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 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 US gangs' location and deportees' 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 Salvadoran children who were exposed at a young age to US gangs are more likely to be involved in gang-related crimes in adulthood. I also find some evidence that these deportations increased child migration to the US by increasing gang violence in El Salvador, 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, U.S. 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 harsh 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 contributions. First, I provide evidence that gangs and violent crime in El Salvador developed due to the arrival of gang 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 created 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 started joining gangs of US origin (here-

[1] See Johnson (2006)

[2] For example, the Trump administration 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).

inafter "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. Salvadoran children in Los Angeles formed these gangs 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 initially, 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 these gang members' expulsion 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 1996/1997 deportees' birthplace; ii) over-time variation in criminal deportations from the US; and iii) differential exposure to US gangs across cohorts (during sensitive ages) within location-time cells. These gangs are known for recruiting young children: in El Salvador, more than 60% of gang members join before the age of 15 (Cruz et al. 2017). Time variation comes from changes in deportation policies in the US starting in 1996. Thus, I define age-specific shocks by interacting the gang presence measures with the individuals' age in 1996, the year when US gang members arrived. Differential exposure arises because children within a municipality experience the arrival of gangs at different ages and because gang presence varies across municipalities based on deportees' place of birth.

Given that gang location could be endogenous, I take advantage of the fact that most deportees go back to their birth municipality. Hence, I instrument gang presence with the birthplace of the universe of US gang members deported in 1996 and 1997; hereinafter I will refer to municipalities in which at least one deported gang member was born as a "birth municipality" and others as "non-birth municipalities."[5]Additionally, looking at previous trends, I am also able to test the identifying assumption —- that is, that birth municipalities and non-birth municipalities would have followed similar trends if the number of gang members deported had not increased after 1996. By comparing changes in outcomes between birth and non-birth municipalities in El Salvador, I can measure how the arrival of gang members from the US affected US gang-related activities (extortion and drug trafficking), homicide rates, and child recruitment. The idea is that gang deportees' arrival had a larger effect in municipalities where they settled, which can be pre-

[4]The same events not only happened in El Salvador but also in Guatemala and Honduras, countries that are also currently affected by gangs originated in the US and have high homicide rates.

[5]For all the outcomes, I present the reduced form estimates and IV estimates using the gang deportees birth municipalities.

dicted by their places of birth, and that within these areas, it affected young children more given that gangs heavily recruit children less than age 15.

To observe these sources of variation, I exploit administrative data on US gangs' criminal activity and incarceration during the period 1985 to 2011. First, I use incarceration and police data on homicide, extortion, drug dealing, trafficking, and other types of crimes at the municipality level, 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 the municipality and date of birth, gang affiliation, length of sentence, year of arrest, and education. It allows me to track cohorts exposed to gang deportees' arrival in 1996 at different ages and in different locations. In this way, I am able to analyze whether those exposed to US gangs as children were more likely to be incarcerated in adulthood. Finally, using deportation data on children from 2011 to 2017, I am able to assess whether US gang violence in El Salvador induced more children to migrate to the US.[6]

The first finding is that after 1996, members of US gangs appear for the first time in El Salvador, leading to a large increase in homicide rates, extortion and drug-related crimes in municipalities where US gang deportees were born.[7] Extortion and drug trafficking activities double, and violence increases by 40%. I find no effects for other crimes, such as robberies and sex crimes, suggesting that US criminal deportees brought criminal capital specific to US gangs.[8] 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 differentiating birth from non-birth municipalities. I also look at preexisting economic development, using nighttime light density data during the period 1992-1996 and find no evidence that gang deportees' birth municipalities were experiencing lower luminosity growth before 1996.

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 deportees' birth municipalities and were younger than 15 when US gang members arrived were more likely to be part of a US gang in adulthood. This result 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 the affected cohorts are 20 percent more likely to be incarcerated for gang-related crimes as adults, compared to less-exposed cohorts (e.g., individuals who grew up in non-birth municipalities and individuals who grew up in gang deportees birth municipalities but were older when the gang deportees arrived).

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

[7] While there were small street gangs before the 1996 shock, none had a clear organization and business. Moreover, while I find that the number of members with US gang affiliation increased after 1996, I find no changes on the number of members of small street gangs.

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

The next focus of the paper is to explore the mechanisms behind the effects of criminal deportees. In particular, I provide evidence on the importance of criminal capital exported from the US. First, I find no increase in illegal activities not associated with US gangs such as property crimes. Moreover, I find that affected Salvadoran children were only involved with US gangs and not with other small street gangs. Second, I rule out that effects are driven by a negative selection of Salvadoran migrants arriving in the US in the 1980s, suggesting that results are not driven by the mere return of individuals who were already more prone to gang-related crime when they left El Salvador as children. Third, I find that changes in non-criminal deportees do not lead to an increase in crime, providing further evidence that effects are not driven by an increase in deportations per se. Finally, I find some evidence that gang recruitment is mitigated in El Salvador areas with historically stronger social ties and networks, which are part of the criminal capital brought by US deportees.

This paper also finds some evidence of a boomerang effect on the US. I take advantage of administrative data on the universe of minors deported from the US between 2011 to 2017, which contains information on the children's birthplace in El Salvador. I also exploit the variation that resulted from a recent truce in 2012 in El Salvador in which US gang violence fell by 50%. Using this exogenous variation in homicides, I find some evidence that the increase in criminality and violence caused by gangs of US origin pushed Salvadoran children to migrate out of the country, increasing the number of minors trying to enter the US (and who were subsequently deported). These results are in line with Clemens (2017), who also finds a positive relationship between homicides in the Northern Triangle 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. In particular, the results imply 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 causing 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 impact 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).[9] In this regard, this paper contributes to the literature on migration (e.g., Becker et al. 2020; 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

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

can be exported to other locations, generating positive spillover effects. In this paper, I look at criminal capital originated in the host country, which due to deportations spreads places of birth, generating negative spillovers. Moreover, this paper complements the case studies from the sociology and political science literatures on the spread of organized crime (Reuter 1985; Gambetta 1996; Varese 2011) by providing quantitative evidence of a successful transplantation case resulting from unintended consequences like a massive wave of deportations.

This paper is also closely related to papers examining the effects of migration on crime (e.g., Bell et al. 2014; Pinotti 2017; Mastrobuoni and Pinotti 2015; Dipoppa 2021). Most of these papers have focused on the effects of migration in host countries and in particular voluntary migration. Particularly, Dipoppa (2021) focuses on the spread of the Sicilian Mafia in a strong-state-capacity environment like North Italy in the context of a migration and a construction market boom. On the other hand, this paper complements 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; Clemens 2017; Kalsi 2018; 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. Closely related, Kalsi (2018) and Sviatschi (2019) show that US gangs hinder basic education at the same ages where I find that children are more likely to be involved with gangs. Therefore, this paper complements these particular findings by providing evidence of the big picture: a self-reinforcing cycle of deportations, gang recruitment, and violence, and shedding light on the mechanisms behind this cycle (i.e., criminal capital spillovers).

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), and the spread of wartime-acquired military and organizational skills (Jha and Wilkinson 2012; Finkel 2015). 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 world's largest criminal organizations. 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 the 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 on 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). 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 and the effects on violence and gang development. Section 5 presents the long-run results for exposed children. 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 Sections 4 and 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).[10]

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 became 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 Mexican gangs (Johnson 1989). Although relatively peaceful initially, this changed in the mid-1980s after 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 2012). They also developed a fierce rivalry with the 18th Street Gang that has persisted to this day.

In the 1990s, the US resorted to gang members' deportation to reduce violence and crime in Los Angeles. The Immigration and Naturalization Service (INS) began to look for and deport

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

gang members actively (Davis 2006). After El Salvador's civil war ended in a peace agreement in 1992, the INS increased these efforts through the former Violent Gang Task Force, which focused on deporting undocumented immigrants with criminal records (DeCesare 1998). However, it was not until 1996 that gang members began being deported in large numbers with The Illegal Immigration Reform and Immigration Responsibility Act (IIRIRA). According to Johnson (2006), the IIRIRA drastically increased immigration enforcement by creating expedited removal procedures, adding new grounds for deportation, and increasing border patrol agents. In particular, IIRIRA: (i) extended the definition of an "aggravated felony" (i.e., the qualifying condition for deportation), and allowed it to be applied retroactively; and (ii) eliminated the "suspension of deportation" status, which permitted the soon-to-be-deportees to adjust for lawful permanent resident status based on presence in the country and demonstration of hardship in case of deportation. Thus, in this wave of deportations, gang members from MS-13 and 18th Street were sent back to Central America (Franco 2010; Johnson 2006; Crisis Group 2017). This paper exploits this shock to identify the effects of criminal capital on gang development in El Salvador.

In the 1990s, when deportations began to increase, gang members in El Salvador did not receive much attention from Salvadoran police authorities. Gangs coming from the US took advantage of the postwar environment in El Salvador to easily embed themselves in neighborhoods. Further, when the deportations occurred, the country's institutions were weak as the state was still undertaking reforms following the 1992 peace accords (IRBC 2016). For example, a rural police unit had not been created, and the number of police officers per capita was low. Moreover, given that gang deportees did not have criminal records in El Salvador, they regained their freedom upon arrival.[11]

There is anecdotal evidence that most members went back to their municipality of birth (DeCesare 1998). Data from recent deportations show that about 70% of deportees return to their birthplace. The reason behind this could be the deportee's lack of knowledge about El Salvador's boundaries by the time they arrived 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. 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."*[12]

Although street gangs existed in El Salvador before the US gangs' arrival, they were relatively

[11] 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.

[12] See Martínez et al. (2016)

small and lacked organization. The deportees sought social acceptance and safety by banding together and replicating the gang structure in the Los Angeles era. As mentioned by Farah (2012), the early deportees demonstrated their organizational skills by moving quickly to make alliances with one another. In particular, the gang deportees brought organizational skills that were relevant for their business. For example, they constructed a complete record of individuals living in the area under their control; they also had 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 gang members use forms of accounting to facilitate coordination and decision-making. Bergman (2018) highlights 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, the two gangs combined 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 mainly 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 that 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 trafficking drugs and weapons between Mexico and the United States.

2.2 US Gangs in El Salvador and Child Recruitment

US Gangs brought not only the extortion and drug dealing business but also a sense of social identity for Salvadoran children. This identity formation facilitated the recruitment of children and their expansion. 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 recruitment is 14.5 (Cruz and Peña 1998).

Children perform several tasks. They are employed as messengers or "antennas" in the communities to control residents' movements. Gangs also use them to collect rents from extortion and drug dealing, and as they progress in their actions, gang leaders reward them with cell phones to inform when either the police or non-residents enter 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. Therefore, children are considered valuable assets for the gangs since they are not likely to be prosecuted in adult courts and thus return to the streets in a short time (Cox et al. 2017).

Some evidence of the recruitment of children who were never exposed to the US is that most of the current US gang membership joined while in El Salvador. A study conducted in 2001 showed that only 12% of gang members have ever been to the US (Giralt and Concha-Eastman 2001), and the most recent study available, conducted only among imprisoned gang members, revealed that only 7.3% of them had been in the United States (Cruz 2009).

Due to its strong 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). Most of them are children who join looking for the recognition, support, and safety that they do not find at home (Cruz et al. 2017; Klahr 2006). Further, even though joining a gang involves several steps and a certain amount of time, it is almost impossible to leave once inside. The MS-13 sees attempts to leave, in most cases, as a form of betrayal, and it is punishable by death (Insight Crime and CLALS 2018).

3 Data

To analyze the role of criminal deportations on gang development, violence and child recruitment, this paper makes use of four main datasets that provide variation across municipalities and time. The first two datasets– time-series on US criminal deportations and birth municipality level data on gang deportees– provide the tools to construct the main treatment variable. Time variation comes from changes in the quantity of criminal deportations induced by IIRIRA in 1996 in the US. I interact the time-series variation with a dummy for gang deportees' birth municipalities. The incarceration and police data provide information on crime outcomes. Moreover, the incarceration dataset allows me to explore whether young individuals exposed to gang deportees during childhood are more likely to be involved in gang activities when they are adults. Finally, the children deportation dataset allows me to analyze the role of US gang violence in El Salvador on child migration.

3.1 Municipality Level Data

3.1.1 Municipality of Birth of Gang Deportees

To define the areas where gang deportees established their structure, I obtain data from the El Salvador General Directorate of Migration (Direccion General de Migracion y Extranjeria, DGME) through a confidentiality agreement. This dataset has the deportees' municipality of birth in El Salvador, the US state where they were deported from, and their criminal records. All this information is provided by the US at the time of deportation.[13] Among the criminal categories, there is one indicating whether the deportee belongs to a gang in the US. In total, there are 567 gang deportees representing about 22% of criminal deportees.

Using this information, I define my treatment sample of "birth municipalities" as those municipalities where gang deportees from California were born. In particular, I exploit the fact that most deportees tend to locate in their municipalities of birth. Section 4.2 validates this measure by examining whether US gang activities are more likely to increase in their birth municipalities. Finally, using these data, I also construct placebo tests by analyzing the effects of the change in deportation policy on the birth municipalities of general (non-criminal) deportees coming from other states, where US gangs were not present.[14]

Table 1 presents summary statistics. There are 262 municipalities in El Salvador. About 14% of municipalities have a gang deportee born. Table 2 presents baseline characteristics. It shows that in 1992, before the shock, birth municipalities have, on average, similar characteristics to non-birth municipalities (except for access to water and sanitation). While birth municipalities have higher population density and years of education, none of these differences are statistically significant.[15]

3.1.2 Homicides Committed by US Gangs

To validate if birth municipalities are actually the ones where US gang members settled, I also use data on homicides committed by gangs with US origin in 2000. This data was provided by the National Civil Police of El Salvador through a "freedom of information" request.[16] According to conversations with police officers, they classify homicides based on extensive investigative and intelligence information at their disposal, which often relies on mapped-out gang boundaries or

[13] Unfortunately, there is no data available on the municipality of residence of deportees. Moreover, for this paper's purpose, I could not access individual records, and thus, I have no information on the number of criminal deportees per municipality. Hence, I only have access to the list of municipalities where gang deportees were born for the 1996-1997 period.

[14] To check the accuracy of this dataset, I compared the total number of deportees in the DHS with the number in the DGME. For 1996-1997, there are 6352 deportees in the DGME data, which is similar to the number of deportees from DHS data for those years (6375).

[15] In addition, since the main specification follows a difference-in-differences design, any imbalance in the outcome levels between birth and non-birth municipalities does not represent a threat to the empirical strategy as they are absorbed by the municipality fixed effect in the empirical specification. Nevertheless, to rule out the concern that these characteristics could be trending differently, as robustness in Section 4.5, I control for time trends in any unbalanced baseline characteristics, exclude municipalities that never have any gang member in jail or gang-related homicide, and match similar municipalities based on baseline characteristics.

[16] There is no data available before 2000.

on-the-field cues. The National Civil Police has been mapping gangs' territorial reach since the 2000s.[17] Gang-related graffiti also helps in the classification; graffiti is a common tactic utilized by gangs to delimitate their boundaries. Citizens in or around gang-controlled locations can tell which gang controls the neighborhood, and this knowledge naturally extends to police officers that operate in the area. Using this information, I define municipalities with US gang presence as municipalities that experienced at least one homicide committed by a US gang in 2000. About 18% of municipalities have US gang presence in 2000.

One limitation with police data is the possibility of measurement error since the accuracy of police classification of gang members is an error-prone measure even in contexts where the police departments have large gang intelligence units like in the US. However, it is also worthwhile to mention the role of tattoos within the Salvadorian gangs. In contrast to other US gangs, MS-13 and Barrio 18 use tattoos to identify themselves, and it is one of the requirements to get in the gang. Salvadorian police exploit this particularity when classifying the homicide perpetrators as gang members. Moreover, since Salvadorian authorities have the policy of separating gangs based on their affiliation to avoid violence in prisons, they also rely on the accuracy of this classification.

3.2 Time Level Data

3.2.1 Criminal Deportations

To analyze how changes in the number of gang deportees affect crime in El Salvador, I obtain data on criminal deportations from the Immigration Statistics of the United States Department of Homeland Security (DHS). It includes annual information on the number of individuals deported from 1966 to 2013, including the country to which they are deported. From 1993 onward, 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 that the individual has been convicted of a crime (illegal status is not sufficient to be considered criminal). Between 1993 and 2013, approximately 40% of deportations to El Salvador were criminal.

Figure 1 shows the total number of individuals deported from the US to El Salvador from 1966 to 2014. As shown in the figure, there was a substantial increase in the number of deported individuals after 1996.[18] Table 1 presents summary statistics. On average, there are 2500 criminal deportees each year.[19]

[17] This has been the subject of extensive jurisprudence in the country in recent years (see, for example: La Prensa Gráfica (2016)), as well as journalistic reports (e.g., Marroquín (2018)).

[18] While there was a wave of criminal deportations after 2001 due to the 9/11 terrorist attacks, it was in 1996 when gang members were deported for the first time in large numbers (Hesson 2012; Denvir 2017)

[19] One limitation of the DHS dataset is that it does not provide information on the number of gang deportees each year. Nevertheless, data from the El Salvador General Directorate of Migration shows that while in 1995 there were few gang deportees, after 1996, approximately 567 gang members were deported, creating a sharp increase in the number of deported gang members.

3.3 Panel Level Data

3.3.1 Homicides

To analyze the effects of US gang deportees on violence, I use municipal-level data on homicide rates for 1965, 1975, 1995, and 1999 to 2011 provided by the National Civil Police of El Salvador.[20] Table 1 Panel A presents summary statistics for the homicides data at the municipality-year level for the sample period. On average, a municipality experienced 25 homicides per year during the sample period.

3.3.2 Incarceration Data

In order to examine the type of criminal activities brought by deportees and whether children exposed to the arrival of gangs are more likely to engage in crime as adults, I use data on the universe of individuals who entered prison from 1985 to 2011 provided by a confidential agreement with the Ministry of Security. These data allow me to track cohorts exposed to deported gang members during childhood across different municipalities. I exploit variation in place and date of birth to explore how childhood exposure to gang deportees affects criminal behavior later in life.

The data contain about 144,758 individuals incarcerated in El Salvador between the ages of 18 and 60. It contains information about their municipality and date of birth, municipality and date of arrest, whether they belong to a gang, their education, and the type of crimes they commit. Most individuals are incarcerated due to robberies (30%), homicide (16%), drug trafficking and sales (13%), extortion (10%), assaults (10%), and sex crimes (9%).[21]

From this sample, I keep only individuals born in El Salvador and construct the exposure to deportee gangs during childhood (i.e., those exposed between the ages of 4 and 18). I then aggregate the data to the cohort and place of birth level. Cohorts in municipalities that do not appear in the incarceration 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 per municipality. On average, there are 20 offenders per cohort-district of birth.

Figure A.1 shows that incarceration rates are higher for the group of individuals exposed to gangs during childhood. Moreover, there is no change in incarceration for individuals from non-gang areas. This helps motivate my empirical specification presented in Section 5.1.

