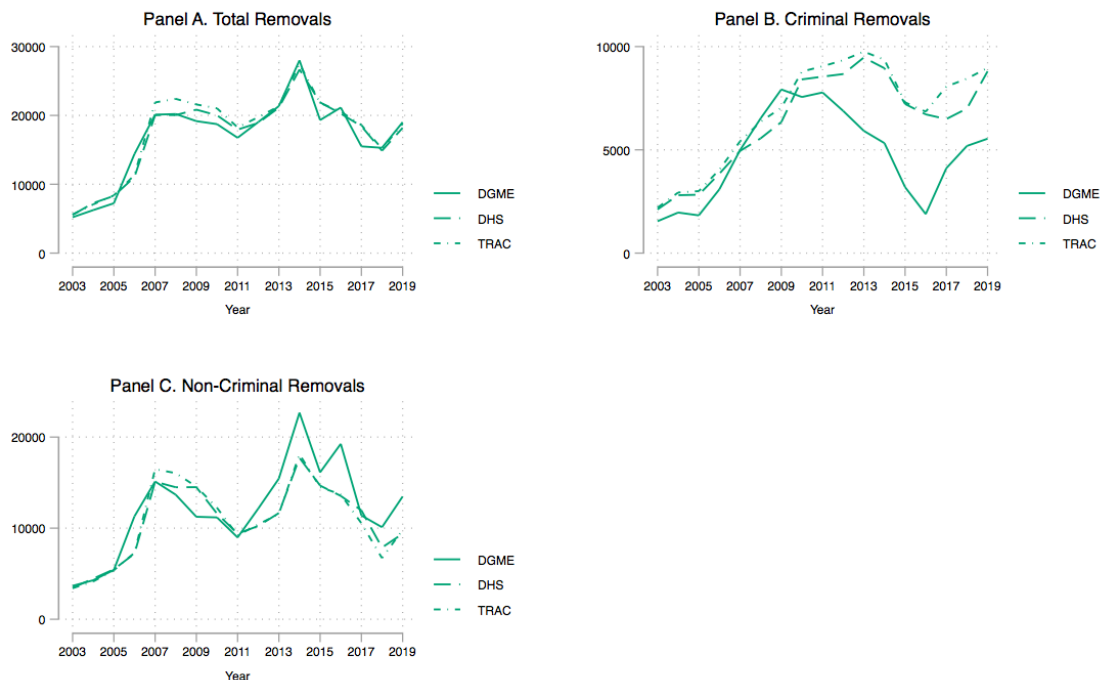
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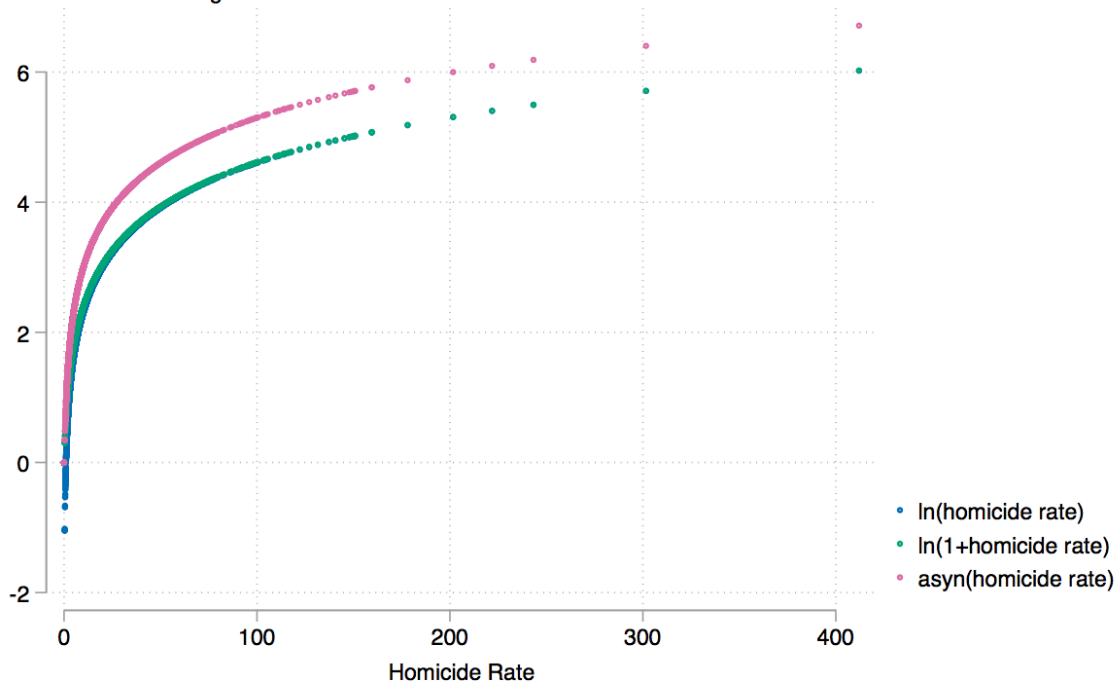
Appendix

Figure A.1: Removals of Salvadorans from the U.S.



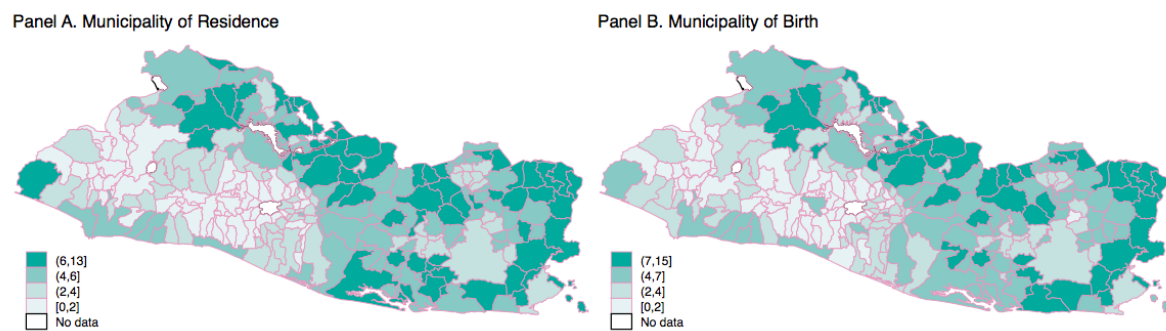
Source: Directorate General of Immigration and Nationality (2020), Department of Homeland Security (DHS) (2020) and Transactional Records Access Clearinghouse (TRAC) (2020a)

Figure A.2: Homicide Rate Transformations 2012-2019



Source: National Civil Police (2020).

Figure A.3: Deportation Rate of Salvadorans by Municipality of Birth and Residence



Source: Directorate General of Immigration and Nationality (2020).

Table A.1: U.S. Immigration Enforcement Laws

Year	Immigration Enforcement Law	Description
1986	Immigration Reform And Control Act (IRCA)	It created an amnesty program that carved a path to residency for thousands of undocumented immigrants, but it also increased significantly the budget of the Border Patrol, which made border crossings more difficult, dangerous, and expensive. It also facilitated the swift removal of non-citizens by expanding the range of deportable crimes with the creation of the “aggravated felony” offense.
1988	Anti-Drug Abuse Act (ADA)	Congress increased the range of crimes that could render someone deportable, and limited the procedures available to noncitizens who wished to challenge their deportation. Before 1988, noncitizens could be deported from the United States only after a hearing before an immigration judge in which the noncitizen could raise one of several bases for canceling the deportation order.
1990	Immigration Act	It turned any violent crime with a sentence of 5 years or longer into an aggravated felony. An important switch contributing to treating thousands of mostly latino immigrants as criminals is the reclassification of undocumented entry. Now, the reentry of a deported individual constitutes a felony.
1994	Immigration and Technical Correction Act	It added additional weapons offenses, some theft and burglary offenses, prostitution, tax evasion, and several categories of fraud as aggravated felonies.
1996	Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA)	It sought to remove (deport) non-citizens, including undocumented immigrants and lawful permanent residents (green card holders) convicted for an aggravated felony. For immigrants, aggravated felonies now include crimes and behaviors that range in intensity from murder and rape to shoplifting. IIRIRA also created 287(g) program which allowed for local law enforcement agencies to enforce federal immigration laws.
2005	Real ID Act	It updated and tightened the laws on application for asylum and deportation of aliens for terrorist activity
2008	Secure Communities Program	It used a federal information-sharing partnership between DHS and the Federal Bureau of Investigation (FBI) that helps to identify in-custody aliens without imposing new or additional requirements on state and local law enforcement. For decades, local jurisdictions have shared the fingerprints of individuals arrested and/or booked into custody with the FBI to see if those individuals have a criminal record and outstanding warrants. Under Secure Communities, the FBI automatically sends the fingerprints to DHS to check against its immigration databases.
2015	Priority Enforcement Program (PEP)	It built on the secure communities program. It expanded the category of deportable offenses, adding more offenses to the priority 1 list and affirmed differences between “good” and “bad” immigrants.

Source: Department of Homeland Security (2020).

Table A.2: Top 5 Deportable Crimes

Top 5	Crime Type	% of total criminal deportations
2003		
1	Assault	11.1%
2	Cocaine - Sell	7.2%
3	Burglary	6.4%
4	Robbery	5.3%
5	Larceny	4.5%
2007		
1	Illegal Entry	22.8%
2	Assault	9.1%
3	Driving Under Influence	6.9%
4	Burglary	4.1%
5	Larceny	3.5%
2011		
1	Driving Under Influence	12.4%
2	Assault	9.8%
3	Illegal Entry	7.9%
4	Traffic Offense	7.5%
5	Larceny	4.6%
2015		
1	Illegal Entry	26.3%
2	Driving Under Influence	10.4%
3	Assault	7.5%
4	Illegal Re-Entry	3.9%
5	Traffic Offense	3.3%
2019		
1	Illegal Entry	35.8%
2	Driving Under Influence	9.1%
3	Assault	6.3%
4	Illegal Re-Entry	4.9%
5	Traffic Offense	4.4%

Source: Transactional Records Access Clearinghouse (TRAC)(2020a).

Table A.3: Descriptive Statistics of Incarcerated Persons

Year	No. Prisoners	% Males	% Females	Average Age
2000	2529	92	8	49.50
2001	2795	93	7	50.57
2002	2438	93	7	47.56
2003	2527	93	7	48.10
2004	2646	92	8	45.82
2005	2727	94	6	44.22
2006	3650	90	10	43.09
2007	4296	89	11	41.12
2008	4885	86	14	40.79
2009	5600	86	14	39.94
2010	6800	87	13	38.08
2011	5985	90	10	36.10
2012	5323	89	11	35.37
2013	4343	88	12	35.29
2014	4586	88	12	32.89
2015	6965	89	11	30.99
2016	7672	87	13	30.41
2017	7969	89	11	30.26
2018	7474	86	14	29.81

Source: Directorate General of Penal Centers (2019).

Table A.4: Effects on Homicides

	(1)	(2)	(3)
NonCriminalDeportation _t	0.473*** (0.146)	0.489*** (0.141)	
CriminalDeportation _t	-0.185 (0.194)	-0.190 (0.178)	
NonCriminalDeportation _{t-1}	-0.167 (0.199)		-0.157 (0.199)
CriminalDeportation _{t-1}	-0.071 (0.192)		-0.030 (0.194)
Observations	1,834	2,096	1,834
R-squared	0.137	0.138	0.129
Municipality FE	✓	✓	✓
Year FE	✓	✓	✓
Controls×Year FE	✓	✓	✓

Notes: The Table shows the yearly and one-year lagged cumulative effects of deportations on homicides. Robust standard errors in parenthesis *** p<0.01, ** p<0.05, * p<0.10

Table A.5: Effects on Homicides by Gang Presence

	(1)	(2)	(3)
NonCriminalDeportation _t	0.248 (0.180)	0.358** (0.165)	
NonCriminalDeportation _t × GangPresence _m	0.488** (0.227)	0.288 (0.206)	
CriminalDeportation _t	-0.030 (0.244)	-0.123 (0.201)	
CriminalDeportation _t × GangPresence _m	-0.323 (0.306)	-0.144 (0.244)	
NonCriminalDeportation _{t-1}	-0.203 (0.245)		-0.285 (0.243)
NonCriminalDeportation _{t-1} × GangPresence _m	0.035 (0.247)		0.277 (0.221)
CriminalDeportation _{t-1}	0.022 (0.255)		0.032 (0.250)
CriminalDeportation _{t-1} × GangPresence _m	-0.224 (0.294)		-0.130 (0.269)
Observations	1,834	2,096	1,834
R-squared	0.143	0.139	0.131
Municipality FE	✓	✓	✓
Year FE	✓	✓	✓
Controls × Year FE	✓	✓	✓

Notes: The Table shows the yearly and one-year lagged cumulative effects of deportations on homicides by gang presence. Robust standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.10

Table A.6: Effects on Homicides by Level of Seriousness of Crime

	(1)
NonCriminalDeportations _t × GangPresence	0.423 (0.323)
CriminalDeportationsMostSerious _t × GangPresence _m	4.558** (1.861)
CriminalDeportationsSerious _t × GangPresence _m	-13.709** (5.778)
CriminalDeportationsLeastSerious _t × GangPresence _m	1.865 (1.326)
Observations	3,144
R-squared	0.127
Municipality FE	✓
Year FE	✓
Controls × Year FE	✓

Notes: The Table shows yearly effects of deportations on homicides by level of seriousness of criminal offense. Data on the level of seriousness of crimes are obtained from the Transactional Records Access Clearinghouse (TRAC).

