Spreading Gangs: Exporting US Criminal Capital to El Salvador

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Abstract

This paper provides evidence showing how deportation policies can backfire by disseminating not only ideas between countries but also criminal networks, spreading gangs, in this case, across Central America and spurring migration back to the US. In 1996, the US Illegal Immigration Responsibility Act drastically increased the number of criminal deportations. In particular, the members of large Salvadoran gangs that developed in Los Angeles were sent back to El Salvador. Using variation in criminal deportations over time and across cohorts combined with geographical variation in the location of US gangs and their members' place of birth, I find that criminal deportations led to a large increase in Salvadoran homicide rates and gang activity, such as extortion and drug trafficking, as well as an increase in gang recruitment of children. In particular, I find evidence that children in their early teens when US gang members arrived are more likely to be involved in gang-related crimes when they are adults. I also find evidence that these deportations, by increasing gang violence in El Salvador, increase child migration to the US–potentially leading to more deportations.

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1 Introduction

We sent them children fleeing the war and they returned gang members to a country that needed to build peace... The gangs that arrived with the deportees grew at an unstoppable speed.

– Carlos Dada, Salvadoran journalist, 2018

Between 1998 and 2014, US immigration authorities logged almost 300,000 deportations of immigrants with criminal records to Central America, including a large number of gang members. Although these policies were primarily aimed at reducing criminal activity by breaking up Los Angeles street gangs, they may have to some extent backfired, spreading gangs across Central America and back into parts of the US. A good example of this is the Mara Salvatrucha, or MS-13, a violent transnational criminal organization that began in Los Angeles and is now active across the US and Central American countries. Recent estimates place its membership at about 9,000 and 100,000 in the U.S. and Central America, respectively.[1]

Gang activities include violence, drug-trafficking, extortion, and human smuggling. The governments of El Salvador, Honduras, Guatemala, and the US are enacting tough measures to target gangs (Insight Crime and CLALS 2018; Crisis Group 2017; Gutierrez 2011). However, historical factors that made their growth possible, including deportation policies, have generally been overlooked. Understanding the role of deportation policies in violent crime is crucial to inform the current debate over using enforcement policies to decrease the flow of illegal immigrants,[2] as well as to explain the sudden surge in the arrival in the US of unaccompanied minors from Central America (Carlson and Gallagher 2015; Meyer et al. 2014).[3] This paper sheds light on how deportation policies may have unintended consequences by generating a self-reinforcing cycle of deportations, gang recruitment and violence between host and home countries.

This paper provides evidence showing that the export of criminal capital through US deportations led to gang development, child recruitment, and migration in Central America. I focus on El Salvador – a country with one of the highest homicide rates in the world, where much of the violence is attributed to gangs of US origin (UNODC 2019). This paper makes three contri-

[1] See http://www.migrationpolicy.org/article/national-policies-and-rise-transnational-gangs.

[2] For example, the Trump administration has justified the increase in deportations by claiming that undocumented immigrants pose a security threat. See, e.g., "Trump moves on Immigration. Deportations in First Month," Politifact, Friday, February 24th, 2017.

[3] Recent interviews of unaccompanied minors arriving in the US stress that gang violence in Central America may be the main push factor (UN High Commissioner for Refugees UNHCR).

butions. First, I provide evidence that gangs and violent crime in El Salvador developed due to the arrival of criminal deportees from the US who brought new criminal knowledge related to extortion and drug trafficking. Second, I am able to causally estimate a mechanism through which gang deportees create large, negative externalities on violent crime: criminal capital spillovers through collaborations with Salvadoran children who had never been in the US. I show that while deportees had a direct effect by merely arriving in El Salvador, they may also have had an indirect effect by recruiting children, thus spreading their criminal capital. In particular, I find that Salvadoran children who were never exposed to the US start joining gangs of US origin (hereinafter "US gangs") after the arrival of gang member deportees. Third, I present some evidence of a self-reinforcing cycle through which gang deportation increases child migration from violent gang areas in El Salvador to the US, in turn further increasing deportations.

To isolate the causal channels, I take advantage of an exogenous change in US policy that suddenly increased the number of criminal deportations in 1996. In particular, members of large gangs (MS-13 and 18th Street) in Los Angeles were sent back to their countries of origin. These gangs were formed by Salvadoran children in Los Angeles during the 1980s, where many families had migrated after El Salvador's civil conflict (DeCesare 1998; Dunn 2007; Lopez and Connell 1996). Though these gangs were not extremely violent at first, after spending time in US prisons, members gained skills related to extortion and violence (Ramsey 2012). In 1996, the US Illegal Immigration Responsibility Act drastically increased the number of criminal deportations, which led to the deportation of these gang members to Central America. It has been widely reported that violence in El Salvador and ultimately in Central America increased after these deportations in 1996 (e.g., Savenije 2009; Arana 2005; Cruz 2013).[4]

Using this setting, I perform a difference-in-differences analysis and exploit three useful sources of variation: i) cross-municipality variation in the locations of US gangs in El Salvador and in their place of birth; ii) over-time variation in criminal deportations from the US; and iii) differential exposure to gangs with US origin across cohorts (during sensitive ages) within location-time cells. These gangs are known to recruit young children: in El Salvador more than 60% of

[4]The same events not only happened in El Salvador but also in Guatemala and Honduras, countries that are also currently affected by gangs that originated in the US and have high homicide rates. While a considerable amount of qualitative research based on interviews and surveys has pointed to the role of deportations on the development of gangs and violence in Central America, previous research has not established causal evidence.

gang members join before the age of 15 (Cruz et al. 2017). Time variation comes from changes in deportation policies in the US in 1996. I thus define age-specific shocks by interacting gang presence measures and age at the time of arrival of US gangs members in 1996. Differential exposure arises because children within a municipality experience the arrival of gangs at different ages and because gang presence varies across municipalities.

Given that gang location could potentially be endogenous, to construct an instrument for gang location, I take advantage of the fact that most deportees go back to their municipality of birth. I thus instrument gang presence with the municipality of birth for the universe of the gang members who were deported from the US in 1996. In addition, looking at previous trends, I am also able to test the identifying assumption - that is, that municipalities with and without US gangs would have followed similar trends if the number of criminals deported had not increased. By comparing changes in outcomes across municipalities in El Salvador with and without a gang presence, I am able to measure how the arrival of criminal deportees from the US affected US gang-related activities (extortion and drug trafficking), homicide rates, child recruitment, and child migration. The idea is that the arrival of gangs had a larger effect in municipalities where they settled, which can be predicted by their place of birth, and that within these areas it affected young children more given that gangs heavily recruit children less than age 15.[5]

To observe these sources of variation, I exploit administrative data on the criminal activity and incarceration of US gangs during the period 1985 to 2011. First, I use police data on homicide, extortion, drug dealing, trafficking, and other types of crimes by municipality, which allows me to check whether gang activity and associated violence increased after the arrival of criminal deportees from the US in 1996. Second, to examine the effects on child recruitment, I take advantage of confidential administrative data on the universe of inmates in Salvadoran prisons. These data include information on municipality of birth, date of birth, length of sentence, year of arrest, and education. It allows me to track cohorts that were exposed to the arrival of gang deportees in 1996 at different ages and in different locations.[6] In this way, I am able to analyze whether those who were exposed to US gangs as children are more likely to be incarcerated in adulthood. Finally, using deportation data on children from 2011 to 2017, I am able to assess whether gang violence

[5] As robustness, I also use the municipalities of birth of all deportees coming from the US in 1995.

[6] I will use the term *gangs* to refer to gangs with US origin and when it is a gang that did not originate in the US I will specify.

induces more children to migrate to the US.[7]

The first finding is that after the arrival of US criminal deportees in 1996, members of US gangs –and associated extortion and drug-trafficking– appear for the first time in El Salvador, leading to a large increase in homicide rates in the municipalities where gang members are located.[8] Extortion and drug-trafficking activities double, and violence increases by 50%. I find no effects for other crimes, which suggests that US criminal deportees brought criminal capital specific to gangs. This result helps rule out other mechanisms, such as an improvement in police presence in these areas. Moreover, before 1996 there is no pre-trend in gang activity, homicide, extortion, drug-trafficking, or other crimes. I also look at preexisting economic development during the period 1992-1996 and find no evidence that municipalities where gangs became established were becoming poorer before the arrival of US gangs.

The second finding is evidence of spillover effects on Salvadoran children who were never exposed to US neighborhoods. I find that individuals who were born in gang areas and were younger than 15 when US gangs arrived are more likely to be part of a gang that originated in the US. This is consistent with the fact that the most common age of initiation into gangs is between 10 and 14, when children are looking for a social structure that US gangs can provide. In particular, I find that affected cohorts are 20 percent more likely to be incarcerated for US gang-related crimes as adults compared to less-exposed cohorts (individuals who grew up in non-gang areas and individuals who grew up in gang areas but were older when the gang deportees arrived).[9]

The next focus of the paper is to explore the mechanisms behind the arrival of criminal deportees. In particular, I provide evidence on the importance of criminal capital exported from the US. First, I find no increase on criminal activities that are not associated with US gangs such as property crimes. Moreover, I find that Salvadoran children are only involved with US gangs and activities related to extortion and drug dealing (which were the main activities of gangs in the US). Second, I rule out that effects are driven by a negative selection of Salvadoran migrants

[7] I am measuring as a proxy of child international migration, the number of deported children during 2011-2017. During this period, deportation policy changed expanding to include many deportations of non-criminals.

[8] While there are small street gangs before the 1996 shock, none have a clear organization and business. Moreover, while I find that after 1996, the number of member with US gangs affiliation increase , I find no changes on the number of members of small street gangs.

[9] Gang-related crimes are the ones associated with their main activities: extortion, homicide, and drug dealing. In addition, incarceration data includes information about whether a crime was committed by a US gang member or not and which gang.

arriving to the US, suggesting that results are not driven by just the presence of more criminals in El Salvador. Third, I find that gang recruitment is mitigated in areas in El Salvador with historical stronger social ties and networks, which are part of the criminal capital brought by US deportees.

This paper also finds evidence of a boomerang effect on the US. I take advantage of administrative data on the universe of deported minors from 2011 to 2017, which contains information on the children's place of birth. I also exploit the variation that resulted from a recent truce in 2012 in El Salvador in which gang violence fell by 50% in the places where gang deportees were born. Using this exogenous variation in homicides, I find some evidence that the increase in criminality and violence caused by gang leaders pushed Salvadoran children to migrate out of the country, increasing the number of minors trying to enter the US. These results are in line with Clemens (2017), who also finds a positive relationship between homicide in the Northern Triangle (Guatemala, El Salvador, and Honduras) and unaccompanied child apprehensions in the United States.

These results have several policy implications. This paper suggests a self-reinforcing cycle between forced migration, violence, and deportation. The results imply, in particular, that the expansion of gangs in El Salvador due to US deportations in the 1990s generated a wave of forced child migration into the US, potentially generating more deportations. This could lead to a cycle of violence, because these child migrants are potentially more likely to be victims of or be recruited by gangs (Vigil 2002; Valdez 2011; Cruz 2010). Moreover, while in this paper I do not quantify whether deportation policies create a positive effect on the US, previous literature has shown that they had no direct effect on reducing violent crime in the US (Hines and Peri 2019; Miles and Cox 2014), casting doubts on the potential benefits of deportation policies.

More broadly, the Salvadoran case provides a unique opportunity to understand how criminal capital can be exported from one place to another, which can help to explain the origin of criminal organizations, one of the main contributors to the recent increase in violent crime in developing countries (UNODC 2019).[10] In this regard, this paper contributes to the literature on migration (e.g., Bernstein et al. 2019; Burchardi et al. 2019b,a; Akcigit et al. 2017; Peters 2017; Khanna et al. 2018a; Moser et al. 2014; Sequeira et al. 2017; Abramitzky and Boustan 2017; Rocha et al. 2017; Hornung 2014) showing how specific human capital acquired in places of birth can be exported to

[10] According to UNODC (2019), much of the violence in the urban developing world can be attributed to gangs and drug cartels.

other locations, generating positive spillover effects. I complement this literature by focusing on criminal capital and looking at the role of forced migration induced by deportation policies in the countries of origin. In this regard, this paper relates to recent working papers studying the role of deportations (e.g., Jakubowski 2010; Blake 2015; Rozo et al. 2017; Kalsi 2017; Sviatschi 2019). While most of the deportation literature has relied on cross-country variation, this paper estimates short- and long-term effects at a more disaggregated level, providing evidence of a self-reinforcing cycle between home and host countries and shedding light on the mechanisms behind this cycle.

This paper is also related to the literature on human capital, incarceration, and peer effects (e.g., Glaeser et al. 1996; Bayer et al. 2009; Deming 2011; Aizer et al. 2015; Damm and Dustmann 2014; Mueller-Smith 2015) in developed countries. I complement this literature by showing how criminal capital from the US spread to children in developing countries who were not exposed to US neighborhoods, increasing the power of two of the largest criminal organizations in the world. Moreover, I provide evidence that early adolescence can be a critical period for gang recruitment and criminal behavior.