3.3.3 Child Deportations

To analyze the effects of violence brought by US gang deportees on children, I take advantage of monthly administrative 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 and month of

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

[21] Police identify gang affiliation of incarcerated individuals mainly based on their tattoos. Once individuals are part of MS-13 or 18st gangs they have to tattoo their affiliation (National Gang Center 2012; Insight Crime and CLALS 2018).

departure, allowing me to explore the effect of US gang violence in El Salvador on international child migration.[22] One limitation of these data is that I can only observe migrant children who are also apprehended in other countries, which may affect the results' interpretation. The data do not include children who migrated internationally and were not apprehended, nor children who tried to depart their country but failed. To convey this sample's representativeness, about 40% of Central American child migrants who depart to the United States or Mexico are apprehended in Mexico (Clemens 2017; Villegas and Rietig 2015; Rosenblum and Ball 2016). Besides, the deportation data only has information on the municipality of birth but not of the last residence.

Figure A.2 shows the spatial distribution of homicides and child migration in El Salvador. Figure A.3 shows child deportation over time for children from municipalities in El Salvador with low, medium, and high exposure to US gangs, as proxied by homicides committed by US gangs. Both figures show that a larger share of deported children originates in municipalities with higher levels of homicide.

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

To examine the causal effect of gang deportees, I focus on the change in deportation policy in 1996 that caused the deportation of individuals affiliated with US gangs among the general criminal deportee population. I first detail the baseline empirical strategy and show how the shock in 1996 did induce a significant increase in the number of individuals with US gang affiliations in El Salvador, particularly in the birth municipalities of gang deportees. I then analyze how US gangs impacted violence, drug trafficking, and extortion rates. I find that deported gang members' introduction significantly increased gang-related extortion and drug selling and trafficking, with no effect on other crimes. Moreover, there is an increase of 50% in homicide rates. This could be mainly driven by turf wars between the two deported gangs from the US: once they arrived in El Salvador, they started competing for territory.

4.1 Empirical Strategy

In order to estimate the causal effect of criminal deportations from the US, ideally I would like to use data on the deportees' arrival location in El Salvador. Unfortunately, this information is unavailable. Given that most deportees return to their municipality of birth, I define my treatment sample of "birth municipalities" as those municipalities where gang deportees arriving from California in 1996 and 1997 were born. In particular, I focus on California since Salvadoran gangs emerged in Los Angeles in the 1980s. Therefore, to measure the effects of criminal deportations from the US, I follow a difference-in-difference strategy. First, I exploit geographic variation in US

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

gang deportees' municipality of birth.[23] Second, I exploit plausibly exogenous time variation in gang deportations induced by the US act passed in 1996. Equation 1 presents the baseline specification:

$$Y_{m,t} = \alpha + \sum_{i=1985}^{2011} \beta_i(\tau_{m,t} = i) \times \textit{Deportee Born}_{m,1996/1997} + \alpha_m + \phi_t + \epsilon_{m,t} \quad (1)$$

where $Y_{m,t}$ is the outcome of interest (e.g, homicide rates) in municipality m in year t. $\textit{Deportee Born}_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997 (when the IIRIRA was announced and enacted).[24] τ_{mt} denotes the event year, defined so that $\tau = 1996$ for the year of the IIRIRA "gang shock". The coefficients are measured relative to the omitted coefficient ($\tau = 1995$), the year 1995. The α_m are municipality fixed effects, which control for time invariant factors that may be correlated with crime. I also include year fixed effects, ϕ_t, which control for time-varying factors that may be correlated with aggregate changes in the outcomes of interest across time. To account for serial correlation of criminal deportations, standard errors are clustered at the municipality level.

To quantify the magnitude of the effects, I exploit DHS data on the number of criminal deportees per year. Ideally, I would like to use the number of gang-members deported. However, one limitation with the DHS data is that I cannot separate gang deportees from other criminals. Thus, I use the changes in the number of criminal deportations as a proxy for changes in the number of gang deportees over time.[25] In particular, I estimate the same specification in equation 1 but replacing the year dummies by a continuous measure:

$$Y_{m,t} = \beta(\textit{Deportee Born}_{m,1996/1997} \times \textit{Criminal Deportations}_t) + \alpha_m + \phi_t + \epsilon_{m,t} \quad (2)$$

where $\textit{Criminal Deportations}_t$ is the number of criminal deportations from the US in year t.[26] Specifications also include time varying municipality-level controls, including homicide rates in 1995, population density, and 1992 census municipality characteristics interacted with year. As robustness, I also include municipality-specific-time trends that control for omitted variables that change over time within a municipality in an approximately linear fashion.

The coefficient of interest in equation 2, β, is interpreted as the change in $y_{m,t}$ due to the change in criminal deportations in 1996 bringing gang members from US. The primary outcomes are the rates of homicide, extortion, and drug trafficking. The main identifying assumptions are that in

[23] I consider birth municipality to be a quasi-random factor based on the absence of significant baseline differences and pre-trends before 1996, and a number of robustness checks, as demonstrated in the next sections.

[24] I validate the birth municipalities as a measure of gang exposure in a number of ways. In Section 4.2, I show that the change in policy in 1996 primarily affected the number of individuals affiliated with gangs in areas where a 1996/1997 US gang deportee was born, consistent with the idea that the US change in deportation policy should have little or no effect in non-birth municipalities. In addition, I show that the birth municipality variable is strongly correlated with an alternative measure constructed using the gang affiliation and location of all homicides in El Salvador in 2000.

[25] Criminal deportations in a given year should be exogenous as long as the United States does not choose to deport more convicts to El Salvador in a year when birth municipalities are particularly violent. Moreover, deportations per year are nationwide at the yearly level, not disaggregated by municipality.

[26] Results do not change if I use the stock of criminal deportees rather than the annual flow (see Table A.13).

the absence of the IIRIRA in 1996, these outcomes would follow common trends in municipalities with and without gang deportees born.

I examine the validity of the common trends assumption, by visually analyzing trends prior to 1996 and by performing several falsification tests. In addition, for equations 1 and 2 to identify an effect of US gang deportees on the outcomes of interest, the 1996 policy must have significantly increased the number of gangs with US affiliation in birth municipalities. I start by examining this issue in the next section.

4.2 Validating the Gang Deportees' Exposure Measure

In this subsection, I show that municipalities that I classify with US gang deportees using the municipality of birth of gang deportees arriving in 1996 and 1997 are the ones that are seeing an expansion of US gangs after the 1996 deportation shock. This result also motivates the use of a difference-in-differences instrumental variable approach as an alternative specification.

First, I estimate the increase in the number of US gang members before and after 1996 in birth and non-birth municipalities, by using the incarceration data that includes the number of incarcerated individuals affiliated with US gangs from 1985 to 2011. Figure 3 presents the results of estimating equation 2, using as an outcome the number of US gang members incarcerated per 100,000 population. Before 1996, there were no US gang members in any of the municipalities. Consistent with the idea that US gang deportees settled in their municipalities of birth, after 1996, we observe a differential increase in US gang members birth municipalities relative to non-birth municipalities.

I also present the same figure but using the incarceration (i.e. number per 100,000 population of the municipality) of gang members that did not belong to a gang with US origin (i.e. belonged instead to small street gangs) as a dependent variable.[27] Figure 4 shows that the 1996 shock did not have any effect on small street gangs. I repeat the same analysis using the incarceration rate of individuals affiliated with insurgency groups as an outcome, and I find no increase. Moreover, there is no differential pre-trend on any of these outcomes, suggesting that US gang deportees did not settle in municipalities where other criminal groups were already rising.

Second, I check whether US gang deportees are more likely to be located in their municipality of birth by analyzing the relationship with municipalities that have US gang presence in 2000 (measured by homicides committed by gangs). I find that about 80% of the birth municipalities of 1996/1997 gang deportees have US gang presence in 2000 (the first year for which this information is available). Given this relationship, to examine the causal effect of deportations and US gangs on crime outcomes, in all tables I present two empirical specifications. First, to examine the reduced-form effects of criminal deportations, I use the specification presented in equation 2. This allows to causally identify how the arrival of US criminal deportees after 1996 shock affect extortion, homicides and drug-related crimes. However, the specification presented in equation 2 does not

[27] Before the 1996 shock, there were no organized and powerful gangs in El Salvador. But, there were small street gangs.

identify the extent to which actually having US gangs affects the outcomes of interest. To estimate the causal effect of US gang presence, I modify the baseline specification and use a difference-in-differences instrumental-variable (DDIV) approach (e.g. Duflo (2001)):

$$Y_{m,t} = \beta(\widehat{GangUS}_{m,2000} \times Criminal\ Deportations_t) + \alpha_m + \phi_t + \epsilon_{m,t} \quad (3)$$

where $Y_{m,t}$ is the outcome of interest in a municipality m at year t; $\widehat{GangUS}_{m,2000}$ is whether the municipality has US gang presence in 2000 instrumented with $Deportee\ Born_{m,1996/1997}$ from equation 1. The coefficient of interest in equation 3, β, is interpreted as the change in outcomes (for example, homicides) due to an increase of one criminal deportation in municipalities with a US gang-related homicide.

The main identifying assumptions are twofold (Hudson et al. 2017). First, in the absence of the change in US deportation policy in 1996, the outcomes of interest in areas with and without gang deportees born would follow common trends. To examine the validity of this assumption, I explore trends in the outcomes of interest across municipalities with and without deportees born prior to the change in deportation policy in 1996. Consistent with this first identification assumption, in the next section I show no evidence of differential trends in any crime outcome prior to the 1996 shock (see Figures 5, 6 and 7). The second identifying assumption for equation 3 is that the instrument for US gang presence, $Deportee\ Born_{m,1996/1997}$, must only affect the outcomes of interest through its effect on US gang presence. Results should be interpreted carefully given this exclusion restriction. I validate this assumption in a number of ways. First, as shown in Figure 3, birth municipalities only experienced an increase in US gang members but not in small street gangs or other groups with no US gang affiliation. Second, in the next section, I show that birth municipalities experienced only an increase in US gang related activities but not crime in general. Third, as robustness I also include baseline characteristics of birth municipalities interacted with year fixed effects to rule out that crime effects on birth municipalities are driven by other factors than US gang presence (Table A.8). Nevertheless, for all specifications I present the reduced form estimates, first stage and IV estimates.

4.3 Gang' Expansion and Violent Crime

I start by exploring whether violence increased after the arrival of US-based gangs. There are several mechanisms through which the arrival of gangs may increase violent crime. Gangs may use violence to control the territory. In particular, the two main gangs that came from the US fight each other to control territory to obtain the rents from extortion and drug dealing. Moreover, gangs may use violence to run their businesses, such as to extract more rents from residents in the communities, and to enforce contracts 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 incarceration rate for homicide offenses as the dependent variable. Two observations are relevant. First, in periods during which criminal deportations from the US increase, the homicide rates rise in the birth municipalities of gang deportees relative to non-birth municipalities. Second, while there were no differential changes in homicide rates relative to the omitted period, after 1996, birth 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 in the municipalities of birth of gang deportees. This evidence suggests that potential confounders would have to mimic the timing of the 1996 criminal deportations extremely closely.

Next, to quantify the effects of gang deportees, I turn to estimate the causal effect of criminal deportations on homicide rates using equation 2. Table 3 presents the results. Panel A presents the reduced form estimates. For all specifications, the municipalities of birth of gang deportees experienced a significant increase in homicide rates due to criminal deportations. To gauge the magnitude of the estimated coefficients, consider an increase in 1,000 criminal deportees. The estimate in the preferred specification (Column 5, which includes all the covariates), implies that homicide rates increase by 8 individuals per 100,000 (this is equivalent to a 40% increase relative to the baseline in 1995). An alternative specification without the covariates (Column 3) implies a 48% increase. These results are robust to only focusing on urban municipalities and including municipality time trends (Column 6) .

To examine how US gang presence affects crime, I also use an instrumental variable difference-in-differences approach. Panel B presents the first stage estimates. Consistent with the results in Section 4.2, there is a positive correlation between the municipality of birth of gang deportees and US gang presence in 2000. Panel C presents the second stage estimates. The magnitude and the significance of the estimates are similar to the reduced form estimates. An increase in 1,000 criminal deportees increased the homicide rate by 50% in the municipalities where US gangs settled.

One potential concern is that criminal deportations from the US could be correlated with enforcement efforts in El Salvador. Thus, Columns 3-7 restrict the analysis to the period before 2006, when the government started the most significant enforcement efforts.[28] In Table A.12 in the Appendix, I also control for the number of police officers per municipality in 1992 interacted with the deportation shock, and the results do not change. In the next section, I also show that general crime did not increase in birth municipalities. 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 receive much attention from the government as the country was still recovering from civil war.

[28] By mid-2006, there was a massive 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 (Hume 2007).

4.4 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, trafficking, and extortion.

Figure 6 presents the event study results. Using the rate of incarceration for each crime, I find that extortion more than doubles, and drug dealing and trafficking increases in birth municipalities. There is a clear jump in 1996 when criminal deportees arrive and no pre-trends. Moreover, Figure 7 shows no effects on other crimes that are not related to gangs, suggesting that no change in law and enforcement conditions or policy changes drive the results, only the deportation of gangs from the US.

Table 4 presents the results of estimating equation 2 for different type of crimes. An increase in 1,000 criminal deportees implies that the incarceration rate for extortion increase by 1.6 individuals per 100,000 in birth municipalities (this is equivalent to a 40% increase relative to the mean). In the case of drug-related crimes, the incarceration rate increased by 13% with no effects on other crimes. Moreover, results do not change when birth municipalities as an instrument for US gang presence (Panel C).

Taken together, these results show that the arrival of gangs from the US in 1996 increase extortion, drug-related crime, and homicide rates in their municipalities of birth, and not other crime categories.

4.5 Robustness Checks and Alternative Specifications

The main identifying assumption of the baseline specification is that there would be *common trends* across birth and non-birth municipalities in the absence of deportations. This assumption could be violated if, for instance, violent crime was increasing in gang deportees' birth municipalities before the deportation shock. To address this concern, in the previous section, I tested for violations of the parallel trend assumption in the years leading up to 1996 by evaluating the event study coefficients for the years before the shock. I show that none of the estimates before 1996 are statistically significant.

Another important threat to the identification strategy may be caused by pre-1996 differences in municipal characteristics that may be correlated with having a gang deportee born. This may be the case to the extent that the post-shock evolution of such characteristics affects criminal outcomes. For example, criminal deportees after 1996 may have settled in their birth municipalities because these municipalities support the type of crime in which US gangs specialize. If this were 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. Moreover, it could also be the case that birth municipalities were more likely to urbanize

over the years and these urbanization patterns could have led to increased crime.

These concerns are akin to the one discussed above and challenge the notion that control municipalities represent the appropriate counterfactual. In addition, they can be potentially evaluated by testing for non-parallel pre-trends. For example, if gang deportees established themselves in municipalities suitable for extortion and drug-related crimes, we would have seen a differential increase in these types of crimes before the arrival of gang deportees in 1996. Figures 5 and 6 show that this is not the case. Moreover, as shown in Table 2, birth municipalities have similar characteristics to municipalities where no gang deportee was born. Nevertheless, to further address this concern, I analyze the robustness of the estimates to different samples, counterfactuals, and specifications that flexibly control for time trends in pre-shock municipal characteristics.

First, I rely on a matching procedure to match similar municipalities based on observable characteristics measured before the deportation shock. In particular, I match each treated municipality (birth municipality) with a counterfactual municipality using nearest neighbor propensity score matching.[29] I estimate the propensity score by predicting the treatment status using a probit model that includes as covariates the homicide rate in 1995, population density in 1992, the proportion of households with access to water and sanitation in 1992, expenditure in education per capita in 1995 and the average years of education in the municipality in 1992. Using a matched control group helps to reduce some of the identification and interpretation concerns that arise when relying mainly on the timing of treatment as the source of identification in difference-in-differences designs. Table A.2 presents the main analysis using these matched controls and shows very similar results.[30]

Second, I restrict the analysis to municipalities that were ever exposed to US gangs during any year in the period of analysis. I define this sample using all municipalities that report US gang homicides or US gang incarceration above the 25th percentile of the distribution in any year as a proxy. In particular, this sample excludes municipalities have never had gang presence which are more rural and less educated.[31] Table A.4 and A.5 show that the main estimates are robust to using these sub-samples.

Third, I check the robustness of the results to including municipality-specific linear trends and pre-trends based on pre-period data following Goodman-Bacon (2021). Tables A.6 and A.7 show that results do not change with the inclusion of these trends. Moreover, I also include a vector of municipality baseline characteristics interacted with the year such as population density, years of education, homicide rates, and expenditures on education (Table A.8). These interactions help to control for potential differential trends across birth and non-birth municipalities.

Finally, to test for preexisting differences in development or urbanization, as a proxy, I compare

[29] This approach follows Rosenbaum and Rubin (1985) who describe how matched sampling can be used to construct a comparison group with similar observed characteristics as the treatment group.

[30] In Table A.3, I further include total population in 1992 in the probit model and results do not change.

[31] In general, all the differences in baseline characteristics between birth and non-birth municipalities using this sub-sample are smaller or are at similar levels as the whole sample. For example, using the sub-sample, the average population density and education in the control group are 1353 and 6.290, close to the averages in birth municipalities of 1389 and 6.464 (see Table A.1).

the night light density of birth and non-birth 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. It confirms the validity of the identification strategy by rejecting the existence of pre-trends across municipalities with and without US gang activity before the arrival of US criminal deportees in 1996. In addition, Table A.9 focuses on only urban municipalities, and the results are very similar. In Tables A.10 and A.11, I also control for population density in 1992 and population in 1995 interacted with the number of criminal deportations. Results do not change, suggesting that changes in population density do not drive the main estimates on crime.

Another potential concern with the reduced form estimates is that the instrument uses data for 1996/97 only, but deportations continued for years after. Thus, it is possible that municipalities with a zero value for the instrument could be home to a gang member who was born there but only deported back in later years. While this is not a threat to identification or exogeneity, it may affect the interpretation of the magnitudes. To deal with this concern, in all the results I also report the IV estimates and the magnitudes are very similar to the reduced form estimates. Moreover, I showed that the F-stat is large and that the first stage is close to 1 for all different specifications and samples, providing evidence that the variation in gang presence was mostly due to the arrival of 1996/97 gang deportees.[32]

4.6 Other Mechanisms

In this section, I explore other potential mechanisms that could be driving the results, such as an increase in general deportations, exposure to violence during the civil conflict, and negative selection of migrants to the US.