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

Table A.7: Heterogeneous Effects on Violent Deaths by Gang Presence

	Total (1)	Males (2)	Females (3)	0-12 (4)	13-17 (5)	18-30 (6)	31-40 (7)	41-50 (8)	51-60 (9)	61-70 (10)	71-80 (11)	81-90 (12)	90more (13)
NonCriminalDeportationBoys _{t,m}	-0.647 (0.404)	-0.557 (0.444)	0.200 (0.373)	0.010 (0.050)	0.401 (0.407)	-0.651 (0.471)	-0.332 (0.393)	-0.453 (0.331)	-0.214 (0.274)	0.370 (0.321)	0.247 (0.275)	0.016 (0.033)	-0.003 (0.014)
NonCriminalDeportationBoys _{t,m} × GangPresence _m	3.181*** (1.110)	2.760** (1.127)	0.463 (0.997)	-0.010 (0.136)	-0.198 (1.087)	1.731 (1.066)	2.213** (1.026)	-0.001 (1.022)	1.537 (1.205)	-0.297 (0.576)	0.243 (0.536)	0.081 (0.165)	-0.038 (0.038)
NonCriminalDeportationGirls _{t,m}	0.983 (0.694)	0.981 (0.686)	0.290 (0.409)	-0.021 (0.046)	0.247 (0.393)	0.787 (0.691)	1.482 (0.923)	0.877 (1.055)	0.299 (0.495)	-0.325 (0.375)	-0.089 (0.144)	0.021 (0.035)	0.016 (0.020)
NonCriminalDeportationGirls _{t,m} × GangPresence _m	-3.683*** (1.104)	-4.239*** (1.100)	0.320 (1.111)	0.231 (0.219)	-0.734 (0.909)	-2.054** (1.013)	-3.363*** (1.170)	-0.910 (1.583)	-2.848** (1.107)	-0.095 (0.747)	-0.228 (0.432)	0.013 (0.201)	-0.083 (0.068)
NonCriminalDeportationMen _{t,m}	0.320* (0.182)	0.223 (0.176)	0.366*** (0.131)	-0.013 (0.033)	0.234* (0.135)	0.130 (0.195)	0.086 (0.161)	0.247 (0.175)	0.278*** (0.105)	0.107 (0.101)	0.146* (0.079)	-0.024 (0.023)	0.003 (0.008)
NonCriminalDeportationMen _{t,m} × GangPresence _m	0.481** (0.237)	0.547** (0.231)	0.047 (0.186)	-0.003 (0.048)	0.123 (0.181)	0.530** (0.221)	0.609*** (0.194)	-0.067 (0.212)	0.070 (0.147)	0.120 (0.130)	0.035 (0.094)	0.034 (0.047)	-0.005 (0.007)
NonCriminalDeportationWomen _{t,m}	0.034 (0.168)	0.085 (0.173)	0.003 (0.133)	0.024 (0.024)	-0.188 (0.119)	0.047 (0.167)	0.093 (0.195)	-0.114 (0.150)	0.248** (0.110)	-0.131 (0.095)	-0.123* (0.066)	0.035** (0.017)	-0.005 (0.007)
NonCriminalDeportationWomen _{t,m} × GangPresence _m	-0.313 (0.231)	-0.383* (0.230)	-0.077 (0.201)	-0.003 (0.059)	0.316* (0.188)	-0.142 (0.252)	-0.350 (0.250)	0.166 (0.212)	-0.032 (0.176)	-0.145 (0.145)	0.115 (0.108)	0.032 (0.052)	0.015 (0.014)
CriminalDeportationMen _{t,m}	-0.097 (0.191)	-0.112 (0.190)	0.091 (0.119)	0.017 (0.027)	0.206* (0.118)	0.296* (0.174)	0.369** (0.174)	0.178 (0.165)	0.041 (0.103)	0.031 (0.100)	-0.003 (0.084)	-0.015 (0.020)	0.003 (0.006)
CriminalDeportationMen _{t,m} × GangPresence _m	-0.283 (0.253)	-0.214 (0.255)	-0.486*** (0.177)	0.018 (0.035)	-0.227 (0.199)	-0.458* (0.240)	-0.402* (0.229)	-0.415* (0.215)	-0.232 (0.157)	-0.042 (0.136)	0.039 (0.092)	-0.001 (0.045)	0.005 (0.012)
CriminalDeportationWomen _{t,m}	0.138 (0.544)	-0.122 (0.567)	0.502 (0.327)	-0.018 (0.039)	1.088*** (0.407)	0.128 (0.373)	-0.331 (0.421)	-0.464 (0.293)	-0.142 (0.211)	0.019 (0.201)	0.327* (0.191)	-0.002 (0.022)	0.004 (0.006)
CriminalDeportationWomen _{t,m} × GangPresence _m	-0.303 (0.933)	-0.135 (0.917)	-0.599 (0.656)	0.000 (0.112)	-0.463 (0.652)	-0.055 (0.745)	-0.170 (0.702)	0.034 (0.604)	0.503 (0.582)	-0.560 (0.401)	-0.083 (0.382)	-0.104 (0.120)	0.012 (0.025)
Observations	2,096	2,096	2,096	2,096	2,096	2,096	2,096	2,096	2,096	2,096	2,096	2,096	2,096
R-squared	0.149	0.149	0.084	0.022	0.118	0.130	0.120	0.098	0.076	0.035	0.021	0.019	0.009
Municipality FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Controls × Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The Table shows the yearly effects of deportations on violent deaths by gang presence, exploiting heterogeneity in terms of demographic characteristics of deportees and victims of violent crime. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

Table A.8: Heterogeneous Effects on Violent Deaths by Gang Presence and Level of Seriousness of Crime

	Total	Males	Females	0-12	13-17	18-30	31-40	41-50	51-60	61-70	71-80	81-90
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A: Gang Presence												
NonCriminalDeportations _t × GangPresence _m	0.448 (0.322)	0.481 (0.333)	-0.109 (0.268)	0.009 (0.071)	0.236 (0.219)	0.659** (0.319)	0.215 (0.271)	0.042 (0.276)	-0.339* (0.191)	-0.107 (0.163)	-0.019 (0.117)	0.024 (0.038)
CriminalDeportationsMostSerious _t × GangPresence _m	4.480** (1.890)	4.167** (1.915)	0.039 (1.486)	0.182 (0.507)	-1.962 (1.656)	3.848* (2.162)	-0.779 (1.991)	-0.736 (1.839)	-1.501 (1.210)	0.856 (1.075)	-0.126 (0.776)	-0.635 (0.569)
CriminalDeportationsSerious _t × GangPresence _m	-12.788** (5.850)	-11.074* (5.899)	-2.407 (5.095)	-0.388 (1.491)	2.631 (4.805)	-9.490 (6.997)	1.018 (6.339)	-3.754 (5.954)	-0.096 (4.041)	-3.548 (3.550)	-1.393 (2.713)	1.972 (1.738)
CriminalDeportationsLeastSerious _t × GangPresence _m	1.578 (1.366)	1.093 (1.340)	0.106 (1.337)	0.056 (0.374)	-1.218 (1.197)	1.978 (1.548)	-0.370 (1.508)	-0.173 (1.441)	-0.567 (0.967)	0.087 (0.873)	0.170 (0.632)	-0.339 (0.354)
Observations	3,144	3,144	3,144	3,144	3,144	3,144	3,144	3,144	3,144	3,144	3,144	3,144
R-squared	0.129	0.129	0.073	0.024	0.109	0.114	0.101	0.082	0.053	0.029	0.015	0.017
Panel B: Gang Presence Intensity												
NonCriminalDeportations _t × LowGangPresence _m	0.193 (0.319)	0.253 (0.329)	-0.289 (0.296)	0.033 (0.085)	0.108 (0.257)	0.415 (0.322)	0.055 (0.313)	-0.127 (0.309)	-0.275 (0.228)	-0.237 (0.183)	-0.021 (0.131)	0.025 (0.054)
NonCriminalDeportations _t × HighGangPresence _m	0.759** (0.379)	0.758* (0.395)	0.110 (0.310)	-0.022 (0.073)	0.392 (0.256)	0.955*** (0.366)	0.409 (0.298)	0.246 (0.301)	-0.417* (0.234)	0.051 (0.199)	-0.016 (0.136)	0.024 (0.050)
CriminalDeportationsMostSerious _t × LowGangPresence _m	3.184* (1.922)	2.979 (1.964)	-1.908 (1.716)	-0.057 (0.589)	-3.528* (1.833)	2.435 (2.284)	-0.746 (2.186)	-1.837 (2.008)	-1.972 (1.419)	0.552 (1.273)	-0.837 (0.807)	-0.338 (0.697)
CriminalDeportationsMostSerious _t × HighGangPresence _m	6.054*** (2.175)	5.610** (2.193)	2.406 (1.609)	0.473 (0.590)	-0.059 (1.871)	5.564*** (2.470)	-0.819 (2.182)	0.602 (2.093)	-0.928 (1.396)	1.225 (1.236)	0.738 (0.956)	-0.995* (0.553)
CriminalDeportationsSerious _t × LowGangPresence _m	-9.702* (5.870)	-8.130 (6.019)	0.926 (5.739)	-0.597 (1.788)	5.768 (5.590)	-7.920 (7.394)	1.958 (6.829)	-2.796 (6.295)	1.378 (4.665)	-2.725 (4.241)	1.009 (2.879)	1.817 (2.140)
CriminalDeportationsSerious _t × HighGangPresence _m	-16.538** (6.994)	-14.652** (6.918)	-6.458 (5.766)	-0.133 (1.718)	-1.182 (5.252)	-11.397 (8.103)	-0.124 (7.042)	-4.918 (7.055)	-1.887 (4.849)	-4.549 (4.062)	-4.312 (3.256)	2.160 (1.790)
CriminalDeportationsLeastSerious _t × LowGangPresence _m	1.069 (1.335)	0.689 (1.352)	-1.208 (1.462)	0.040 (0.426)	-1.502 (1.316)	2.167 (1.651)	-0.543 (1.630)	-1.028 (1.503)	-1.043 (1.126)	-0.184 (1.037)	-0.298 (0.665)	-0.173 (0.454)
CriminalDeportationsLeastSerious _t × HighGangPresence _m	2.197 (1.658)	1.584 (1.593)	1.704 (1.486)	0.075 (0.430)	-0.873 (1.373)	1.749 (1.748)	-0.159 (1.665)	0.865 (1.750)	0.012 (1.131)	0.417 (0.994)	0.739 (0.764)	-0.541 (0.333)
Observations	3,144	3,144	3,144	3,144	3,144	3,144	3,144	3,144	3,144	3,144	3,144	3,144
R-squared	0.131	0.131	0.078	0.027	0.112	0.118	0.102	0.086	0.054	0.030	0.017	0.021
Municipality FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Controls × Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The Table shows the yearly effects of deportations on violent deaths by gang presence, exploiting heterogeneity in terms of demographic characteristics of victims of violent crime and level of seriousness of crimes. Panel A presents the results for the usual gang presence, while Panel B presents the results for gang presence intensity. Data on the level of seriousness of crimes are obtained from the Transactional Records Access Clearinghouse (TRAC). Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

Table A.9: Effects on Robbery Rate by Gang Presence

	(1)	(2)	(3)	(4)	(5)	(6)
NonCriminalDeportation $_{t,m}$	0.008 (0.092)	0.016 (0.100)				
NonCriminalDeportation $_{t,m} \times$ GangPresence	0.008 (0.138)	0.041 (0.159)				
NonCriminalDeportation $_{t-3,m}$	-0.002 (0.086)		0.000 (0.102)			
NonCriminalDeportation $_{t-3,m} \times$ GangPresence	0.079 (0.119)		0.110 (0.155)			
NonCriminalDeportation $_{t-6,m}$			-0.055			
NonCriminalDeportation $_{t-6,m} \times$ GangPresence				(0.114) 0.182 (0.159)		
NonCriminalDeportation $_{t-9,m}$	-0.106 (0.081)				-0.112 (0.097)	
NonCriminalDeportation $_{t-9,m} \times$ GangPresence	0.146 (0.112)				0.199 (0.157)	
NonCriminalDeportation $_{t-12,m}$	-0.068 (0.080)					-0.090 (0.091)
NonCriminalDeportation $_{t-12,m} \times$ GangPresence	0.170 (0.119)					0.229 (0.152)
CriminalDeportation $_{t,m}$	-0.194 (0.146)	-0.219 (0.157)				
CriminalDeportation $_{t,m} \times$ GangPresence	-0.057 (0.221)	-0.030 (0.276)				
CriminalDeportation $_{t-3,m}$	-0.176 (0.165)		-0.195 (0.176)			
CriminalDeportation $_{t-3,m} \times$ GangPresence	-0.010 (0.216)		-0.018 (0.279)			
CriminalDeportation $_{t-6,m}$	-0.083 (0.168)			-0.137 (0.174)		
CriminalDeportation $_{t-6,m} \times$ GangPresence	-0.054 (0.223)			-0.011 (0.277)		
CriminalDeportation $_{t-9,m}$	-0.013 (0.157)				-0.049 (0.169)	
CriminalDeportation $_{t-9,m} \times$ GangPresence	-0.069 (0.226)				-0.046 (0.275)	
CriminalDeportation $_{t-12,m}$	0.117 (0.125)					0.109 (0.136)
CriminalDeportation $_{t-12,m} \times$ GangPresence	-0.169 (0.221)					-0.177 (0.272)
Observations	22,008	25,152	24,366	23,580	22,794	22,008
R-squared	0.103	0.133	0.127	0.120	0.111	0.102
Municipality FE	✓	✓	✓	✓	✓	✓
Month \times Year FE	✓	✓	✓	✓	✓	✓
Controls \times Month FE \times Year FE	✓	✓	✓	✓	✓	✓

Notes: The Table shows the monthly effect of deportations on the robbery rate by gang presence. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

Table A.10: Characteristics of Salvadoran Deportees

		2010	2013	2016	2019
Demographic characteristics					
Age (average)		31.53	29.48	27.37	29.83
Gender	Male	87.4%	90.3%	83.5%	84.3%
	Female	12.6%	9.7%	16.5%	15.7%
	None	3.9%	4.0%	3.5%	4.2%
Educational Level	Primary	27.6%	23.3%	17.8%	21.6%
	Secondary	35.8%	35.9%	31.1%	36.5%
	Technical	28.6%	32.6%	41.2%	34.8%
	University or more	3.9%	4.1%	6.3%	3.0%
Marital status	Single	36.9%	53.9%	60.8%	59.2%
	Married	25.8%	21.6%	15.5%	15.7%
	Cohabiting	22.2%	20.3%	21.4%	23.2%
	Separated or divorced	14.5%	4.1%	1.6%	1.5%
Household head	Widow/Widower	0.5%	0.1%	0.7%	0.4%
	Yes	56.9%	62.7%	36.0%	40.9%
No. of household members	No	43.1%	37.3%	64.0%	59.1%
	4.40	4.20	4.14	4.13	
Speaks English	Yes	30.2%	8.5%	9.4%	12.6%
	No	69.8%	91.5%	90.6%	87.4%
Country of residence	El Salvador	31.6%	72.5%	90.7%	76.8%
	U.S.	68.2%	27.1%	9.1%	23.1%
	Mexico	0.2%	0.2%	0.1%	0.0%
Migration experience					
Has family in the U.S.	Yes	98.0%	94.8%	97.7%	95.3%
	No	2.0%	5.2%	2.3%	4.7%
Has children in the U.S.	Yes	49.7%	29.4%	26.4%	40.2%
	No	50.3%	70.6%	73.6%	59.8%
Time spent in U.S. (in months)		83.67	33.25	11.95	32.88
Worked in the U.S.	Yes	64.9%	26.5%	8.6%	23.9%
	No	35.1%	73.5%	91.4%	76.1%
Reasons for leaving El Salvador	Unemployment				64.0%
	Low Income				19.3%
	Family-related reasons				9.6%
	Violence and insecurity				7.1%
	Natural disaster				0.0%
Fear of returning to El Salvador	Other				0.1%
	Yes				35.0%
Reasons for being afraid	No				65.0%
	Insecurity and violence				67.1%
	Threatened by gangs				7.1%
	Family stayed in the U.S.				0.2%
Employment uncertainty	Employment uncertainty				22.2%
	Do not know anybody				3.2%
	Other reasons				0.2%

Source: EMIF Sur El Salvador (2010, 2013, 2016, 2019)

Chapter 4

Parent Migration and Education Outcomes of Children Left Behind

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 in country of origin. This study evaluates the impact of parent international migration on educational outcomes of children left behind in El Salvador. 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 adverse consequences on children's developmental outcomes and increase their vulnerability to exploitation and recruitment by criminal organizations. This article finds that children with at least one migrant parent exhibit a lower probability of attending school, where the effect is driven by older boys and girls ages 13 to 17, and no effects are found on younger children or on their likelihood of lagging behind in school. Although remittances play an important role in decreasing financial constraints in Salvadoran households, they do not fully compensate for the adverse consequences of parental absence. These findings evidence that the short-term effect of migration is financial hardship, which results in labor readjustments within the household where boys are replacing school for work and girls are more prone to be inactive, likely carrying out more housework. In addition, in this particular context, parent migration puts children at higher vulnerability where many of them likely drop out of school to join gangs or opt to migrate to flee gang persecution and violence. Derived policies are relevant not only for El Salvador but also for other countries experiencing similar migration and violence levels in Latin America and other regions.