By taking insights from the migration and human capital literature, this paper contributes to the literature that studies the participation of individuals in crime and armed groups in developing countries (e.g., Dell et al. 2019; Dube and Vargas 2013; Blattman et al. 2017; Limodio 2019; Khanna et al. 2018b; Berman et al. 2011; Sviatschi 2017). In the context of developing countries, most of the focus has been on the role of economic incentives in rural areas where conflict between different armed groups has occurred. I complement this by providing causal evidence on individual participation not only in criminal activities but in criminal organizations such as gangs, and with a focus in urban areas, for which little research has been done (Glaeser and Sims 2015). In this regard, this paper also complements the literature exploring the nature of organized crime (e.g., Gambetta 1996; Bandiera 2003; Pinotti 2015; Alesina et al. 2016; Buonanno et al. 2015; Acemoglu et al. 2020; Murphy and Rossi 2017). Much of this literature has focused on the origins of the Italian mafia. I complement it by providing evidence on the origin of a criminal organization in a developing country. By studying the origin and consequences of gangs, this paper also sheds light on the origins and consequences of weak states in developing countries (e.g., Acemoglu et al. 2015). For example, Melnikov et al. (2019) points out that one potential explanation for the lack of local state capacity may be the presence of criminal organizations (such as gangs and cartels)

controlling territories in developing countries.

The remainder of the paper is organized as follows. In the next section, I present the setting. Section 3 describes the data. Section 4 presents the empirical strategy. Section 5 presents the long-run results. I return to policy implications in the final section by exploring the effects on recent child migration.

2 Historical Background

In this section, I present qualitative evidence showing how changes in US deportation policies led to an increase in criminal capital in El Salvador. Deported gang members likely had a direct effect on crime in El Salvador. In addition, they may have had an indirect effect due to the recruitment of others, spreading criminal knowledge acquired in the US. This anecdotal evidence is largely consistent with the more rigorous causal evidence presented in Section 5.

2.1 The Origin of Gangs

Los Angeles was the destination for thousands of people fleeing civil war in El Salvador in the 1980s. During this period, Salvadoran immigrants were living in poor and overcrowded neighborhoods and often faced discrimination. What is more, in a typical immigrant family both parents worked, leaving children much of the time without supervision (Savenije 2009).[11]

During this period, many Central American youth, who were often on their own in the streets of Los Angeles, joined the 18th Street Gang, a gang formed mainly by Mexican youth that become one of the biggest gangs in Los Angeles (DeCesare 1998; Dunn 2007; Lopez and Connell 1996). At the same time, a group of Salvadoran youth came together in what would later be called the MS-13 or Mara Salvatrucha (Hayden 2005). The MS-13 partly originated as a self-defense group in response to discrimination and threats from other Mexican gangs (Johnson 1989). Although relatively peaceful at first, this changed in the mid-1980s when some of the MS-13 members spent time in prison. Prison served as a place where MS-13 members could learn illegal practices, gain social connections, and plan future criminal activities. By 1985, the MS-13 had evolved; it started taking up small-scale drug trafficking and extorting money from corner drug dealers (Ramsey

[11] For a more extensive review of the history of gangs from El Salvador, see Savenije (2009).

2012). They also developed a fierce rivalry with the 18th Street Gang that has persists to this day.

In the late 1980s, the US resorted to the deportation of gang members to try to reduce violence and crime in Los Angeles. The Immigration and Naturalization Service (INS) began to actively look for and deport gang members (Davis 2006). After El Salvador's civil war ended in a peace agreement in 1992, the INS increased these efforts through what was called the Violent Gang Task Force, which focused on deporting undocumented immigrants with criminal records (DeCesare 1998).

The Illegal Immigration Reform and Immigration Responsibility Act (IIRIRA) of 1996 drastically increased immigration enforcement by creating expedited removal procedures, adding new grounds for deportation, and increasing the number of border patrol agents. In this wave of deportations, gang members from MS-13 and 18th Street were sent back to Central America. This paper exploits this shock to identify the effects of criminal capital on gang development in El Salvador.

Figure 1 shows the number of individuals deported from the US to El Salvador from 1966 to 2014. Beginning in 1993, there is information on whether the deported individuals were convicted criminals. As shown in the figure, there was a substantial increase in the number of deported individuals after 1996.[12]

In the 1990s, when deportations began to increase, gang members in El Salvador did not receive much attention from police authorities there. Gangs coming from the US took advantage of the postwar environment in El Salvador to easily embed themselves in neighborhoods. At the time when the criminal deportations occurred, the country's institutions were weak as the state was still in the process of undertaking reforms followed the 1992 peace accords (IRBC 2016). For example, a rural police unit had not even been created and the number of police officers per capita was very low. Moreover, given that gang deportees did not have criminal records in El Salvador, they regained their freedom.[13]

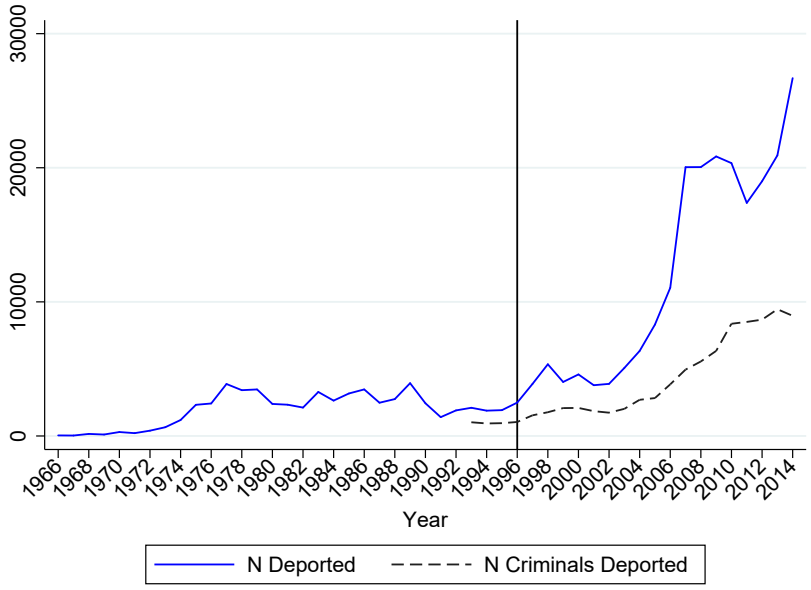
There is anecdotal evidence that, once back in El Salvador, most members of US gangs went

[12]While there was also an increase in criminal deportations after 2001 due to 9/11 terrorist attacks, it is only in the 1996 wave when gang members were deported for the first time and in large numbers.

[13]When criminal deportees arrived from the US, Salvadoran authorities did not have any information on their criminal or legal background. It was therefore difficult for the government to track criminal deportees once they arrived there. The US finally signed an agreement to share criminal records and legal background of deportees with Central American countries in 2014.

back to their municipality of birth (DeCesare 1998). Data from recent deportations show that about 70% of deportees return to their place of birth. This could be mainly because gang deportees, by the time they arrived in El Salvador, they did not have much information on the interior of El Salvador in 1996 given that they had grown up mostly in the US. Thus, gang deportees potentially went to places where they still had some relatives.

Figure 1: Deportations to El Salvador by year



Source: Department of Homeland Security

Once in El Salvador, deported gang members spread US-style gang culture within the country. This included the names of gang organizations (i.e., MS-13 and the 18th Street Gang), as well as the use of tattoos, employing hand signs to identify gang members, clothing, and, most importantly, the use of violence and criminal behavior related to extortion and drug dealing (Cruz 2007; Giralt and Concha-Eastman 2001). In 2016, for example, a member of the 18th Street Gang was quoted as saying that the gang leader *El diablito of Hollywood*, upon his arrival from the US, *"wanted to institutionalize extortion nationwide."*[14]

Although street gangs existed in El Salvador prior to the arrival of the gangs from the US, they were quite small and lacked organization. The deportees sought social acceptance and safety by banding together and replicating the gang structure they had known in the Los Angeles era.

[14] "Killers on a Shoestring: Inside the Gangs of El Salvador," *New York Times*, November 20, 2016, https://www.nytimes.com/2016/11/21/world/americas/el-salvador-drugs-gang-ms-13.html

As mentioned by Farah (2012), the early deportees demonstrated their organizational skills by moving quickly to make alliances among them. In particular, the gang deportees brought organizational skills that were relevant for their business. They have, for example, a complete record of individuals living in the area under their control; they also have hierarchies and a division of labor. Using a combination of archival documents, interviews and participant observation, Neu (2019) analyzes the extortion activities of MS-13 and the 18th Street Gang and finds that forms of accounting are used by gang members to facilitate coordination and decision-making. Bergman (2018) highlights the fact that gangs are like major corporations with thousands of employees, clear top-to-bottom management systems, and business plans. They are organizations with a group of leaders, dozens of managers, financial advisors, and bodyguards.

MS-13 and the 18th Street Gang are currently the two major youth gangs in El Salvador and Central America. Between 2002 and 2006, both gangs accounted for more than 87% of gang membership in El Salvador (Aguilar and Miranda 2006; USAID 2006). The gangs are known not only because they control many Salvadoran neighborhoods and prisons, but also because they have evolved to become powerful criminal groups with extortion networks across the region. Salvadoran authorities estimate that 60,000 to 70,000 people belong to gangs and that half a million more—relatives, business partners, corrupt politicians and police—are financially dependent on them (Maslin 2016). Salvadorans pay $756m a year in protection rackets to gangs , about 3% of GDP, according to a study by the country's central bank and the UN Development Program (Penate et al. 2016).

El Salvador's extremely high murder rate is largely due to turf wars in which gangs fight to dominate the retail drug trade and extortion rackets. Penate et al. (2016) estimate that the total cost of violence, including the amount households spend on extra security and the lost income of people deterred from working, is nearly 16% of GDP, the highest level in Central America. Recently, these gangs were associated with Mexican cartels and involved in trafficking drugs and weapons between Mexico and the United States. Nevertheless, the main source of revenue and of violent crime that reaffirms their hold over territory are protection rackets enforced by deadly threats (Crisis Group 2016).[15]

[15]These are common characteristics of all gangs in Latin America.

2.2 US Gangs in El Salvador and Child Recruitment

US Gangs not only brought the business of extortion and drug dealing to El Salvador but also a sense of social identity and careers for Salvadoran children, which helped them to recruit children and expand. Criminal deportees reproduced the structures and behaviors that gave them support when they grew up in Los Angeles. According to Rodgers et al. (2009), *"the gangs swiftly founded local clikas, or chapters, of their gang in their communities of origin;[...]rapidly attracted local youths and either supplanted or absorbed pandillas (preexisting small street gangs)."* Status, respect, and a sense of collective identity are key elements of gang recruitment. A recent survey shows that most children join gangs out of a desire for respect and friendship and that more than 60% of gang members join before the age of 15 (Cruz et al. 2017; Savenije 2011; Santacruz-Giralt and Concha-Eastman 2001; Cruz and Peña 1998). The average age of gang recruitment is 14.5 (Cruz and Peña 1998).

Children perform several tasks. They are used as messengers or as "antennas" in the communities to control the movement of individuals. Gangs also use them for the collection of rent or extorted money and as they progress in their actions, gangs reward them with cell phones to call the gangs when police and non-residents are entering the neighborhood. Taking advantage of the fact that they are not subject to criminal charges, children also perform tasks such as transporting weapons or drug packages. Children are considered valuable assets for the gangs since there they not likely to be prosecuted in adult courts and thus able to return to the streets in a very short time (Cox et al. 2017).

Some evidence for the importance of the recruitment of children who were never exposed to the US is the fact the majority of Salvadoran gang members today joined within the country and have never been outside the country. A study conducted in 2001 showed that only 12% of gang members have ever been in the US (Giralt and Concha-Eastman 2001), and the most recent study available, conducted only among imprisoned gang members, revealed that only 7.3% had been in the United States (Cruz 2009).

Thanks to its extremely powerful reputation, and young people's perception of the gang's lifestyle, MS-13 stands out for its strong capacity to attract and recruit new young members (Portillo 2003). Children from hostile families are particularly vulnerable to being targeted (Savenije 2011; Smutt and Miranda 1998). Gangs are constantly attracting new members wherever they op-

erate and as mentioned, most of the children who join are looking for the recognition, support, and safety they did not find in their homes (Cruz et al. 2017; Klahr 2006). Joining a gang involves several steps and a certain amount of time, but once inside it is almost impossible to get out. The MS-13 sees attempted departure, in most cases, as a form of betrayal and it is punishable by death (Insight Crime and CLALS 2018).

3 Data

This study brings together data from multiple sources in order to examine the effects of deportations on El Salvador.

3.1 Time level data

Data on criminal deportations comes from the Immigration Statistics of the United States Department of Homeland Security (DHS). This data set includes annual information on the number of individuals deported from 1966 to 2013, including the country to which they are deported. Beginning in 1993, the data on deportations can be divided according to criminal and non-criminal status. Criminal status includes those cases in which the DHS has evidence of a conviction. Between 1993 and 2013, approximately 40% of deportations to El Salvador are criminal.

3.2 Geographic level data

To define the areas where gang deportees established their structure, I exploit police data on homicides committed by gangs with US origin in 2000.[16] According to conversations with police officers, they classify whether an homicide was committed by a US-gang if the homicide occurred in a gang's territory. I therefore define municipalities with US-gang presence as municipalities that experienced at least one homicide committed by a US-gang in 2000.