An increase in non-criminal deportees. Since the passage of IIRIRA in 1996 was also followed by an increase in non-criminal deportations, it could be the case that birth municipalities also experienced higher rates of non-criminal deportees. If this is the case, the policy change could affect crime by other channels than the establishment of US affiliated gangs (for example, by reducing the flow of remittances or affecting the labor market). To analyze this potential channel, first, I estimate the effect of non-criminal deportations in those municipalities where only non-criminal deportees coming from California were born. In particular, I interact the birth municipalities of non-criminal deportees arriving from California with the number of non-criminal deportations each year. Table A.14 presents these results. Using the same identification strategy as in the main analysis, but controlling for non-criminal deportees, I find that changes in general deportees do not affect crime in the non-criminal deportees' birth municipalities. Moreover, the effects of crim-

[32]One explanation for this result is that most gang deportees after 1996 established themselves in municipalities where the 1996/97 deportees were born. This could be due to two reasons. First, they could be from those same municipalities. Second, even if they were not from those municipalities, there is vast anecdotal evidence that gang deportees arriving in recent years, tend to go to places where their gang has networks in the country, i.e., where the first wave of gangs arrived. Moreover, this is shown in Figure 3: the US gangs tend to have significantly higher presence over the years in municipalities where 1996/97 gang deportees were born.

inal deportations do not change when I control for changes in non-criminal deportations.

Second, I also use the information on the municipality of birth of non-criminal deportees from states other than California in 1996/1997, where MS-13 or 18 street gangs were not present in the 1990s. Most deportees came from Texas (50%), Washington DC (4%), and 11% came from other states such as Florida, New York, Arizona, Nevada, and Illinois. Using this data, I analyze the effect of general deportations in the birth municipalities of non-criminal deportees arriving in 1996/1997 from these other states. Table A.14 shows that the arrival of general deportees from these other states does not increase crime in their birth municipalities. Moreover, the magnitude of the main estimates does not change. I also present the event study figures for this analysis in Figures A.7 - A.10 and there is no change in crime after 1996 in birth municipalities of non-criminal deportees from other states.

Third, to further control for a more continuous measure of general deportees, I predict non-criminal returnees migration flows using municipality-specific migration rates in 1992. Consistent with the previous results, Table A.15 shows no evidence that municipalities with a higher share of international migrants in 1992 experience an increase in crime.[33]

Finally, if changes in general deportees were driving the effects, I would also observe an increase in economic-related crimes such as robberies and assaults, but as shown in the previous section, I do not find evidence of it (see Figure 7).

Negative selection of migrants in the US. One of the main hypotheses of this paper is that the gangs from the US brought criminal capital to El Salvador. However, it could be the case that migrants were already violent when they left El Salvador in the 1980s and were going to be criminals in the future independently of their exposure to US criminal capital. This particularly could be the case if Salvadoran children who fled to the US had greater exposure to violence during the civil conflict in the 1980s and were thus more likely to become criminals.

Three pieces of evidence suggest 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 have acquired any criminal capital before leaving. Second, if these children or their families had already been violent, one would have expected to see an increase in all crime types, not only in those related to extortion and drug trafficking (which are associated with the US gangs). Moreover, the municipalities where gang deportees were born have similar homicide rates both in levels and trends before 1996 to municipalities where no gang deportee was born. Nevertheless, to rule out that effects are driven by exposure to violence during childhood, I also control for the number of individuals who were victims of violence in their birthplace during the civil conflict, interacted with the deportation shock. Table A.16 shows that the main results do not change in this specification.

Third, using data from the 1990 US census and the El Salvador census of 2007, I compare the education levels of Salvadorans who left between 1980 and 1990 versus Salvadorans who never

[33]Moreover, I do not find evidence that municipality-specific migration rates in 1992 are correlated with the birth municipalities of 1996/97 gang deportees.

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.17).[34] 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 Los Angeles versus Salvadorans who went to other counties in the 1980s (results are presented in Figure A.11 in the Appendix). These results suggest that movers and deportees, on average, did not have worse characteristics than those who stayed in El Salvador during the 1980s.

5 Gang Recruitment of Children

In this section, I analyze to what extent US deportees' negative spillovers to Central America were not only their criminal knowledge but also the integration of native children into the gangs. In particular, I show that the arrival of criminal deportees from the US affected Salvadoran children since gangs particularly recruit young children to expand their activities. I find that children from birth municipalities are more likely to be incarcerated with a US gang affiliation during adulthood. This suggests that deported gang members recruited these children, thus increasing their future participation in US gangs.

5.1 Empirical Specification

To analyze whether gang deportees coming from the US generated spillovers on 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. Identification comes from variation in the years of exposure to criminal deportees at different ages and variation to US gangs (using gang deportees' municipality of birth) across children's municipalities of birth. Equation 4 presents the specification:

$$Y_{m,c} = \beta \underbrace{(Age\ 1996_c \times Deportee\ Born_{m,1996/1997})}_{GangShockAge x_{m,c}} + \alpha_m + \delta_c + \epsilon_{m,c} \tag{4}$$

where m indexes the municipality of birth and c the birth year. $Deportee\ Born_{m,1996/1997}$ is a dummy indicating whether gang members coming from California in 1996/1997 were born in the child's municipality of birth. $Age1996_c$ 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 omitted category is a dummy

[34] In particular, I focus on individuals that were older than 25 at the time of migration so that I can compare the educational attainment before the arrival to the US.

indicating whether Salvadorans were older than 19 years old in 1996 when US gangs arrived in El Salvador. The dependent variable is the number of individuals in prison per cohort-municipality of birth per 1000 individuals.

The parameter of interest is β, the effect of experiencing US gang deportees during childhood, which is identified from variation in US gang deportees across municipalities and birth cohorts. Affected cohorts are those who were at young ages when gang deportees arrived in their birth municipalities in 1996. The control group is therefore composed of those individuals who were born in the same municipality but in a different year, and those who were born in a different municipality where no gang deportee was born but belong to the same cohort.

5.2 Effect on Adult Incarceration

Table 5 presents the results of estimating equation 4 by age bins. The age bins reflect the different school cycles.[35] It shows that individuals who were at primary-school age when gangs arrived from the US are about 20 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 drop out in the transition between primary and secondary education. 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 (2) and (3) present the results dividing the sample by individuals with US gang affiliation versus individuals with 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 who were at young ages when US gang deportees arrived in 1996. In contrast, there are no effects of being exposed to US gang deportees on the probability of being affiliated with a non-US gang. Table 5 also shows the IV estimates and results do not change substantially.

Figure 8 presents the results by age-specific dummies. The effect of being exposed to US gang deportees declines after age 15. Moreover, the results show no differential effect based on the number of years exposed to gangs. For example, those exposed to US gang deportees at the age of 6 have similar chances of being incarcerated for gang-related crimes as those exposed at the age of 10. This is mainly because when gang deportees arrived in 1996 they particularly recruited early teens.[36] Therefore, those who were older than 15 and not exposed in the early teens are less likely to be affected. The fact that specific cohorts only drive long-term effects provides further evidence that results are not confounded by other municipality-varying factors such as increased enforcement in gang areas.

[35] In particular, the omitted category reflects the ages when individuals are in higher education (19-25).

[36] Individuals aged 4-10 in 1996 are also affected since they also experience gang exposure in the early teens. While they may have been exposed to a larger number of US gang deportees, the effects may not be larger for them since the largest recruitment efforts were done when US gangs just arrived in El Salvador.

In the Appendix, I repeat the robustness checks presented in Section 4.5 for the future criminality outcomes. Overall, I find that the results are robust to including municipality time trends, baseline characteristics interacted with year, and to using different samples and counterfactuals. Additionally, for the long-term effects specifications, I control for year-of-arrest fixed effects since arrests of affected cohorts may be correlated with overall changes in policing in El Salvador. Using the incarceration data, I construct a panel of arrests by year. I use the year of arrest to construct a sample containing the incarceration rate per cohort in each municipality of birth and the arrest year. For this specification, I aggregate the data so that there is one observation for each combination of year, birthplace, and year of the arrest. Since there are individuals of the same age arrested in different years, I can also separate the age effects. In the Appendix, Table A.23 presents the results, including year-of-arrest. I find that the effects do not change and are of a similar magnitude relative to the mean.

5.3 Potential Mechanisms behind Gang Recruitment

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

First, given that the deportees brought violent skills, 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 monopoly 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 and a sense of collective identity are critical for gang recruitment. A survey done of gang members shows that 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. Previous qualitative evidence highlights 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).[37]

To study these mechanisms, Table A.24 presents a fully saturated version of equation 4 for the affected ages that includes interactions with measures such as $Police$, the number of police officers in 1992; $Army_{m,1982}$ whether there was a military base during the civil conflict in municipality m;

[37]Several forms of insurgent civilian collective action were observed during the civil war, from strikes, marches, and massive demonstrations to the voluntary provision of intelligence, land occupation, and 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 turn it into strong support (Martín-Baró 1981; Ocampo 2017). Rebel collaboration came from different actors like landless laborers, land-poor peasants, and some smallholders, among others, who stood 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 *"government rackets"*, where the incumbent conditioned the civilian access to health services, agriculture inputs, or other types 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).

and $Left_{m,1982}$, a dummy indicating whether leftist guerrillas had a presence in municipality m in 1982. It shows that the effects are only mitigated in municipalities where rebels held control during the civil conflict. The number of state officials, police officers and army bases, do not mitigate gang recruitment. These results provide some evidence that what prevented gang development in the former rebel areas was not only the permanency of violent skills but potentially other social factors. Otherwise, one would see the effects mitigated in the regions that used to have military presence.[38] For example, the presence of social capital in guerrilla areas may have allowed the communities to organize against gang activity. Moreover, the fact that insurgent groups were formed by community members may have led to more social cohesion and community support in these areas, which may have prevented children from participating in gangs.[39]

Overall, these results suggest that to prevent child recruitment by gangs, increasing police enforcement may not be sufficient since US gang deportees brought not only violent skills but also a social structure for children.

6 Policy Implications

This section investigates whether gangs' development might have created a violence trap for Salvadoran children. Figure A.5 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 migration from El Salvador, Honduras, and Guatemala to the US and Mexico (Carlson and Gallagher 2015).[40] Whether the relationship between gang violence in Central America and child migration to the US is causal, however, remains an open question.

[38] Moreover, according to The Truth Commission from El Salvador (1993), the military-led state was responsible for most of the violence during the civil conflict. Around 85% of deaths in the war were attributed to the military-led state, whereas the rest is attributable to rebel groups or unknown causes.

[39] 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 controlled by military-led groups (Wood 2003; McIlwaine 1998). One important aspect is that when the gangs arrived, these groups were no longer controlling these areas, suggesting that other characteristics, such as social cohesion, may be important factors that persist in these communities. Another possibility is that areas previously controlled by leftist insurgents 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 the location of gangs is uncorrelated with the presence of rebels. Second, using recent deportation data, I find that deportees born in areas with rebels presence have similar rates of returning to their birthplace as deportees born in non-rebel areas. They also have similar characteristics (criminal records, education, and age). 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 war per year of birth, and the results do not change.

[40] 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.

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 the children who migrated internationally and were apprehended in other countries as a proxy.[41] I exploit two potentially exogenous variation sources. In March 2012, the government agreed with the US gang' leaders 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 political support.

Using the truce's timing, 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 ceasefire generated an exogenous decrease in gang-related homicide rates that was not related to child migration trends. Furthermore, the fact that the truce was coordinated with US gang leaders reinforces the hypothesis that municipalities where the leaders had better control may have experienced larger reductions in crime. [42]

Formally, I estimate the following model:

$$ChildMigration_{i,t,m} = \beta \widehat{Homicides}_{i-1,t,m} + \alpha_m + \rho_i + \epsilon_{i,t,m} \tag{5}$$

where m indexes the municipality of birth, i the month and t the year. $ChildMigration_{i,t,m}$ is the number of children who left municipality m and were deported in month i. $Homicides_{i-1,t,m}$ are the number of homicides in month $i-1$, year t per municipality m, instrumented by a dummy indicating the truce months, interacted with the US gang deportees' municipality of birth. The specification 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 include 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 6 presents the results. There is a positive relationship between the number of homicides in the municipality of birth and child migration. On average, I find that an increase of 1 homicide translates to an increase of 2 children deported per month, on average. These results are robust to different specifications.

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

[41] Estimates from the El Salvador General Directorate of Migration show that about 90% of deported children are arrested within one month from their departure from El Salvador, specially when coming from Mexico. Thus, considering the number of homicides the month before the deportation occurred can be a good proxy of the violence in the municipality at the time the child migrated. As robustness, I also repeat the analysis using the homicides in the previous two or three months. Results are qualitatively similar, showing a significant positive effect of homicides on the number of child migrants in the areas where US gang deportees were born. In addition, I also repeat the analysis by keeping only those arriving from Mexico, and results do not change.

[42] I also repeat the analysis using the gang leaders' municipality of birth as an instrument, and results do not change. Figure A.4 shows the evolution per month and a larger decline after the truce in those municipalities where gang leaders who negotiated the truce were born.

policy debate in the United States over whether unaccompanied child migrants qualify for legal status as refugees since they can be fleeing violence or 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.

7 Conclusion

This paper takes a first step towards understanding how criminal deportations affect gang development and human capital in El Salvador. The results 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 had never been exposed to US neighborhoods. These spillover effects eventually caused more unaccompanied minors to migrate from El Salvador to the US. Hence, this paper not only provides evidence of the indirect effect of gang deportees from the US on Salvadoran children but also on the way gang violence in El Salvador may have pushed children out of the country to the US, increasing the number of deported children.

Regarding the external validity of the paper, even though it focuses on US-origin gangs in El Salvador, its findings have policy implications for the remaining places of the Northern Triangle (i.e., Honduras and Guatemala), Mexico, and the US. These contexts may experience the same self-reinforcing cycle of deportations, gang recruitment, and violence between host and home countries due to the territorial control of these gangs. Furthermore, the results on criminal capital spillovers are also relevant for similar contexts where criminal organizations involuntary migrated (e.g., police crackdowns, expelled members, deportations, etc.) to weak states such as the yakuza in the Philippines (Hill 2004; Varese 2011), the Georgian *vory v zakone* in different former Soviet states (Kukhianidze 2009; Varese 2011), or the Taiwan triads in mainland China (Chin 2003; Varese 2011).

Finally, the findings suggest that policymakers should examine long-run solutions to gang activity that seek to break the deportations and criminality cycle. One such potential policy is addressing the incentives that children face when deciding whether to drop out of school and join gangs. The results also imply that US deportation and incarceration policies that create hardened criminals are self-defeating. By deporting migrants with criminal capital and connections, 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.

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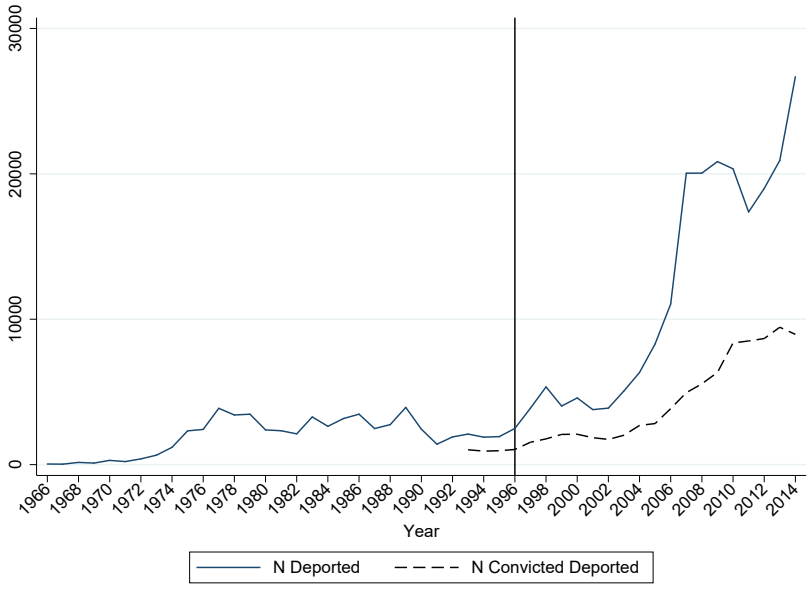
Figures