Keywords: International Migration, Education, Children Left Behind, El Salvador, Northern Triangle

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 left behind living without one or both parents, which affects the environment where they grow and develop. Understanding the effects of family dissolution events is particularly relevant in the context of El Salvador as children and youth represent a highly vulnerable population who face poor economic opportunities, are direct targets of gang recruitment and in many cases are forced to migrate. Parent migration may constitute a disruptive family transition with multiple costs to children who remain in country of origin, which can put them at even higher vulnerability. This paper investigates how parental absence due to migration in El Salvador impacts children's education and the 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 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 these represent 17 percent of 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). In turn, parent migration also represents lower supervision, guidance, protection and emotional support for children, which can have negative consequences on their development. Little evidence exists on the effects of parent migration on children left behind in northern Central America, a subregion characterized by high levels of out-migration, poverty and violence. Understanding how migration of family members affect those left behind can contribute to the formulation of policies that address the mechanisms behind the recent alarming increase in the number of migrants and asylum-seekers to the U.S. from the Northern Triangle.²

One of the main challenges of estimating the causal effect of parent migration on children's well-being is that the migration decision is endogenous. The reasons that might push parents to migrate, such as a negative household economic shock, natural disasters, local violence, might be

¹Just in 2015, El Salvador exhibited 103 homicides per 100,000 inhabitants compared to a global average rate of 6.3 (UNODC, 2019).

²Recent 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).

the exact same reasons that prevent children from attending school. More importantly, migration is not random and individuals with specific observed and unobserved characteristics self-select into migration, which can also influence the schooling decisions they make for their children. Several studies have addressed endogeneity issues by employing as instruments the historical migration rates at the local 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; Antman, 2011), where most of the existing empirical evidence is on Mexico. These studies largely rely on data on migration corridors between immigrants' origin and destination countries disaggregated at the lowest possible geographic level to obtain an exogenous shock of variation of migrants.

Data on migration corridors between El Salvador and the U.S. are not available for the entire country. As a result, studies on El Salvador that investigate the same research question addressed by the present article are largely descriptive or do not fully address endogeneity issues. The closest analysis to this paper is done by Intemann and Katz (2014) who address endogeneity using wage earnings and employment rates in immigrants' city of destination, but they do so only for four small communities in El Salvador covered by their survey. In order to overcome this data limitation, I employ a shift-share/Bartik instrument design to induce a plausibly exogenous source of variation of migration outflows of Salvadorans at the local level. More specifically, I use historical migration shares of Salvadorans at the canton level interacted with the stock of immigrants from Central America, except El Salvador, living in the U.S. to predict current migration rates of Salvadorans into the U.S.

This article evidences that parental migration adversely impacts children's schooling in El Salvador and the magnitude of the effects vary by children's gender and age. More specifically, this study finds that children with at least one migrant parent have a lower probability of attending school, where the effect is driven by older boys and girls ages 13 to 17, and no effect is found on younger children. I do not find strong evidence that parental migration has a significant effect on the likelihood of children lagging behind in school. There are several potential mechanisms behind the observed effects. First, although children with migrant parents are more likely to receive remittances than the rest of the children, remittances may not be sufficiently large or consistent to increase overall household income and have a positive effect on older children's schooling. In addition, descriptive evidence shows that when the father migrated, which is the predominant case in El Salvador, mothers are raising their children alone without the help of other family members. This in turn could lead to labor adjustments within the household. In fact, I find evidence that older boys are replacing school for work, while girls are more likely to be inactive, neither working nor studying, which could be due to them carrying out more domestic work. These findings correspond to a story where the short-term impact of migration is financial

hardship, which leads to older children assuming additional work responsibilities to compensate for migrant parent's contribution.

I also discuss other potential mechanisms that could be taking place given the context. On one hand, parent migration 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 future migration. In addition, older boys in marginalized and poor areas in El Salvador are at risk of being recruited into gangs, and parental absence 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 Girls are also prone to gang violence as they are victims of sexual assault, which can result in teenage pregnancies (La Prensa Gráfica, 2016). Parental migration exposes vulnerable youths to additional risks, where the human capital costs evidenced in this study can also be driven by the violent context in which they live.

This paper makes several contributions to the literature. The study of migration has focused predominantly on analyzing the impact of immigrants in host countries (Card, 1990, 2001, 2009; Peri, 2016; Borjas, 2017, 2019), but less evidence exists on its effects in their country of origin. Within the latter, there is an extensive literature assessing how remittances sent from household members residing abroad impact those who stayed in origin-country. Generally, these studies find that remittances 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). However, little evidence exists on the impacts of migration, other than remittances, on those left behind, where the present article considers the effects of parental absence on children's development. 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, which is responsible for the rise in asylum-seekers in the U.S. Derived policy implications are relevant not only for El Salvador but also for other Central American countries experiencing similar migration and violence levels.

The rest of the study is organized as follows. The next section surveys the literature on the effects of changes in family structure, parental absence, and parent migration on children's well-being. Then, Section 3 describes the data employed and provides descriptive statistics. Section 4 presents the empirical strategy employed and discusses possible threats to its validity. The

³Recent 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).

main empirical results are reported in Section 5. In Section 6, I evaluate possible mitigating effects and mechanisms behind findings. Section 7 discusses other potential channels and section 8 concludes.

2 Related Literature

This article is directly linked to the literature studying how family dissolution events impact children's well-being, and it concentrates on the complex effects of international migration of parents on children who remain in the country of origin. In this section, I first survey the literature on changes in family composition in different contexts and how these changes impact children's development outcomes. Then, I review the existing evidence on the effects of migration and identify possible gaps.

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 as a result of divorce, separation or single-motherhood (IFS and STI, 2017). This proportion varies notably across and within developed and developing nations. For instance, among OECD countries, the proportion of children living in single-parent household 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). As family arrangements across the world continue changing, it is imperative to better understand the consequences that these changes can have on children. 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 exhibiting 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 (Weitof et al., 2003) and higher risk of sexual activity and teenage pregnancy among children living in non-intact two-parent households.⁴ Hence, changes in family structure and living arrangements can have several adverse consequences on children's cognitive, social and emotional development (Amato, 2005; Brown, 2010; Astone and McLanahan, 1991).

⁴For 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).

In terms of children's education, single-parenthood is evidenced to have a negative impact on several schooling outcomes among developed nations. For instance, in the U.S., 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). Likewise, children experiencing family dissolution and single parenthood in the U.K, Sweden and Germany exhibit lower educational attainment compared to children from intact families, which is driven by reductions in social capital and aspirations due to the absence of the parent (Jonsson and Gahler, 1997) and by lower financial and time resources available for the child (Mahler and Winkelmann, 2004). Consequently, there is consistent evidence supporting the adverse effects of single parenthood on children's education in many OECD countries.

On the other hand, Latin America and the Caribbean (LAC) has also experienced 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 households (Robles and Duryea, 2016). The proportion of children living with both parents is even lower in El Salvador, around 59 percent, and a similar trend is observed in other Central American countries.

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 in many European countries, marriage was never widely institutionalized in LAC. Increasing cohabitation and lower union stability in the region are not only the result of secularization but also of historical family arrangements where 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.

In LAC, very few studies empirically analyze the impacts of changes in family structure on children's development. For instance, Arends-Kuenning and Duryea (2006) show that across different countries - Brazil, Ecuador, Nicaragua and Panama - 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 Recent evidence on Ecuador also 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). These findings evidence 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, which 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, for which further empirical work is really needed.

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. A recent cross-country study shows that the prevalence of parental absence due to migration in LAC ranges from 7 percent in Peru to 21 percent in the Dominican Republic (DeWaard, Nobles and Donato, 2018). In the case of El Salvador, the present study finds that approximately 6 percent of children live without at least one parent due to migration. Evidence on the proportion of children with migrant parents and its impact on children left behind is very limited in LAC.⁷

There is no general consensus on the overall effect of parental absence due to migration 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 previously unavailable, which can be invested toward children's health and education. Several studies evidence the 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 are found to have a significant impact on lowering their hazard of dropping out of school (Cox, Edwards & Ureta, 2003). In Mexico, as the proportion of households that receive

⁵Although 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.

⁶The 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.

⁷A systematic review of the literature that analyzes the consequences of parent migration on children left behind shows that 82% of studies were done in China, and only around 5% in Latin America (Fellmeth et al. 2018).

remittances increase, infant mortality falls, children's school attendance rises, illiteracy drops and the population living in poverty is reduced (Lopez-Cordoba, 2005). Children in remittance-recipient households in the Philippines and Morocco 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). Consequently, remittances are evidenced to have an overall positive effect on household members as they alleviate financial constraints, which can help improve health and education outcomes.

On the other hand, parental absence due to migration is evidenced to have several adverse consequences on children's well-being. Parental migration leads to labor adjustments within the household which can have a negative impact on children's health and education, and increase the likelihood of risky child migration and child labor (Antman, 2011; McKenzie and Rapoport, 2011; Amuedo-Dorantes and Pozo, 2010; Cortes, 2015; Schemeer, 2009; Fellmeth et al. 2018; Griffiths, 2018). To start, migrants may not be able to send remittances for some time after migration and family members in countries of origin might need to support them financially while compensating for their lost income, where children bear the costs of such adjustments. In Mexico, children reduce study hours and increase work hours due to the immediate financial hardship after the father leaves (Antman, 2011). Likewise, in rural Mexico, 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). On the other hand, parental migration can also adversely impact children's physical and mental health. In rural China, where nearly 70 million children are left behind by one or both parents, children exhibit increased risks of mental health problems such as depression, anxiety, suicidal thoughts and nutritional problems including wasting and stunting (Fellmeth et al. 2018; Griffiths, 2018).

In addition, parent migration entails longer-term absence, leading to lower parental supervision, guidance and emotional support, which can increase youth vulnerability. Qualitative analyses show that children who were left behind by one or both parents in Mexico and El Salvador are easy prey for exploitation, recruitment into criminal organizations such as gangs or cartels because their parents were not present to provide guidance and protection (Vasquez, 2014). In fact, a risk factor to gang membership is living in dysfunctional and disintegrated families (Cruz, 2017). Due to high migration and death of many male family members during and after the civil war, living in disintegrated families has become the reality of many youths in El Salvador (Menjivar, 2006). The absence of one or both parents due to migration in environments characterized by poverty and exclusion increases the vulnerability of children and youth, which can push them to join gangs.

Empirical studies that investigate the impact of international migration in El Salvador, predominantly provide evidence of the positive effect of remittances on those left behind (Acosta, 2006; Cox, Edwards & Ureta, 2003). The closest analysis to this study is done by Intemann and Katz (2014) who also evaluate the effects of parental absence via migration on children's schooling.⁸ The present article differs from that of Intemann and Katz (2014) in terms of scope and identification strategy employed. In terms of scope, I provide evidence at the national level including both urban and rural areas while the paper by Intemann and Katz (2014) cover 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 rich survey, which allows them to connect city of origin and destination of migrants for the four communities studied. Nationwide historical data on migration corridors between El Salvador and the U.S. are unavailable. To overcome this data limitation, I use a novel application of a shift-share instrument design to predict migration outflows at the local level and provide causal evidence of the effects of parental migration on children's education at the country level.

3 Data

This study employs data from three sources. The main data source I use is El Salvador's national household survey, *Encuesta de Hogares de Propósitos Múltiples* (EHPM, for its Spanish acronym) from 2011 to 2019. The household survey is a cross-section survey representative at the national and department levels as well as for the 50 largest municipalities and rural/urban areas.⁹ It provides data on children's schooling outcomes, household composition, number of household members, parent presence within the household, parent migration status, and demographic characteristics of the child such as age and gender.

One of the key advantages of the household survey is that starting in 2011, 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.¹⁰ 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, or identifying their absence. I employ the first question in order to have a longer period of study and

⁸Employing time-use data and an instrumental variable strategy, the authors 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.

⁹El 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 206 municipalities and 950 cantons that are included in all years from 2011 to 2019.

¹⁰The 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.

use the second question to cross-check the accurate identification of family composition from 2016 to 2019 only.¹¹ 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 other family arrangement, when neither parent resides in the same household as the child. A disadvantage of the data on migration is that it is only possible to identify if the child's parent is absent due to migration but it is not possible to determine when the parent left or where the parent migrated to. This last piece of missing information on migrants' place of destination can be overcome by evidence from recent studies showing that 88 percent of Salvadoran migrants live in the U.S.. Thus, the U.S. is the most likely destination country for Salvadoran migrants (IOM and UN Population Division, 2015).

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.¹² I focus on children who are in schooling age, so my overall sample consists of 108,676 children who are between 6 to 17 years of age. On the other hand, the treatment variable corresponds to children who have at least one migrant parent, including the mother, father or both.

Moreover, 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, by migration year and destination country and allows me to obtain the share of Salvadoran migrants living in the United States per canton in 2000. Although the census covers all 262 municipalities, this study focuses only on the 206 municipalities and the 950 cantons that are represented in all household surveys. Lastly, I use the USA IPUMS American Community Surveys (ACS) samples from 2010 to 2019 to obtain the stock of immigrants from Central America living in the U.S., including Guatemala, Honduras, Costa Rica, Nicaragua and Panama, 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, which will be described in further detail in Section 4.

3.1 Summary Statistics

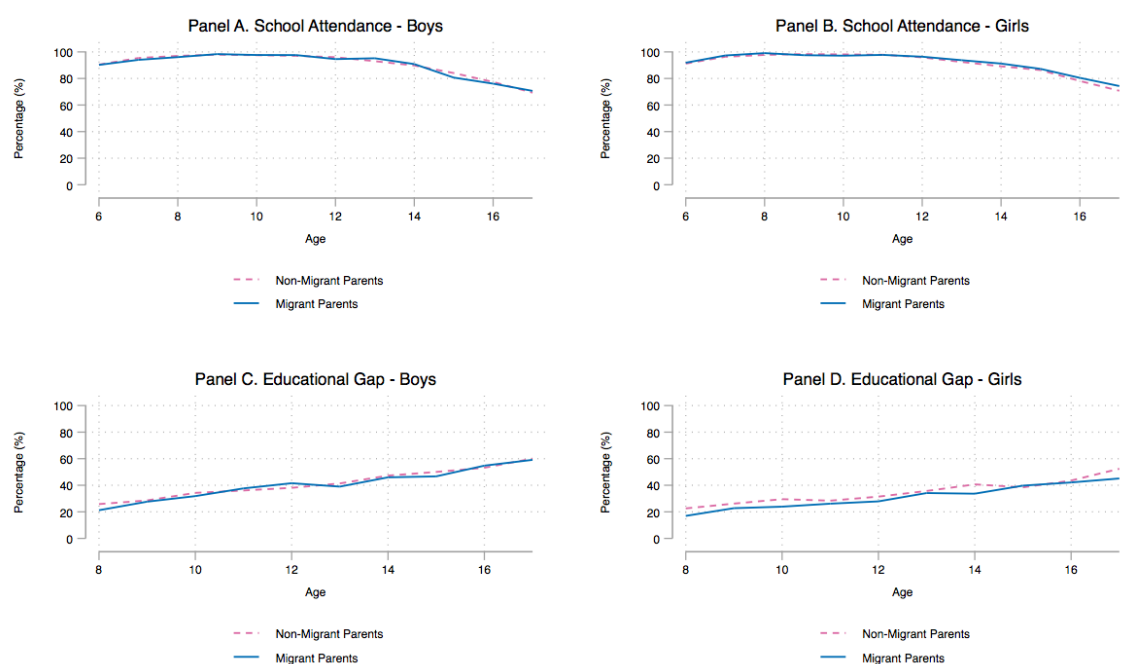
In this section, I provide some descriptive statistics of the sample of children under study including their household composition, educational outcomes, parent migration status and demographic characteristics. In El Salvador, 67 percent of children live with both parents, while 23 percent

¹¹The total sample consists of 108,676 children between the ages of 6 to 17 for years 2011 to 2019 who are in the treatment or control group.