Table A.1 presents baseline characteristics before the arrival of criminal deportees. It shows that in 1992, before the shock, gang areas were neither less developed nor did they have higher levels of violence than non-gang areas. If anything they had higher levels of education than non-gang areas. In addition, there is no evidence that gang members self-selected into areas that were

[16] There is no data available before 2000.

more unequal. Moreover, I find no difference in light density growth and crime in the years before the arrival of gangs in 1996 (see Figures A.6, 4, 5, and 6)).

Given that gang presence might be endogenous, I also use confidential data from El Salvador migration office on the municipalities of births for the universe of gang deportees coming from the California in 1996 and 1997.[17] I exploit this data as an instrument for gang presence. In particular, I exploit the fact that most deportees tend to arrive to their municipalities of birth. Thus, in order to understand whether deportees caused gangs to start, I examine whether US gangs are more likely to start in municipalities in which the 1996/1997 deportees were from. Moreover, as robustness I exploit information on the municipalities of birth for the universe of deportees arriving from the US to El Salvador in 1995 a year before the IIRIRA was enacted.[18]

3.3 Panel level data

To analyze the effects on violence, I use data on municipal-level homicide for the years 1995 and 1999 to 2011 provided by the National Civil Police of El Salvador.[19]

In order to examine whether children exposed to the arrival of gangs are more likely to engage in crime as adults I use confidential data on the universe of individuals who entered prison from 1985 to 2016. These data allow me to track cohorts who were exposed to deported gang leaders during childhood across different municipalities. I exploit variation in place and date of birth to explore how childhood exposure to the criminal deportations affects criminal behavior in later life.

The data contain about 140,000 individuals incarcerated in El Salvador between the ages of 18 and 60. It contains information about their municipality and date of birth and arrest, whether they belong to a gang, their education, and the type of crimes they commit. From this sample, I keep only individuals born in El Salvador and construct exposure to deportee gangs during youth and early adulthood (those who were exposed between ages of 4 and 20). I then aggregate the data to the cohort and place of birth. Cohorts in municipalities that do not appear in the incarceration

[17] Unfortunately, there is no data available on the municipality of residence of deportees. Moreover, for the purpose of this paper, I could not have access to individual records and the only data that was provided is at the municipalities of birth level for the years 1995-1997.

[18] There is no data available on the place of arrival of deportees. Moreover, there is no deportation data at the municipality of birth level before 1995.

[19] There is no data available between 1995 and 1999.

data take a value of zero, which means that there is no one in prison from that cohort in that specific municipality. I also construct the incarceration rate by dividing the number of offenders by the number of people born per municipality and cohort. On average there are 20 offenders per cohort-district of birth.

Figure 2 shows that incarceration rates are higher for individuals exposed to gangs during childhood. Moreover, there is no change for individuals from non-gang areas. This helps motivate my main empirical specification.

Figure 2: Differences in incarceration rates by ages

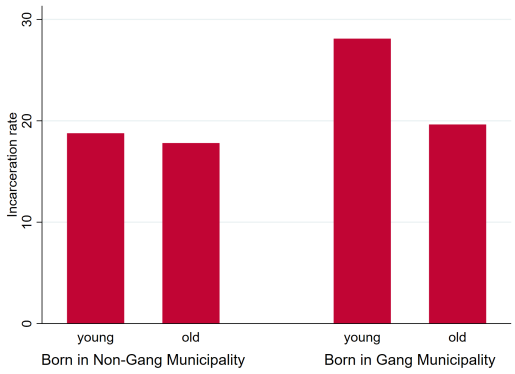
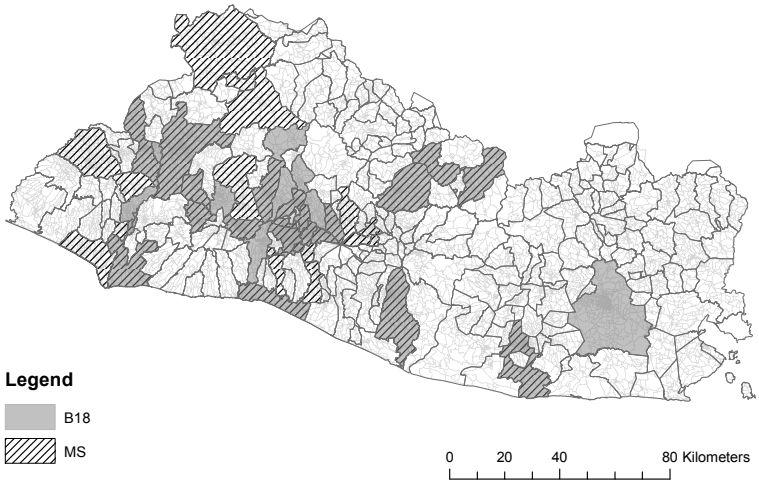


Figure 3: US gangs in El Salvador



Finally, I take advantage of administrative monthly data on the universe of minors deported from the US and Mexico between 2011 and 2017. These data contain information on children's place of birth allowing me to explore the effect of gang violence on international child migration.[20] One limitation of these data is that I can only observe migrant children who are also apprehended in other countries, which may affect the interpretation of the results. The data do not include children who migrated internationally and were not apprehended, nor children who tried to depart their country but did not succeed. To convey the representativeness of this sample, about 40% of Central American child migrants who depart for the United States or Mexico are apprehended in Mexico (Clemens 2017; Villegas and Rietig 2015; Rosenblum and Ball 2016). In addition, the deportation data only has information on the municipality of birth, not of last residence.

Figure A.1 shows the spatial distribution of homicides and child migration in El Salvador. Figure A.4 shows child deportation over time for children from municipalities in El Salvador with low, medium, and high exposure to gangs, as proxied by homicide committed by gangs. Both figures show that a larger share of deported children originate in municipalities with higher levels of homicide.

4 Empirical Strategy

In order to estimate the causal effect of criminal deportations from the US, it would be ideal to use data on the location to which the deportees arrived in El Salvador. Unfortunately, this information is unavailable.[21] Therefore, to measure the effects of criminal deportations from the US, I combine a difference-in-difference strategy with an instrumental variables approach. First, I exploit geographic variation in gang deportees location and municipality of birth. Second, I exploit plausibly exogenous time variation in criminal deportations induced by the US law passed in 1996. Equation 1 presents the baseline specification.

$$Y_{m,t} = \alpha + \sum_{i=-10}^{5} \beta_i (\tau_{m,t} = i) \times \textit{Gang Presence}_m + \alpha_m + \phi_t + \epsilon_{m,t} \tag{1}$$

[20] Unfortunately, there is no data available on child migration.

[21] The only data available under confidential agreement is data at the municipality of birth of deportees.

where τ_{mt} denotes the event year, defined so that $\tau = 0$ for the year the criminal deportations started (1996), $\tau = 1$ for one year after the deportations started, and so on. For $\tau \leq -1$, municipalities were not affected by the deportations. The coefficients are measured relative to the omitted coefficient ($\tau = -1$), the year 1995. *Gang Presence*$_m$ is a measure of US gang presence for municipality m. The α_m are municipality fixed effect, ϕ_t and year fixed effects. By including these fixed effects, I control for invariant differences between gang and non-gang municipalities, and for changes in aggregate time trends across years.

To quantify the effects, I also define the treatment variable as the total number of criminal deportees to El Salvador interacted with a dummy variable that equals one if a given municipality has presence of gangs with US origin. Since gang presence is measured after the criminal shock in 1996 which brought the gang members from the US to El Salvador, I use as instrumental variable an indicator for whether deportees from Los Angeles were born in that municipality.[22] Equation 2 presents the baseline specification:

$$Y_{m,t} = \beta \underbrace{(\textit{Gang Presence}_m \times \textit{Criminal Deportations}_{t-1})}_{GangShock_{m,t}} + \alpha_m + \phi_t + \epsilon_{m,t} \tag{2}$$

Criminal Deportations$_{t-1}$ is the instrumented number of criminal deportations from the US in year $t-1$. *Gang Presence*$_m$ is instrumented by a dummy indicating whether a gang deportee arriving in 1996 and 1997 (when the IIRIRA was announced and enacted) was born in that municipality.[23] To account for serial correlation of criminal deportations, standard errors are clustered at the municipality level. As robustness, I also include controls for enforcement variables and for municipality-specific-time trends that control for omitted variables that change over time within a municipality in an approximately linear fashion.

In order to examine the long-term effects of US criminal deportations on Salvadoran children, I estimate the effect of being exposed to criminals during childhood at different ages. Identification

[22] For robustness, I also use as an instrument a dummy indicating the municipality of birth for the whole universe of deportees arriving in 1995 (a year before the IIRIRA act). The idea is that gang deportees tend to be located in their municipalities of birth which correlate to the municipalities of birth of an average deportee.

[23] In particular, I requested data for those years to Salvador Migration Office since these are the years when most of the qualitative literature argues that gang members from California arrived to El Salvador. Results are also robust to only using 1996.

comes from variation in the years of exposure to criminal deportees at different ages and from gang presence across the children's municipalities of birth. Equation 3 presents the specification:

$$Y_{m,c} = \beta \underbrace{(\textit{Age 1996}_c \times \textit{Gang Presence}_m)}_{GangShockAgex_{m,c}} + \alpha_m + \delta_c + \epsilon_{m,c} \tag{3}$$

where m indexes the municipality of birth and c the birth year. $\textit{Gang Presence}_m$ is a dummy indicating whether gang members coming from the US arrived in the municipality of birth. $\textit{Age1996}_c$ is the individual's age in 1996. The term δ_c indicates year-of-birth fixed effects; it controls for specific cohort effects. The term α_m indicates municipality-of-birth fixed effects; it controls for time-invariant characteristics of the municipality that may be correlated with both childhood exposure and recruitment. The parameter of interest is β, the effect of experiencing criminal deportations during childhood, which is identified from variations among criminal deportees across municipalities and birth cohorts. The control group is therefore composed of those who were born in the same municipality but in a different year, and those who were born in a different municipality but belong to the same cohort.

My empirical strategy compares the average incarceration rate of a cohort who was exposed to gang deportees at their key exposure ages to older cohorts in the same municipality who did not receive such a shock at these ages. I flexibly control for time trends using cohorts of the same ages living in municipalities that did not have US gangs at the key exposure ages. I now turn to discussing the potential threats to identification.

4.1 Addressing Potential Concerns

In this subsection, I show that municipalities where gangs are located are the ones that are seeing an expansion of US gangs. In addition, I discuss the exclusion, relevance, and common trends assumptions. Finally, I present a series of robustness checks that address the potential endogeneity of gang presence and differential trends across municipalities.

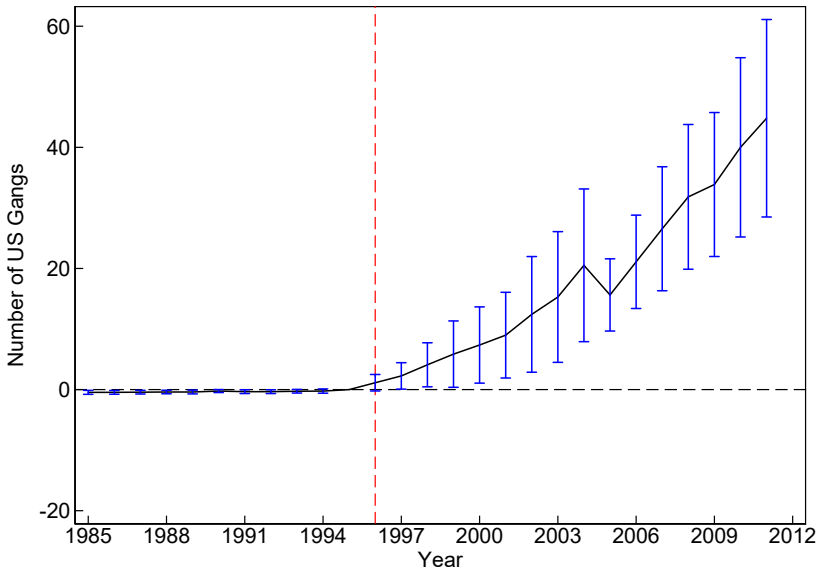
In the above specification, I assume that the municipalities where gangs located are the ones who are most affected by the 1996 shock. One concern is that other municipalities could have

expanded gangs in response to criminal deportations. To address this concern, using the incarceration data that includes the number of incarcerated individuals who are affiliated with US gangs from 1985 to 2011, I estimate the increase in the number of US gang members before and after 1996 in municipalities with and without gang presence. Figure 4 presents the results of estimating equation 1, using as an outcome the number of US gang members incarcerated. Before 1996, there were no US gang members in any of the municipalities. After 1996, exactly when the wave of deportees included gang members from LA, there is an expansion of US gang members in the municipalities that they controlled. In the Appendix, I present the same figure but use as dependent variable the number of gang members that did not belong to a gang with US origin. The 1996 shock does not have any effect on small street gangs (Figure A.2).[24]

Given that I use the place of birth of gang deportees as an instrument for gang presence, I also provide a formal test for the *relevance assumption* in Table 1. The Kleibergen and Paap F statistic is large, indicating that the weak instrument problem is not a concern. Municipalities that have more gang deportees born are more likely to have a US gang established. The second assumption that must be satisfied for the validity of the identification strategy is the *exclusion restriction*. This could be violated if the local government in El Salvador increases its enforcement or resources in gang areas when the US increased its criminal deportations. To address this concern, I estimate the effect on crime that is not related to gang activity. As a further robustness check, I control for the number of police officers and stations per municipality and I limit the sample to the period when enforcement did not increase.