Figure 1: Deportations to El Salvador by year



Source: Department of Homeland Security

Figure 2: US gangs in El Salvador

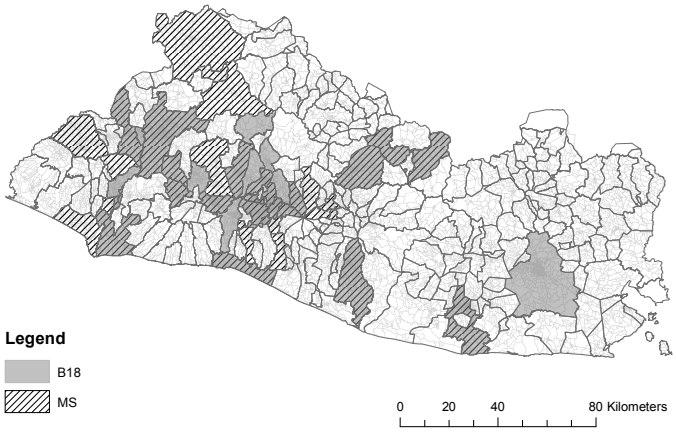
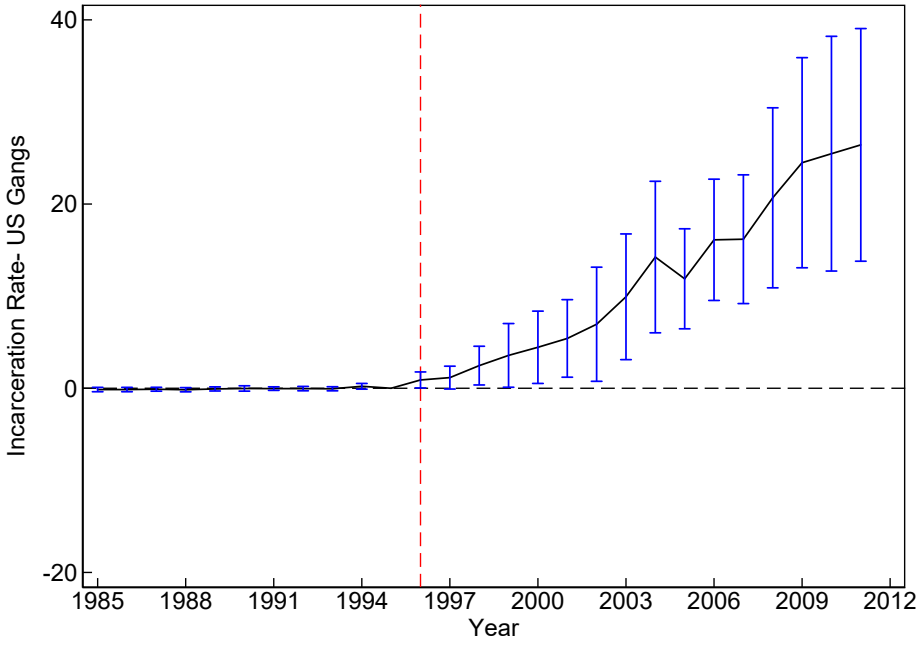
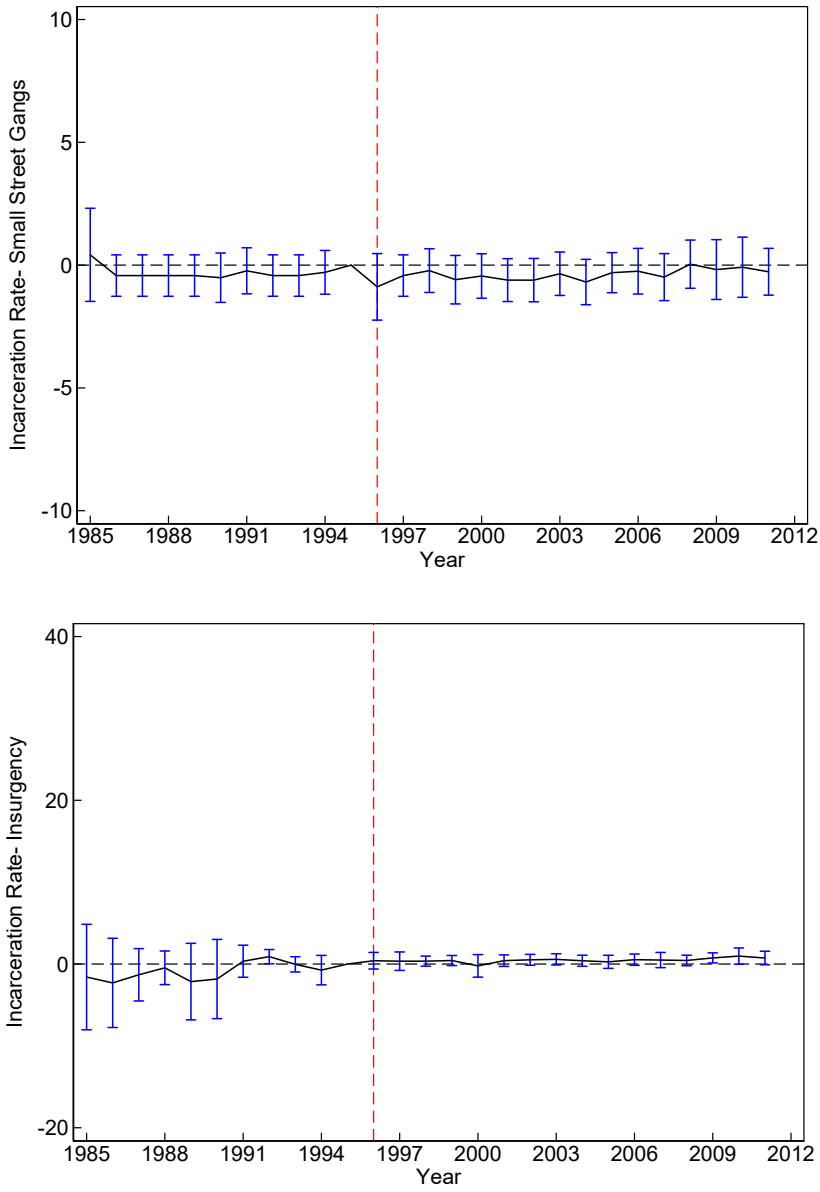


Figure 3: The 1996 shock and US gangs incarceration rate



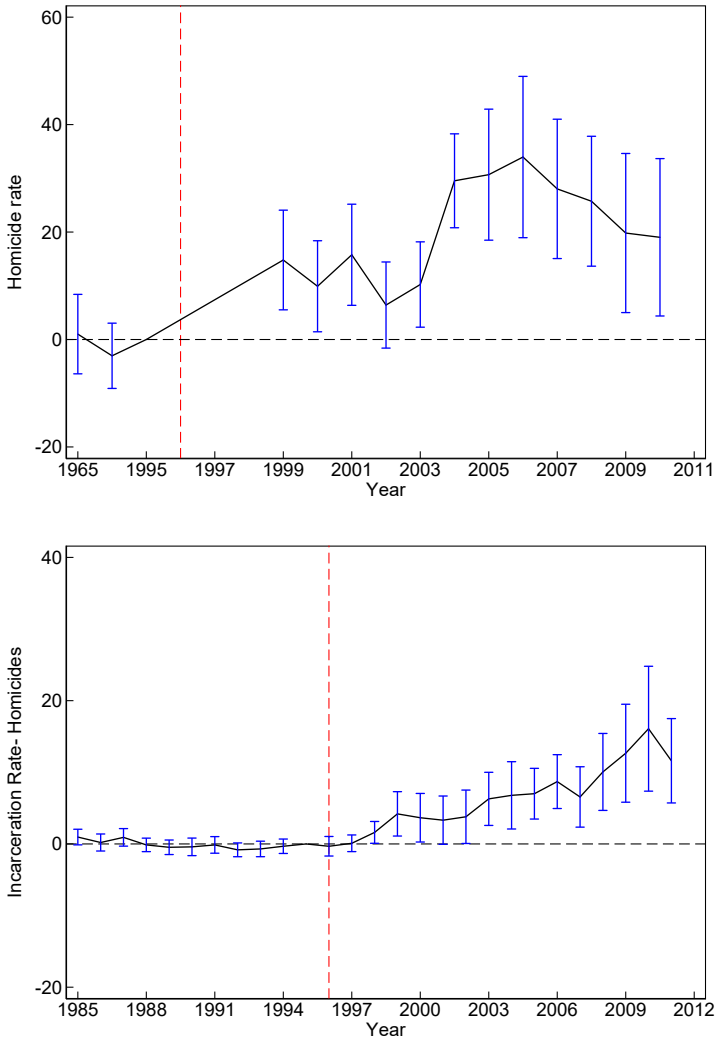
Notes: This graph plots the coefficients for the regression of the number of US gang members incarcerated per 100,000 population of the municipality on the interaction between year and the birth municipality dummy (which equals 1 if a 1996/7 US gang deportee was born in the municipality), obtained from equation 1. Therefore the y-axis can be interpreted as the difference in average incarceration rates of gang members between birth- and non-birth municipalities in a given year. The regression controls for municipality fixed effects and year fixed effects. Standard errors are clustered at the municipality level and confidence intervals at 95% are presented.

Figure 4: The 1996 shock and incarceration rates of other criminal groups



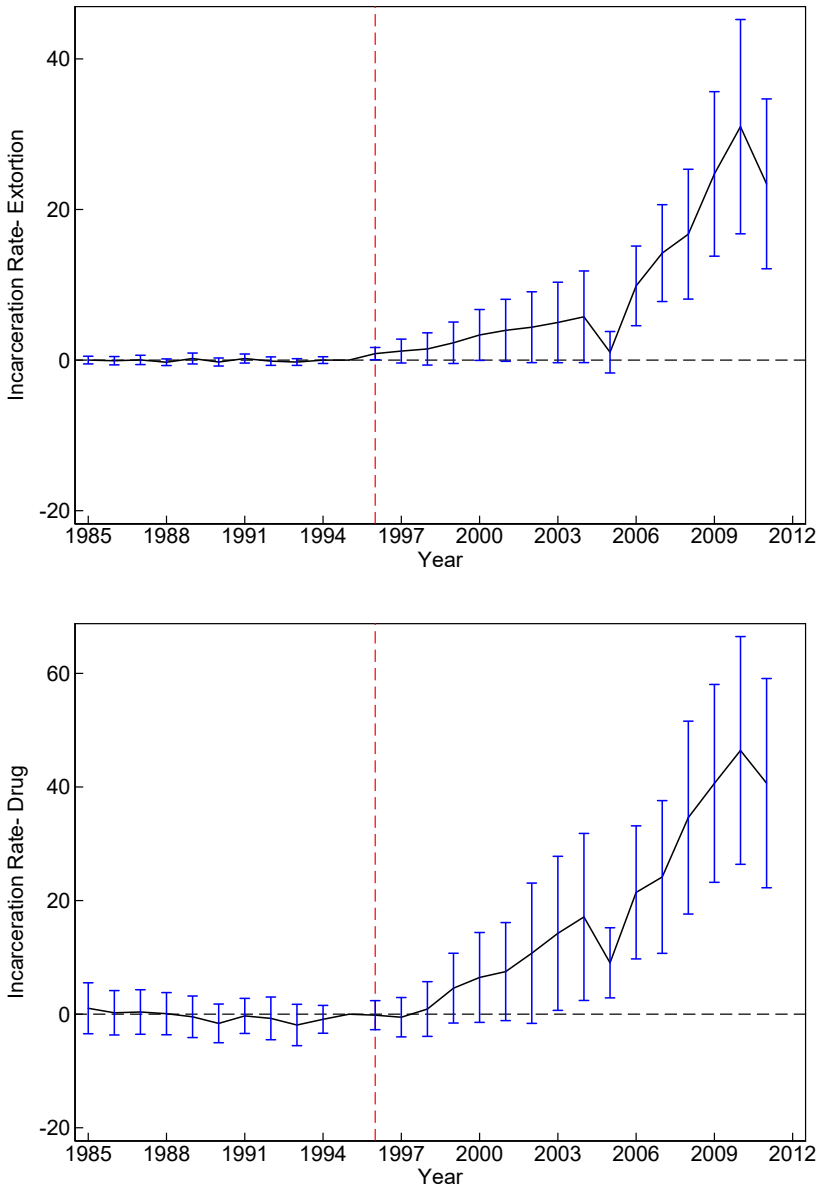
Notes: These graphs plot the coefficients for the regression of the number of small street gang members (top) and members of insurgent groups (bottom) incarcerated per 100,000 population of the municipality on the interaction between year and and the birth municipality dummy (which equals 1 if a 1996/7 US gang deportee was born in the municipality), obtained from equation 1. Small street gangs are defined as those without any US affiliation (MS-13 and 18th street gang). Therefore the y-axis can be interpreted as the difference in average incarceration rates of small gang members (top) and members of insurgent groups (bottom) between birth- and non-birth municipalities in a given year.The regression controls for municipality fixed effects and year fixed effects. Standard errors are clustered at the municipality level and confidence intervals at 95% are presented.

Figure 5: The 1996 shock and homicide



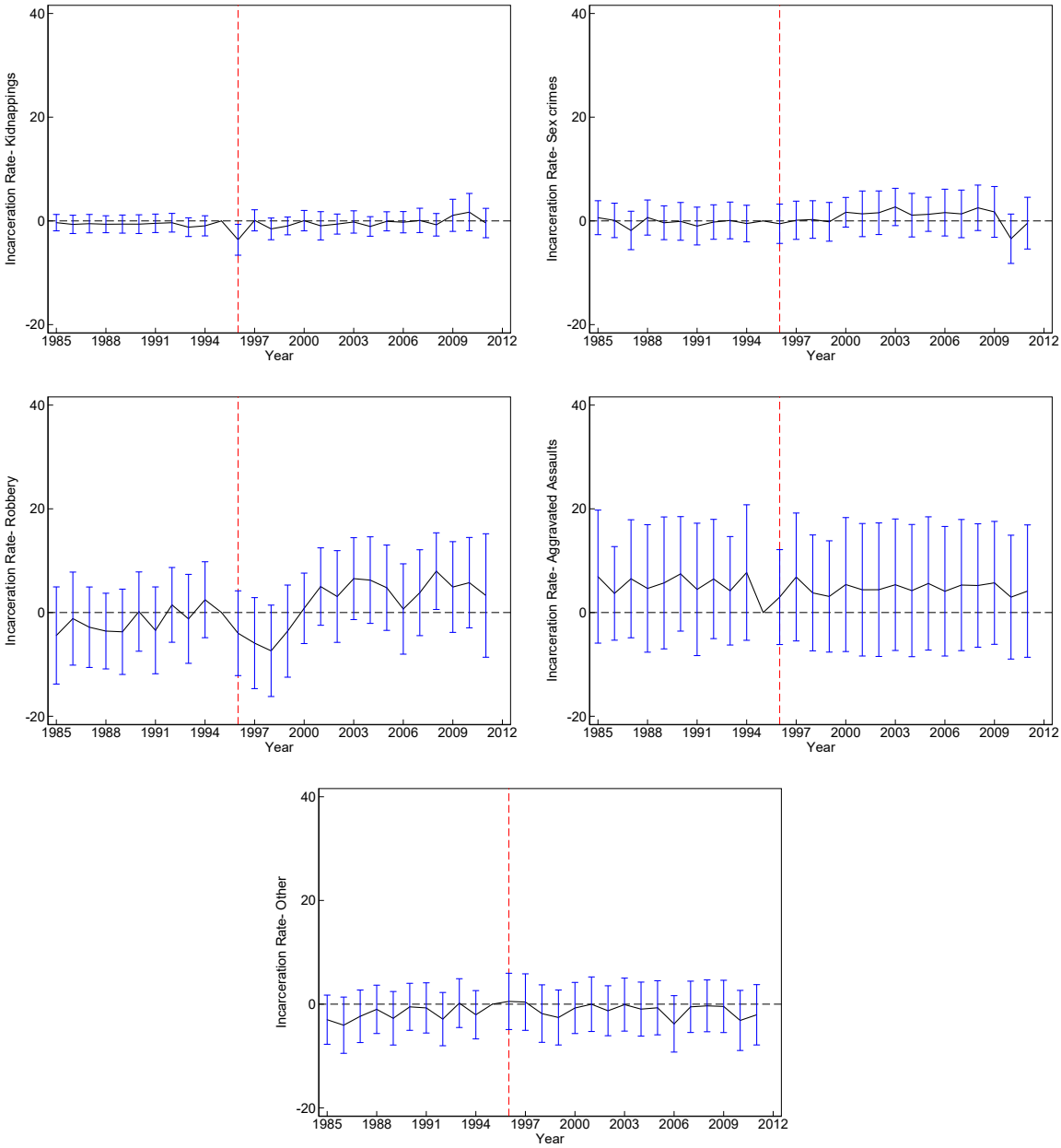
Notes: These graphs plot the coefficients for the regression of number of homicides (top) and the number of inmates incarcerated for homicide (bottom) per 100,00 population of the municipality on the interaction between year and the birth municipality dummy (which equals 1 if a 1996/7 US gang deportee was born in the municipality), obtained from equation 1. Therefore the y-axis can be interpreted as the difference in average homicide rates (top) and incarceration rates of inmates who committed homicide (bottom) between birth- and non-birth municipalities in a given year.The regressions control for municipality fixed effect, and year fixed effects. Standard errors are clustered at the municipality level and confidence intervals at 95% are presented.

Figure 6: The 1996 shock and gang-specific crimes



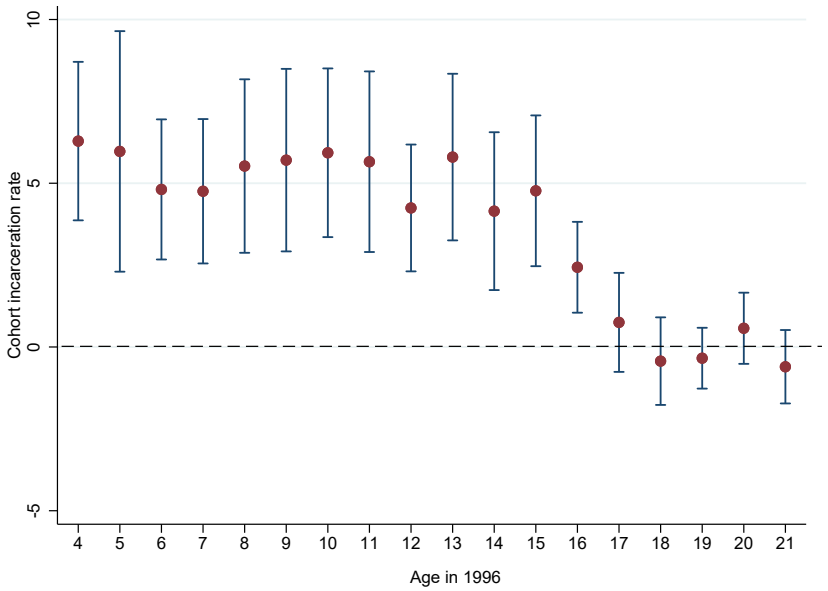
Notes: These graphs plot the coefficients for the regression of number of inmates incarcerated for extortion (top) and number of inmates incarcerated for drug-related offenses (bottom) per 100,000 population of municipality on the interaction between year and the birth municipality dummy (which equals 1 if a 1996/7 US gang deportee was born in the municipality), obtained from equation 1. Therefore the y-axis can be interpreted as the difference in average incarceration rates for extortion (top) and for drug-related offenses (bottom) between birth- and non-birth municipalities in a given year The regressions control for municipality fixed effect and year fixed effects . Standard errors are clustered at the municipality level and confidence intervals at 95% are presented.

Figure 7: The 1996 shock and non-gang crimes



Notes: These graphs plot the coefficients for the regression of number of inmates incarcerated for kidnapping (upper left), sex crimes (upper right), robbery (mid left), aggravated assault (mid right), and other (bottom) per 100,000 population of municipality on the interaction between year and the birth municipality dummy (which equals 1 if a 1996/7 US gang deportee was born in the municipality), obtained from equation 1. Therefore the y-axis can be interpreted as the difference in average incarceration rates for the respective crimes between birth- and non-birth municipalities in a given year. The regressions control for municipality fixed effect and year fixed effects . Standard errors are clustered at the municipality level and confidence intervals at 95% are presented.