¹²This definition of educational lag has been employed in a recent report by Duryea and Robles (2016) at the Inter-American Development Bank, which describes the trends of a comprehensive set of key social indicators for LAC in the last two decades.

live with their mother only, 4 percent with their father only and 6 percent in a different family arrangement.¹³ Among the 33 percent of children who live without at least one parent, the main reason for parental absence is abandonment, 77 percent, followed by migration, 12 percent, death, 8 percent, and other reasons, 3 percent. Parental absence due to migration is predominantly caused by the migration of fathers. In most of the cases, 61 percent, the father has migrated, followed by the mother, 25 percent, and in 14 percent of the cases both parents have migrated.¹⁴

Figure 1. Schooling outcomes by Child's Gender and Parent Migrant Status



Notes: Author's calculations using EHPM from 2011 to 2019.

In terms of schooling outcomes, on average, around 89 percent of children between the ages of 6 to 17 attend school. Primary and secondary school attendance can be broadly divided to capture 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, 80 percent of children attend secondary education.¹⁵ Figure 1 presents the proportion

¹³A recent study by FUSADES and UNICEF (2015) that evaluates changes in Salvadoran families, estimates that in 2012, 64.5 percent of children ages 6 to 17 live with both parents in a nuclear or extended family; 28.3 percent live in a monoparental family, where no distinction is made between living with mother only or father only, and 7.2 percent of children live in a different family arrangement. The figures reported in the present study differ very little from those provided by UNICEF, which can be the result of different definitions of family structure and of the 5-year difference in data.

¹⁴Own estimates using EHPM from 2011 to 2019.

¹⁵These 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).

of children who attend school and are lagging behind in school by child's age, gender and parent migrant status. It shows that there are very small differences in school attendance between boys and girls for both primary and secondary education. There are also no observable differences in school attendance between children with migrant and 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). Figure 1 shows that children with migrant parents, particularly girls, exhibit slightly lower educational lag than children with non-migrant parents. Educational gap increases with children's age and boys exhibit higher schooling lag than girls. Overall, Figure 1 evidences that there are no drastic observable differences in schooling outcomes between children with migrant and non-migrant parents, where the small differences found are in favor of children with migrant parents. The empirical analysis will determine whether these differences are caused by parent migration.

Table 1. Descriptive Statistics: All children, Migrant Parent and No Migrant Parent

Variable	All Children		Migrant Parents		Non-Migrant Parents	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Migrant Parent	0.07	0.25				
Migrant Father	0.04	0.19				
Migrant Mother	0.02	0.13				
Both Parents Have Migrated	0.01	0.10				
Number of Household Members	5.16	1.99	4.76	1.98	5.19	1.99
Living in an Rural Area	0.40	0.49	0.47	0.50	0.40	0.49
Average Household Income	117.54	131.37	125.68	96.36	116.94	133.57
Age	11.84	3.44	12.09	3.30	11.82	3.45
Gender (Boy)	0.51	0.50	0.51	0.50	0.51	0.50
Years of Schooling	4.36	3.18	4.74	3.12	4.33	3.19
School Attendance (6-17)	0.89	0.32	0.90	0.29	0.89	0.32
School Attendance Boys (6-17)	0.89	0.31	0.89	0.31	0.89	0.32
School Attendance Girls (6-17)	0.89	0.32	0.91	0.28	0.89	0.32
School Attendance (6-12)	0.96	0.20	0.96	0.19	0.96	0.20
School Attendance Boys (6-12)	0.96	0.21	0.96	0.20	0.96	0.21
School Attendance Girls (6-12)	0.96	0.19	0.97	0.17	0.96	0.19
School Attendance (13-17)	0.80	0.40	0.84	0.36	0.80	0.40
School Attendance Boys (13-17)	0.81	0.39	0.83	0.38	0.81	0.39
School Attendance Girls (13-17)	0.80	0.40	0.86	0.35	0.79	0.41
Educational Gap (8-17)	0.41	0.49	0.37	0.48	0.42	0.49
Educational Gap Boys (8-17)	0.44	0.50	0.42	0.49	0.45	0.50
Educational Gap Girls (8-17)	0.38	0.49	0.32	0.47	0.38	0.49
Employment Children (6-17)	0.10	0.31	0.09	0.28	0.11	0.31
Employment Boys (6-17)	0.14	0.35	0.13	0.33	0.14	0.35
Employment Girls (6-17)	0.06	0.24	0.04	0.21	0.06	0.25
Employment Children (6-12)	0.03	0.18	0.03	0.17	0.03	0.18
Employment Boys (6-12)	0.04	0.21	0.04	0.20	0.04	0.21
Employment Girls (6-12)	0.02	0.15	0.02	0.12	0.02	0.15
Employment Children (13-17)	0.19	0.39	0.15	0.35	0.19	0.39
Employment Boys (13-17)	0.26	0.44	0.22	0.41	0.26	0.44
Employment Girls (13-17)	0.11	0.31	0.07	0.26	0.11	0.32
Neither work nor study (13-17)	0.11	0.32	0.10	0.30	0.12	0.32
Neither work nor study Boys (13-17)	0.07	0.26	0.07	0.26	0.07	0.26
Neither work nor study Girls (13-17)	0.16	0.37	0.07	0.26	0.11	0.32

Notes: The Table shows descriptive statistics for the sample of children between the ages of 6 to 17 and is restricted to children who have a migrant parent or live with both parents.

In addition, 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. On average, children in the sample live in households with 5 members, 40 percent of them live in rural areas and 51 percent are male. Around 7 percent of children have a migrant parent, 3.6 percent a migrant father, 1.6 percent a migrant mother and for a small proportion 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 are more likely to migrate when their children are older. Children with migrant parents have on average a higher household income, a fewer number of household members and have more years of schooling than children with non-migrant parents.

4 Empirical strategy

In this section, I first describe the empirical strategy employed to assess the effect of parental migration on children's education. Then, I discuss some possible threats to the identification strategy and address these concerns.

4.1 Identification Strategy

In order to evaluate the effect of having a migrant parent on children's schooling outcomes I start by estimating the following equation:

$$schooling_i = \alpha + \beta(migrantparent_i) + \gamma(X_i) + \varphi_d + \varphi_t + \varepsilon_i \quad (4.1)$$

where the dependent variable $schooling_i$ of the child i equals: (1) school attendance, a dummy variable equal to 1 if a child between 6 to 17 years old attends school, 0 otherwise; or (2) schooling lag, a dummy variable equal to 1 if a child between 8 to 17 years old is at least 2 years behind the school grade they should be attending given their corresponding age for children, 0 otherwise. The treatment variable is $migrantparent_i$, which is a dummy variable equal to 1 if a child has at least one parent absent due to migration, 0 if the child lives with both parents. Given that the education outcomes analyzed are dichotomous variables, my main estimation method is a linear probability model (LPM) with which I 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 child's gender, age, age squared, whether the child resides in a rural area, and 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. Moreover, I cluster the standard errors

at the canton level to allow for arbitrary correlation within cantons.

One concern with evaluating 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. Including department fixed effects, allows controlling for some of these time-invariant characteristics of their place of residence that influence both parent migration and education decisions. However, the main concern in this analysis is selection bias as migration is not random and individuals with specific unobserved characteristics self-select into migration. In turn, these characteristics may also influence the decisions they make for their children's education.

I account for the endogeneity of parent migration by instrumenting for it using a shift-share instrument that provides a source of exogenous variation in migration outflows of Salvadorans at the canton level. Shift-share 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.¹⁶ The present study uses a variation of this instrument design predicting migration outflows of Salvadorans into the U.S. More specifically, the instrument for parent migration would be estimated using the historic share of Salvadoran migrants in 2000 at the canton level, the "share", interacted with the aggregate change of stock of Salvadoran immigrants residing in the U.S. at time t , the "shift". There are two underlying assumptions made for this instrument to be valid. First, Salvadoran migrants are more likely to leave from cantons with a higher proportion of previous migrants living in the U.S. Second, presumably exogenous demand-pull events in the U.S., such as a positive labor market shock, could attract more Salvadoran migrants. However, there are some concerns associated with the second assumption. The increase in the stock of Salvadoran immigrants in the U.S. presumably driven by demand-pull factors could also be driven by local supply-push factors at the canton or individual level. In that case, it is challenging to disentangle supply-push from demand-pull effects. Thus, in order to ensure that out-migration is driven by demand-pull factors only, I estimate the "shift" component of the instrument employing the change in stock of immigrants from Central America residing in the U.S. instead, and I exclude El Salvador.¹⁷ In this manner, the change of stock of immigrants from Central America living in the U.S. is potentially correlated with migration outflows from El Salvador, but it is not correlated with specific characteristics of cantons or individuals in El Salvador that could have an impact on migration and education outcomes. Consequently, the instrument plausibly predicts migration outflows of Salvadorans that are independent of economic or demographic characteristics at the

¹⁶Many 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).

¹⁷The Central American countries included are Guatemala, Honduras, Nicaragua, Costa Rica and Panama.

canton or individual level in El Salvador and induces exogenous variation in the distribution of Salvadoran migrants across cantons.

The migration status of parents is instrumented using the following first-stage regression:

$$migrantparent_i = \beta Pr(\text{outflow of Salvadoreans to U.S.})_{cm,t} + \gamma(X_i) + \varphi_d + \varphi_t + \varepsilon_i \quad (4.2)$$

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

$$Pr(\text{outflow of Salvadorans to U.S.})_{cm,t} = \left[\frac{1}{Population_{cm,t}} ((\Delta immstockCA - ESA)_t \times \Theta_{cm,2000}) \right]$$

and,

$$\Theta_{cm,2000} = \frac{migrants_{cm,2000}}{\sum_{cm} migrants_{cm,2000}}$$

where $\Theta_{cm,2000}$ is the share of Salvadoran migrants in canton c of municipality m residing in the U.S. out of total Salvadoran migrants in 2000 living in the U.S. $Population_{cm,t}$ is the total population in canton c of municipality m at time t . And $\Delta immstockCA - ESA_t$ is the change in the stock of immigrants from Central America living in the U.S., excluding El Salvador, from 2011 to 2019.¹⁸ The Central American countries included are Guatemala, Honduras, Nicaragua, Costa Rica and Panama. X is again a set of child-level characteristics. φ_d and φ_t capture department and year fixed effects, respectively. And standard errors are clustered at the canton level.

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 the instrument is statistically significant at the 1 percent confidence level. Moreover, the F-statistic on the excluded instruments is 29.04, which is above the threshold of 10. These first-stage results support the relevance of the instrumental variable.

I further check if the instrument remains valid when I exclude one-by-one each of the Central American countries included to estimate the "shift" component of the instrument. Results are provided in Table A.2 and show that the instrument remains valid throughout all one-by-one exclusions.

¹⁸The migrant share is estimated in 2000 using the last Salvadoran census available, and the change of stock of immigrants from Central America to the U.S. is estimated using the IPUMS American Community Surveys (ACS) samples from 2010 to 2019.

Table 2. First Stage Results on Parent Migration

	Migrant Parent (1)
Pr(outflow of Salvadorans to U.S.) $_{cm,t}$	0.619*** (0.129)
Observations	108,676
Year FE	✓
Department FE	✓
Controls×Year FE	✓
No. Cantons	950
F-test	29.04

Notes: The table shows the first stage results for the entire sample of children ages 6 to 17. 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 to its 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. In turn, 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 prior economic conditions, 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 the current period of analysis at the municipal level.¹⁹ 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.²⁰

Furthermore, Jaeger and co-authors (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 the instrument is capturing long-term positive or negative consequences of previous migration flows. For instance, less developed cantons with high migration in 2000, could 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. Alternatively, cantons with a higher proportion of migrants in 2000 could exhibit worse schooling outcomes than municipalities with lower migrants due to the low return to edu-

¹⁹A 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.

²⁰Flexibly controlling for these determinants of migration over time do not alter my estimates.

cation associated with the prospect of future migration.²¹ Therefore, 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 these threats to identification.²² 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 A.3 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 A.4 regresses the instrument on current school attendance, educational lag and school attainment with and without controls. The results of tables A.3 and A.4 show that past and current educational outcomes have no significant effect on the predicted outflow of Salvadorans.

In addition, as Jaeger et al. suggest, if the past share of migrants goes back in time sufficiently and the composition of migrants across cities are not too stable over time, the instrument is unlikely to capture long-term adjustments of previous migration flows. The composition of migration outflows in El Salvador has not remained stable over time in terms of magnitude and geographic distribution. As Figure A.1 shows, in 2000 there were around 13,000 emigrants and this figure more than doubled in 2005; hence, the magnitude of migration outflows has not been stable particularly after 2000, when I measure the initial shares. In addition, Figure A.2 shows the distribution of emigrants in El Salvador across the 14 departments from 1980 to 2005 and evidences that the proportion of Salvadoran emigrants per department has changed over time. Up to 2000, there was a high proportion of Salvadorans leaving from the western and south east side of the country. However, after 2000, there was an increase in the proportion of Salvadorans leaving from the center of the country. This change in magnitude and composition is largely driven by the two earthquakes that took place in 2001, which predominantly affected the central region of the country, and it led to increasing emigration from those areas. Moreover, using 2000 to identify the past share 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).

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.

²¹McKenzie 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.

²²Mayda 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. The authors carry out several falsification tests to address threats to identification. I adapt some of these tests to the present study.

5 Results

5.1 OLS results

Table 3 reports the OLS estimation results of equation (1) for school attendance and educational lag. Columns (1) and (3) present unconditional effects, whereas in columns (2) and (4), I control for child's gender, age, area of residence and household size. Table 3 shows that conditional on a set of covariates, having a migrant parent increases children's likelihood of attending school by 1.4 percentage points and decreases their probability of lagging behind in school by 0.4 percentage points, although the latter is not statistically significant.²³

Table 3. OLS Effects on Educational Outcomes

	School Attendance		Educational Gap	
	(1)	(2)	(3)	(4)
Migrant Parent	0.018*** (0.004)	0.014*** (0.004)	-0.025*** (0.007)	-0.004 (0.007)
Child's a boy		-0.010*** (0.002)		0.074*** (0.004)
Child's age		0.118*** (0.004)		-0.006 (0.006)
Child's age ²		-0.006*** (0.000)		0.002*** (0.000)
Rural area		-0.065*** (0.004)		0.116*** (0.010)
Household size		-0.011*** (0.001)		0.029*** (0.001)
Observations	108,676	108,676	92,093	92,093
R-squared	0.013	0.130	0.013	0.093
Year FE	✓	✓	✓	✓
Department FE	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓
No. Cantons	950	950	950	950
Mean Dep. Var.	0.88	0.88	0.41	0.41

Notes: The Table shows the conditional and unconditional OLS effects of parent migration on school attendance and educational lag. 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 better education outcomes than those who live with both 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).