[24]Before the 1996 shock there were no organized and powerful gangs in El Salvador. But, there were small street gangs ("pandillas") that ended up being absorbed by US gangs.

Figure 4: The 1996 shock and US-gangs in El Salvador



Notes: This graph plots the coefficients for the interaction between year and US gang presence on the number of US gang members incarcerated obtained from equation 1. The regression control for municipality fixed effect, and year fixed effects. The Y-axis shows the estimated coefficients and the X-axis shows the interaction year. Standard errors are clustered at the municipality level and confidence intervals at 95% are presented.

The third and most important identifying assumption of the baseline specification is that there would be *common trends* across municipalities with and without gangs in the absence of deportations. This assumption could be violated if, for instance, violent crime was increasing in areas where gangs established their organization before the deportation shock.

I address this concern by visually inspecting pre-trends in the event study analysis and by including municipality-specific linear trends. I also include a vector of municipality baseline characteristics interacted with year. These interactions help control for potential differential trends across types of municipalities. In addition, for the long-term effects specifications, since arrests of affected cohorts may be correlated with overall changes in policing in El Salvador, I control for year of arrest fixed effects. Using the incarceration data, I construct a panel of arrests by year. I measure the probability of being incarcerated in a particular year given that the individual was born in a gang municipality and experienced the arrival of gang leaders in 1996 at each age. For this specification, the data is aggregated so that there is one observation for each combination of year, municipality of birth, and year of arrest. Since there are individuals of the same age arrested

in different years, I am also able to separate the age effects.

Moreover, to test for preexisting differences in development, I compare the night light density of gang and non-gang municipalities before 1996. I estimate the model in equation 1 using the logarithm of night light density as the dependent variable. The result of this exercise is presented in Figure A.6 in the Appendix and confirms the validity of the identification strategy of rejecting the existence of pre-trends across municipalities with and without US-gang activity before the arrival of US criminal deportees in 1996.

5 Does the Arrival of Criminal Capital from the US to El Salvador Affect the Development of Gangs?

This section presents two sets of findings related to short- and long-run outcomes. First, the introduction of deported criminals significantly increases the gang-related activities of extortion and drug trafficking, with no effect on other crimes. Moreover, there is an increase of 50% in homicide rates. This could be mainly driven by competition among the two gangs that were deported from the US: once they arrived in El Salvador they started competing for territory.

Second, the arrival of criminal deportees from the US affected Salvadoran children since gangs particularly recruit young children to expand their activities. Affected children are more likely to be incarcerated for gang-related crimes when they are adults, suggesting that deported gang members recruited these children, thus increasing their future participation in US gangs. All of these results are robust to the inclusion of baseline covariates interacted with year fixed effects, and municipality-specific time trends.

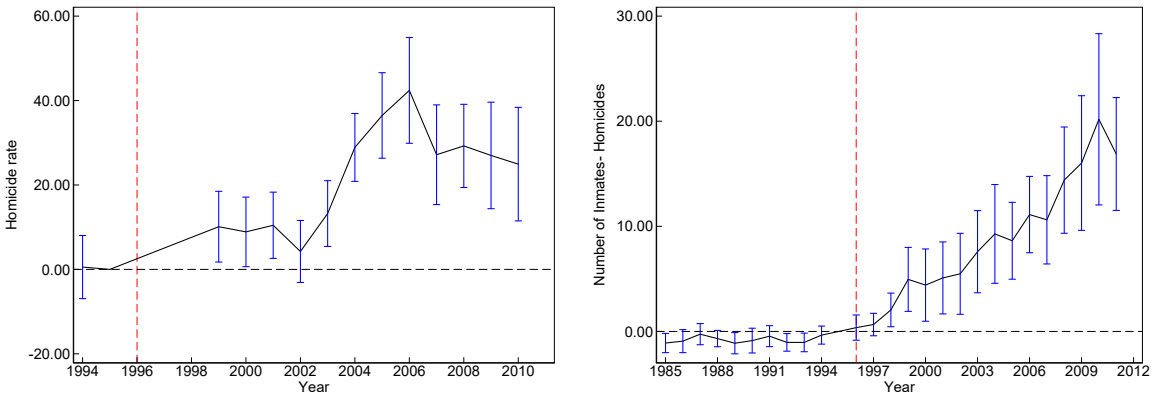
5.1 Gang' Expansion and Violent Crime

In this section, I explore whether violence increases after the arrival of US-based gangs. There are several mechanisms through which the arrival of gangs may increase violent crime. First, gangs use violence to control the territory. In particular, the two main gangs that came from the US fight each other for the control of territory to obtain the rents from extortion and drug dealing. Moreover, they may resist the state, which generates violence. Second, gangs may use violence to extract more rents from residents in the communities. Finally, they may use violence to run

their businesses, in order to enforce contracts and resolve disputes since they cannot rely on the government to protect their illegal businesses. In sum, the arrival of gang members from the US may increase violence by the MS-13 and 18th Street against each other, the government, and the civilian population.

Figure 5 plots the event and year coefficients from estimating Equation 1 using the homicide rate and the number of inmates who committed homicides as the dependent variable. Two observations are relevant. In periods during which the criminal deportations from the US increase, homicides rate increase. Second, while before 1996 homicides rates are at similar levels in areas where US gangs members settled, after 1996, these municipalities experience an increase in homicide rates. The results support the validity of the identification strategy, showing an absence of a strong pre-trend and evidence of a trend break after the arrival of criminal deportees in 1996, thereby increasing homicides. This evidence suggests that potential confounders would have to mimic the timing of the 1996 criminal deportations extremely closely.

Figure 5: US 1996 gang shock and homicide



Notes: These graphs plot the coefficients for the interaction between year and gang presence on the homicide rates and number of inmates who committed homicide from equation 1. The regressions control for municipality fixed effect, and year fixed effects. The Y-axis shows the estimated coefficients and the X-axis shows the interaction year. Standard errors are clustered at the municipality level and confidence intervals at 95% are presented.

Next, I turn to estimating the causal effect of criminal deportations on homicide rates using Equation 2. Table 1 presents the results. Column (1) includes all observations from 1965, 1995 and 1999 to 2010.[25]

[25]With the exception of 1965 data, there is no data available on homicide rates before 1995.

Table 1: Criminal deportations from the US and homicide rates in El Salvador

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Gang shock$_{m.t}$	0.005***	0.005***	0.005***	0.013***	0.011***	0.011***	0.008**
	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.003)	(0.004)
First Stage, Dep. Variable: *Gang shock*$_{m,t}$							
Deportee born$_m$ × *CrimDep*$_t$		0.77***					0.742***
		(0.063)					(0.0767)
Kleiberg-Paap F-stat		149.627					93.629
Observations	3,668	3,668	1,457	2,882	2,882	1,151	1,151
Municipality FE	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓
Years	1965, 1995	1965, 1995	1965, 1995	1965, 1995	1965, 1995	1965, 1995	
	1999-2011	1999-2011	1999-2011	1999-2006	1999-2006	1999-2006	1999-2006
Municipality Time Trends					✓	✓	✓
Urban Municipalities			✓			✓	✓
IV		✓					✓

Notes: *Gang shock*$_{m,t}$ is the interaction of a dummy indicating the presence of gangs in the municipality and the number of criminal deportations in year t-1. The specification is presented in Equation 2. Column (1) presents the results for the whole period and includes controls for municipality and year fixed effects. Column (2) presents the results using as an instrument of gang presence whether a gang deportees (that arrived in 1996/1997) was born in that municipality. Column (3) restricts the analysis to urban municipalities. Column (4)-(7) restricts the analysis to the years before enforcement efforts. Standard errors are clustered at the municipality level. Significant at *** p<0.01, ** p<0.05, * p<0.1.

To gauge the magnitude of the estimated coefficients, consider an increase in 1,000 criminal deportees. The estimates imply that homicide rates increase by 5 individuals per 100,000 (this is equivalent to a 20% increase relative to the baseline in 1995).

One potential concern is that criminal deportees after 1996, settle in municipalities that support the type of crime that US-gangs have specialized in. If this was the case, the coefficient of the difference-in-differences regression would then not identify the effect of randomly allocating gang deportees across municipalities, but (at least partly) capture this selection, and the influence of municipalities that deportees selected for settlement on their criminal ambitions. Thus, to address the potential endogeneity of gang presence, Column (2) uses as an instrument, the binary of whether a gang deportee arriving from the US in 1996 was born in that municipality. The results are similar in magnitude and significance, suggesting that gang deportees did not select to locate in more violent or criminal municipalities.[26] Given that gangs are mostly an urban phenomenon, Column (3) focuses on only urban municipalities, and the results are very similar.

Another potential concern is that criminal deportations from the US could be correlated with enforcement efforts in El Salvador. If this is the case, the exclusion restriction would not hold. Thus, Columns (4)-(7) restricts the analysis to the period before 2006, when the government started the largest enforcement efforts.[27] In Table A.2 in the Appendix, I also control for the number of police stations and officers per municipality. The results do not change. These results should be taken with caution, however, since enforcement can be a *bad control*. These results are consistent with the qualitative evidence presented in Section 2, pointing out that when gangs arrived in 1996 from the US, they did not received much attention from the government as the country was still recovering from civil war.

[26]The event study figures also support this result, showing that before 1996 there were no differences in crime outcomes and light density between areas where gangs settled and areas where they did not. Moreover, the same figures using the municipality of birth also present no differences in the years before 1996 between areas where gang deportees from the US were born and areas where no member was born.

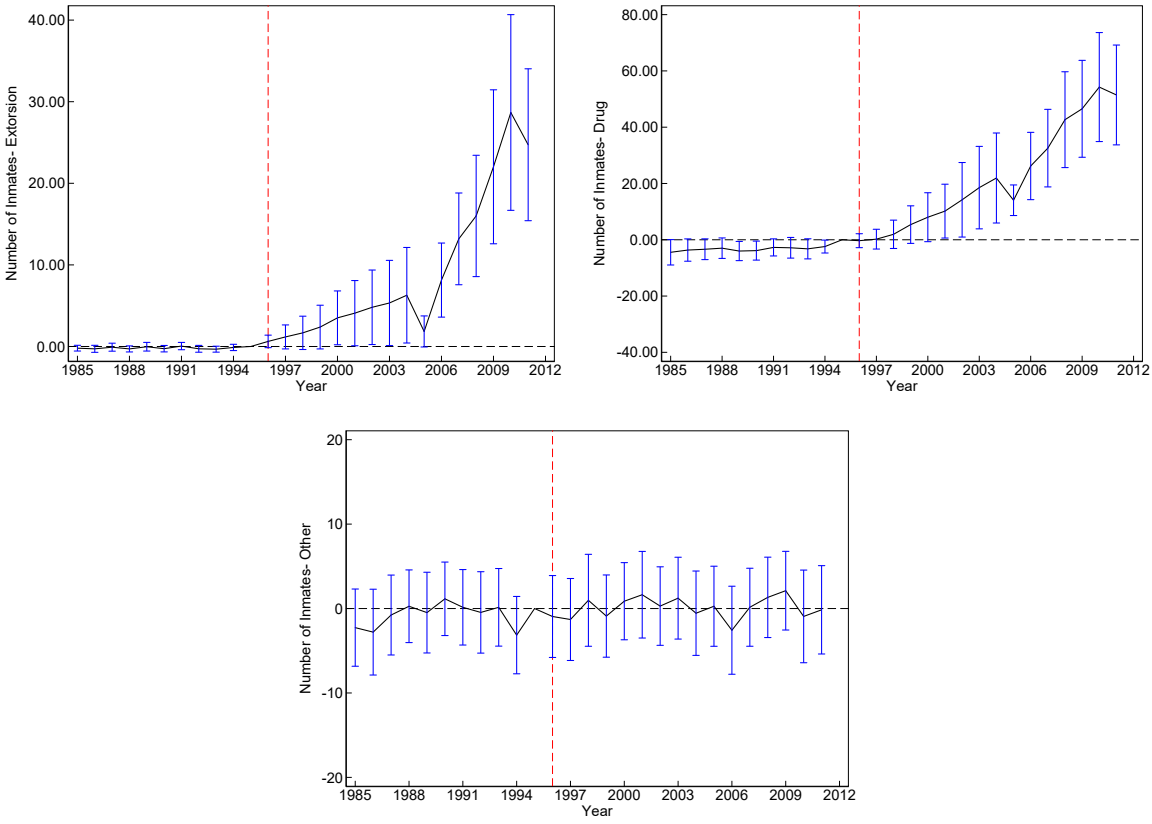
[27]By mid-2006, there was a large security initiative called *Super Mano Dura*. The *Super Mano Dura* gave complete authority to the police and military personnel to carry out arrests based on arbitrary decisions and thin evidence. Police could use the presence of tattoos, hand signals, and even physical appearance as evidence of gang membership (Hume 2007).