Figure 8: Adulthood incarceration rates by exposure to US gangs



Notes: This graph plots the coefficients obtained from a regression of the number of individuals with US gang affiliation incarcerated per 100,000 of municipality population on the interaction between the birth municipality dummy (which equals 1 if a 1996/7 US gang deportee was born in the child's municipality of birth) and dummies at different childhood ages in 1996. Therefore the y-axis can be interpreted as the difference in average incarceration rates between birth- and non-birth municipalities for each given cohort, where cohort is defined by the age of the individual at the time of the "gang shock" in 1996. It controls for municipality of birth, and cohort fixed effects. Standard errors are clustered at the municipality-of-birth level

Tables

Table 1: Summary Statistics

	Mean	SD	Min	Max
Panel A: Police data				
Homicide rate by municipality-year	24.09	32.19	0	508.26
Total observations	3,930			
Municipalities with US gang (=1)	0.18	0.38	0	1
Total observations	262			
Panel B: Incarceration data by municipality-year				
Homicide rate	10.17	16.96	0	403.77
Extortion rate	3.84	11.64	0	208.48
Drug rate	6.11	13.16	0	219.30
Other crimes rate	6.06	13.53	0	269.18
Robbery rate	18.20	24.18	0	48.43
Sex crime rate	6.46	12.82	0	209.64
Assaults rate	9.26	19.93	0	403.77
Kidnapping rate	2.15	8.19	0	269.18
Insurgency rate	2.32	14.86	0	672.95
Non US gang rate	1.82	6.79	0	37.48
US gang rate	5.81	14.26	0	274.73
Total observations	6291			
Panel C: Incarceration data by municipality-year of birth				
Incarceration rate	22.82	19.86	0	250
US gang rate	6.30	8.16	0	71.43
Total observations	5,764			
Panel D: US deportation data by year				
Criminal deportees	2550.78	2247.81	593	8507
Total observations	27			
Panel E: El Salvador deportation data by municipality of birth				
Mun. of birth for 1996/1997 US gang deportees CA	0.14	0.35	0	1
Mun. of birth for 1996/1997 US general deportees CA	0.29	0.46	0	1
Mun. of birth for 1996/1997 US general deportees TX	0.72	0.45	0	1
Mun. of birth for 1996/1997 US general deportees DC	0.09	0.28	0	1
Mun. of birth for 1996/1997 US general deportees other states	0.20	0.40	0	1
Total observations	262			
Panel F: El Salvador Children deportation data per month per municipality of birth				
Deported children	1.23	4.32	0	111
Total observations	12,672			

Table 2: Baseline characteristics of birth and non-birth municipalities

Variable	Non-birth	Birth	Diff.	$\|t\|$	$\Pr(\|T\| > \|t\|)$
Poverty index 1992	5.839	5.799	-0.04	0.05	0.961
Complete family 1992	0.535	0.532	-0.003	0.33	0.742
Population density	1111	1389	278	0.53	0.598
Labor force participation 1992	67.35	67.51	0.16	0.18	0.855
Teenage pregnancy 1992	83.65	83.44	-0.21	0.31	0.759
Child mortality 1992	24.34	20.96	-3.38	1.07	0.287
Years of education 1992	5.964	6.464	0.5	1.46	0.150
Illiterate rate 1992	24.13	21.83	-2.3	0.98	0.330
Unemployment rate 1992	7.090	7.101	0.011	0.01	0.989
Homicide rates in 1995	20.71	22.58	1.87	0.54	0.589
Participated in the armed forced 1992	0.012	0.014	0.002	0.37	0.714
Number of deaths during civil conflict in 1980	24.89	28.78	3.89	0.30	0.764
Members living abroad 1992	0.116	0.123	0.007	0.80	0.426
Proportion of expropriated land 1980	0.111	0.099	-0.012	0.31	0.757
Expenditure in education per capita 1995	602.0	498.5	-103.5	1.61	0.112
Expenditure in health per capita 1995	132.19	141.93	9.74	0.32	0.749
State officials per capita 1992	2.401	2.485	0.084	0.24	0.810
Land reform in 1980	0.101	0.106	0.005	0.09	0.929
Year of foundation	1819	1807	-12	0.43	0.672
Access to water and sanitation 1992	40.53	53.10	12.57	2.07	0.043

Table 3: Criminal deportations from the US and homicide rates in El Salvador

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Reduced form							
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0039	0.0026	0.0097	0.0083	0.0083	0.0062	0.0062
	(0.0010)	(0.0010)	(0.0014)	(0.0022)	(0.0023)	(0.0026)	(0.0027)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel B: First stage est.							
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.7712	0.7155	0.7711	0.7715	0.7715	0.7158	0.7158
	(0.0631)	(0.0772)	(0.0631)	(0.0658)	(0.0671)	(0.0805)	(0.0837)
Kleibergen-Paap F stat	149.59	85.99	149.46	137.46	132.24	78.99	73.06
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel C: IV estimates							
$GangUS_m \times CrimDep_t$	0.0050	0.0036	0.0126	0.0108	0.0108	0.0087	0.0087
	(0.0012)	(0.0014)	(0.0016)	(0.0027)	(0.0027)	(0.0033)	(0.0035)
Obs.	3930	1561	3144	3144	3144	1249	1249
Number of mun.	262	104	262	262	262	104	104
Dep. var. mean	24.09	32.09	20.46	20.46	20.46	28.24	28.24
Municipality FE	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓
Urban		✓				✓	✓
Pre-Enforcement Years			✓	✓	✓	✓	✓
Mun. Trends				✓	✓	✓	✓
Municipal level controls					✓		✓

Notes: The dependent variable is the homicide rate in municipality m in year t. Panel A presents the reduced form estimates from equation 2. *Deportee Born*$_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997, *Criminal Deportations*$_t$ is the number of criminal deportations from the US in year t. Panel B and C present the first stage and IV estimates from equation 3. *GangUS*$_{m,2000}$ is whether the municipality has gang presence in 2000 instrumented with *Deportee Born*$_{m,1996/1997}$. All specifications include municipality and year fixed effects. Column (2) includes only municipalities where a main city is located. Column (3) includes only the years before the largest enforcement efforts. Column (4) further controls for municipality time trends. Column (5) includes baseline characteristics interacted with year such as, homicide rates and years of education. Columns (6) and (7) include only urban municipalities, and control for municipality time trends and baseline characteristics interacted with year. Municipality clustered standard errors are presented in parenthesis.

Table 4: Criminal deportations from the US and criminal capital in El Salvador

	(1) Homicide rate	(2) Extortion rate	(3) Drug traff. rate	(4) Other crime
Panel A: Reduced form estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0015	0.0016	0.0008	0.0001
	(0.0003)	(0.0004)	(0.0003)	(0.0002)
	(1)	(2)	(3)	(4)
Panel B: First stage estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.7778	0.7778	0.7778	0.7778
	(0.0610)	(0.0610)	(0.0610)	(0.0610)
Kleibergen-Paap F stat	162.78	162.78	162.78	162.78
	(1)	(2)	(3)	(4)
Panel C: IV estimates				
$GangUS_m \times CrimDep_t$	0.0019	0.0021	0.0010	0.0001
	(0.0004)	(0.0005)	(0.0004)	(0.0002)
Obs.	6291	6291	6291	6291
Number of mun.	262	262	262	262
Dep. var. mean	10.1744	3.8356	6.1094	6.0584
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

Notes: Panel A presents the reduced form estimates from equation 2. *Deportee Born*$_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997, *Criminal Deportations*$_t$ is the number of criminal deportations from the US in year t. Panel B and C present the first stage and IV estimates from equation 3. *GangUS*$_{m,2000}$ is whether the municipality has gang presence in 2000 instrumented, with *Deportee Born*$_{m,1996/1997}$. The dependent variables in each specification are the incarceration rate for homicides (Column 1), extortion (Column 2), drug-related crimes (Column 3) and other crimes (Column 4). All specifications include municipality and year fixed effects. Municipality clustered standard errors are presented in parenthesis.

Table 5: Effects of exposure to US gangs during childhood on future criminality

	Reduced form			**IV**		
	(1) All	(2) US-Gang	(3) Non-US Gang	(4) All	(5) US-Gang	(6) Non-US Gang
$GangShockAge4x6_{m,c}$	7.427	4.840	0.034	9.631	6.276	0.044
	(1.533)	(1.102)	(0.064)	(2.079)	(1.393)	(0.083)
$GangShockAge7x9_{m,c}$	5.684	3.918	0.147	7.370	5.081	0.191
	(1.658)	(0.999)	(0.089)	(2.038)	(1.216)	(0.118)
$GangShockAge10x12_{m,c}$	4.043	3.308	0.060	5.243	4.289	0.077
	(1.834)	(0.855)	(0.115)	(2.320)	(1.061)	(0.148)
$GangShockAge13x15_{m,c}$	4.940	2.375	0.059	6.405	3.080	0.077
	(2.115)	(0.865)	(0.139)	(2.708)	(1.105)	(0.179)
$GangShockAge16x18_{m,c}$	2.667	0.917	0.277	3.459	1.190	0.359
	(2.286)	(0.693)	(0.191)	(2.910)	(0.887)	(0.246)
Obs.	5764	5764	5764	5764	5764	5764
Number of mun.	262	262	262	262	262	262
Dep. var. mean	22.819	6.299	2.314	22.819	6.299	2.314

Notes: $GangShockAgex_{m,c}$ is the interaction between the measure of gang presence in the child's municipality of birth and a dummy indicating the age x in 1996. Columns 1-3 present the reduced form estimates of equation 4 using the birth municipality dummy as a measure of US gang presence. Columns 4-6 show the results using gang presence in 2000 instrumented by the municipality of birth of US gang deportees in 1996/1997. The omitted category is a dummy indicating whether individuals were older than 19 years old at the time of arrival of gangs in El Salvador. The dependent variable in Columns 1 and 4, is the number of individuals in prison per cohort-municipality of birth per 1000 population. Columns 2 and 5 use as dependent variable, the incarceration rate for individuals with US gang affiliation. As placebo, Columns 3 and 6 use as dependent variable, the incarceration rate for individuals with non-US gang affiliation. All specifications control for municipality of birth, year of birth. Standard errors clustered at the municipality of birth level.

Table 6: Homicides and child migration

	(1)	(2)	(3)	(4)	(5)
$\widehat{Homicides}_{i-1,t,m}$	1.622	2.024	1.972	1.923	1.913
	(0.309)	(0.281)	(0.307)	(0.296)	(0.310)
Observations	12672	12672	12672	12672	10800
Municipality FE		✓	✓	✓	✓
Month-Year FE			✓	✓	✓
Municipality trends				✓	✓
Municipality covariates					✓

Notes: This table presents the estimates from equation 5. $Homicides_{i,t-1,m}$ are the number of homicides in the previous month in the child's municipality of birth, instrumented by the timing of the truce interacted with birth municipality dummy. The dependent variable is $ChildMigration_{i,t,m}$ the number of children who left municipality m and were deported in month t. Column (5) includes municipality baseline characteristics interacted with month such as, population density, years of education, homicide rates, and expenditures in education. Standard errors clustered at the municipality-of-birth level.

Appendix

Figures

A Additional descriptive figures

Figure A.1: Differences in incarceration rates by ages

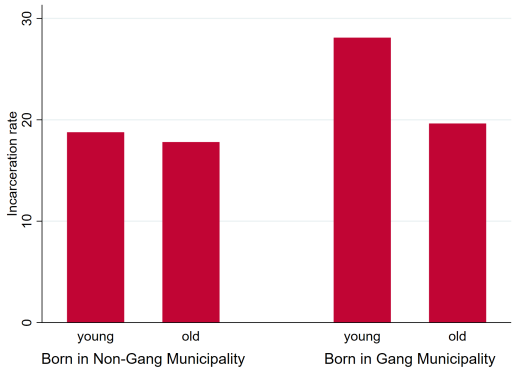


Figure A.2: Child deportation and homicide rates at children's municipalities of birth, 2003-2016

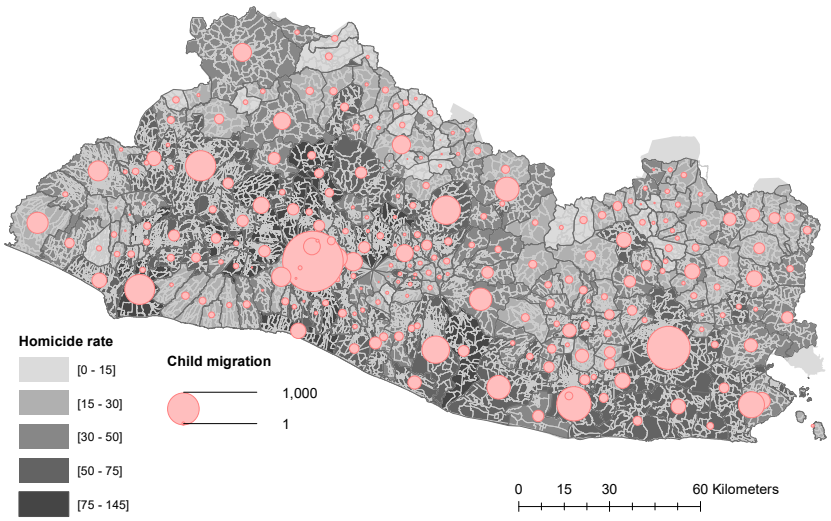


Figure A.3: Child deportations across municipalities with varying exposure to homicide committed by US gangs

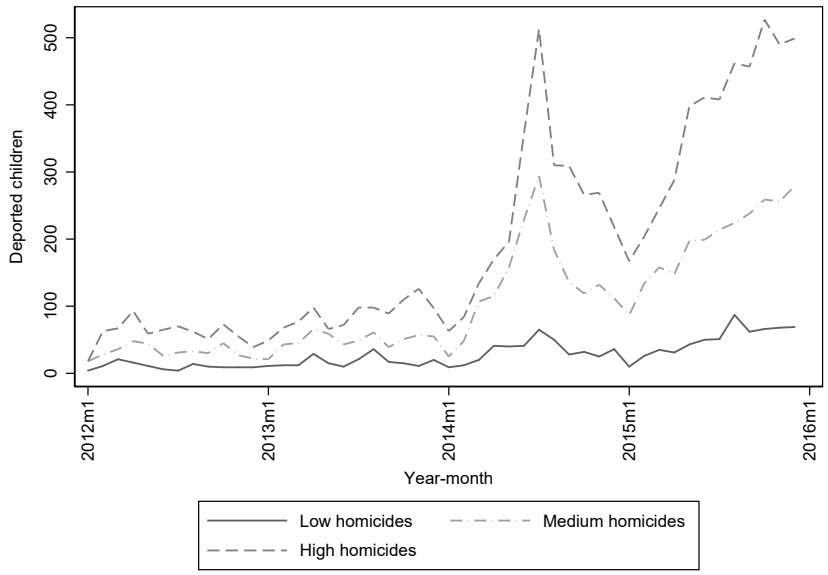


Figure A.4: Homicide rates per 100,000 by US gang leaders' municipalities of birth

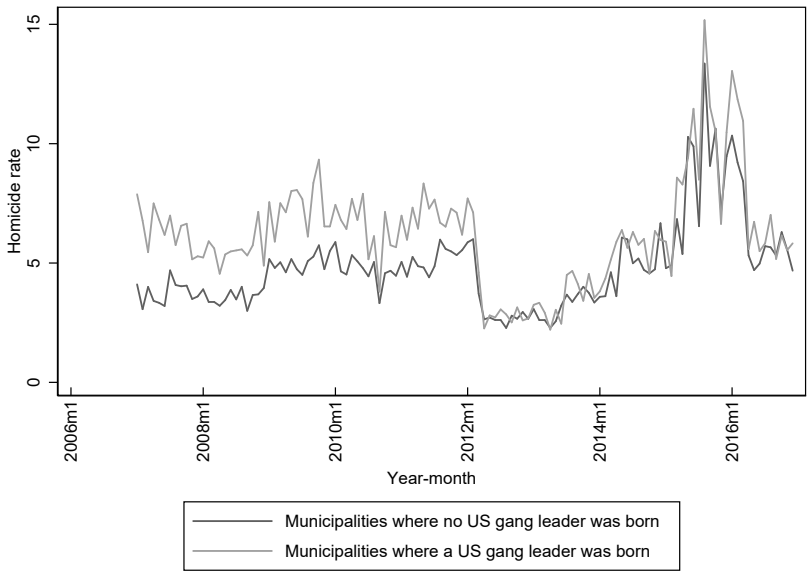
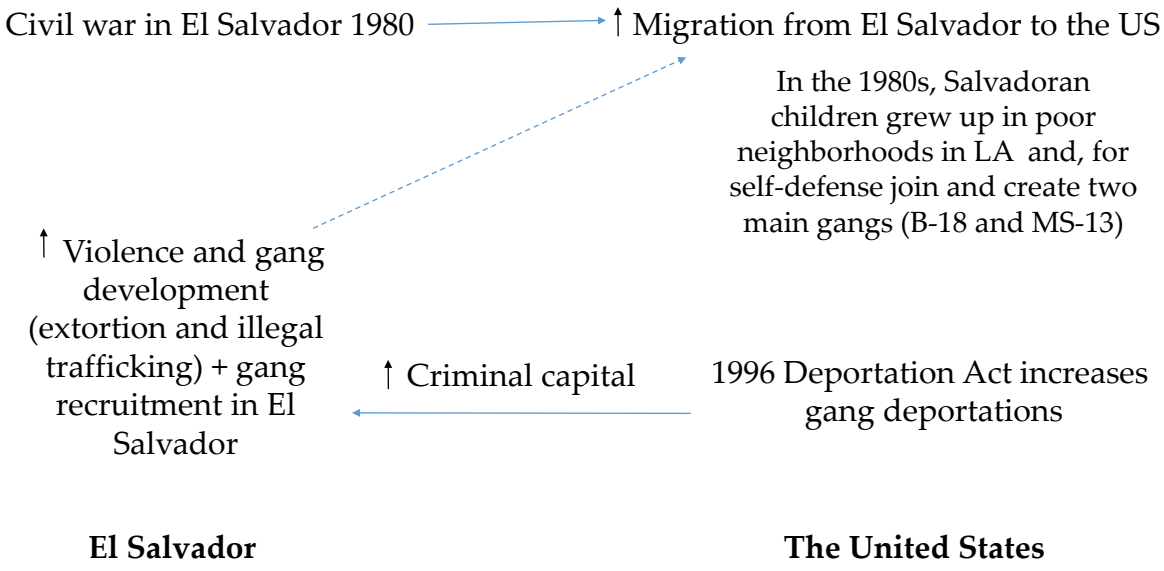
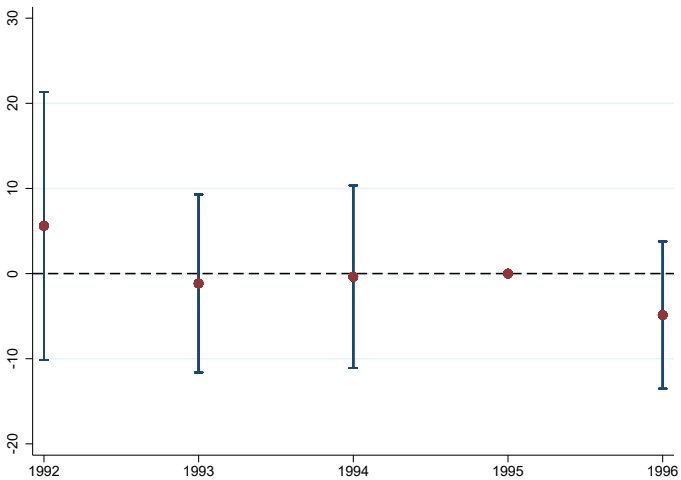


Figure A.5: Self-reinforcing cycle



B Robustness checks

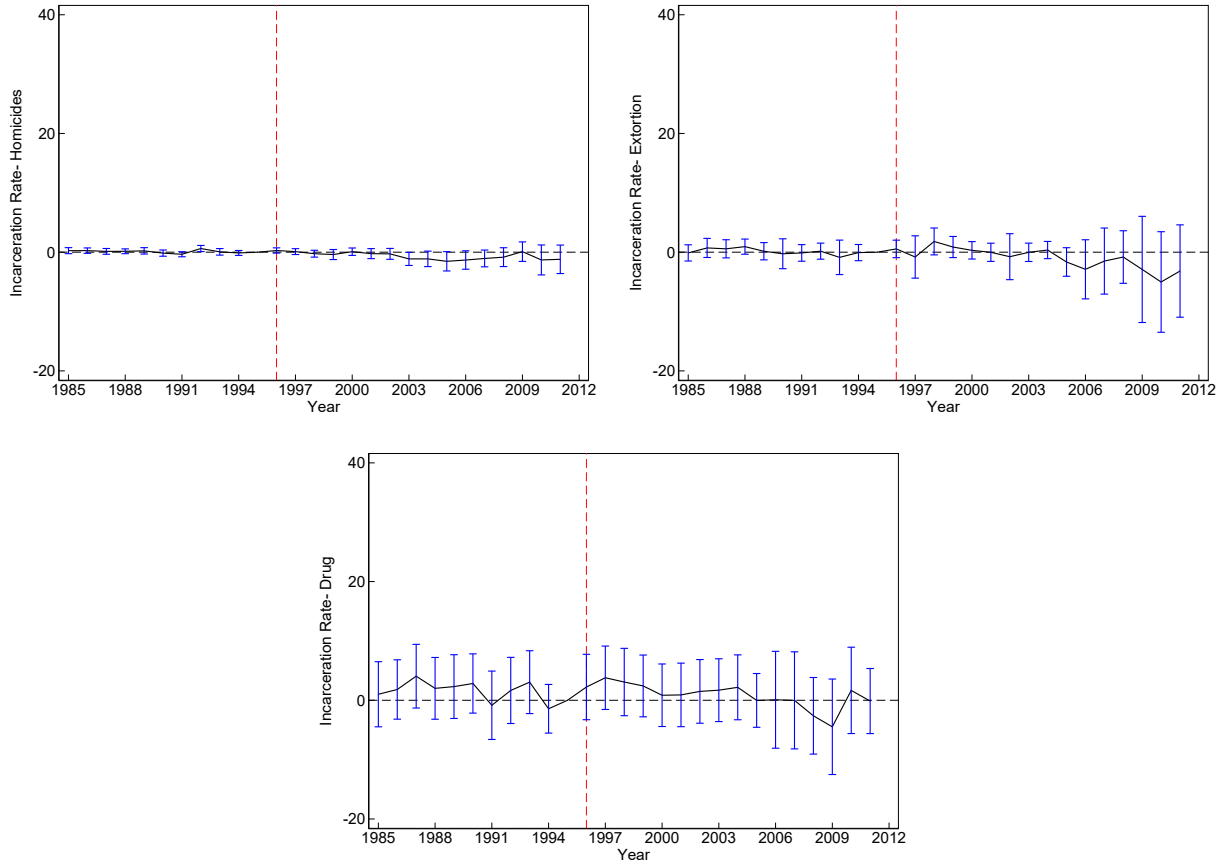
Figure A.6: No preexisting differences in night light density between birth and non-birth municipalities before 1996



Notes: This graph plots the coefficients for the interaction between year and US gang deportees' municipalities of birth on the the logarithm of night light density obtained from equation 1 for the period before 1996. 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.

