Making a Gangster: Exporting US Criminal Capital to El Salvador

PRELIMINARY DRAFT

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July 31, 2018

Abstract

This paper provides new evidence on how criminal skills exported from the US affects gang development in Central America and child migration to the US. In 1996, the US Illegal Immigration Responsibility Act drastically increased the number of criminal deportations. In particular, the leaders of large Salvadoran gangs that developed in Los Angeles were sent back to El Salvador. In addition to having a direct effect on violent crime, the arrival of individuals bringing criminal skills and connections may have generated important spillover effects on Salvadorean children that were never exposed to US neighborhoods, eventually leading to more unaccompanied minors emigrating from El Salvador to the US. I exploit the change in US deportation policy to examine the effects of an increase in criminal capital in El Salvador on violence, extortion and child migration. Using variation over time and across cohorts combined with geographical variation in the location of gang groups and leader's place of birth, I find that criminal deportations led to a large increase in homicide rates and gang activity such as extortion and drug trafficking as well as an increase in gang recruitment of children. In particular, I find evidence that children in their early teens when the leaders arrived are more likely to be involved in gang related crimes and have less education when they are adults. I also find evidence that these deportations, by increasing gang violence in El Salvador, increase child migration to the US, potentially leading to more deportations. However, I find that in municipalities with stronger organizational skills and social ties in 1980s before the deportation shocks, US gang are less likely to develop. In sum, this paper provides a new hypothesis about how gangs expanded and how historical social cohesion and pre-existing organizational skills to credibly threaten violence can prevent gang development.

1 Introduction

Between 1998 and 2014, US immigration authorities logged almost 300,000 deportations of immigrants with criminal records to Central America, including an untold number of gang leaders. Although these policies were primarily aimed at reducing criminal activity by breaking up Los Angeles street gangs, it may have backfired and helped spread gangs across Central America and back into other parts of the United States. A good example of this is the Mara Salvatrucha, or MS-13, which is a violent transnational criminal organization that started in Los Angeles and is now active across the United States and many Central American countries. Recent estimates place MS-13 membership in the United States between 8,000 and 10,000 individuals across 33 states.[1]

Gangs' activities include brutal violence, drug-trafficking, extortion, and human smuggling. The US government, as well as the governments of El Salvador, Honduras, and Guatemala, are enacting tough measures to target gangs. However, factors that made the growth of the gangs possible, most importantly deportation policies and historical factors, have generally been overlooked.

This paper provides new evidence on how an increase in criminal capital due to deportations from the US affects gang development, human capital investments and child deportations in El Salvador. El Salvador is among the countries with the highest homicide rates in the world and much of this violence has been attributed to gangs. This paper makes three contributions. First, it shows that gangs in El Salvador developed due to the arrival of criminal deportees bringing new criminal skills related to extortion and drug trafficking from the US. In addition, while deportees may have a direct effect by bringing new criminals, they may also have an indirect effect by recruiting children, spreading their criminal capital. In particular I show that Salvadorean children that were never exposed to the US start being part of these gangs with US origin. Second, I show how historical social cohesion and organizational skills can mitigate gang violence and recruitment of children by providing social identity to children and by substituting the skills the gangs provide. Third, I present some evidence of a self-reinforcing cycle through which gang deportation increase child migration from violent gang areas to the US, further increasing deportations.

To isolate the causal channels, I take advantage of exogenous changes in US deportation policies that suddenly increase the number of criminal deportations. In particular, the leaders of large Salvadorean gangs that developed in Los Angeles were sent back to their countries. These gangs were formed by Salvadorean in Los Angeles during the 1980s where many families migrated from El Salvador as part of the civil conflict (DeCesare 1998; Dunn 2007; Lopez and Connell 1996). Though these gangs were not extremely violent at first, after spending time in US prisons, members gained skills related to extortion and violence (Ramsey 2012). Then, in 1996 the US Illegal Immigration Responsibility Act drastically increased the number of criminal deportations leading to the deportation of these gang leaders. This further increase in 2003 when the US passed the Homeland Security Act and further increased the number of deportations. It has been widely re-

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

ported that violence in El Salvador increased after these deportations and by 2016, El Salvador had the highest murder rate in the world. The gangs are known to recruit primary school age children, thus children were likely particularly affected. More than 70% of gang members join before the age of 15.

This setting yields three useful sources of variation: i) cross-municipality variation in gang's location, ii) over-time variation in criminal deportations, and iii) differential exposure to gangs across cohorts (during sensitive ages) within location-time cells. I measure gang presence in two ways: gang activity in 2002 measured by gan homicides (prior to the second wave of criminal deportations) and gang activity in 1996 measured by the place of birth of individuals associated with gangs who went to jail in 1996 and 1997 (during the first wave of criminal deportations). Time variation comes from changes in deportation policies in the US in 1996 and 2003. I thus define age-specific shocks by interacting gang presence measures and age at the time of arrival of the gangs leader in 1996. Differential exposure arises since children within a municipality experience the arrival of gangs at different ages and due to variation in gang presence across municipalities.