5.2 Gangs and the Development of Two Innovations: Extortion and Drug Trafficking

I use incarceration data from 1985-2011 to shed light on the question of whether gang members who were deported brought criminal knowledge from the US by analyzing the effects by type of crime before and after the arrival of criminal deportees in 1996. As described in the background section, gang members in the US developed specific criminal capital in US prisons and streets for low-level drug dealing and trafficking, and extortion.

Figure 6 presents the event study results. I find that extortion more than doubles and drug dealing and trafficking increases in the municipalities where the gangs arrive. There is a clear jump in 1996 when criminal deportees arrive and no pre-trends. Moreover, I find no effects on other crimes that are not related to gangs, suggesting that no overall improvement in law and enforcement conditions or policy changes are driving the results, only the deportation of gangs from the US. In the Appendix, I also present the same event study figures using the municipalities of birth of gang deportees. The results are similar showing that the municipalities of birth of gang deportees were not more violent.

Figure 6: US 1996 gang shock and gang-specific crimes



Notes: These graphs plot the coefficients for the interaction between year and gang presence on different specific crimes (extortion, drug-related crimes and others). The regressions control for municipality fixed effect and year fixed effects . The Y-axis shows the estimated coefficients and the X-axis shows the interaction year. Standard errors are clustered at the municipality level and confidence intervals at 95% are presented.

Table 2 presents the results of estimating equation 2. An increase in 1,000 criminal deportees implies that the incarceration rate for homicides increase by 1 individual per 100,000 (this is equivalent to a 25% increase relative to the baseline before 1996). In the case of extortion, the incarceration rate doubles with no effects on other crimes.

Table A.2 presents a series of robustness checks. To control for enforcement, the first row include interactions between the gang shock and measures of enforcement such as the number of police officers per municipality. In Panel C, I control for municipality-specific trends. In Panel F, I present the reduced form results. Finally, in the last row I present the results using as an instrument of US gang presence the municipalities of birth of all deportees arriving in 1995. The results do not change.

Table 2: Criminal deportations from the US and criminal capital in El Salvador

	(1)	(2)	(3)	(4)
	Homicide rate	Extortion rate	Drug Traf. rate	Other Crime
Gangs shock$_{m.t}$	0.0010***	0.0011***	0.0006***	0.0002
	(0.0002)	(0.0003)	(0.0002)	(0.0001)
Instrumental Variable: US gang deportees' municipality of birth				
Gangs shock$_{m.t}$	0.0014***	0.0016***	0.0009***	0.0001
	(0.0003)	(0.0004)	(0.0003)	(0.0002)
Mean of dependent	4.07	0.45	2.7	4.75
Effect for avg municipality	25%	222%	37%	0.001%
Observations	6,291	6,291	6,291	6,291
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

Notes: *Gang shock*$_{m,t}$ is the interaction of a dummy indicating the presence of gangs in the municipality and the number of criminal deportations in year t-1. The instrument is a dummy indicting whether a 1996/1997 US gang deportee was born in that municipality. The specification is presented in Equation 2. Standard errors are clustered at the municipality level. Significant at *** p<0.01, ** p<0.05, * p<0.1.

5.2.1 Other Mechanisms

In an attempt to better understand the mechanisms underlying the effects of criminal deportees, I explore the characteristic of Salvadorans who migrated to the US between 1980 and 1990, as well as their exposure to violence during civil conflict in El Salvador.

Negative selection of migrants in the US. One of the main hypothesis of this paper is that the gangs from the US brought criminal capital. It could be the case, however, that migrants were already violent when they left El Salvador in the 1980s and would be criminals in the future independently of their exposure to US criminal capital.

Three pieces of evidence suggests that this is not the case. First, most of the Salvadorans who became gang members in the US were children when they left El Salvador and were thus less likely to be criminals back then. Second, if these children or their families were already violent types,

one would expect to see an increase in all types of crime, not only in those related to extortion and drug trafficking. Moreover, the crime rates in municipalities were 1996/1997 gang deportees were born have similar homicide rates before 1996 than municipalities were no deportee was born. Third, using data from 1990 US census and the El Salvador census of 2007, I compare the levels of education of Salvadorans who left between 1980 and 1990 versus Salvadorans who never left. I find that the ones who left have higher levels of education than the ones who stayed, suggesting that those who moved were, if anything, positively selected (see Table A.3). This is consistent with previous evidence that immigrants are positively selected into developed countries (Abramitzky and Boustan 2017; Abramitzky et al. 2012; Grogger and Hanson 2011; Abramitzky et al. 2014; Basilio et al. 2017) . Moreover, I find no differences in education between Salvadorans who went to LA versus Salvadorans who went to other counties in the 1980s (results are presented in Figure A.7 in the Appendix). These results suggest that movers and deportees on average did not present worse characteristics than those who stayed in El Salvador during the 1980s.

Negative selection of gang deportees' municipalities of birth. It could be the case that gang members were born in municipalities that were intrinsically more violent. To address, this concern I use another instrument for gang presence which is a measure for historical pre-existing deportation in that municipality. In particular, I use the municipality of birth for all deportees coming from California in 1995 before the IIRIRA act was passed. I find that effects do not change and are of similar magnitude. Moreover, the event study figures using variation in the municipality of birth of US gang deportees do not seem to validate this possibility given that the years before 1996, the municipalities where gang deportees were born do not present significant differences in crime and light density compared to the control municipalities.

Exposure to violence. Another possibility is that Salvadoran children who fled to the US had greater exposure to violence during the civil conflict in the 1980s and are thus more likely to become criminals. To address this concern, for robustness, I control for the number of individuals that were victim of violence in the place where they were born during the civil conflict, interacted with time trends. I find that results do not change (Table A.2). Moreover, the fact that there is no effect of criminal deportees on other types of crimes that are not associated with the main US gangs (MS-13 and 18th Street) suggests that the effects are not driven mainly by exposure to violence during childhood.

5.3 Gang Recruitment of Children and Adult Incarceration

In this section, I analyze to what extent the negative spillovers of US deportees to Central America were not only the criminal knowledge brought by US deportees but also the integration of extortion and drug dealing practices knowledge among native children.

To analyze whether gang deportees coming from the US generated spillovers to Salvadoran children who were never exposed to US neighborhoods, I start by estimating the incarceration effects of being exposed to criminal deportees in 1996 at different ages of childhood. The omitted category is a dummy indicating whether Salvadorans were between 19 years old at the time US gangs arrived in El Salvador. The dependent variable is the number of individuals in prison per cohort-district of birth divided by the population born in that cohort-district per 1000 individuals.

Table 3 presents the results of estimating Equation 3.[28] It shows that individuals who were at primary-school age when gangs arrived from the US are about 30 percent more likely to be incarcerated when they are adults. I find no effects for those who were in the first years of secondary education. This is mainly because children tend to dropout in the transition between primary and secondary education.[29] Thus, individuals at secondary-school ages when the gangs arrived are less likely to be affected. In addition, the null effects for older cohorts are also consistent with qualitative evidence indicating that gangs start recruiting children during early adolescence (Cruz et al. 2017).

To shed light on the effect of Salvadoran children joining US gangs, Columns (3)-(6) present the results dividing the sample by individuals that have US gang affiliation versus individuals that have a gang affiliation but not from the US. It shows that the probability of being incarcerated and having a US gang affiliation almost doubles for individuals that were at young ages when US gang deportees arrived in 1996. In contrast, there are no effects of being exposed to US gang deportees in the probability of being affiliated to a non-US gang.

Tables A.4 and A.5 in the Appendix presents the reduced form estimates as well as the results using as an instrument the municipality of birth of all deportees arriving from the US in 1995. I

[28] The ages bins reflect the different school cycles.

[29] These results are consistent with Sviatschi (2017) showing that large and significant negative effects on years of education are concentrated at primary schooling ages in Peru. This is also the case in El Salvador, previous evidence found that children tend to drop out of school before they begin secondary education due to the arrival of criminal deportees from the US (Sviatschi 2019).

find that results are qualitatively similar.

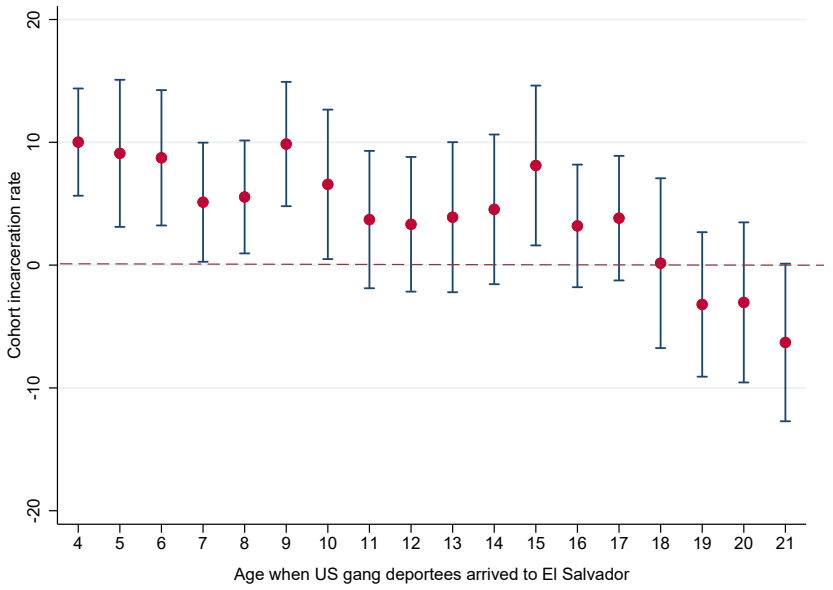
Table 3: Exposure to gangs from the US during childhood on future criminality in El Salvador

	All sample		US gang affiliation		Non-US gang affiliation	
	(1)	(2)	(3)	(4)	(5)	(6)
$GangShockAge4x6_{m,c}$	9.631***	6.778***	6.276***	4.336***	0.044	0.077
	(2.078)	(2.279)	(1.393)	(1.291)	(0.083)	(0.067)
$GangShockAge7x9_{m,c}$	7.370***	4.916*	5.081***	4.101***	0.191	0.040
	(2.038)	(2.619)	(1.216)	(1.472)	(0.118)	(0.126)
$GangShockAge10x12_{m,c}$	5.243**	5.135*	4.289***	2.776**	0.077	-0.084
	(2.319)	(2.775)	(1.061)	(1.274)	(0.148)	(0.094)
$GangShockAge13x15_{m,c}$	6.405**	7.110**	3.080***	3.098**	0.077	-0.068
	(2.707)	(3.214)	(1.105)	(1.464)	(0.179)	(0.100)
$GangShockAge16x18_{m,c}$	3.459	3.806	1.190	0.415	0.359	0.051
	(2.910)	(3.219)	(0.887)	(1.136)	(0.246)	(0.145)
Mean of dependent	22.82	26.65	6.3	8.3	6.3	8.3
Municipality FE	✓	✓	✓	✓	✓	✓
Yob FE	✓	✓	✓	✓	✓	✓
Municipality trends	✓	✓	✓	✓	✓	✓
Urban		✓		✓		✓
IV	✓	✓	✓	✓	✓	✓

Notes: $GangShockAgex_{m,c}$ is the interaction between the measure of gang presence in the municipality of birth and a dummy indicating the age x in 1996, using as instrument a dummy indicating the municipality of birth for US gang deportees in 1996/1997. The omitted category is a dummy indicating whether individuals were 19 years old at the time of arrival of gangs in El Salvador. The dependent variable is the number of individuals in prison per cohort-municipality of birth divided by the population born in that cohort-district per 1000 individuals. All specifications control for municipality of birth, year of birth, as well as municipality-specific time trends. Standard errors clustered at the municipality of birth level. Significant at *** p<0.01, ** p<0.05, * p<0.1

Figure 7 presents the results by age-specific dummies. Again, there are no effects for those individuals who were older than 15. Moreover, the results show that there is no differential effect based on the number of years exposed to gangs. For example, those individuals who were exposed to US gang deportees at the age of 6 have similar chances of being incarcerated for gang-related crimes as those who were exposed at the age of 10. However, those who were older than 15 and not exposed at the early teens are not affected. This provides further evidence that the early teens could be a critical period for gang recruitment.

Figure 7: Incarceration rate effects by age



Notes: This graph plot the coefficients obtained from a regression of the incarceration rate on the interaction between the gang presence in the municipality of birth (instrumented by a dummy indicating whether a 1996/1997 US gang deportee was born in that municipality) and dummies at different childhood ages. The regressions control for municipality of birth, municipality time trends, and cohort fixed effects. The Y-axis shows the estimated coefficients and the X-axis shows the ages. Standard errors are clustered at the municipality-of-birth level.

The fact that long-term effects are only driven by specific cohorts provides further evidence that results are not confounded by other municipality varying factors such as increased enforcement in gang areas. Nevertheless, to control for enforcement, I use the year of arrest to also construct a sample that contains the incarceration rate per cohort per municipality of birth plus year of arrest. In the Appendix, Table A.6 presents the results including year-of-arrest. I find that the effects do not change and are of the similar magnitude.

5.3.1 Potential Mechanisms behind Gang Recruitment

In this section, I explore potential mechanisms behind gang recruitment. I analyze the preexisting characteristics of municipalities that are effected the most by the increase in criminal deportations from the US.