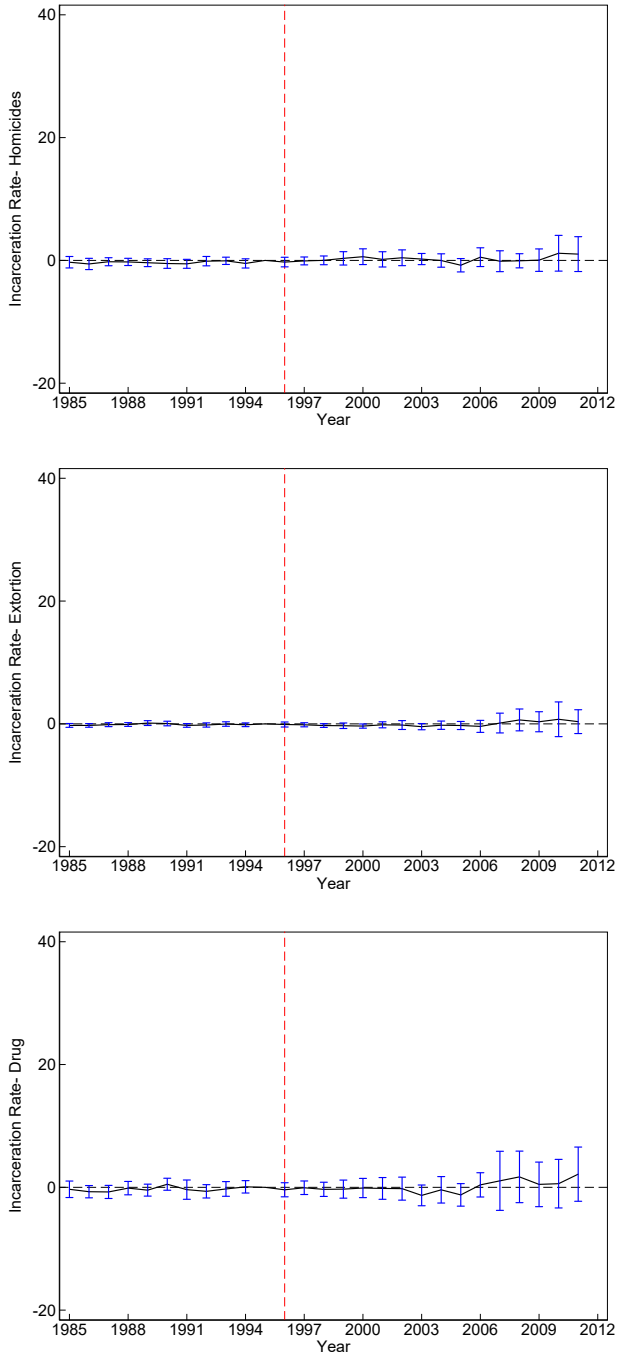
C Mechanisms

Figure A.7: The effect of non-criminal deportations from Texas



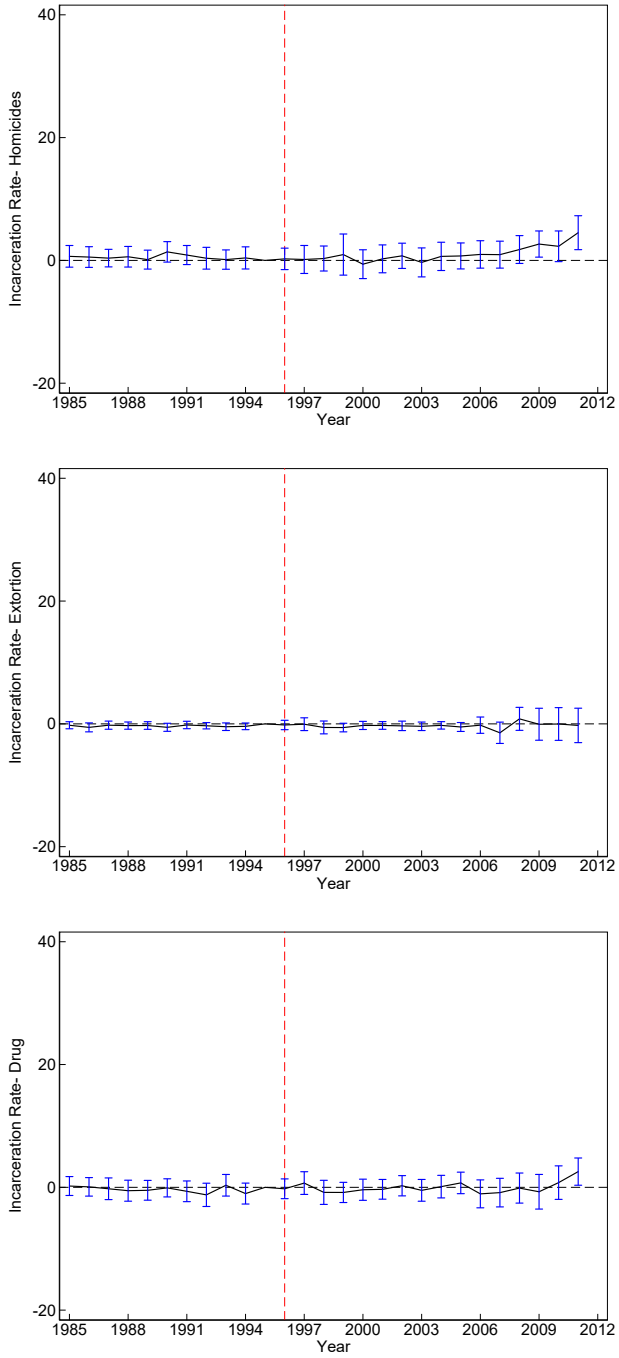
Notes: These graphs plot the coefficients for the regression of number of inmates incarcerated for homicides (top), extortion (middle) and for drug-related offenses (bottom) per 100,000 population of municipality on the interaction between year and Texas birth municipality dummy (which equals 1 if a 1996/7 non-criminal deportee coming from Texas was born in the municipality), obtained from equation 1, but replacing the birth municipality of gangs for Texas non-criminal deportees municipalities of birth. The regressions control for municipality fixed effect and year fixed effects . Standard errors are clustered at the municipality level and confidence intervals at 95% are presented.

Figure A.8: The effect of non-criminal deportations from Washington DC



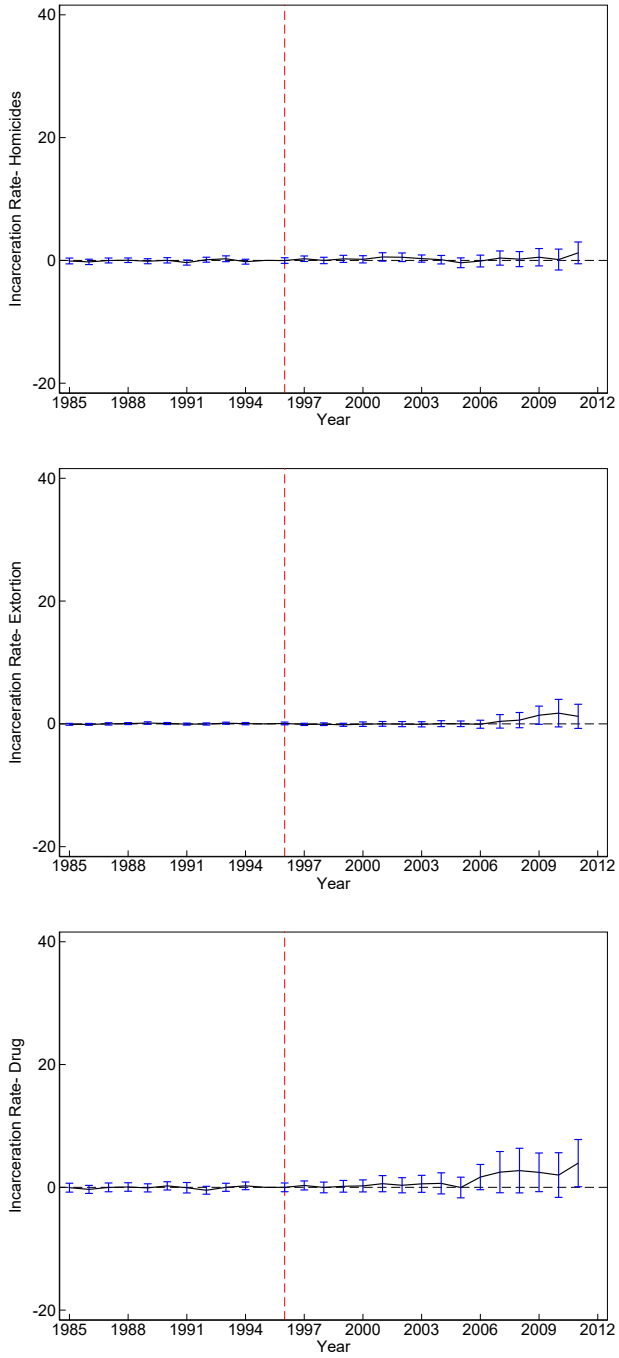
Notes: These graphs plot the coefficients for the regression of number of inmates incarcerated for homicides (top), extortion (middle) and for drug-related offenses (bottom) per 100,000 population of municipality on the interaction between year and DC birth municipality dummy (which equals 1 if a 1996/7 non-criminal deportee coming from DC was born in the municipality), obtained from equation 1, but replacing the birth municipality of gangs for DC non-criminal deportees municipalities of birth. The regressions control for municipality fixed effect and year fixed effects . Standard errors are clustered at the municipality level and confidence intervals at 95% are presented.

Figure A.9: The effect of non-criminal deportations from California



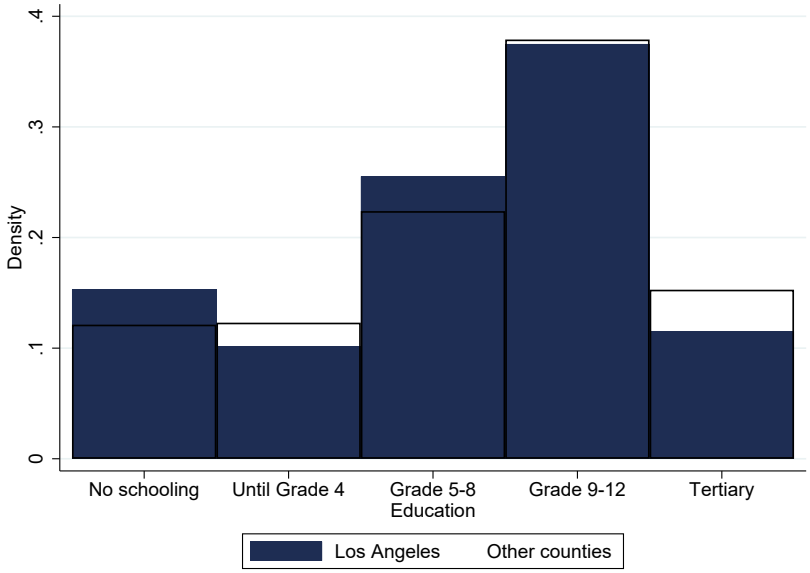
Notes:These graphs plot the coefficients for the regression of number of inmates incarcerated for homicides (top), extortion (middle) and for drug-related offenses (bottom) per 100,000 population of municipality on the interaction between year and California non-criminal deportees' birth municipality dummy (which equals 1 if a 1996/7 non-criminal deportee coming from California was born in the municipality), obtained from equation 1, but replacing the birth municipality of gangs for California non-criminal deportees municipalities of birth. The regressions control for municipality fixed effect and year fixed effects . Standard errors are clustered at the municipality level and confidence intervals at 95% are presented.

Figure A.10: The effect of non-criminal deportations from other states



Notes: These graphs plot the coefficients for the regression of number of inmates incarcerated for homicides (top), extortion (middle) and for drug-related offenses (bottom) per 100,000 population of municipality on the interaction between year and non-criminal deportees' birth municipality dummy (which equals 1 if a 1996/7 non-criminal deportee coming from other states was born in the municipality), obtained from equation 1, but replacing the birth municipality of gangs for other states' non-criminal deportees municipalities of birth. The regressions control for municipality fixed effect and year fixed effects . Standard errors are clustered at the municipality level and confidence intervals at 95% are presented.

Figure A.11: Years of schooling for Salvadoran who migrated between 1980 and 1990, living in Los Angeles and other counties in 1990



Notes: This graph shows a histogram of educational attainment by Salvadoran who migrated between 1980 and 1990, living in Los Angeles and other counties in 1990.

Tables

D Additional descriptive tables

Table A.1: Baseline characteristics between birth and non-birth municipalities using the sample of municipalities that have gang presence

Variable	Non-birth	Birth	Diff.	$\|t\|$	$\Pr(\|T\| > \|t\|)$
Poverty index 1992	5.896	5.799	-0.097	0.11	0.913
Complete family 1992	0.535	0.532	-0.003	0.31	0.755
Population density	1353	1389	36	0.06	0.951
Labor force participation 1992	67.28	67.51	0.23	0.26	0.792
Teenage pregnancy 1992	83.65	83.44	-0.21	0.32	0.759
Child mortality 1992	23.81	20.96	-2.85	1.00	0.319
Years of education 1992	6.290	6.464	0.174	0.49	0.626
Illiterate rate 1992	23.75	21.83	-1.92	0.75	0.460
Unemployment rate 1992	7.253	7.101	-0.151	0.18	0.854
Homicide rates in 1995	20.67	22.58	1.91	0.70	0.488
Participated in the armed forced 1992	0.012	0.014	0.002	0.37	0.714
Number of deaths during civil conflict in 1980	24.89	28.78	3.89	0.30	0.764
Members living abroad 1992	0.117	0.123	0.006	0.75	0.456
Proportion of expropriated land 1980	0.118	0.099	-0.019	0.48	0.636
Expenditure in education per capita 1995	582.64	498.5	-84.14	1.34	0.185
Expenditure in health per capita 1995	137.43	141.93	4.5	0.14	0.886
State officials per capita 1992	2.378	2.485	0.107	0.28	0.778
Land reform in 1980	0.101	0.106	0.005	0.12	0.908
Year of foundation	1816	1807	-9	0.32	0.748
Access to water and sanitation 1992	43.67	53.10	9.43	1.45	0.153

E Robustness checks

E.1 Matched sample

Table A.2: Robustness check: Matched sample

	(1) Homicide rate	(2) Extortion rate	(3) Drug traff. rate	(4) Other crime
Panel A: Reduced form estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0012	0.0013	0.0008	-0.0001
	(0.0004)	(0.0004)	(0.0003)	(0.0002)
	(1)	(2)	(3)	(4)
Panel B: First stage estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.7461	0.7461	0.7461	0.7461
	(0.0680)	(0.0680)	(0.0680)	(0.0680)
Kleibergen-Paap F stat	120.28	120.28	120.28	120.28
	(1)	(2)	(3)	(4)
Panel C: IV estimates				
$GangUS_m \times CrimDep_t$	0.0016	0.0018	0.0010	-0.0001
	(0.0005)	(0.0006)	(0.0005)	(0.0002)
Obs.	2986	2986	2986	2986
Number of mun.	119	119	119	119
Dep. var. mean	10.0564	4.3329	6.3789	5.6160
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

Notes: Panel A presents the reduced form estimates from equation 2 using the matched sample based on observable characteristics before the deportation shock such as, population density, homicide rate, average years of education, access to water and sanitation, and expenditures in education in the municipality. *Deportee Born*$_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997, *Criminal Deportations*$_t$ is the number of criminal deportations from the US in year t. Panel B and C present the first stage and IV estimates from equation 3. *GangUS*$_{m,2000}$ is whether the municipality has gang presence in 2000 instrumented with *Deportee Born*$_{m,1996/1997}$.The dependent variables in each specification are the incarceration rate for homicides (Column 1) , extortion (Column 2), drug-related crimes (Column 3) and other crimes (Column 4). All specifications include municipality and year fixed effects. Municipality clustered standard errors are presented in parenthesis.