²³I also estimate equation (1) additionally controlling for household income, which does have a positive and significant effect on children's education. I do not include these results in the analysis as household income is endogenous. However, results can be made available upon request.

5.2 2SLS and Reduced Form Results

The findings observed previously are however biased given the endogeneity of the treatment variable. In this section, I present reduced form and 2SLS results of equation (1) using IV estimation. Tables 4 and 5 show these results for school attendance and educational lag, respectively. In each table, column (1) presents OLS results; Column (2) gives the reduced form estimates; column (3) reports the 2SLS results; and columns (7) and (8) show the marginal effects of Probit and IV Probit estimations for comparison.²⁴

Column (3) in Table 4 shows that children ages 6 to 17 who have a migrant parent exhibit a 60 percent lower probability of attending school than children with non-migrant parents. This negative effect is consistent across reduced form, 2SLS and IV-Probit. The sign change from OLS to IV estimation evidences that there are unobserved characteristics of migrant parents that directly impact their children's schooling, which were not being captured through OLS estimation. This sign change from OLS to 2SLS estimation is also evidenced in other empirical studies evaluating the impact of parent migration on children's education in Mexico (McKenzie and Rapoport, 2011).

Table 4. Effects on School Attendance

	LPM (1)	RF (2)	2SLS (3)	Probit (4)	IV-Probit (5)
Migrant Parent	0.014*** (0.004)	-0.325*** (0.104)	-0.525*** (0.193)	0.012*** (0.004)	-0.396*** (0.099)
			First-stage		
Pr(mig outflow rate)			0.619*** (0.129)		
Observations	108,676	108,676	108,676	108,676	108,676
Year FE	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓
No. Cantons	950	950	950	950	950
F-statistic			23.05		
Mean Dep. Var.	0.88	0.88	0.88	0.88	0.88

Notes: The table shows the conditional OLS, RF, 2SLS, Probit and IV-Probit effects on school attendance for the entire sample of children ages 6 to 17. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

Moreover, Table 5 presents the results of the effect of parental migration on schooling lag, which shows that children with migrant parents exhibit a lower probability of lagging behind in

²⁴I flexibly control for municipal-level drivers of migration over time throughout the analysis. 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 2000 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.

school; however, this effect is not statistically significant. Parental absence due to migration does not seem to impact the likelihood of children lagging behind in school.

Table 5. Migrant Parents and Schooling Lag Children 8-17

	LPM	RF	2SLS	Probit	IV-Probit
	(1)	(2)	(3)	(4)	(5)
Migrant Parent	-0.004 (0.007)	-0.012 (0.199)	-0.019 (0.306)	-0.005 (0.007)	-0.028 (0.302)
			First-stage		
Pr(mig outflow rate)			0.649*** (0.137)		
Observations	92,093	92,093	92,093	92,093	92,093
No. Cantons	950	950	950	950	950
Year FE	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓
F-statistic			22.58		
Mean Dep. Var	0.41	0.41	0.41	0.41	0.41

Notes: The table shows the conditional OLS, RF, 2SLS, Probit and IV-Probit effects on educational lag for the entire sample of children ages 8 to 17. Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

The treatment covers children who have at least one migrant parent, which includes having one or both parents gone. The observed effect may vary by whether one or both parents are absent. As a robustness check, I estimate an IV Probit model where my treatment is a categorical variable that indicates whether a child has 0, 1 or two parents absent due to migration in order to evaluate treatment intensity. The predictive margins for school attendance and educational gap evaluated at having 0, 1 or 2 migrant parents are presented in Figure A.3. These results show that having one parent absent due to migration significantly reduces the likelihood of attending school for children ages 6 to 17, and the magnitude of this negative effect is even larger for children who have both parents absent. Having 1 or 2 migrant parents does not have a significant impact on children's educational gap. These results should be interpreted with caution due to the small proportion of children with both migrant parents, 1 percent; however, they are suggestive of large adverse effects associated to treatment intensity.²⁵

²⁵Due to data limitations, I cannot directly estimate the marginal effect of having one additional parent absent due to migration conditional on having the first parent absent for several reasons. On one hand, the data employed in this study do not allow me to observe for instance when a child has one parent absent and the other parent leaves later on. I can only observe whether one or both parents are absent, which are mutually exclusive. In addition, the instrument is not valid when I compare children who have both parents absent due to migration to those who have only one parent absent as the sample becomes very small and both groups are very homogenous.

5.3 Heterogenous Effects

The existing empirical evidence on the effects of parental migration on children left behind have shown that parental migration impacts children differently depending on their age, gender, and area of residence. In this section, I explore heterogeneity across these three dimensions. Tables 6, 7 and 8 report OLS and IV results for school attendance and educational gap by age, gender and area of residence of the child, respectively.

In order to examine differential effects by children's age, I divide children into two age groups, 6 to 12 and 13 to 17, which broadly capture primary and secondary school attendance, respectively. Column 3 of Table 6 shows that older children with migrant parents exhibit a 70 percent lower probability of attending school, whereas no statistically significant effect is found on younger children with migrant parents. Hence, older children are more negatively affected by parental migration, which is consistent with evidence found in Mexico of a stronger negative effect of parent migration on older children's education (McKenzie and Rapoport, 2011; Antman, 2010). I find no statistically significant effects of parent migration on schooling lag by children's age.

Table 6. Effects on Educational Outcomes by Child's Age Group

	School Attendance			Educational Lag		
	LPM (1)	RF (2)	2SLS (3)	LPM (4)	RF (5)	2SLS (6)
Age13_17×Migrant	0.008 (0.007)	-0.705*** (0.162)	-0.618*** (0.200)	0.024** (0.010)	-0.028 (0.184)	-0.012 (0.227)
Migrant Parent	0.012*** (0.003)	-0.027 (0.098)	-0.169 (0.197)	-0.017* (0.009)	-0.021 (0.205)	-0.046 (0.375)
Age13_17	-0.152*** (0.005)	-0.143*** (0.005)	-0.065** (0.025)	0.172*** (0.005)	0.175*** (0.005)	0.177*** (0.026)
Observations	108,676	108,676	108,676	92,093	92,093	92,093
No. Cantons	950	950	950	950	950	950
Year FE	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓	✓
F-statistic			26.01			25.83
Mean Dep. Var	0.88	0.88	0.88	0.41	0.41	0.41

Notes: The table shows the conditional OLS, RF, and 2SLS effects on school attendance and educational lag. The sample is restricted to children ages 8 to 17 for schooling lag only. Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Moreover, I assess whether parent migration impacts children differently by their gender. Given that I observed differential effects by age group, I split the sample into these same age groups in order to simultaneously check for age and gender differences. Table 7 below shows that having a migrant parent has no statistically significant effect on younger girls and boys. However, having a migrant parent decreases the likelihood of attending school for both older boys and girls. More specifically, boys ages 13 to 17 with a migrant parent exhibit a 60 percent lower probability

of attending school than girls with non-migrant parents, and older girls with migrant parents have a 75 percent lower probability of attending school than girls with non-migrant parents. Again, I find no statistically significant effect of parent migration on schooling lag for both boys and girls. These large negative effects on older boys and girls have also been evidenced in the context of Mexico.²⁶

Table 7. Effects on Educational Outcomes by Child's Gender and Age Group

	School Attendance 6-12			School Attendance 13-17			Schooling Lag 8-17		
	LPM (1)	RF (2)	2SLS (3)	LPM (4)	RF (5)	2SLS (6)	LPM (7)	RF (8)	2SLS (9)
Gender(Boy=1)×Migrant	0.001 (0.005)	-0.106 (0.089)	-0.237 (0.165)	-0.018* (0.011)	-0.472** (0.187)	-0.474** (0.225)	0.016 (0.011)	0.098 (0.168)	0.106 (0.204)
Migrant Parent	0.005 (0.004)	-0.071 (0.084)	-0.168 (0.153)	0.028*** (0.008)	-0.446** (0.209)	-0.590** (0.286)	-0.013 (0.009)	-0.064 (0.226)	-0.066 (0.289)
Gender(Boy=1)	-0.005*** (0.002)	-0.004** (0.002)	0.021 (0.018)	-0.012*** (0.005)	-0.009* (0.005)	0.043 (0.029)	0.073*** (0.004)	0.073*** (0.005)	0.062** (0.025)
Observations	60,884	60,884	60,884	47,792	47,792	47,792	92,093	92,093	92,093
No. Cantons	950	950	950	950	950	950	950	950	950
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
F-statistic			11			19.89			15.20
Mean Dep. Var.	0.96	0.96	0.96	0.79	0.79	0.79	0.41	0.41	0.41

Notes: The table shows the conditional OLS, RF, and 2SLS effects on school attendance and educational lag disaggregated by children's gender. The sample is restricted to children ages 8 to 17 for schooling lag only. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

Lastly, I evaluate the effect of parental migration on children's schooling by their area of residence. Evaluating these differences in terms of area of residence is relevant as on one hand, 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 proportion of children with migrant parents living in rural areas, 8 percent, compared to urban areas, 6 percent. Table 8 evidences that older children with migrant parents living in rural areas exhibit a lower probability of attending school and for the first time I also observe a higher probability of them lagging behind in school than children with non-migrant parents living in urban areas. Again, I find no statistically significant effect on younger children.

As additional robustness checks, I analyze whether these heterogeneous effects by age, gender and area prevail when I use as a control group children with parents absent for other reasons including abandonment, death and other reasons. Making this distinction allows me to compare two groups of children with absent parents whose main difference lies in that children with migrant parents receive remittances and the control group likely does not. In turn, comparing these two groups, I am able to isolate the effect of remittances. Tables A.5 through A.7 present the results of this analysis by age, gender and area of residence, respectively. These tables show that

²⁶Antman (2011) finds that father's migration decreases children's probability of participating in school by 46 percentage points for all children, and by 113 and 83 percentage points for boys and girls ages 12 to 15, respectively.

there is no statistically significant effect of parent migration on school attendance and schooling lag by children's age group and area of residence when comparing children with migrant parents against children with absent parents for other reasons. However, I find a persistent significant negative effect of parental absence due to migration on older boys' school attendance. These results show that, on one hand, remittances do not fully compensate for the absence of parents who have migrated as these children exhibit worse schooling outcomes than children with parents absent for other motives who do not receive remittances. They also suggest that there is some mechanism specifically linked to parental absence due to migration, whether it is the length of absence, the physical distance or other factors, that has a more adverse impact predominantly on older boys.

Table 8. Schooling Outcomes Migrant Parent and Area of Residence

	School Attendance 6-12			School Attendance 13-17			Schooling Lag 8-17		
	LPM (1)	RF (2)	2SLS (3)	LPM (4)	RF (5)	2SLS (6)	LPM (7)	RF (8)	2SLS (9)
Rural×Migrant	0.006 (0.006)	-0.137 (0.119)	-0.193 (0.174)	0.012 (0.012)	-0.945*** (0.317)	-0.716*** (0.275)	0.005 (0.014)	0.787** (0.396)	0.763** (0.377)
Migrant Parent	0.003 (0.004)	-0.017 (0.106)	-0.122 (0.172)	0.013** (0.006)	0.087 (0.295)	-0.366 (0.306)	-0.007 (0.010)	-0.654* (0.388)	-0.542 (0.401)
Rural Area	-0.019*** (0.003)	-0.016*** (0.004)	0.003 (0.019)	-0.127*** (0.008)	-0.115*** (0.008)	-0.035 (0.036)	0.115*** (0.010)	0.106*** (0.011)	0.022 (0.047)
Observations	60,884	60,884	60,884	47,792	47,792	47,792	92,093	92,093	92,093
No. Cantons	950	950	950	950	950	950	950	950	950
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
F-statistic			13.78			26.41			23.26
Mean Dep. Var.	0.96	0.96	0.96	0.79	0.79	0.79	0.41	0.41	0.41

Notes: The table shows the conditional OLS, RF, and 2SLS effects on school attendance and educational lag disaggregated by children's area of residence. The sample is restricted to children ages 8 to 17 for schooling lag only. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

5.4 Addressing Potential Concerns

In this subsection, I present a series of robustness checks to address two potential concerns that emerge from the main findings. First, due to data limitations, I do not know when parents migrated and I am unable to determine whether the effects evidenced are capturing short- or long-term impacts of parental absence on children. Second, the previous subsection evidenced large magnitude effects under 2SLS estimation, for which it is important to discuss the factors that could be driving these large effects.

Parental absence may affect children differently depending on the length of their absence. On one hand, short-term absence may lead to immediate readjustments within the household to compensate for the lost income of the migrant parent, who at the beginning may not be able to send substantial and consistent remittances. On the other hand, although remittances may consistently arrive at some point, if the parent has been gone for longer, the adverse effects of their

long-term absence may be evidenced on children's mental, physical and emotional well-being. As mentioned previously, the household survey does not capture information on when parents migrated. However, I attempt to evaluate whether the observed effects are capturing long-term or short-term effects of parental migration by predicting parental absence length employing the age of younger siblings as a proxy.²⁷ More specifically, I first restrict the sample to nuclear families, which can only be identified from 2016 to 2019.²⁸ Then, I estimate the potential length of parental absence as follows: Short-term absence refers to children who have at least one sibling ages 1 to 3, where parental expected departure date was at maximum 3 years ago; medium-term absence refers to children who have at least one sibling between the ages of 4 to 7 and no younger siblings where the parent could have potentially left between 4 to 7 years ago; and long-term absence refers to children who have at least one sibling ages 8 to 10 years old and no younger siblings, predicting a period of absence of 8 years at minimum.

The OLS results of the short-term, medium-term and long-term impact of parent migration on children's school attendance are provided in Table A.8 by different age groups.²⁹ Given that the sample is restricted significantly by using years 2016 to 2019 only, the instrumental variable is no longer valid and cannot provide robust 2SLS results.³⁰ Table A.8 shows that parental absence due to migration has a negative short-term impact on school attendance of older children ages 13 to 17, while there is no significant medium-term effect. Short-term parental absence does not have a significant effect on younger children; however, their medium-term absence evidences a weakly positive effect on their school attendance. Interestingly, the sign of the effect on older children is reversed when evaluating the long-term effect and a positive weak impact on school attendance is observed. The OLS findings suggest that the length of parental absence is an important determinant of how parental absence impacts children's schooling, where 2SLS estimation is likely capturing this bias not accounted for by general OLS estimation. A more detailed and robust analysis is needed to draw generalizable conclusions.

The second concern I address is the large magnitudes of the coefficients obtained through 2SLS estimation. These large magnitudes are not driven by having a weak instrument, as the

²⁷I assume that parents are monogamous hence there are no children from new partners and rule out the possibility of circular migration where the parent may migrate for short periods of time for work and then return. Although there are seasonal migrant workers from Central America in the U.S., migration from El Salvador has been characterized by long-term episodes as evidenced by nearly one quarter of its population residing abroad and an increasing number of Salvadorans being forced to return.

²⁸The household survey does not directly identify nuclear families within the household. In order to do this, I employ the line number of the mother or the father within the household to identify nuclear families, which is only available from 2016 to 2019. I exclude children who have both parents absent as I cannot identify who their parents are within the household, which in turn does not allow me to identify siblings. This exclusion does not represent a problem to the present analysis as only around 1 percent of children have both parents absent due to migration.

²⁹I focus on school attendance as consistent significant effects have been found on this educational outcome only.