First, given that the deportees brought criminal knowledge, I analyze the extent to which preexisting state capacity such as the number of police officers, state officials, and army bases in the

1980s can mitigate gang recruitment in the 2000s by having the monopoly of violence.

Second, criminal deportees from the US not only brought criminal knowledge and the business of extortion and drugs to El Salvador, but also provided a social structure for Salvadoran children. Status, respect, and a sense of collective identity are all important for gang recruitment. About 60% of those who join gangs are seeking respect, friendship, and community (Cruz et al. 2017). To shed light on this mechanism, I focus on how social capital bequeathed by leftist insurgents in the 1980s may complement or substitute for gang development. There is a lot of qualitative evidence highlighting the fact that these groups were mainly characterized by their ability to mobilize masses, which enabled them to create a form of social capital in the locations that they controlled (Wood 2003; McClintock 1998; Ocampo 2017).[30]

This paper finds some evidence of the importance of collective action to mitigate gang recruitment. I find that in municipalities where leftist revolutionaries were present in 1980, gangs did not develop after criminal deportees from the US began arriving in 1996. I cannot fully disentangle the mechanism explaining why areas with a previous presence of leftist insurgency mitigate gang activity, but several pieces of qualitative evidence suggest that insurgent groups bequeathed social cohesion and organizational skills on the areas where they were active. First, existing literature shows that residents in these areas attend more municipal meetings and remain more committed to social change and equity than do respondents in nearby municipalities (Wood 2003). Second, effects are not mitigated in municipalities where army units or naval or air force bases were located in 1982, suggesting that it is not only combat experience or histories of violence in these areas that prevent gang development.[31]

Table A.7 presents a fully saturated version of Equation 3 that includes interactions with measures such as $Police$, the number of police officers in 1992; $Army_{m,1982}$ whether there was a mili-

[30]Several forms of insurgent civilian collective action were observed during the civil war, from strikes, marches and massive demonstrations to voluntary provision of intelligence, land occupation, and the provision of goods to the rebels (Wood 2008). This happened in a context of growing intense and indiscriminate state violence where guerrilla groups were able to channel popular discontent and turned it into strong support (Martín-Baró 1981; Ocampo 2017). Rebel collaboration came from different actors, landless laborers, land-poor peasants, and some smallholders, among others, who stand in most cases against extreme state abuse (Wood 2008; Grassetti 2016; Martín-Baró 1981). Moreover, these collaborative protection networks were often under attack by state agents as a form of *"goverment rackets"*, where government conditioned the civilian access to health services, agriculture inputs or other type of government aid on the provision of intelligence and support against rebels (Stanley 1996). These efforts, however, could not match the resilience of the insurgent networks (Wood 2003).

[31]Using recent Lapop surveys, I also confirm these results, which show that households in areas where leftist rebels were present in the 1980s, are today more likely to contribute to solving community problems.

tary base during the civil conflict; and $Collective_{m,1982}$, a dummy indicating whether leftist guerillas had a presence in municipality m in 1982.

I find that the effects are only mitigated in municipalities where rebels held control during the country's civil conflict. This could be due to the presence of social capital in these areas that allowed the communities to organize against gang activity. Moreover, the fact that insurgent groups were formed by members of the community may have led to more social cohesion and community support in these areas, which may have prevented children from participating in gangs. These results are consistent with recent surveys in El Salvador showing that residents in these areas remain more committed to social change and equity than respondents in the other nearby municipalities that were controlled by military-led groups (Wood 2003; McIlwaine 1998). One important aspect is that by the time the gangs arrived, these groups were no longer controlling these areas, suggesting that other characteristics, such as the social cohesion may be important factors that persist in these communities.

In addition, I find that preexisting characteristics of the state, such as the number of police officers and army bases, do not mitigate gang recruitment. These results provide further evidence that what prevented gang development in the areas that used to have rebel forces was not only the permanency of criminal knowledge but also the presence of collective action, otherwise one would see the effects mitigated in areas that used to have military presence.[32]

Another possibility is that areas where leftist insurgents were in control tend to attract fewer criminal deportees or deportees with different characteristics. Several pieces of evidence suggest this may not be the case. First, the timing of deportations and location of gangs is uncorrelated with the presence of rebels. Second, using recent deportation data, I find that deportees born in areas with a presence of rebels have similar rates of returning to their place of birth than deportees born in non-rebel areas. They also have similar characteristics (criminal records, education and age).[33]

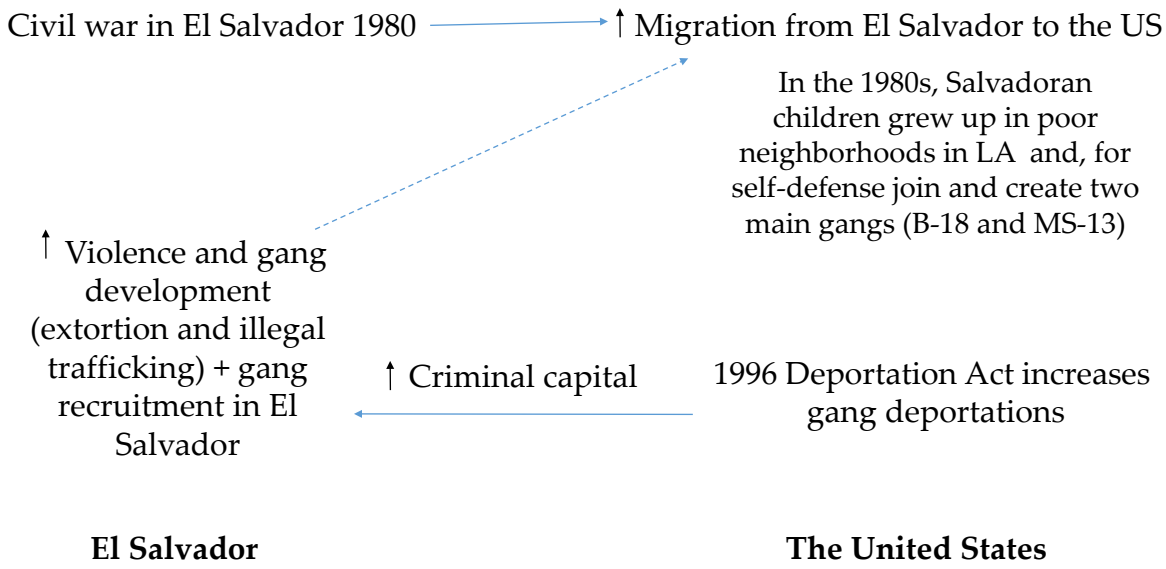
[32] Moreover, according to The Truth Commission from El Salvador (1993), the military-led state was responsible for around 85% of deaths in the war, whereas the rest is attributable to rebel groups or to unknown causes.

[33] Another factor that could overstate or amplify the transfer of criminal knowledge from deportees to Salvadoran children could be wartime violence during the civil conflict. I address this issue by controlling for the number of victims during the civil conflict per year of birth and the results do not change.

6 Policy Implications

In this section, I investigate whether the development of gangs might have created a violence trap for Salvadoran children. Figure 8 provides a summary of the events and this hypothesis. In particular, I analyze how violence initiated by gang deportees in the 1990s may have affected migration to the US and other countries in recent years. According to qualitative research based on interviews, gang violence could be the main factor explaining the recent increase in emigration from El Salvador, Honduras and Guatemala to the US and Mexico (Carlson and Gallagher 2015).[34] Whether the relationship between gang violence in Central America and child migration to the US is causal, however, remains an open question.[35]

Figure 8: Self-reinforcing cycle



[34] According to UN High Commissioner for Refugees (UNHCR), 66% of the children cited violence by organized armed criminal actors as a primary motivator for leaving.

[35] To the best of my knowledge, the closest paper that investigates the role of violence on child migration using causal estimates is Clemens (2017). However, it relies mostly on time series variation on homicides without exploiting any exogenous shock to gang violence.

6.1 The Role of Gang Violence in El Salvador in International Child Migration

I start by exploring the relationship between homicide and child international migration, using as a proxy children who migrated internationally and were apprehended in other countries.[36] Formally, I estimate the following model:

$$ChildMigration_{i,t,m} = \beta Homicides_{i-1,t,m} + \alpha_m + \rho_i + \epsilon_{i,t,m} \quad (4)$$

where m indexes the municipality of birth, i the month and t the year. where $ChildMigration_{i,t,m}$ is the number of children who left municipality m and were deported in month i. $Homicides$ are the number of homicides in month $i-1$, year t per municipality m. It controls for municipality of birth fixed effects α_m, year fixed effects and month fixed effects. All regressions include population per year and municipality. I also add municipality-specific linear month trends to further account for any other systematically varying municipality-level factors that may have coincided with changes in the number of homicides.

Table 4 presents the results. There is a positive relationship between the number of homicides in the municipality of birth and child migration. I find that an increase of 10 homicides on average translates to an increase of 5 children deported per month. These results are robust to different specifications.

To further address the concern that the number of homicides per month is endogenous, I exploit two sources of potentially exogenous variation. In March 2012, the government reached an agreement with the leaders of the US origin gangs to improve prison conditions for gang members in exchange for a gang ceasefire. Within 24 hours of the start of the truce, the homicide rate dropped by 50 percent (Crisis Group 2016). However, by June 2013 the gang truce ended due to a lack of support from both the ruling party, and the Salvadoran public.

Using the timing of the truce, I interact the months of truce with the US gang deportees' municipalities of birth as an instrumental variable. The idea behind this is that the truce generated an exogenous decrease in gang-related homicide rates that was not related with child migration

[36] Most of the children were apprehended in Mexico and the US. Moreover, estimates from the International Migration Office in El Salvador show that children if they are deported they are apprehended within one month from their departure from El Salvador.

trends. Furthermore, the fact that the truce was coordinated with gang leaders reinforces the hypothesis that municipalities where the leaders had better control may have experienced larger reductions in crime.[37]

Exploiting these sources of variation, I instrument the number of homicides by a dummy indicating the months of the truce interacted with the US gang deportees' municipality of birth. Column(5) in Table 4 shows that the results are robust. There is a positive significant relationship between homicides at the child's municipality of birth and migration to the US or Mexico.

Table 4: Homicides and child migration

	(1)	(2)	(3)	(4)	(5)
$Homicides_{i-1,t,m}$	0.768**	0.628***	0.542***	0.512***	1.923***
	(0.319)	(0.187)	(0.169)	(0.145)	(0.296)
Observations	12,672	12,672	12,672	12,672	12,672
Municipality FE		✓	✓	✓	✓
Month-Year FE			✓	✓	✓
Municipality trends				✓	✓
IV					✓

Notes: $Homicides_{i,t,m}$ are the number of homicides in the previous month in the municipality of birth. $ChildMigration_{i,t,m}$ is the number of children who left municipality m and were deported in month t. Column (5) presents the IV estimates. Standard errors clustered at the municipality-of-birth level. Significant at *** p<0.01, ** p<0.05, * p<0.1

This analysis has several potential implications. First, deportation policies may have generated a self-reinforcing cycle of migration, gang recruitment and violence. Second, it sheds light on the policy debate in the United States over whether unaccompanied child migrants qualify for legal status as refugees since they can be fleeing violence, or whether they should be treated as economic migrants. This paper highlights that violence induced by US gangs can be a significant factor in explaining the increase in the number of children coming to the US from Central America.

[37] I also repeat the analysis using the gang leaders' municipality of birth as an instrument and results do not change. Figure A.5 shows the evolution per month and a larger decline after the truce in those municipalities where leaders were born.

7 Conclusion

This paper takes a first step towards understanding how criminal deportations affect gang development and human capital in El Salvador. Although many have been suggested that US deportation policies have contributed to the development of gangs in Central America, this paper is the first to provide causal evidence for it at a micro level.

The results of this paper show that the increase in US criminal deportations led to increases in gangs of US origin, homicide rates, extortion and drug trafficking in El Salvador. In addition to having a direct effect on violent crime, the arrival of individuals bringing criminal knowledge and connections generated important spillover effects on Salvadoran children who were never exposed to US neighborhoods, eventually leading to more unaccompanied minors emigrating from El Salvador to the US. This paper not only provides evidence of the indirect effect of gang leaders from the US on Salvadoran children, but also how gang violence in El Salvador may push children out of the country to the US, increasing the number of deported children.

These results suggest that policy makers should examine long run solutions to gang activity that seeks to break the cycle of deportations and criminality. One such potential policy is addressing the incentives that children face when deciding whether to drop out of school and joining gangs.[38] The results also imply that US deportation and incarceration policies that create hardened criminals are self-defeating. By deporting migrants who posses criminal capital, the US is increasing future migration issues. Better reintegration of migrants and ex-convicts may also be able to break the cycle. Further research is needed to examine these long-run solutions.

[38] Evidence from Brazil finds that conditional cash transfer programs (CCT) that provide transfers on the condition that children stay at school led to an 18% reduction in youth crime (Chioda et al. 2015). In a similar way, in Peru, by increasing the time children spent in school, CCTs have reduced the amount of time spent on illegal narcotraffic activities (Sviatschi 2017).