In addition, given that gang location could potentially be endogenous, I take advantage of incarceration data from 2012 that contains the name and place of birth of all individuals in jail. Using these data, I instrument gang presence with the municipality of birth of the major gang leaders who were deported from the US.[2] By comparing changes in outcomes across municipalities with and without gang presence in El Salvador, I am able to measure how the arrival of criminal deportees from the US affected homicide rates, gang related activities (extortion and drug trafficking), educational attainment, incarceration and child migration. The idea is that the arrival of gangs had a larger effect in municipalities where leaders were born and that within these areas it affected children more given that gangs heavily recruit young children.

To observe these sources of variation, I exploit administrative data on gang's criminal activity and incarceration. First, I use panel of gang homicides by municipality that allows me to check where gangs were located at the beginning of the period. Second, to examine the long-run effects on children recruitment, I take advantage of confidential administrative data from 2002 to 2017 on the universe of inmates in Salvadoran prisons, which includes information on municipality of birth, date of birth, length of sentence and education. These data allow me to track cohorts that were exposed to the arrival of gang leaders at different ages and in different locations. In this way, I am able to analyze whether exposed children are more likely to be incarcerated in adulthood.

In the short run, I show that after the arrival of US criminal deportees extortion appears for the first time in the country leading to a large increase in homicide rates and a decrease in human capital in the places where gang members are located. Children in primary school are less likely to attend school after the arrival of gangs. This is consistent with the fact that the most common age of initiation for gangs is between 10 and 14, which is also when children are at particular risk of dropping out of school when gang presence increases. Consistent with these results, I observe

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[2]Looking at previous trends I am also able to test the identifying assumption, that is, that municipalities with and without gang arrival would have followed similar trends if the number of criminals deported had not increased.

that in the long-run, educational attainment decreases more heavily for younger cohorts who were exposed to gang presence during childhood. Moreover, I find no effects for individuals that were in secondary school at the time that the leaders arrived, in line with the fact that most of dropouts occur before these grades. I also provide evidence that these effects are not driven by selective migration or an increase in homicides rate, suggesting that gang presence is driving the results.

Next, I further explore the spillover effects of gang recruitment of children by examining long-run effects on crime. I find that individuals who were born in gang areas and were in primary schooling ages are more likely to be incarcerated when they are adults. In particular, affected cohorts are 20 percent more likely to be incarcerated as adults compared to less exposed cohorts (individuals who grew up in non-gang areas and individuals who grew up in gang areas but were in secondary school when the leaders arrived). Moreover, I find that as adults, affected children are more likely to be part of one of the gangs that originated in the US. I find no effect on crimes that are not associated with gangs.

The next focus of the paper is to explore the mechanisms behind gang recruitment. Criminal deportees from the US not only brought the business of extortion and drugs to El Salvador but also social identity for some Salvadorean children. Status, respect and a sense of collective identity is important for gang recruitment. About 80% join the gang seeking respect and friendship. To shed light on this mechanism, I take advantage of areas with historical collective action in 1980s before the gangs from US arrive. In particular, I focus on how social capital and organizational skills left by the left insurgency groups in 1980s may complement or substitute gang development. These groups were mainly characterized by their ability to mobilize masses leaving organizational skills and social capital in the locations that they controlled (McClintock, 1998;Wood, 2003). One important aspect is that by the time the gangs arrived these groups were no longer controlling these areas.

This paper finds some evidence of the importance of social capital and organizational skills to mitigate gang development. I find that areas with historical collective action gangs do not develop. This is consistent with recent surveys in El Salvador that show that residents in guerrilla areas remain more committed to social change and equity than respondents in the other nearby municipalities that had been dominated by government-military groups (Wood 2005). This results are in line with recent research showing that combat experience is an important type of human capital that can lead to increased organizational skills and political collective action (Jha and Wilkinson 2012). Relatedly, Eynde (2015) shows that higher military recruitment in colonial Punjab is associated with an increase of literacy skills.

Finally, this paper also finds evidence of a boomerang effect on the US. I find evidence that the increase in criminality and violence caused by gang leaders pushed Salvadoran children to migrate out of the country, increasing the number of unaccompanied minors trying to enter the US. I take advantage of administrative migration data on the universe of deported minors from 2012 to 2017 which contains information on children's place of birth. Moreover, I exploit variation from a recent truce in El Salvador that reduced gang violence by 50% in the places where leaders

were born.