³⁰The shift-share instrument exploits time variation, which is highly limited when I restrict the sample to include four years only.

first-stage results show that the instrument is strongly relevant and the different robustness tests confirm its validity. Instead, they are driven by the group of compliers the instrument is capturing. 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 results capture the local average treatment effect (LATE) for compliers only. Therefore, it is important to better understand who is the group of compliers responding to the instrument and in turn the population I am making inferences about.

In order to shed light on the group of compliers, I employ the methods developed by Marbach and Hangartner (2020), which allow profiling compliers and non-compliers by a set of covariates of interest. Assuming monotonicity and independence of the instrument, the authors first estimate the covariate means for always-takers and never-takers, and then subtract their weighted covariate mean from that of the entire sample to back out the covariate mean of compliers. Standard errors are then estimated employing bootstrap methods.³¹ These methods rely on previous theoretical and empirical evidence developed to test for distributional effects of treatments within compliers for specific outcomes or covariates (Imbens and Rubin, 1997; Abadie, 2002, 2003).³²

In most theoretical and empirical evidence on characterization of compliers, identification comes from a dichotomous instrument; whereas the present study employs a continuous shift-share instrument. For the purpose of this analysis only, I dichotomize my instrument where the auxiliary instrument equals one if the emigration rate predicted by the shift-share instrument is above the median of any given year and it equals zero if below or equal to the median of that given year.³³ Although precision may be lost by doing this, we are able to gain a better understanding of the characteristics of the subgroup of compliers.

The mean and confidence intervals of different characteristics of compliers and non-compliers are presented in Figure A.4. This figure shows that the compliers to my instrument exhibit on average the following characteristics: they are predominantly females, older than 12, relatively poor, live in rural areas, have a higher number of household members and receive higher remittances. Combined with previous findings, the observed large negative effects evidenced through 2SLS estimation pertain to a group of children who live in poverty and vulnerability, whose parents migrated not long ago and although remittances arrive, they may not be substantial. This is a very peculiar group of compliers who have high incentives of dropping out of school to work or migrate for better economic opportunities. Given their strong migrant networks and high labor

³¹The authors have also developed a Stata package called "ivdesc" that allows estimating differences in characteristics between compliers and non-compliers sub-groups directly.

³²Abadie (2002) develops a bootstrap strategy to test for distributional effects of treatments within compliers. And Abadie (2003) takes this analysis one step further and identifies statistical characteristics for compliers estimating average treatment responses for any group of compliers defined by some value for the covariates, referred to as the Local Average Response Function (LARF).

³³Different dichotomous instrument alternatives can be generated; however, I employ the instrument that generates the strongest first-stage. For robustness I repeat the same analysis with different alternative IVs, where similar results are obtained.

market incentives abroad, they may also assign a higher value to work than to education given the expected lower return to education when abroad. Consequently, large magnitude effects are not surprising on this particular group of compliers.

6 Mechanisms

I have found consistent evidence that parent absence due to migration adversely impacts particularly older boys and girls who exhibit a lower probability of attending school. Given these findings, in this section I explore possible mechanisms behind these findings.

6.1 Remittances

On one hand, remittances can mitigate to a certain extent the adverse effect of parental absence if these are consistent and substantial. Around 20 percent of Salvadoran households receive remittances and 87 percent of children with migrant parents live in a remittance-recipient household. However, the size and consistency of remittances depend on the length of time since migrant's arrival to host country, gender wage differentials in immigrant host country and parental responsibilities associated with gender roles, to mention a few.

Women face more limited labor market options abroad, lower pay and fewer opportunities for upward mobility than men. But 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).³⁴ Parental absence due to migration in El Salvador is driven largely by father migration, around 68 percent. Evaluating a subsample of children with a present mother and a migrant father, I find that 94 percent of the mothers indicate that they are separated from the child's father.³⁵ 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. Child support obligations can be difficult to enforce when the non-custodial parent is in a different country.³⁶ 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 and lower financial resources available in the household. Alternatively remittances received could be low not because of fathers unwillingness to remit, but because of the financial constraints faced as a recently arrived immigrant.

³⁴Abrego 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.

³⁵See Table A.9 for descriptive statistics of the present mother and father including their education level, civil status and age

³⁶El 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.

In order to shed light on this mechanism, I assess how parent migration impacts the financial resources available in the household in terms of remittances and household income. Results are provided in Table 9 where the control group in Panel A is children living with both parents and in Panel B it refers to children with absent parents for other reasons. Panel A of Table 9 evidences that children with migrant parents live in households that receive higher remittances per capita than children living with both parents. This comes to show that migrant parents continue supporting their children financially despite the circumstances they may face as immigrants, which evidences that migration does not represent abandonment of familial relationships but rather a commitment to those left behind (Nobles, 2011).³⁷ However, although children with migrant parents do receive remittances, their household income per capita is not higher than that of children living with both parents.³⁸ This suggests that although remittances arrive, they may not be sufficiently large to significantly increase household income of the treated group.

Table 9. Effects on Remittances and Household Income

	Remittances per Capita			Household Income per Capita		
	LPM (1)	RF (2)	2SLS (3)	LPM (4)	RF (5)	2SLS (6)
Panel A. Control Group: Children Living with both Parents						
Migrant Parent	56.137*** (0.843)	106.675*** (12.388)	145.783*** (18.534)	11.325*** (1.585)	36.105 (40.825)	18.026 (72.014)
Observations	108,489	108,489	108,489	106,424	106,424	106,424
F-statistic			22.57			22.91
Panel B. Control Group: Children with Absent Parents for other Reasons						
Migrant Parent	48.908*** (0.834)	106.675*** (12.388)	154.438*** (17.499)	21.080*** (1.196)	21.080*** (1.196)	82.242*** (31.516)
Observations	63,493	63,493	63,493	63,821	63,821	63,821
F-statistic			28.50			28.40
No. Cantons	950	950	950	950	950	950
Year FE	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓	✓

Notes: The Table shows the conditional OLS, RF, and 2SLS effects on remittances per capita and household income per capita for the entire sample of children ages 6 to 17. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

³⁷Nobles (2011) provides evidence from Mexico on how parent absence due to migration and parental absence due to divorce are substantively distinct phenomena as parental migration does not represent abandonment of familial relationships as it is the case of divorce, but it rather represents a commitment to those left behind.

³⁸These results should be interpreted with caution as they can also be driven by reversed causality where not only parent migration has an impact on household income, but also household income impacts the decision to migrate.

On the other hand, Panel B of Table 9 evidences that remittances and specially household income per capita of children with migrant parents are higher than those of children with parents absent for other motives. Thus, although children with migrant parents count with more financial resources, through remittances, than children with parents absent for other reasons, the former still exhibit worse schooling outcomes. This suggests that there are additional mechanisms taking place particularly related to migration. The analysis described in this section brings about a few conclusions. First, parental absence due to migration is intrinsically different from other reasons of absence not only because of their ability to send remittances but also because of their commitment to help those left behind. Second, although migrants send remittances, these do not seem to compensate for other adverse effects that result from their absence.

6.2 Presence of Other Relatives

Parent migration can lead to labor readjustments within the household where the presence of other relatives such as grandparents can mitigate any adverse consequences by providing emotional, financial and time support to the single parent. In order to shed light on this possible mechanism, I first empirically test how parent migration impacts children's schooling by their gender and age group controlling for the presence of grandparents and other relatives in the household. Table 10 below presents the results of this analysis comparing children with migrant parents to two control groups: children living with both parents and children whose parents are absent due to other reasons. Table 10 shows that the presence of grandparents has a positive effect on both younger and older children's school attendance. However, even when controlling for their presence in the household, the negative effect of parent migration on older children's school attendance persists. Therefore, the presence of other relatives does not have a significant effect in reducing the adverse effect of parental absence due to migration.

In addition, I investigate who children predominantly live with when the father, mother or both parents have migrated, as well as when parents are absent due to abandonment or death and report descriptive statistics in Table A.10. I observe that when the mother has migrated and the father is present, 87 percent of children live with extended family where 65 percent live with grandparents and 21 percent with other relatives. When both parents have migrated, most children live with other relatives, 97 percent, where the majority live with grandparents. Moreover, when the father is absent due to migration, 56 percent of children live with their mother only and 44 percent of them have a relative living with them, mostly grandparents. 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 providing financial and emotional support as well as supervision and protection to children falls solely on mothers. In turn, it is possible that there are labor readjustments within the household where

older children may be forced to abandon school and work instead, while girls may need to take additional household chores, including taking care of younger siblings, in response to the mother increasing work hours. In the next section, I further evaluate this channel.

Table 10. Effects on Education Outcomes by Children's Gender Controlling for Presence of other Relatives

	School Attendance 6-12			School Attendance 13-17			Schooling Lag 8-17		
	LPM (1)	RF (2)	2SLS (3)	LPM (4)	RF (5)	2SLS (6)	LPM (7)	RF (8)	2SLS (9)
<i>Panel A. Control Group: Children Living with both Parents</i>									
Gender(Boy=1)×Migrant	0.001 (0.005)	-0.100 (0.089)	-0.171 (0.153)	-0.018* (0.011)	-0.483*** (0.187)	-0.618** (0.270)	0.016 (0.011)	0.099 (0.167)	0.119 (0.208)
Migrant Parent	-0.002 (0.004)	-0.081 (0.084)	-0.342 (0.260)	0.021** (0.009)	-0.464** (0.209)	-0.920** (0.416)	0.011 (0.010)	-0.041 (0.225)	-0.026 (0.405)
Gender(Boy=1)	-0.005*** (0.002)	-0.004** (0.002)	0.014 (0.016)	-0.013*** (0.005)	-0.009* (0.005)	0.059* (0.034)	0.073*** (0.004)	0.073*** (0.005)	0.060** (0.025)
Other Relatives	-0.000 (0.004)	-0.000 (0.004)	0.089 (0.058)	-0.048*** (0.007)	-0.046*** (0.007)	0.202** (0.093)	0.025*** (0.007)	0.029*** (0.007)	0.021 (0.090)
Grandparents	0.017*** (0.003)	0.017*** (0.003)	0.172* (0.099)	0.036*** (0.007)	0.042*** (0.006)	0.557*** (0.190)	-0.068*** (0.007)	-0.060*** (0.007)	-0.074 (0.175)
Observations	60,884	60,884	60,884	47,792	47,792	47,792	92,093	92,093	92,093
F-statistic			19.16			19.80			19.19
<i>Panel B. Control Group: Children with Parents Absent for Other Reasons</i>									
Gender(Boy=1)×Migrant	0.011* (0.006)	0.016 (0.132)	0.025 (0.090)	-0.047*** (0.011)	-0.831*** (0.265)	-0.648*** (0.245)	0.013 (0.011)	0.395* (0.214)	0.285* (0.167)
Migrant Parent	0.013*** (0.004)	-0.153 (0.136)	-0.111 (0.106)	0.122*** (0.009)	0.083 (0.258)	-0.065 (0.233)	-0.102*** (0.009)	-0.137 (0.243)	-0.091 (0.179)
Gender(Boy=1)	-0.016*** (0.003)	-0.014*** (0.003)	-0.018 (0.018)	0.018*** (0.006)	0.019*** (0.006)	0.138*** (0.049)	0.076*** (0.005)	0.074*** (0.005)	0.022 (0.034)
Other Relatives	-0.007 (0.005)	-0.007 (0.005)	-0.006 (0.005)	-0.049*** (0.008)	-0.047*** (0.008)	-0.042*** (0.010)	0.009 (0.008)	0.008 (0.008)	0.006 (0.009)
Grandparents	0.008** (0.003)	0.008** (0.003)	0.010** (0.004)	0.044*** (0.007)	0.049*** (0.007)	0.067*** (0.014)	-0.054*** (0.006)	-0.058*** (0.006)	-0.059*** (0.009)
Observations	32,886	32,886	32,886	31,439	31,439	31,139	56,101	56,101	56,101
F-statistic			20.07			13.18			19.30
No. Cantons	950	950	950	950	950	950	950	950	950
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The Table shows the conditional OLS, RF, and 2SLS effects on school attendance and educational lag controlling for the presence of other relatives. The Table contrasts effects between two different control groups: In Panel A, the control group corresponds to children who live with both parents; whereas in Panel B it corresponds to children with parents absent for other reasons. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

6.3 Work and Study Decisions

One additional mechanism behind the observed negative effect of parent migration on children's schooling is the possibility of children dropping out of school to work, as a response to labor adjustments within the household. Given that the strongest negative effect on school attendance is observed on older boys and girls, I assess how having a migrant parent impacts the likelihood of children ages 13 to 17 to be working and/or attending school by child's gender, results are shown in Table 11. I find 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. More specifically, boys exhibit a 73 percent lower likelihood of studying only and a 12 percent higher likelihood

of working. It is evident that older boys with migrant parents are then replacing school with work. These findings are consistent with empirical evidence on the adverse impact of parental migration in Mexico where boys also exhibit a higher likelihood of dropping out of school in order to work (Antman, 2011). The previous section evidenced that children with parents absent due to migration receive remittances; however, these may be insufficient to cover household expenses, which can push particularly older boys to work.

Moreover, Table 11 shows that girls with migrant parents are more likely to be neither working nor studying, less likely to be only studying and no significant effect is found on their likelihood of only working. Girls exhibit a very low probability of attending school only, almost 100 percent, and a 5.5 % higher probability of being inactive. 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 (Robles & Duryea, 2016).³⁹ In my sample, 13 percent of girls ages 13 to 17 are neither working nor studying, and only 6 percent of boys. Some of the reasons that drive particularly girls in El Salvador to neither work nor study include teenage pregnancy, housework and taking care of dependents (PNUD, 2018). Consequently, it is likely that older girls with migrant parents abandon school and are inactive due to helping out with domestic work or taking care of younger siblings.

In short, these findings suggest that parent migration leads to labor readjustments within the household where girls are more likely to be inactive, potentially carrying out domestic work or taking care of siblings, and boys are more likely to work. Further research should explore how children with migrant parents allocate their time between study, work and leisure to better understand this channel.

Table 11. Effects on Schooling and Work Outcomes by Children's Gender

VARIABLES	Work & School			Only School			Only Work			Neither Work nor Study		
	OLS (1)	RF (2)	2SLS (3)	OLS (4)	RF (5)	2SLS (6)	OLS (7)	RF (8)	2SLS (9)	OLS (10)	RF (11)	2SLS (12)
Gender(Boy=1)×Migrant	-0.030*** (0.009)	-0.007 (0.166)	0.049 (0.200)	0.012 (0.013)	-0.466** (0.194)	-0.527* (0.286)	-0.010 (0.007)	0.840*** (0.159)	0.811*** (0.213)	0.028*** (0.009)	-0.367** (0.173)	-0.334* (0.179)
Migrant Parent	-0.021*** (0.006)	0.101 (0.106)	0.168 (0.150)	0.049*** (0.009)	-0.360* (0.208)	-0.737** (0.327)	-0.018*** (0.004)	-0.159 (0.099)	0.045 (0.132)	-0.009 (0.008)	0.418** (0.169)	0.524** (0.236)
Gender(Boy=1)	0.105*** (0.006)	0.089*** (0.006)	0.096*** (0.027)	-0.117*** (0.007)	-0.077*** (0.006)	-0.052 (0.038)	0.099*** (0.005)	0.090*** (0.005)	-0.004 (0.027)	-0.087*** (0.005)	-0.102*** (0.005)	-0.039* (0.023)
Observations	47,792	73,709	47,792	47,792	73,709	47,792	47,792	73,709	47,792	47,792	73,709	47,792
No. Cantons	950	950	950	950	950	950	950	950	950	950	950	950
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
F-statistic			19.83			19.83			19.83			19.83
Dep. Mean	0.11	0.11	0.11	0.72	0.72	0.72	.07	.07	.07	.09	.09	.09

Notes: The Table shows the conditional OLS, RF, and 2SLS effects on work and school outcomes for children ages 13 to 17 only. Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.10

³⁹Youths 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.