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Appendix

Figures

Figure A.1: Child deportation and homicide rates at children's municipalities of birth, 2003-2016

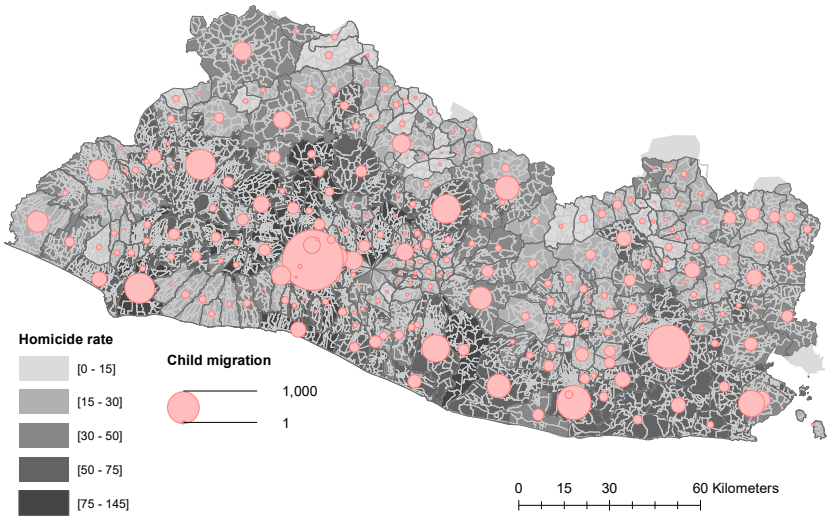
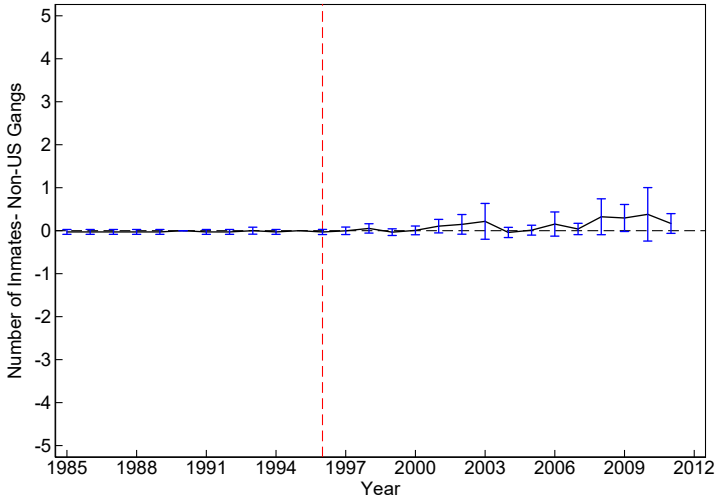
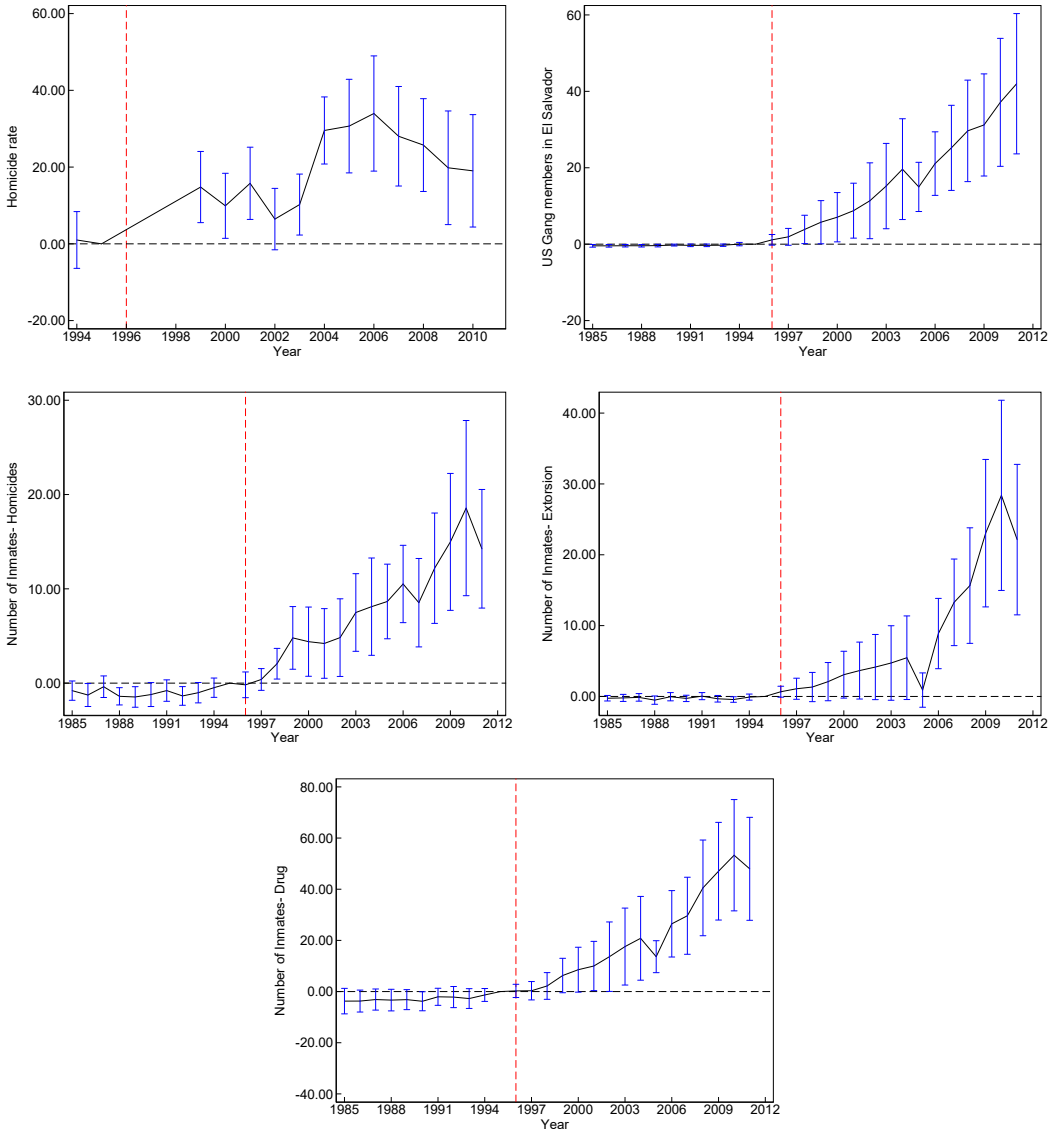


Figure A.2: The 1996 US criminal deportee shock and non-US gangs in El Salvador



Notes: This graph plots the coefficients for the interaction between year and gang presence on the number of Non-US gang members incarcerated obtained from equation 1. The regressions control for municipality fixed effect,and year fixed effects. The Y-axis shows the estimated coefficients and the X-axis shows the interaction year. Standard errors are clustered at the municipality level and confidence intervals at 95% are presented.

Figure A.3: the 1996 US shock and US gangs in El Salvador (using 1996/1997 deportees' municipalities of birth)



Notes: These graphs plot the coefficients for the interaction between year and deportees' municipality of birth on different specific crimes. The omitted year is 1995. The regressions control for municipality fixed effect, and year fixed effects. The Y-axis shows the estimated coefficients and the X-axis shows the interaction year. Standard errors are clustered at the municipality level and confidence intervals at 95% are presented.

Figure A.4: Child deportations across municipalities with varying exposure to homicide committed by gangs

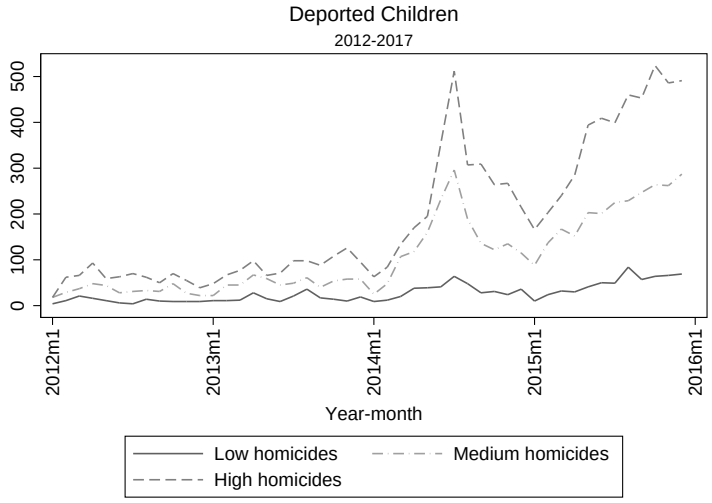


Figure A.5: Homicide rates by truce leaders' municipalities of birth

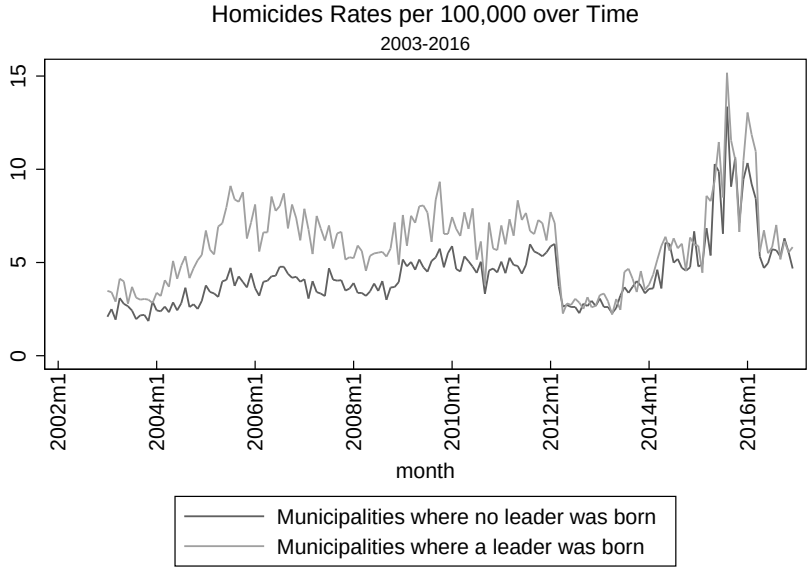
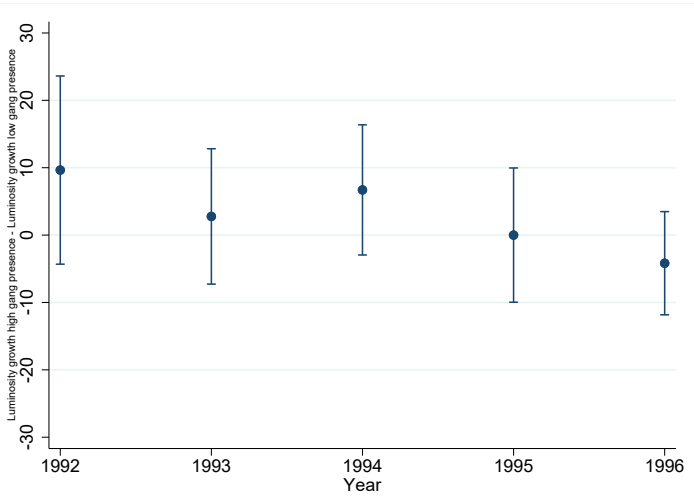
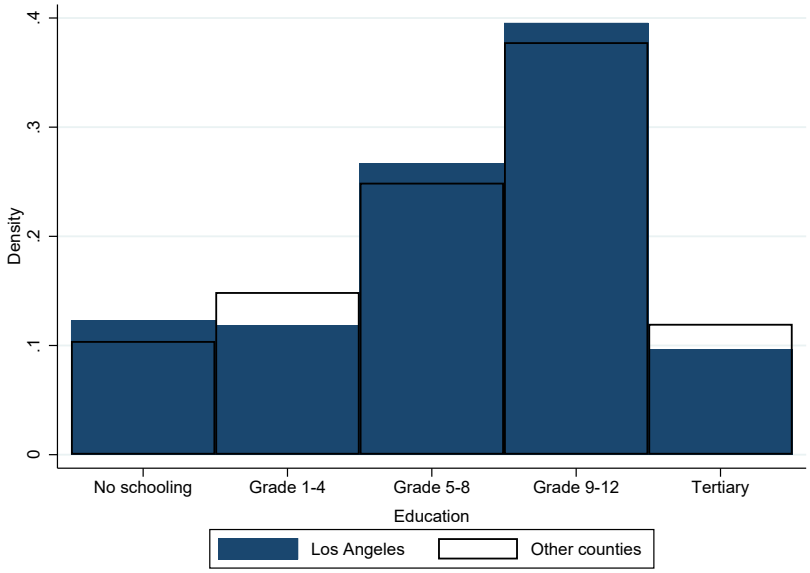


Figure A.6: No preexisting differences in night light density between gangs and non-gang municipalities before 1996



Standard errors are clustered at the municipality level and confidence intervals at 95% are presented.