Table A.3: Robustness check: Matched sample

	(1) Homicide rate	(2) Extortion rate	(3) Drug traff. rate	(4) Other crime
Panel A: Reduced form estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0009	0.0016	0.0006	-0.0002
	(0.0004)	(0.0004)	(0.0003)	(0.0002)
	(1)	(2)	(3)	(4)
Panel B: First step estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.6681	0.6681	0.6681	0.6681
	(0.0786)	(0.0786)	(0.0786)	(0.0786)
Kleibergen-Paap F stat	72.30	72.30	72.30	72.30
	(1)	(2)	(3)	(4)
Panel C: IV estimates				
$GangUS_m \times CrimDep_t$	0.0014	0.0023	0.0009	-0.0003
	(0.0005)	(0.0006)	(0.0005)	(0.0003)
Obs.	2437	2437	2437	2437
Number of mun.	93	93	93	93
Dep. var. mean	9.6786	4.2377	6.0403	5.3567
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

Notes: Panel A presents the reduced form estimates from equation 2 using the matched sample based on observable characteristics before the deportation shock such as, population, homicide rate, average years of education, access to water and sanitation, and expenditures in education in the municipality. *Deportee Born*$_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997, *Criminal Deportations*$_t$ is the number of criminal deportations from the US in year t. Panel B and C present the first stage and IV estimates from equation 3. *GangUS*$_{m,2000}$ is whether the municipality has gang presence in 2000 instrumented with *Deportee Born*$_{m,1996/1997}$.The dependent variables in each specification are the incarceration rate for homicides (Column 1) , extortion (Column 2), drug-related crimes (Column 3) and other crimes (Column 4). All specifications include municipality and year fixed effects. Municipality clustered standard errors are presented in parenthesis.

E.2 Keeping only municipalities that experienced gang presence

Table A.4: Robustness check: Sample of municipalities that have US gang presence (using criminals with US gang affiliation in the incarceration data)

	(1) Homicide rate	(2) Extortion rate	(3) Drug traff. rate	(4) Other crime
Panel A: Reduced form estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0011	0.0015	0.0007	-0.0001
	(0.0003)	(0.0004)	(0.0003)	(0.0001)
	(1)	(2)	(3)	(4)
Panel B: First stage estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.7713	0.7713	0.7713	0.7713
	(0.0623)	(0.0623)	(0.0623)	(0.0623)
Kleibergen-Paap F stat	153.42	153.42	153.42	153.42
	(1)	(2)	(3)	(4)
Panel C: IV estimates				
$GangUS_m \times CrimDep_t$	0.0014	0.0019	0.0009	-0.0001
	(0.0004)	(0.0005)	(0.0004)	(0.0002)
Obs.	5016	5016	5016	5016
Number of mun.	194	194	194	194
Dep. var. mean	10.1217	3.9848	5.8843	5.5177
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

Notes: Panel A presents the reduced form estimates from equation 2. *Deportee Born*$_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997, *Criminal Deportations*$_t$ is the number of criminal deportations from the US in year t. Panel B and C present the first stage and IV estimates from equation 3. *GangUS*$_{m,2000}$ is whether the municipality has gang presence in 2000 instrumented with *Deportee Born*$_{m,1996/1997}$.The dependent variables in each specification are the incarceration rate for homicides (Column 1), extortion (Column 2), drug-related crimes (Column 3) and other crimes (Column 4). All specifications include municipality and year fixed effects. In this table, I restrict the analysis to municipalities that were ever exposed to US gangs during my period of analysis. I define this sample using all municipalities that present gang related criminals in jail above the first quartile of the distribution each year as a proxy. Municipality clustered standard errors are presented in parenthesis.

Table A.5: Robustness check: Sample of municipalities that have US gang presence (using gang-related homicide data)

	(1) Homicide rate	(2) Extortion rate	(3) Drug traff. rate	(4) Other crime
Panel A: Reduced form estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0009	0.0017	0.0008	-0.0001
	(0.0003)	(0.0004)	(0.0003)	(0.0001)
	(1)	(2)	(3)	(4)
Panel B: First stage estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.7888	0.7888	0.7888	0.7888
	(0.0595)	(0.0595)	(0.0595)	(0.0595)
Kleibergen-Paap F stat	175.89	175.89	175.89	175.89
	(1)	(2)	(3)	(4)
Panel C: IV estimates				
$GangUS_m \times CrimDep_t$	0.0011	0.0021	0.0010	-0.0002
	(0.0004)	(0.0005)	(0.0004)	(0.0002)
Obs.	4713	4713	4713	4713
Number of mun.	183	183	183	183
Dep. var. mean	10.0523	3.9028	5.9056	5.3753
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

Notes: Panel A presents the reduced form estimates from equation 2. *Deportee Born*$_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997, *Criminal Deportations*$_t$ is the number of criminal deportations from the US in year t. Panel B and C present the first stage and IV estimates from equation 3. *GangUS*$_{m,2000}$ is whether the municipality has gang presence in 2000 instrumented with *Deportee Born*$_{m,1996/1997}$.The dependent variables in each specification are the incarceration rate for homicides (Column 1), extortion (Column 2), drug-related crimes (Column 3) and other crimes (Column 4). All specifications include municipality and year fixed effects. In this table, I restrict the analysis to municipalities that were ever exposed to US gangs during my period of analysis. I define this sample using all municipalities that report gang homicides above the first quartile of the distribution each year as a proxy. Municipality clustered standard errors are presented in parenthesis.

E.3 Including municipality time trends and covariates

Table A.6: Robustness check: Adding municipality time trends

	(1) Homicide rate	(2) Extortion rate	(3) Drug traff. rate	(4) Other crime
Panel A: Reduced form estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0015	0.0019	0.0007	0.0001
	(0.0004)	(0.0005)	(0.0003)	(0.0003)
	(1)	(2)	(3)	(4)
Panel B: First stage estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.7778	0.7778	0.7778	0.7778
	(0.0622)	(0.0622)	(0.0622)	(0.0622)
Kleibergen-Paap F stat	156.12	156.12	156.12	156.12
	(1)	(2)	(3)	(4)
Panel C: IV estimates				
$GangUS_m \times CrimDep_t$	0.0019	0.0024	0.0009	0.0001
	(0.0005)	(0.0006)	(0.0004)	(0.0003)
Obs.	6291	6291	6291	6291
Number of mun.	262	262	262	262
Dep. var. mean	10.1744	3.8356	6.1094	6.0584
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Mun. Time trends	✓	✓	✓	✓

Notes: Panel A presents the reduced form estimates from equation 2. *Deportee Born*$_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997, *Criminal Deportations*$_t$ is the number of criminal deportations from the US in year t. Panel B and C present the first stage and IV estimates from equation 3. *GangUS*$_{m,2000}$ is whether the municipality has gang presence in 2000 instrumented with *Deportee Born*$_{m,1996/1997}$.The dependent variables in each specification are the incarceration rate for homicides (Column 1), extortion (Column 2), drug-related crimes (Column 3) and other crimes (Column 4). All specifications include municipality and year fixed effects as well as municipality time trends. Municipality clustered standard errors are presented in parenthesis.

Table A.7: Robustness check: Adding trends using pre-period data (based on Goodman-Bacon (2021))

	(1) Homicide rate	(2) Extortion rate	(3) Drug traff. rate	(4) Other crime
Panel A: Reduced form estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0015	0.0016	0.0008	0.0001
	(0.0003)	(0.0004)	(0.0003)	(0.0002)
	(1)	(2)	(3)	(4)
Panel B: First stage estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.7779	0.7779	0.7779	0.7779
	(0.0609)	(0.0609)	(0.0609)	(0.0609)
Kleibergen-Paap F stat	162.96	162.96	162.96	162.96
	(1)	(2)	(3)	(4)
Panel C: IV estimates				
$GangUS_m \times CrimDep_t$	0.0019	0.0021	0.0010	0.0001
	(0.0004)	(0.0005)	(0.0004)	(0.0002)
Obs.	6291	6291	6291	6291
Number of mun.	262	262	262	262
Dep. var. mean	10.1744	3.8356	6.1094	6.0584
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

Notes: Panel A presents the reduced form estimates from equation 2. *Deportee Born*$_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997, *Criminal Deportations*$_t$ is the number of criminal deportations from the US in year t. Panel B and C present the first stage and IV estimates from equation 3. *GangUS*$_{m,2000}$ is whether the municipality has gang presence in 2000 instrumented with *Deportee Born*$_{m,1996/1997}$.The dependent variables in each specification are the incarceration rate for homicides (Column 1), extortion (Column 2), drug-related crimes (Column 3) and other crimes (Column 4). All specifications include municipality and year fixed effects as well as municipality time trends using the pre-period data. Municipality clustered standard errors are presented in parenthesis.

Table A.8: Robustness check: Including municipal level controls

	(1) Homicide rate	(2) Extortion rate	(3) Drug traff. rate	(4) Other crime
Panel A: Reduced form estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0011	0.0020	0.0008	-0.0001
	(0.0004)	(0.0005)	(0.0003)	(0.0003)
	(1)	(2)	(3)	(4)
Panel B: First stage estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.7997	0.7997	0.7997	0.7997
	(0.0638)	(0.0638)	(0.0638)	(0.0638)
Kleibergen-Paap F stat	157.17	157.17	157.17	157.17
	(1)	(2)	(3)	(4)
Panel C: IV estimates				
$GangUS_m \times CrimDep_t$	0.0014	0.0026	0.0010	-0.0001
	(0.0005)	(0.0007)	(0.0004)	(0.0003)
Obs.	5501	5501	5501	5501
Number of mun.	221	221	221	221
Dep. var. mean	9.9262	3.7624	5.8023	5.4962
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Mun. Time trends	✓	✓	✓	✓

Notes: Panel A presents the reduced form estimates from equation 2. *Deportee Born*$_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997, *Criminal Deportations*$_t$ is the number of criminal deportations from the US in year t. Panel B and C present the first stage and IV estimates from equation 3. *GangUS*$_{m,2000}$ is whether the municipality has gang presence in 2000 instrumented with *Deportee Born*$_{m,1996/1997}$.The dependent variables in each specification are the incarceration rate for homicides (Column 1), extortion (Column 2), drug-related crimes (Column 3) and other crimes (Column 4). All specifications include municipality and year fixed effects as well as baseline characteristics interacted with year such as population density, years of education, homicide rates, and expenditures on education. Municipality clustered standard errors are presented in parenthesis.

E.4 Including only urban areas and controlling for population

Table A.9: Robustness check: Keeping only urban areas

	(1) Homicide rate	(2) Extortion rate	(3) Drug traff. rate	(4) Other crime
Panel A: Reduced form estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0010	0.0016	0.0008	-0.0001
	(0.0004)	(0.0004)	(0.0004)	(0.0002)
	(1)	(2)	(3)	(4)
Panel B: First stage estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.7154	0.7154	0.7154	0.7154
	(0.0772)	(0.0772)	(0.0772)	(0.0772)
Kleibergen-Paap F stat	85.65	85.65	85.65	85.65
	(1)	(2)	(3)	(4)
Panel C: IV estimates				
$GangUS_m \times CrimDep_t$	0.0015	0.0022	0.0011	-0.0001
	(0.0005)	(0.0006)	(0.0005)	(0.0002)
Obs.	2767	2767	2767	2767
Number of mun.	104	104	104	104
Dep. var. mean	10.4178	4.3416	6.6413	5.7633
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

Notes: Panel A presents the reduced form estimates from equation 2. *Deportee Born*$_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997, *Criminal Deportations*$_t$ is the number of criminal deportations from the US in year t. Panel B and C present the first stage and IV estimates from equation 3. *GangUS*$_{m,2000}$ is whether the municipality has gang presence in 2000 instrumented with *Deportee Born*$_{m,1996/1997}$.The dependent variables in each specification are the incarceration rate for homicides (Column 1), extortion (Column 2), drug-related crimes (Column 3) and other crimes (Column 4). All specifications include municipality and year fixed effects. The sample includes only municipalities where a main city is located. Municipality clustered standard errors are presented in parenthesis.

Table A.10: Robustness check: Controlling for changes in criminal deportations over time interacted with population density in 1992

	(1) Homicide rate	(2) Extortion rate	(3) Drug traff. rate	(4) Other crime
Panel A: Reduced form estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0015	0.0019	0.0008	0.0001
	(0.0004)	(0.0005)	(0.0003)	(0.0003)
	(1)	(2)	(3)	(4)
Panel B: First stage estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.8011	0.8011	0.8011	0.8011
	(0.0587)	(0.0587)	(0.0587)	(0.0587)
Kleibergen-Paap F stat	186.03	186.03	186.03	186.03
	(1)	(2)	(3)	(4)
Panel C: IV estimates				
$GangUS_m \times CrimDep_t$	0.0019	0.0024	0.0010	0.0001
	(0.0005)	(0.0006)	(0.0004)	(0.0003)
Obs.	6195	6195	6195	6195
Number of mun.	258	258	258	258
Dep. var. mean	10.0977	3.8018	6.0715	5.9710
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

Notes: Panel A presents the reduced form estimates from equation 2. *Deportee Born*$_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997, *Criminal Deportations*$_t$ is the number of criminal deportations from the US in year t. Panel B and C present the first stage and IV estimates from equation 3. *GangUS*$_{m,2000}$ is whether the municipality has gang presence in 2000 instrumented with *Deportee Born*$_{m,1996/1997}$.The dependent variables in each specification are the incarceration rate for homicides (Column 1), extortion (Column 2), drug-related crimes (Column 3) and other crimes (Column 4). All specifications include municipality and year fixed effects, and population density in 1992 interacted with *Criminal Deportations*$_t$. Municipality clustered standard errors are presented in parenthesis.

Table A.11: Robustness check: Controlling for changes in criminal deportations over time interacted with population in 1995

	(1) Homicide rate	(2) Extortion rate	(3) Drug traff. rate	(4) Other crime
Panel A: Reduced form estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0015	0.0019	0.0007	0.0001
	(0.0004)	(0.0005)	(0.0003)	(0.0003)
	(1)	(2)	(3)	(4)
Panel B: First stage estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.7778	0.7778	0.7778	0.7778
	(0.0622)	(0.0622)	(0.0622)	(0.0622)
Kleibergen-Paap F stat	156.15	156.15	156.15	156.15
	(1)	(2)	(3)	(4)
Panel C: IV estimates				
$GangUS_m \times CrimDep_t$	0.0019	0.0024	0.0009	0.0001
	(0.0005)	(0.0006)	(0.0004)	(0.0003)
Obs.	6291	6291	6291	6291
Number of mun.	262	262	262	262
Dep. var. mean	10.1744	3.8356	6.1094	6.0584
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

Notes: Panel A presents the reduced form estimates from equation 2. *Deportee Born*$_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997, *Criminal Deportations*$_t$ is the number of criminal deportations from the US in year t. Panel B and C present the first stage and IV estimates from equation 3. *GangUS*$_{m,2000}$ is whether the municipality has gang presence in 2000 instrumented with *Deportee Born*$_{m,1996/1997}$.The dependent variables in each specification are the incarceration rate for homicides (Column 1), extortion (Column 2), drug-related crimes (Column 3) and other crimes (Column 4). All specifications include municipality and year fixed effects, and population in 1995 interacted with *Criminal Deportations*$_t$. Municipality clustered standard errors are presented in parenthesis.

Table A.12: Robustness check: Adding enforcement variables as control

	(1) Homicide rate	(2) Extortion rate	(3) Drug traff. rate	(4) Other crime
Panel A: Reduced form estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0014	0.0013	0.0006	0.0000
	(0.0003)	(0.0004)	(0.0003)	(0.0002)
	(1)	(2)	(3)	(4)
Panel B: First stage estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.7870	0.7870	0.7870	0.7870
	(0.0627)	(0.0627)	(0.0627)	(0.0627)
Kleibergen-Paap F stat	157.59	157.59	157.59	157.59
	(1)	(2)	(3)	(4)
Panel C: IV estimates				
$GangUS_m \times CrimDep_t$	0.0018	0.0017	0.0008	0.0000
	(0.0004)	(0.0005)	(0.0004)	(0.0002)
Obs.	6210	6210	6210	6210
Number of mun.	259	259	259	259
Dep. var. mean	10.1299	3.8220	6.0686	5.9801
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

Notes: Panel A presents the reduced form estimates from equation 2. *Deportee Born*$_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997, *Criminal Deportations*$_t$ is the number of criminal deportations from the US in year t. Panel B and C present the first stage and IV estimates from equation 3. *GangUS*$_{m,2000}$ is whether the municipality has gang presence in 2000 instrumented with *Deportee Born*$_{m,1996/1997}$.The dependent variables in each specification are the incarceration rate for homicides (Column 1), extortion (Column 2), drug-related crimes (Column 3) and other crimes (Column 4). All specifications include municipality and year fixed effects, and the number of police officers in 1992 interacted with the deportation shock. Municipality clustered standard errors are presented in parenthesis.

Table A.13: Robustness check: Using criminal stocks

	(1) Homicide rate	(2) Extortion rate	(3) Drug traff. rate	(4) Other crime
Panel A: Reduced form estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0002	0.0002	0.0001	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	(1)	(2)	(3)	(4)
Panel B: First step estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.7766	0.7766	0.7766	0.7766
	(0.0610)	(0.0610)	(0.0610)	(0.0610)
Kleibergen-Paap F stat	161.99	161.99	161.99	161.99
	(1)	(2)	(3)	(4)
Panel C: IV estimates				
$GangUS_m \times CrimDep_t$	0.0002	0.0002	0.0001	0.0000
	(0.0000)	(0.0001)	(0.0000)	(0.0000)
Obs.	6291	6291	6291	6291
Number of mun.	262	262	262	262
Dep. var. mean	10.1744	3.8356	6.1094	6.0584
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

Notes: Panel A presents the reduced form estimates from equation 2. *Deportee Born*$_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997, *Criminal Deportations*$_t$ is the stock of criminal deportees from the US in year t. Panel B and C present the first stage and IV estimates from equation 3. *GangUS*$_{m,2000}$ is whether the municipality has gang presence in 2000 instrumented with *Deportee Born*$_{m,1996/1997}$.The dependent variables in each specification are the incarceration rate for homicides (Column 1) , extortion (Column 2), drug-related crimes (Column 3) and other crimes (Column 4). All specifications include municipality and year fixed effects. Municipality clustered standard errors are presented in parenthesis.