7 Other Potential Mechanisms

There are other mechanisms that could be behind the observed effects, but due to data limitations, I am unable to empirically test them. Given their relevance in this particular context, I cannot avoid at minimum discussing them briefly. First, another channel to consider is that parent migration also represents an incentive for children to seek migration themselves for better economic opportunities or for family reunification purposes. Parent migration reduces the cost of migration for children who remain in origin country through the strengthening of migrant networks and knowledge gain about the labor opportunities abroad. Consistent with this hypothesis, a few studies find evidence in Mexico that older children, ages 16 to 18, who have migrant parents exhibit lower school attendance due to their higher likelihood of future migration (McKenzie and Rapoport, 2011; Lara, 2015). In a 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 future migration.

In addition, youths living in poor and marginalized areas in El Salvador are particularly vulnerable to gang recruitment where parent absence due to migration, which translates into lower supervision and protection for children, increases their vulnerability. In turn, male and female youths may exhibit lower school attendance due to gang violence in and around schools. Gang membership in El Salvador is currently estimated at around 30,000 individuals formed predominantly by young men ages 13 to 25 (Cruz, Rosen, Amaya and Vorobyeva, 2017). Gang violence in and around schools can push children to drop out of school, while gang-related criminal activities can also offer some youth an attractive alternative to staying in school (Adelman and Székely, 2016). A recent empirical study provides support to this channel where the author shows that boys who are vulnerable to gang membership in El Salvador experience a reduction in completed schooling and an increased likelihood to work driven by the expansion of gangs (Kalsi, 2018). On the other hand, girls are also prone to gang violence as they are frequently forced to become their partners or are victims of sexual assault that can result in teenage pregnancies (La Prensa Gráfica, 2016). Parental migration exposes vulnerable youths to additional risks, where the human capital costs evidenced in this article can also be driven by the violent context in which they live.

Lastly, as an alternative to being recruited into gangs or to being killed, many children and youths choose to migrate. One of the main drivers of the recent steep increase in the number of unaccompanied migrant children from El Salvador, Guatemala and Honduras apprehended in the U.S. is gang-related violence (UNHCR, 2014; UNICEF, 2016). In fact, it has been estimated that one additional homicide in the Northern Triangle leads to an increase of 3.7 unaccompanied children who are apprehended in the U.S. (Clemens, 2017). Therefore, children with migrant par-

ents may abandon school to escape violence and to be reunified with their parents. The threat of violence, poverty and the need to seek family reunification push many youths to abandon school and migrate.

8 Conclusion

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 on children's development. However, the absence of one or both parents due to migration entails a reduction in the quantity and quality of parental time, leading to lower supervision, protection, guidance and emotional support available for children. This study provided evidence of the impact of parent migration on children's schooling in El Salvador, a country with a large immigrant population, high levels of violence and where children and youth represent an extremely vulnerable group.

This article evidenced an adverse impact of parent migration on children's education, where the effect was observed to differ by child's gender and age. I found that particularly older boys and girls, ages 13 to 17, with migrant parents exhibit a lower probability of attending school, while no strong effects are found on younger children or on them lagging behind in school. These effects were found to be explained by several mechanisms including the length of time since parent migration, the financial support of migrant parents and labor readjustments within the household. On one hand, this article found that parent absence due to migration is intrinsically different from other reasons of absence as it does not represent abandonment of familial relationships but rather a commitment to those left behind. Children with migrant parents do receive remittances; however, these do not seem to be sufficiently large or consistent to have a positive impact on their development. On the other hand, children with migrant fathers are mostly living with their mothers only without the support of other relatives, which entails that the responsibility of providing protection supervision, financial and emotional support lies solely on the mother. In turn, there are labor readjustments within the household taking place where boys are found to be replacing school for work and girls are more prone to be inactive likely carrying out more housework. The findings of this study are in line with a story also observed in other contexts where the short-term effect of migration is financial hardship, which results in older children absorbing additional work responsibilities outside or within the household to compensate for the absence of the migrant parent.

This article also discussed other possible mechanisms behind the observed effects given the context. On one hand, parent migration also represents an incentive for children to migrate them-

selves to be reunified with family or to seek better economic opportunities. In addition, youths in marginalized and poor areas in El Salvador are at risk of being recruited into gangs, and parental 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.

The evidence found in this study also suggests several topics for future research. In order to better understand the role of remittances in this context, future research should address how consistent remittances are, whether remittances increase overall household income compared to income prior to migrant's departure in the short- and long-run, and how remittances are effectively being allocated within the household. Moreover, youth inactivity is a salient problem in Central American and it is important to understand the reasons behind it where time-use data could shed light on how children allocate their time between school, domestic and non-domestic work. In addition, more data and research is needed on the drivers behind the increasing trend of unaccompanied children migrating to the U.S. and on gang violence in and around schools.

There are several policy implications that emerge from this study. As child migration from the Northern Triangle continues increasing, it is imperative for host, transit and origin countries to work together in the formulation of policies that safeguard children during such a risky journey, promptly reunify them with their families and expand grounds for granting asylum. Moreover, policy interventions that target youths at risk and 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 countries experiencing similar migration and violence levels in Latin America and other regions.

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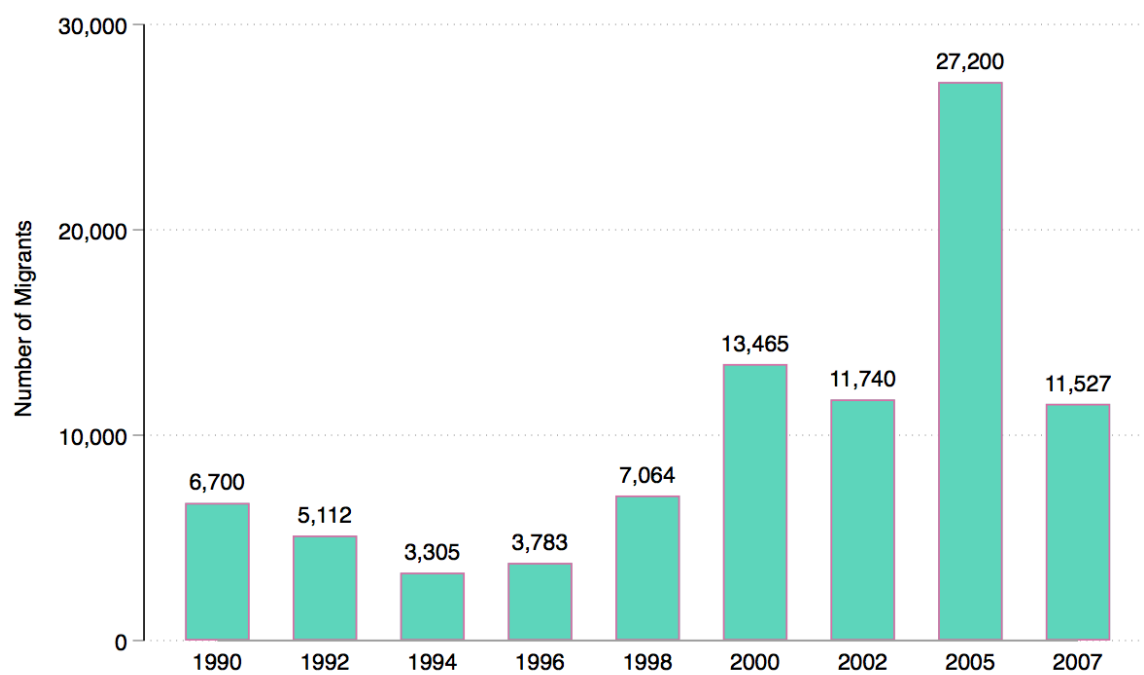
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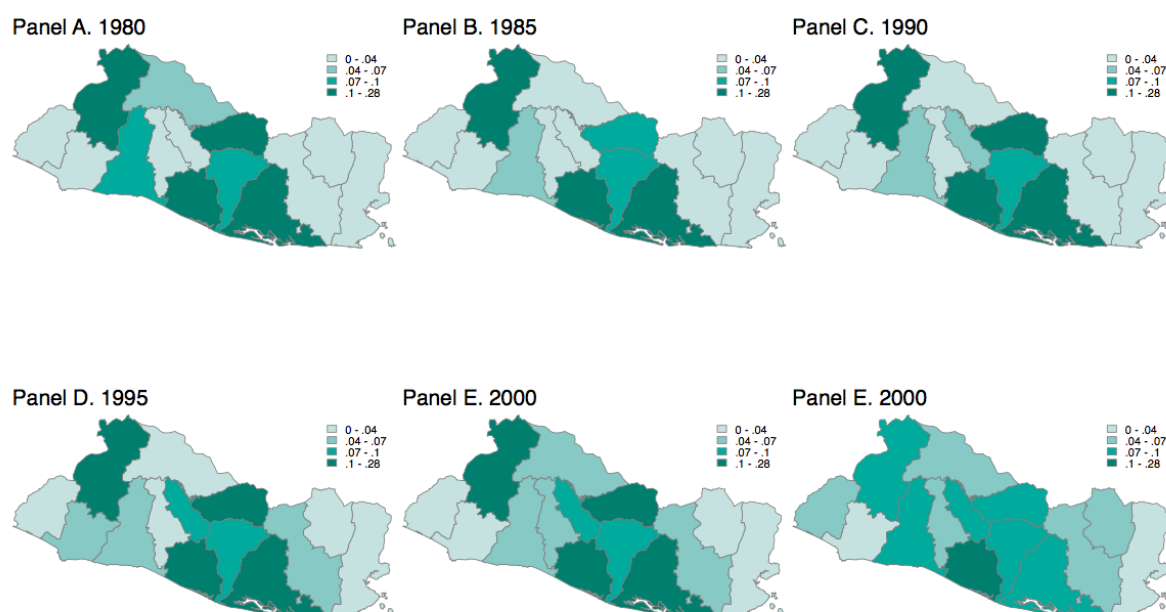
Appendix

Figure A.1: Total Salvadoran Migrants over Time



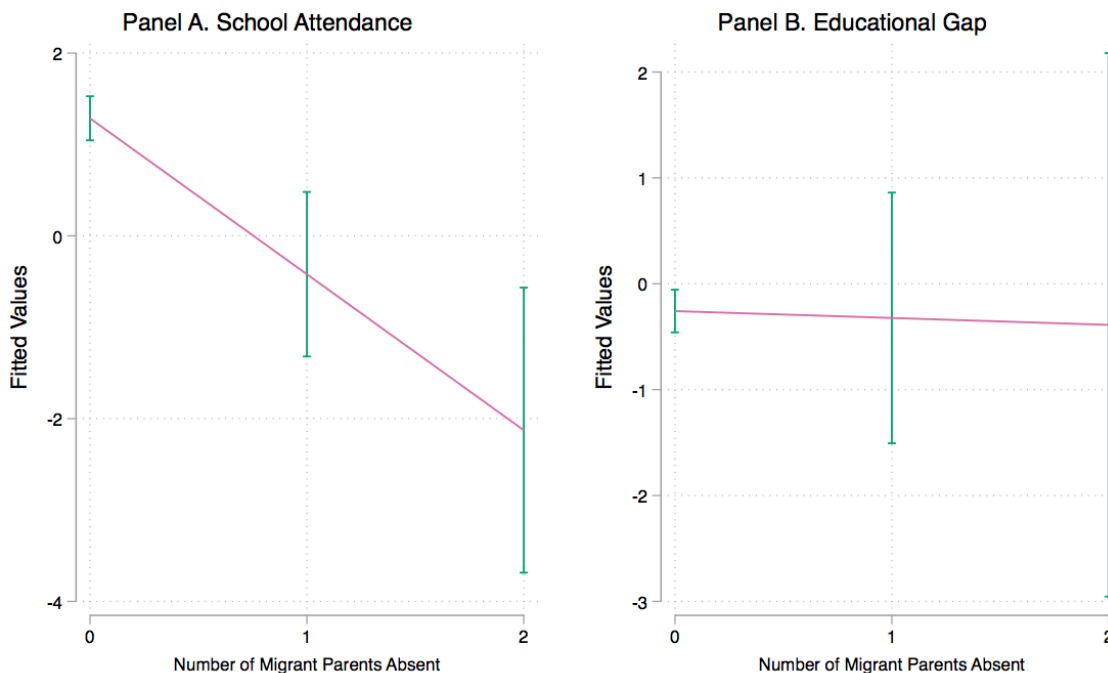
Source: General Directorate of Statistics and Censuses (DIGESTYC) (2007).

Figure A.2: Share of Migrants Across Departments



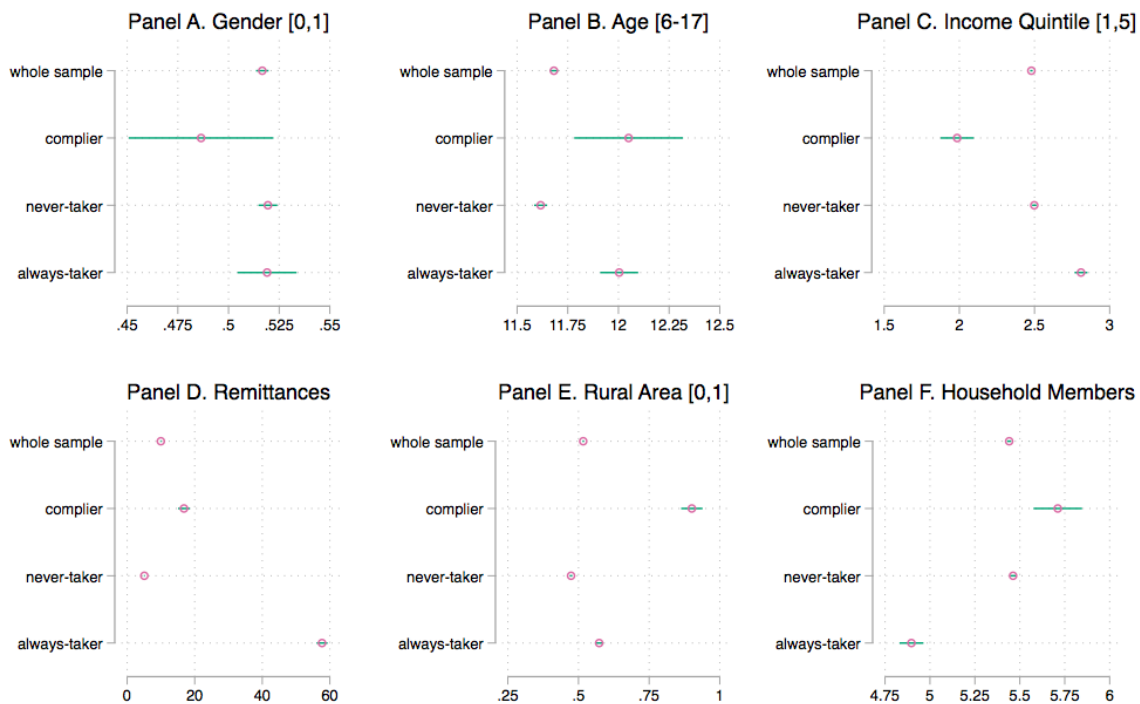
Source: General Directorate of Statistics and Censuses (DIGESTYC) (2007).