Figure A.7: Years of schooling for Salvadoran who migrated between 1980 and 1990, living in LA and other counties in 1992



Tables

Table A.1: Baseline characteristics between US gangs and non-gang municipalities

Variable	Non-gang	Gang	Diff.	$\|t\|$	Pr($\|T\| > \|t\|$)
Poverty index 1992	7.623	6.471	-1.153	1.49	0.1413
Complete family 1992	0.529	0.541	0.012	1.35	0.1804
Area km2	52.578	72.632	20.054	1.12	0.2716
Labor force participation 1992	67.081	67.843	0.762	0.90	0.3724
Teenage pregnancy 1992	84.711	82.761	-1.951	0.31	0.7590
Child mortality 1992	22.800	23.473	0.673	0.22	0.8286
Years of education 1992	5.602	6.323	0.721	3.07	0.0030***
School attendance 1995	0.654	0.682	0.028	3.07	0.0021***
Illiterate rate 1992	27.874	22.194	-5.680	3.29	0.0015***
Unemployment rate 1992	6.890	7.362	0.471	0.59	0.5537
Homicides rates in 1995	17.014	23.551	6.537	1.11	0.2699
Participated in the armed forced 1992	0.010	0.010	-0.000	0.10	0.9226
Number of deaths during civil conflict in 1980	23.343	26.812	3.469	0.28	0.78
Members living abroad 1992	0.111	0.113	0.002	0.23	0.8169
Males living abroad 1992	0.061	0.065	0.004	0.86	0.3945
Proportion with war camps	0.022	0.029	0.007	0.19	0.8468
Proportion of expropriated land 1980	0.112	0.100	-0.012	0.31	0.7584
Police officers rate per 100,000 in 1992	22.037	21.389	-0.648	0.13	0.8979
Expenditure in education per capita 1995	609.056	505.434	-103.622	1.64	0.1044
Expenditure in health per capita 1995	136.265	135.741	-0.524	0.02	0.9861
State officials per capita 1992	1.724	2.064	0.340	1.29	0.2022
Land reform in 1980	0.136	0.136	-0.000	0.01	0.9944
Year of foundation	1820.217	1806.629	-13.589	0.50	0.6179
Access to water and sanitation 1992	33.517	50.393	16.876	3.95	0.0002***

Table A.2: Robustness checks

	(1)	(2)	(3)	(4)
	Homicide rate	Extortion rate	Drug traf rate	Other crimes rate
Panel A: Controls for *Gang shock* $\times$ *Police officers*$_{m,t}$				
Gangs shock$_{m.t}$	0.001***	0.001***	0.001**	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Panel B: Controls for *Gang shock* $\times$ *Victims civil conflict*$_{m,t}$				
Gangs shock$_{m.t}$	0.001***	0.001***	0.001***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Panel C: Controls for municipality time trends				
Gangs shock$_{m.t}$	0.001***	0.001***	0.0005***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Panel D: Reduced form using US gang deportees municipality of birth				
Gangs shock$_{m.t}$	0.0011***	0.0013***	0.0007***	0.0001
	(0.0003)	(0.0003)	(0.0002)	(0.0002)
Panel E: IV using US deportees municipality of birth in 1995				
Gangs shock$_{m.t}$	0.0017***	0.0015***	0.0010**	0.0003
	(0.0005)	(0.0005)	(0.0004)	(0.0003)
Panel F: Reduced form using US deportees municipality of birth in 1995				
Gangs shock$_{m.t}$	0.0008***	0.0008***	0.0005**	0.0001
	(0.0002)	(0.0003)	(0.0002)	(0.0001)
Observations	6,291	6,291	6,291	6,291
Mean of dependent	4.07	0.45	2.7	4.75
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

Table A.3: Years of education of migrants in the US and non-migrants in El Salvador

	Non-migrant Salvadoran	Migrant Salvadoran in the US (period of migration 1980-1990)
	%	%
No schooling	34.93	13.5
Grade 1-4	29.40	11.37
Grade 5-8	16.27	23.77
Grade 9-12	13.11	37.72
Tertiary/university	6.29	13.62
Observations	149,220	195,949

Notes: Column (1) presents the years of education using 2007 census in El Salvador for Salvadoran that never left the country but had a member that left to the US. Column (2) presents the years of education using 1990 census in the US for Salvadorans that migrated to the US in the period 1980-1990. Results are similar to using 1992 census in El Salvador, 2000 and 2010 US census as well as comparing to non-migrants in El Salvador who did not have any relative in the US.

Table A.4: Exposure to gangs from the US during childhood on future criminality in El Salvador (OLS and reduced form estimates using the municipality of birth of US gang deportees in 1996/1997)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	US gang		Non-US gang		US gang		Non-US gang	
$GangShockAge4x6_{m,c}$	4.530***	3.709***	0.038	0.071				
	(0.976)	(0.891)	(0.063)	(0.046)				
$GangShockAge7x9_{m,c}$	4.280***	4.022***	0.110	-0.026				
	(0.887)	(1.003)	(0.082)	(0.081)				
$GangShockAge10x12_{m,c}$	3.917***	2.920***	0.135	0.055				
	(0.774)	(0.894)	(0.116)	(0.062)				
$GangShockAge13x15_{m,c}$	2.988***	3.367***	0.267	-0.011				
	(0.791)	(1.000)	(0.197)	(0.071)				
$GangShockAge16x18_{m,c}$	1.482**	1.098	0.383**	0.105				
	(0.583)	(0.752)	(0.190)	(0.094)				
$GangBirthAge4x6_{m,c}$					4.840***	3.102***	0.034	0.055
					(1.102)	(0.938)	(0.064)	(0.049)
$GangBirthAge7x9_{m,c}$					3.918***	2.934***	0.147	0.028
					(0.999)	(1.105)	(0.089)	(0.089)
$GangBirthAge10x12_{m,c}$					3.308***	1.986**	0.060	-0.060
					(0.855)	(0.937)	(0.115)	(0.065)
$GangBirthAge13x15_{m,c}$					2.375***	2.216**	0.059	-0.048
					(0.865)	(1.067)	(0.139)	(0.071)
$GangBirthAge16x18_{m,c}$					0.917	0.297	0.277	0.037
					(0.693)	(0.818)	(0.191)	(0.104)
Observations	5,764	2,288	5,764	2,288	5,764	2,288	5,764	2,288
Municipality FE	✓	✓	✓	✓	✓	✓	✓	✓
Yob FE	✓	✓	✓	✓	✓	✓	✓	✓
Municipality trends	✓	✓	✓	✓	✓	✓	✓	✓
Urban		✓		✓		✓		✓
OLS estimates	✓	✓	✓	✓				
Reduced form estimates					✓	✓	✓	✓

Notes: $GangShockAgex_{m,c}$ is the interaction between the measure of gang presence in the municipality of birth and a dummy indicating the age x in 1996. $GangBirthAge16x18_{m,c}$ is the interaction between a dummy indicating the municipality of birth of US gang deportees that arrived in 1996/1997 and a dummy indicating the age x in 1996. The omitted category is a dummy indicating whether individuals were 19 years old at the time of arrival of gangs in El Salvador. The dependent variable is the number of individuals in prison per cohort-municipality of birth divided by the population born in that cohort-district per 1000 individuals. All specifications control for municipality of birth, year of birth, as well as municipality-specific time trends. Standard errors clustered at the municipality of birth level. Significant at *** p<0.01, ** p<0.05, * p<0.1

Table A.5: Exposure to gangs from the US during childhood on future criminality in El Salvador (IV and reduced form estimates using the municipality of birth of all deportees in 1995)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	US gang		Non-US gang		US gang		Non-US gang	
$GangShockAge4x6_{m,c}$	5.434***	5.883***	0.003	0.053				
	(1.497)	(1.912)	(0.125)	(0.088)				
$GangShockAge7x9_{m,c}$	5.015***	5.218**	0.222	-0.037				
	(1.664)	(2.106)	(0.192)	(0.204)				
$GangShockAge10x12_{m,c}$	4.887***	4.942**	0.043	-0.129				
	(1.478)	(2.012)	(0.238)	(0.143)				
$GangShockAge13x15_{m,c}$	1.622	2.438	0.060	-0.077				
	(1.607)	(2.153)	(0.296)	(0.163)				
$GangShockAge16x18_{m,c}$	0.237	0.152	0.458	0.174				
	(1.224)	(1.727)	(0.376)	(0.217)				
$DeporteeBirthAge4x6_{m,c}$					2.716***	2.735***	0.002	0.025
					(0.788)	(0.898)	(0.063)	(0.042)
$DeporteeBirthAge7x9_{m,c}$					2.506***	2.426**	0.111	-0.017
					(0.917)	(1.054)	(0.095)	(0.095)
$DeporteeBirthAge10x12_{m,c}$					2.442***	2.298**	0.022	-0.060
					(0.762)	(0.925)	(0.119)	(0.063)
$DeporteeBirthAge13x15_{m,c}$					0.811	1.133	0.030	-0.036
					(0.837)	(1.060)	(0.149)	(0.075)
$DeporteeBirthAge16x18_{m,c}$					0.119	0.071	0.229	0.081
					(0.616)	(0.805)	(0.189)	(0.101)
Observations	5,764	2,288	5,764	2,288	5,764	2,288	5,764	2,288
Municipality FE	✓	✓	✓	✓	✓	✓	✓	✓
Yob FE	✓	✓	✓	✓	✓	✓	✓	✓
Municipality trends	✓	✓	✓	✓	✓	✓	✓	✓
Urban		✓		✓		✓		✓
IV estimates	✓	✓	✓	✓				
Reduced form estimates					✓	✓	✓	✓

Notes: $GangShockAgex_{m,c}$ is the interaction between the measure of gang presence in the municipality of birth (using as instrument a dummy indicating the municipality of birth of all US deportees in 1995) and a dummy indicating the age x in 1996. $DeporteeBirthAge16x18_{m,c}$ is the interaction between a dummy indicating the municipality of birth of all US deportees that arrived in 1995 and a dummy indicating the age x in 1996. The omitted category is a dummy indicating whether individuals were 19 years old at the time of arrival of gangs in El Salvador. The dependent variable is the number of individuals in prison per cohort-municipality of birth divided by the population born in that cohort-district per 1000 individuals. All specifications control for municipality of birth, year of birth, as well as municipality-specific time trends. Standard errors clustered at the municipality of birth level. Significant at *** p<0.01, ** p<0.05, * p<0.1

Table A.6: Additional robustness checks. Exposure to gangs from the US during childhood

	(1)	(2)
$GangShockAge4x6_{m,c}$	0.193***	0.136***
	(0.041)	(0.044)
$GangShockAge7x9_{m,c}$	0.147***	0.097*
	(0.040)	(0.051)
$GangShockAge10x12_{m,c}$	0.106**	0.102*
	(0.045)	(0.054)
$GangShockAge13x15_{m,c}$	0.127**	0.142**
	(0.052)	(0.063)
$GangShockAge16x18_{m,c}$	0.069	0.075
	(0.057)	(0.063)
Observations	288,200	114,400
Mean of dependent	0.47	0.53
Municipality FE	✓	✓
Yob FE	✓	✓
Municipality trends	✓	✓
Urban		✓
IV	✓	✓

Notes: $GangShockAgex_{m,c}$ is the interaction between the measure of gang presence in the municipality of birth (using as instrument the municipality of birth for 1996/1997 gang deportees) and a dummy indicating the age x in 1996. The omitted category is a dummy indicating whether individuals were between 19 and 20 years old at the time of arrival of gangs in El Salvador. The dependent variable is the number of individuals in prison per year of arrest per cohort-municipality of birth divided by the population born in that cohort-district per 1000 individuals. All specifications control for municipality of birth, year of birth, year of arrest as well as municipality specific time trends. Standard errors clustered at the municipality of birth level. Significant at *** p<0.01, ** p<0.05, * p<0.1

Table A.7: Mechanisms behind gang recruitment

	(1)	(2)	(3)	(4)	(5)	(6)
$GangShockAge4x15_{m,c}$	6.003***	5.290**	6.207***	6.894***	7.389***	7.340***
	(1.488)	(2.120)	(1.965)	(1.758)	(1.391)	(1.395)
$GangShockAge4x15_{m,c} \times$ *Police*$_{m,1992}$		-0.030				
		(0.048)				
$GangShockAge4x15_{m,c} \times$ *State Officials*$_{m,1992}$			0.257			
			(1.105)			
$GangShockAge4x15_{m,c} \times$ *Army*$_{m,1980}$				-2.824		
				(2.356)		
$GangShockAge4x15_{m,c} \times$ *Collective action*$_{m,1980}$					-7.909***	
					(2.710)	
$GangShockAge4x15_{m,c} \times$ *Disputed land*$_{m,1980}$						-3.815
						(2.634)
Observations	5,764	5,764	5,764	5,764	5,764	5,764
Municipality FE	✓	✓	✓	✓	✓	✓
Yob FE	✓	✓	✓	✓	✓	✓
Municipality trends	✓	✓	✓	✓	✓	✓
IV	✓	✓	✓	✓	✓	✓

Notes: $GangShockAgex_{m,c}$ is the interaction between the measure of gang presence in the municipality of birth and a dummy indicating the age x in 1996. The omitted category is a dummy indicating whether individuals were 19 years old at the time of arrival of gangs in El Salvador. The dependent variable is the number of individuals in prison per cohort-municipality of birth divided by the population born in that cohort-district per 1000 individuals. All specifications control for municipality of birth, year of birth, as well as municipality specific time trends. Standard errors clustered at the municipality of birth level. Significant at *** p<0.01, ** p<0.05, * p<0.1