F Mechanisms behind crime effects

Table A.14: Robustness check: Controlling for changes in non-criminal deportees

	California			Washington DC		
	(1) Hom.	(2) Extort.	(3) Drugs	(4) Hom.	(5) Extort.	(6) Drugs
Panel A						
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0016	0.0018	0.0007	0.0015	0.0019	0.0007
	(0.0004)	(0.0005)	(0.0003)	(0.0004)	(0.0005)	(0.0003)
$NonCrimBorn_{m,1996/1997} \times NonCrimDeport_t$	0.0002	-0.0002	-0.0001	0.0002	0.0000	0.0002
	(0.0002)	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0002)
	Texas			**Other states**		
	(1) Hom.	(2) Extort.	(3) Drugs	(4) Hom.	(5) Extort.	(6) Drugs
Panel B						
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0018	0.0018	0.0007	0.0015	0.0019	0.0007
	(0.0006)	(0.0005)	(0.0004)	(0.0004)	(0.0005)	(0.0003)
$NonCrimBorn_{m,1996/1997} \times NonCrimDeport_t$	0.0003	-0.0000	-0.0002	0.0002	0.0000	0.0000
	(0.0003)	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0001)
Obs.	6291	6291	6291	6291	6291	6291
Number of mun.	262	262	262	262	262	262
Dep. var. mean	10.1744	3.8356	6.1094	10.1744	3.8356	6.1094

Notes: This table presents the reduced form estimates from equation 2 controlling for changes in non-criminal deportees over time ($NonCrimDeport_t$) interacted with the birth municipalities of non-criminal deportees ($NonCrimBorn_{m,1996/1997}$) coming from different states such as, California (Columns 1-3 in Panel A), Washington DC (Columns 4-6 in Panel A), Texas (Columns 1-3 in Panel B , and other states (Columns 4-6 in Panel B). *Deportee Born*$_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997, *Criminal Deportations*$_t$ is the number of criminal deportations from the US in year t. Panel A controls for shocks to general deportees coming from California (Columns 1-3) and Washington DC (Columns 4-6) by interacting the birth municipalities of non-criminal deportees coming from California and Washington DC with the number of non-criminal deportations over time. Panel B includes shocks to general deportees coming from Texas (Columns 1-3) and other states (Columns 4-6), by interacting the birth municipalities of non-criminal deportees from Texas and other states with the number of non-criminal deportations over time. Specifications also include municipality and year fixed effects. Municipality clustered standard errors are presented in parenthesis.

Table A.15: Robustness check: Controlling for historical migration in 1992

	(1) Homicide rate	(2) Extortion rate	(3) Drug traff. rate	(4) Other crime
Panel A: Reduced form estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0015	0.0016	0.0008	0.0001
	(0.0003)	(0.0004)	(0.0003)	(0.0002)
$Migration_{1992} \times NonCrimDeport_t$	0.0002	0.0001	0.0001	0.0003
	(0.0004)	(0.0004)	(0.0004)	(0.0002)
	(1)	(2)	(3)	(4)
Panel B: First step estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.7794	0.7794	0.7794	0.7794
	(0.0611)	(0.0611)	(0.0611)	(0.0611)
Kleibergen-Paap F stat	162.85	162.85	162.85	162.85
	(1)	(2)	(3)	(4)
Panel C: IV estimates				
$GangUS_m \times CrimDep_t$	0.0019	0.0021	0.0010	0.0001
	(0.0004)	(0.0005)	(0.0004)	(0.0002)
$Migration_{1992} \times NonCrimDeport_t$	0.0003	0.0003	0.0002	0.0003
	(0.0004)	(0.0004)	(0.0004)	(0.0002)
Obs.	6245	6245	6245	6245
Number of mun.	260	260	260	260
Dep. var. mean	10.1735	3.8312	6.1238	6.0661
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

Notes: Panel A presents the reduced form estimates from equation 2 controlling for changes in non-criminal deportees over time interacted with municipality-specific migration rates in 1992 ($Migration_{1992} \times NonCrimDeport_t$). *Deportee Born*$_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997, *Criminal Deportations*$_t$ is the number of criminal deportations from the US in year t. Panel B and C present the first stage and IV estimates from equation 3. *GangUS*$_{m,2000}$ is whether the municipality has gang presence in 2000 instrumented with *Deportee Born*$_{m,1996/1997}$.The dependent variables in each specification are the incarceration rate for homicides (Column 1) , extortion (Column 2), drug-related crimes (Column 3) and other crimes (Column 4). All specifications include municipality and year fixed effects. Municipality clustered standard errors are presented in parenthesis.

Table A.16: Robustness check: Adding victims of conflict in 1980s as control

	(1) Homicide rate	(2) Extortion rate	(3) Drug traff. rate	(4) Other crime
Panel A: Reduced form estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.0015	0.0016	0.0010	0.0002
	(0.0004)	(0.0004)	(0.0003)	(0.0002)
	(1)	(2)	(3)	(4)
Panel B: First stage estimates				
$DeporteeBorn_{m,1996/1997} \times CrimDep_t$	0.8667	0.8667	0.8667	0.8667
	(0.0523)	(0.0523)	(0.0523)	(0.0523)
Kleibergen-Paap F stat	274.45	274.45	274.45	274.45
	(1)	(2)	(3)	(4)
Panel C: IV estimates				
$GangUS_m \times CrimDep_t$	0.0018	0.0018	0.0011	0.0002
	(0.0004)	(0.0005)	(0.0004)	(0.0002)
Obs.	6210	6210	6210	6210
Number of mun.	259	259	259	259
Dep. var. mean	10.1299	3.8220	6.0686	5.9801
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

Notes: Panel A presents the reduced form estimates from equation 2. *Deportee Born*$_{m,1996/1997}$ indicates the birth municipality of gang deportees arriving from California in 1996 and 1997, *Criminal Deportations*$_t$ is the number of criminal deportations from the US in year t. Panel B and C present the first stage and IV estimates from equation 3. *GangUS*$_{m,2000}$ is whether the municipality has gang presence in 2000 instrumented with *Deportee Born*$_{m,1996/1997}$.The dependent variables in each specification are the incarceration rate for homicides (Column 1), extortion (Column 2), drug-related crimes (Column 3) and other crimes (Column 4). All specifications include municipality and year fixed effects, and the number of victims of civil conflict in 1980-1990 interacted with the deportation shock. Municipality clustered standard errors are presented in parenthesis.

Table A.17: Years of education of migrants in the US and non-migrants in El Salvador

	(1) Non-migrant Salvadoran %	(2) Migrant Salvadoran in the US (period of migration 1980-1990) %
No schooling	34.93	13.52
Grade 1-4	29.40	11.37
Grade 5-8	16.27	23.77
Grade 9-12	13.11	37.72
Tertiary	6.29	13.62
Observations	149220	195949

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.

F.1 Robustness checks children

Table A.18: Exposure to gang from the US during childhood on future criminality in El Salvador - Matched sample

	Reduced form		**IV**	
	(1) US-Gang	(2) Non-US Gang	(3) US-Gang	(4) Non-US Gang
$GangShockAge4x6_{m,c}$	4.846	0.183	6.546	0.247
	(1.192)	(0.124)	(1.599)	(0.168)
$GangShockAge7x9_{m,c}$	3.584	0.239	4.842	0.323
	(1.117)	(0.205)	(1.442)	(0.278)
$GangShockAge10x12_{m,c}$	2.668	0.229	3.605	0.309
	(1.041)	(0.274)	(1.363)	(0.369)
$GangShockAge13x15_{m,c}$	2.391	0.313	3.230	0.423
	(0.992)	(0.348)	(1.318)	(0.470)
$GangShockAge16x18_{m,c}$	0.603	0.562	0.815	0.759
	(0.788)	(0.433)	(1.055)	(0.585)
Obs.	2618	2618	2618	2618
Number of mun.	119	119	119	119
Dep. var. mean	7.990	3.083	7.990	3.083

Notes: $GangShockAgex_{m,c}$ is the interaction between the measure of gang presence in the child's municipality of birth and a dummy indicating the age x in 1996. Columns 1-2 present the reduced form estimates of equation 4 using the birth municipality dummy as a measure of US gang presence. Columns 3-4 show the results using gang presence in 2000 instrumented by the municipality of birth of US gang deportees in 1996/1997. The omitted category is a dummy indicating whether individuals were older than 19 years old at the time of arrival of gangs in El Salvador. Columns 1 and 3 use as dependent variable, the incarceration rate for individuals with US gang affiliation. As placebo, Columns 2 and 4 use as dependent variable, the incarceration rate for individuals with non-US gang affiliation. This table restricts the analysis to the matched sample. All specifications control for municipality of birth and year of birth fixed effects, and municipality time trends. Standard errors clustered at the municipality of birth level.

Table A.19: Exposure to gang from the US during childhood on future criminality in El Salvador - Sample of municipalities that have US gang presence using incarceration data

	Reduced form		**IV**	
	(1) US-Gang	(2) Non-US Gang	(3) US-Gang	(4) Non-US Gang
$GangShockAge4x6_{m,c}$	4.183	-0.006	5.415	-0.008
	(1.134)	(0.050)	(1.450)	(0.065)
$GangShockAge7x9_{m,c}$	3.370	0.063	4.363	0.082
	(1.067)	(0.063)	(1.321)	(0.082)
$GangShockAge10x12_{m,c}$	2.678	-0.064	3.467	-0.083
	(0.912)	(0.074)	(1.145)	(0.098)
$GangShockAge13x15_{m,c}$	1.819	-0.056	2.355	-0.073
	(0.931)	(0.069)	(1.193)	(0.090)
$GangShockAge16x18_{m,c}$	0.797	0.116	1.032	0.150
	(0.742)	(0.126)	(0.946)	(0.162)
Obs.	4268	4268	4268	4268
Number of mun.	194	194	194	194
Dep. var. mean	7.805	2.914	7.805	2.914

Notes: $GangShockAgex_{m,c}$ is the interaction between the measure of gang presence in the child's municipality of birth and a dummy indicating the age x in 1996. Columns 1-3 present the reduced form estimates of equation 4 using as measure of gang presence the municipality of birth of gang deportees. Columns 4-6 show the IV estimates using as measure, gang presence in 2000 instrumented by the municipality of birth for US gang deportees in 1996/1997. The omitted category is a dummy indicating whether individuals were older than 19 years old at the time of arrival of gangs in El Salvador. Columns 1 and 3 use as dependent variable the incarceration rate for individuals with US gang affiliation. As placebo, Columns 2 and 4 use as dependent variable the incarceration rate for individuals with non-US gang affiliation. In this table, I restrict the analysis to municipalities that were ever exposed to US gangs during my period of analysis. I define this sample using all municipalities that present gang related criminals in jail above the first quartile of the distribution each year. All specifications control for municipality of birth and year of birth fixed effects, and municipality time trends. Standard errors clustered at the municipality of birth level.

Table A.20: Exposure to gang from the US during childhood on future criminality in El Salvador - Sample of municipalities that have US gang presence using gang homicide data

	Reduced form		**IV**	
	(1) US-Gang	(2) Non-US Gang	(3) US-Gang	(4) Non-US Gang
$GangShockAge4x6_{m,c}$	4.203	0.016	5.313	0.021
	(1.157)	(0.046)	(1.456)	(0.058)
$GangShockAge7x9_{m,c}$	3.557	0.062	4.496	0.078
	(1.079)	(0.065)	(1.315)	(0.084)
$GangShockAge10x12_{m,c}$	3.030	-0.028	3.830	-0.035
	(0.930)	(0.070)	(1.155)	(0.089)
$GangShockAge13x15_{m,c}$	1.870	-0.046	2.364	-0.059
	(0.947)	(0.070)	(1.172)	(0.090)
$GangShockAge16x18_{m,c}$	0.842	0.114	1.065	0.144
	(0.737)	(0.131)	(0.923)	(0.164)
Obs.	4026	4026	4026	4026
Number of mun.	183	183	183	183
Dep. var. mean	7.787	2.933	7.787	2.933

Notes: $GangShockAgex_{m,c}$ is the interaction between the measure of gang presence in the child's municipality of birth and a dummy indicating the age x in 1996. Columns 1-3 present the reduced form estimates of equation 4 using as measure of gang presence the municipality of birth of gang deportees. Columns 4-6 show the IV estimates using as measure, gang presence in 2000 instrumented by the municipality of birth for US gang deportees in 1996/1997. The omitted category is a dummy indicating whether individuals were older than 19 years old at the time of arrival of gangs in El Salvador. Columns 1 and 3 use as dependent variable the incarceration rate for individuals with US gang affiliation. As placebo, Columns 2 and 4 use as dependent variable the incarceration rate for individuals with non-US gang affiliation. In this table, I restrict the analysis to municipalities that were ever exposed to US gangs during my period of analysis. I define this sample using all municipalities that report gang related homicides above the first quartile of the distribution each year as a proxy. All specifications control for municipality of birth and year of birth fixed effects, and municipality time trends. Standard errors clustered at the municipality of birth level.

Table A.21: Exposure to gang from the US during childhood on future criminality in El Salvador including municipality level controls

	Reduced form		**IV**	
	(1) US-Gang	(2) Non-US Gang	(3) US-Gang	(4) Non-US Gang
$GangShockAge4x6_{m,c}$	4.347	-0.010	5.589	-0.013
	(0.959)	(0.056)	(1.230)	(0.073)
$GangShockAge7x9_{m,c}$	3.837	0.078	4.934	0.101
	(1.085)	(0.064)	(1.327)	(0.084)
$GangShockAge10x12_{m,c}$	3.121	-0.017	4.012	-0.022
	(0.837)	(0.065)	(1.044)	(0.084)
$GangShockAge13x15_{m,c}$	2.344	-0.063	3.013	-0.080
	(0.962)	(0.074)	(1.226)	(0.096)
$GangShockAge16x18_{m,c}$	0.793	0.057	1.019	0.074
	(0.744)	(0.108)	(0.942)	(0.138)
Obs.	4928	4928	4928	4928
Number of mun.	224	224	224	224
Dep. var. mean	6.634	2.440	6.634	2.440

Notes: $GangShockAgex_{m,c}$ is the interaction between the measure of gang presence in the child's municipality of birth and a dummy indicating the age x in 1996. Columns 1-3 present the reduced form estimates of equation 4 using as measure of gang presence the municipality of birth of gang deportees. Columns 4-6 show the IV estimates using as measure, gang presence in 2000 instrumented by the municipality of birth for US gang deportees in 1996/1997. The omitted category is a dummy indicating whether individuals were older than 19 years old at the time of arrival of gangs in El Salvador. Columns 1 and 3 use as dependent variable the incarceration rate for individuals with US gang affiliation. As placebo, Columns 2 and 4 use as dependent variable the incarceration rate for individuals with non-US gang affiliation. All specifications control for municipality of birth, and year of birth fixed effects, municipality time trends, and baseline characteristics interacted with year such as population density, years of education, homicide rates, and expenditures in education. Standard errors clustered at the municipality of birth level.

Table A.22: Exposure to gang from the US during childhood on future criminality in El Salvador - Keeping only urban areas

	Reduced form		**IV**	
	(1) US-Gang	(2) Non-US Gang	(3) US-Gang	(4) Non-US Gang
$GangShockAge4x6_{m,c}$	3.102	0.055	4.336	0.077
	(0.938)	(0.049)	(1.291)	(0.067)
$GangShockAge7x9_{m,c}$	2.934	0.028	4.101	0.040
	(1.105)	(0.089)	(1.472)	(0.126)
$GangShockAge10x12_{m,c}$	1.986	-0.060	2.776	-0.084
	(0.937)	(0.065)	(1.274)	(0.094)
$GangShockAge13x15_{m,c}$	2.216	-0.048	3.098	-0.068
	(1.067)	(0.071)	(1.464)	(0.100)
$GangShockAge16x18_{m,c}$	0.297	0.037	0.415	0.051
	(0.818)	(0.105)	(1.136)	(0.145)
Obs.	2288	2288	2288	2288
Number of mun.	104	104	104	104
Dep. var. mean	8.315	3.123	8.315	3.123

Notes: $GangShockAgex_{m,c}$ is the interaction between the measure of gang presence in the child's municipality of birth and a dummy indicating the age x in 1996. Columns 1-3 present the reduced form estimates of equation 4 using as measure of gang presence the municipality of birth of gang deportees. Columns 4-6 show the IV estimates using as measure, gang presence in 2000 instrumented by the municipality of birth for US gang deportees in 1996/1997. The omitted category is a dummy indicating whether individuals were older than 19 years old at the time of arrival of gangs in El Salvador. Columns 1 and 3 use as dependent variable the incarceration rate for individuals with US gang affiliation. As placebo, Columns 2 and 4 use as dependent variable the incarceration rate for individuals with non-US gang affiliation. The sample includes only municipalities where a main city is located. All specifications control for municipality of birth and year of birth fixed effects, and municipality time trends. Standard errors clustered at the municipality of birth level.

Table A.23: Exposure to gang from the US during childhood on future criminality in El Salvador - Including year of arrest fixed effects

	Reduced form		**IV**	
	(1) US-Gang	(2) Non-US Gang	(3) US-Gang	(4) Non-US Gang
$GangShockAge4x6_{m,c}$	0.097	0.001	0.126	0.001
	(0.022)	(0.001)	(0.027)	(0.002)
$GangShockAge7x9_{m,c}$	0.078	0.003	0.102	0.004
	(0.019)	(0.002)	(0.024)	(0.002)
$GangShockAge10x12_{m,c}$	0.066	0.001	0.086	0.002
	(0.017)	(0.002)	(0.021)	(0.003)
$GangShockAge13x15_{m,c}$	0.048	0.001	0.062	0.002
	(0.017)	(0.003)	(0.022)	(0.003)
$GangShockAge16x18_{m,c}$	0.018	0.006	0.024	0.007
	(0.014)	(0.004)	(0.017)	(0.005)
Obs.	288200	288200	288200	288200
Number of mun.	262	262	262	262
Dep. var. mean	0.126	0.046	0.126	0.046

Notes: 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. $GangShockAgex_{m,c}$ is the interaction between the measure of gang presence in the child's municipality of birth and a dummy indicating the age x in 1996. Columns 1-3 present the reduced form estimates of equation 4 using as measure of gang presence the municipality of birth of gang deportees. Columns 4-6 show the IV estimates using as measure, gang presence in 2000 instrumented by the municipality of birth for US gang deportees in 1996/1997. The omitted category is a dummy indicating whether individuals were older than 19 years old at the time of arrival of gangs in El Salvador. Columns 1 and 3 use as dependent variable the incarceration rate for individuals with US gang affiliation. As placebo, Columns 2 and 4 use as dependent variable the incarceration rate for individuals with non-US gang affiliation. All specifications control for municipality of birth, and year of birth fixed effects, and year of arrest fixed effects. Standard errors clustered at the municipality of birth level.

F.2 Mechanisms behind gang recruitment

Table A.24: 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)
$GangShockAge4x15_{m,c}\times$		0.030				
		(0.048)				
$GangShockAge4x15_{m,c}\times$			-0.257			
			(1.105)			
$GangShockAge4x15_{m,c}\times$ $Army_{m,1980}$				-2.824		
				(2.356)		
$GangShockAge4x15_{m,c}\times$ $Left_{m,1980}$					-7.909	
					(2.710)	
$GangShockAge4x15_{m,c}\times$ $Disputedland_{m,1980}$						-3.815
						(2.634)
Obs.	5764	5764	5764	5764	5764	5764
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 (using as instrument the municipality of birth for 1996/1997 gang deportees) and a dummy indicating whether individuals were younger than 15 in 1996. The omitted category is a dummy indicating whether individuals were older than 15 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 per 1000 population. 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.