Figure A.3: Predictive Margins with 95% CIs



Notes: The sample used in Panel A corresponds to children ages 6 to 17, whereas that of Panel B corresponds to children ages 8 to 17, where the predicts obtained using IV Probit estimation and evaluated at having 0, 1 or 2 parents absent due to migration.

Figure A.4: Mean and 95% Confidence Interval



Note: Descriptive statistics (mean and 95% bootstrap confidence intervals) for the complier and non-complier subpopulation.

Table A.1: Variables 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 a rural area and 0 if in an urban 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

Table A.2: Robustness First Stage Results Country Exclusions

	(1)	(2)	(3)	(4)	(5)
Instrument-GTM	0.831*** (0.203)				
Instrument-HND		1.041*** (0.218)			
Instrument-CRI			0.680*** (0.138)		
Instrument-NIC				0.633*** (0.135)	
Instrument-PAN					0.568*** (0.121)
Observations	108,676	108,676	108,676	108,676	108,676
Year FE	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓
No. Cantons	950	950	950	950	950
F-test	28.75	29.07	29.06	28.90	29.01

Notes: The Table shows first-stage results of regressing the instrument on migrant parent excluding individually each of the five Central American countries included to estimate the instrument to test for robustness of the instrument after each exclusion for the entire sample of children ages 6 to 17. Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Table A.3: Robustness: Instrument Effects on Past Education

	(1)	(2)	(3)	(4)
School Attainment ₂₀₀₇	0.000 (0.000)	0.000 (0.000)		
School Attendance ₂₀₀₇			0.008 (0.006)	0.007 (0.006)
Observations	950	950	950	950
Department FE	✓	✓	✓	✓
Controls		✓		✓

Notes: The Table shows the OLS results of regressing the instrument on past education outcomes. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

Table A.4: Robustness: Instrument Effects on Current Education

	(1)	(2)	(3)	(4)
School Attendance	-0.006 (0.006)	-0.006 (0.006)		
Educational Gap			-0.004 (0.003)	-0.004 (0.003)
Observations	950	950	950	950
Department FE	✓	✓	✓	✓
Controls		✓		✓

Notes: The Table shows the OLS results of regressing the instrument on current education outcomes. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

Table A.5: Effects on Education Outcomes by Children's Age Group

	School Attendance			Schooling Lag		
	LPM	RF	2SLS	LPM	RF	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
Age13_17×Migrant	0.068*** (0.007)	-0.107 (0.187)	-0.098 (0.136)	-0.029*** (0.011)	-0.097 (0.237)	-0.067 (0.164)
Migrant Parent	0.034*** (0.004)	-0.140 (0.144)	-0.111 (0.107)	-0.086*** (0.009)	0.059 (0.287)	0.036 (0.202)
Age13_17	-0.211*** (0.006)	-0.197*** (0.006)	-0.179*** (0.027)	0.221*** (0.006)	0.217*** (0.006)	0.229*** (0.033)
Observations	64,325	64,325	64,325	56,101	56,101	56,101
No. Cantons	950	950	950	950	950	950
Year FE	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓	✓
F-statistic			20.08			20.10

Notes: The Table shows LPM, RF and 2SLS effects for school attendance and educational lag by age group. Control group refers to children with absent parents for other reasons. The sample is restricted to children ages 8 to 17 for schooling lag. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

Table A.6: Effects on Education Outcomes by Children's Gender

	School Attendance 6-12			School Attendance 13-17			Schooling Lag 8-17		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	LPM	RF	2SLS	LPM	RF	2SLS	LPM	RF	2SLS
Gender(Boy=1)×Migrant	0.011* (0.006)	0.019 (0.132)	0.027 (0.090)	-0.049*** (0.011)	-0.873*** (0.268)	-0.674*** (0.245)	0.014 (0.011)	0.401* (0.214)	0.286* (0.166)
Migrant Parent	0.013*** (0.004)	-0.153 (0.136)	-0.111 (0.106)	0.126*** (0.009)	0.135 (0.260)	-0.009 (0.231)	-0.104*** (0.009)	-0.161 (0.243)	-0.109 (0.178)
Gender(Boy=1)	-0.016*** (0.003)	-0.014*** (0.003)	-0.018 (0.018)	0.020*** (0.006)	0.022*** (0.006)	0.145*** (0.049)	0.075*** (0.005)	0.073*** (0.005)	0.021 (0.033)
Observations	32,886	32,886	32,886	31,439	31,439	31,139	56,101	56,101	56,101
No. Cantons	950	950	950	950	950	950	950	950	950
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
F-statistic			20.12			13.03			19.39

Notes: The Table shows LPM, RF and 2SLS effects for school attendance and educational lag by gender. Control group is children with absent parents for other reasons. The sample is restricted to children ages 8 to 17 for schooling lag. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

Table A.7: Effects on Education Outcomes by Area of Residence

	School Attendance 6-12			School Attendance 13-17			Schooling Lag 8-17		
	(1) LPM	(2) RF	(3) 2SLS	(4) LPM	(5) RF	(6) 2SLS	(7) LPM	(8) RF	(9) 2SLS
Rural×Migrant	0.002 (0.006)	-0.140 (0.158)	-0.079 (0.118)	0.023* (0.013)	-0.404 (0.354)	-0.173 (0.311)	0.023* (0.014)	0.481 (0.387)	0.388 (0.336)
Migrant Parent	0.017*** (0.004)	-0.040 (0.134)	-0.037 (0.113)	0.089*** (0.007)	0.010 (0.323)	-0.139 (0.368)	-0.109*** (0.010)	-0.322 (0.379)	-0.280 (0.369)
Rural Area	-0.017*** (0.004)	-0.014*** (0.004)	0.003 (0.024)	-0.144*** (0.009)	-0.133*** (0.010)	-0.101* (0.059)	0.103*** (0.010)	0.100*** (0.011)	0.030 (0.064)
Observations	32,886	32,886	32,886	31,439	31,439	31,439	56,101	56,101	56,101
No. Cantons	950	950	950	950	950	950	950	950	950
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
F-statistic			17.01			19.02			21.48

Notes: The Table shows LPM, RF and 2SLS effects for school attendance and educational lag by area of residence. Control group is children with absent parents for other reasons. The sample is restricted to children ages 8 to 17 for schooling lag. Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Table A.8: Effects on School Attendance by Length of Parental Absence

	Short-Term			Medium-Term			Long-Term
	6-17	6-12	13-17	6-17	6-12	13-17	13-17
Migrant Parent	-0.029 (0.018)	0.001 (0.015)	-0.124** (0.056)	0.018 (0.022)	0.023* (0.014)	-0.010 (0.034)	0.057* (0.029)
Observations	6,942	5,091	1,851	4,561	3,034	3,145	2,831
R-squared	0.147	0.030	0.149	0.152	0.035	0.146	0.126
No. Municipalities	212	212	212	212	212	212	212
Year FE	✓	✓	✓	✓	✓	✓	✓
Department FE	✓	✓	✓	✓	✓	✓	✓
Controls×Year FE	✓	✓	✓	✓	✓	✓	✓

Notes: The Table shows the OLS effects of parent migration on school attendance for different lengths of parental absence. The age of younger siblings is used as a proxy for length of parental absence. The sample is restricted to years 2016 to 2019 for which nuclear families can be identified. For children ages 6 to 12, the medium-term parental absence is estimated based on whether children have at least one sibling between the ages of 4 to 5. Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Table A.9: Descriptive Statistics Detailed

Variable	All Children		Migrant Parent		No Migrant Parent	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Mother average years education	6.98	4.60	7.03	4.44	6.98	4.60
Child's mother's age	35.00	8.51	34.77	8.23	35.01	8.52
Child's mother is employed	0.50	0.50	0.39	0.49	0.51	0.50
Child's mother is accompanied	0.33	0.47	0.00	0.05	0.34	0.47
Child's mother is married	0.37	0.48	0.00	0.00	0.38	0.49
Child's mother is a widow	0.03	0.16	0.01	0.09	0.03	0.16
Child's mother is divorced	0.01	0.08	0.01	0.09	0.01	0.08
Child's mother is separated	0.22	0.41	0.94	0.23	0.19	0.39
Child's mother is single	0.05	0.22	0.04	0.19	0.05	0.22
Father average years of education	7.07	4.71	7.95	5.00	7.06	4.71
Child's father's age	39.82	10.35	41.61	10.09	39.81	10.35
Child's father is employed	0.92	0.27	0.83	0.37	0.92	0.27
Child's father is accompanied	0.43	0.50	0.00	0.00	0.44	0.50
Child's father is married	0.53	0.50	0.00	0.00	0.53	0.50
Child's father is a widow	0.01	0.07	0.00	0.06	0.01	0.07
Child's father is divorced	0.00	0.03	0.02	0.12	0.00	0.03
Child's father is separated	0.03	0.16	0.94	0.24	0.02	0.15
Child's father is single	0.00	0.05	0.04	0.20	0.00	0.05

Notes: The Table shows more detailed descriptive statistics for the sample of children ages 6 to 17, including descriptives about parents when they are present.

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

Absence	Living with Relatives	Living with Grandparents	Living with Other Relatives
Migrant Parent	63.79	44.88	18.91
Migrant Father	43.83	28.35	15.48
Migrant Mother	86.52	65.21	21.3
Migrant Both	96.85	69.68	27.17
Abandonment Parent	67.52	49.8	17.72
Abandonment Father	60.22	43.01	17.21
Abandonment Mother	66.63	51.85	14.78
Abandonment Both	96.08	74.9	21.18
Death Parent	58.56	36.33	22.23
Death Father	54.00	33.07	20.93
Death Mother	67.64	43.33	24.32
Death Both	94.9	60.68	34.22

Notes: The Table presents living arrangement of children ages 6 to 17 by reason of parental absence including migration, abandonment and death.

Chapter 5

Conclusion

Rampant gang-related violence in the Northern Triangle of Central America is increasingly pushing both children and adults to make the risky migration journey to the north. Simultaneously, as a result of the strengthening of U.S. immigration enforcement policies, an increasing number of Central Americans have been repatriated to their countries of origin. Through its different chapters and perspectives, this thesis sought to provide empirical evidence of the impact of both out-migration and forced return migration in the country of origin of immigrants, where little evidence exists.

Chapter 2 advanced understanding on the formation, development and consequences of gangs in Central America by bringing together multi-disciplinary evidence. The ample sociological study of gangs evidenced that Central American gangs are the result of a combination of factors including internal conflicts and violence, marginalization, migration, social exclusion, dysfunctional families, rapid urbanization and lack of economic opportunities for youths, which have persisted in these countries for years. On the other hand, the economic study of criminal organizations has allowed to locate the origin of gangs to the U.S. deportation of Salvadorans with a criminal background who transferred criminal capital and gang culture to their places of origin. However, it was actually tough-on-crime or *Mano Dura* policies implemented in the early 2000s, what influenced their growth, organization and power. As a result, gangs have been evidenced to have several adverse consequences on the communities they govern including hindering economic and human capital development, increasing extortion and violence and influencing politics. The economic study of Central American gangs is relatively recent, which poses an opportunity for further developing theoretical and empirical work.

Furthermore, Chapter 3, examined how recent deportations of Salvadorans with and without a criminal background impact local gangs and violent crime. This study evidenced that the repatriation of Salvadorans continue having an impact on crime in municipalities where gangs are present, nearly 20 years after the first deportations of gang members. More specifically, I found

that an increase in deportations of persons without a criminal background to municipalities where gangs are present leads to an increase in homicides; whereas an increase in deportations of Salvadorans with a criminal background decrease homicides in municipalities where gangs are present. In order to better understand the mechanisms behind these effects, it is necessary to explore heterogeneity of victims of violent crime and deportees by demographic characteristics, presence of gangs, criminal background, and level of seriousness of criminal offense. In turn, I found that there are three main mechanisms behind the observed effects. On one hand, the U.S. deportation of Salvadorans who have committed most serious crimes continues contributing to gang membership and increasing gang-related violence. Moreover, deported Salvadorans who have committed less-serious crimes have a positive contribution to the local labor market, which makes them less prone to re-offend and in turn reduces violent crimes. Finally, the deportation of persons without a criminal background to gang-dominated areas increases homicides by them becoming the victims of violent crime as they represent the perfect target for gang recruitment. These findings speak about the negative unintended consequences of U.S. Immigration enforcement, which continues having an adverse impact on immigrants' communities of origin.

Lastly, Chapter 4 assessed the impacts of parent migration on schooling outcomes of children left behind in El Salvador. This article evidenced that children with migrant parents exhibit a lower probability of attending school, where the effect differs by children's age and gender. More precisely, older boys and girls, ages 13 to 17, with migrant parents exhibit a lower likelihood of attending school, while no strong effects were found on younger children or on their probability of lagging behind in school. These effects were explained by several mechanisms. Although children with migrant parents do receive remittances, these do not seem to be sufficiently large or consistent to have a positive impact on their development. In turn, there are labor readjustments within the household taking place where boys are found to be replacing school for work and girls are more prone to be inactive, likely carrying out more domestic work. The evidence found in this study is in line with a story in which the short-term effect of parent migration is financial hardship, which results in older children taking work responsibilities outside or within the household to compensate for the absence of the migrant parent. Moreover, in the particular context of El Salvador, it is likely that parent migration puts children at higher vulnerability where additional mechanisms are in place including children dropping out of school to join gangs or opting to migrate to flee gang persecution and violence.

This dissertation sheds light on the economic and development consequences of migration in the country of origin of migrants with the objective of providing relevant and current evidence for the formulation of policies that address the root causes of violence-driven migration from the Northern Triangle of Central America. There are several policy implications that emerge from the studies that conform this dissertation. First, policy-makers studying and addressing the

impacts of organized crime in Central America ought to acknowledge the adverse effects that tough-on-crime policies have had on contributing to gangs' organization and power. As such, repressive measures should not continue being the preferred approach to reduce crime, as they achieve exactly the opposite effect. Instead, the pacification of Central American gangs requires the formulation of integral policies that incorporate crime prevention for youths at risk, better targeting of policing, rehabilitation of ex-convicts and gang members as well as criminal justice system reform, to mention a few.

Moreover, these findings also speak about the negative unintended consequences of U.S. Immigration enforcement, which continue having an adverse impact on immigrants' communities of origin. The policy implications that emerge are relevant for immigrants' sending and host countries. On one hand, U.S. immigration policies that aim at deterring further irregular migration are not succeeding at doing so but are instead contributing to fueling a cycle of violence-driven migration. Moreover, the U.S. may be deporting Central Americans who fled from violence in the first place, and as they are forced to return to their home country, they are exposed to death and victimization upon return. On the other hand, from the perspective of origin countries, as more immigrants are being forced to return, programs of assistance to returnees are key to their proper reintegration into society and to taking advantage of their productive potential.

Lastly, the findings of this dissertation evidence that children and youths represent an extremely vulnerable population in El Salvador and other Central American countries. In many cases, they face social exclusion, marginalization, little opportunities for education and development, and are direct targets of gang recruitment, which can also push them to make the risky migration journey. Thus, policy interventions that target youths at risk and 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. The derived policies from this dissertation are relevant not only for El Salvador but also for other countries experiencing similar migration and violence levels in Latin America and other regions.