These results show how criminal deportations from the US can reduce human capital in the destination country, and how criminal deportations can ultimately benefit criminal organizations and induce child migration. More broadly, the Salvadoran case provides a unique opportunity to understand how criminal capital can be exported from one place to another explaining the origin of gangs and associated violence. In this regard, this paper contributes to the literature on migration showing how specific human capital acquired in places of birth can be exported to other locations generating spillover effects.[3] I complement this literature by focusing on criminal capital and the development of two innovations: extortion and illegal trafficking. Closely related, Murphy and Rossi (2017) traced the development of Mexican cartel to Chinese migration that brought knowledge of the opium trade to Mexico.

This paper related to several literature. First, this paper is related to the literature studying 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). Most of this literature has focused on the effects of incarceration and peers at school on future recidivism. I complement this literature by showing how criminal capital from the US spread to Salvadorean children that were not exposed to US neighborhoods and prisons. In a previous paper, Sviatschi (2017) shows that exposing children to illegal labor markets makes them more likely to be criminals, irrespective of where they live as adults. In this paper I show evidence that exposure to deported gang leaders has similar effects. Moreover, I provide some evidence that effects are driven by individuals that were exposed during their early adolescence. While previous literature on human capital has focused on early childhood (e.g., Currie and Almond 2011; Heckman 2006; Brooks-Gunn and Duncan 1997), I complement this literature by providing evidence that early adolescence can be a critical period for gang recruitment and criminal behavior since individuals are more likely to be influenced by peers and role models (Ingoldsby and Shaw 2002).

This paper relates to the literature exploring the nature of organize crime (e.g., Gambetta 1996; Bandiera 2003; Pinotti 2015; Alesina et al. 2016; Buonanno et al. 2015; Acemoglu and De Luca 2017). Much of this literature has focused on the origins of the Italian mafia. I complement this literature by providing first evidence on the origin of gangs which are one of the main contributors to the recent increase in violent crime in cities in developing countries. Moreover, there is little evidence on crime in developing countries despite very high homicide rates, especially in urban areas. By understanding how gangs develop, I shed light on policies to address gang development and expansion. In addition, by understanding the origin and consequences of gangs, this paper also shed light on the origins and consequences of weak states in developing countries. Previous literature has studied how the lack of state capacity can have negative effects on development (e.g., Acemoglu et al. 2015). One potential unexplored explanation for this lack of local state capacity can be the presence of criminal organizations (such as gangs and cartels) controlling territories in developing countries.

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[3] E.g, Moser et al 2013, Hornung 2014, Rocha et al 2016.

Finally, this paper is also related to recent working papers studying deportations (e.g., Jakubowski 2010; Blake 2015; Rozo et al. 2017; Kalsi 2017). While most of the literature has relied on cross-country variation, this paper estimates short and long-term effects at a more disaggregated level using the universe of individuals and municipalities in El Salvador. The closest related previous paper is by Rozo et al. (2017) who study the effects of criminal and non-criminal deportations from the US to Mexico in municipalities near repatriation points. Unlike this paper, they find no effects on homicides rates. In contrast to the individuals deported from the US to Mexico, many of the individuals deported to El Salvador were known gang leaders in Los Angeles. This is important, as it implies that these individuals potentially bring criminal capital back to El Salvador. In work conducted in parallel, Kalsi (2017) also examines the effects of criminal deportations on schooling in El Salvador at a more aggregated level. Where our outcomes overlap, I find similar results: a decline in schooling.[4]

Overall, this paper provides evidence of 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 is generating a wave of forced child migrants into the US, potentially generating more deportations. This could lead to a cycle of violence because these child migrants are potentially more likely to be victims or recruited by gangs. In addition, the fact that the effect of gang deportations is smaller in places with more social cohesion and historically less inequality suggests that policies to integrate individuals and decrease the incentives for adolescents to join gangs are needed to break this cycle.

2 Historical Background

2.1 The Origin of Gangs [5]

Los Angeles was the destination of thousands of people from El Salvador fleeing civil war in the 1980s. During this period, Salvadoran immigrants were living in poor and overcrowded neighborhoods and often faced discrimination. In a typical immigrant family both parents worked, leaving children without major supervision (Savenije 2009).

During this period, many Central American youth, who were often on their own in the streets of Los Angeles, joined the Eighteenth Street Gang or Barrio 18, a gang formed mainly by Mexican

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[4]This paper makes three contributions relative to the work conducted in parallel. First, it uses confidential information on the exact location of gangs which allows me to assess whether homicides committed by gangs expanded in these areas due to criminal deportations at a more disaggregated level using the universe of individuals and municipalities in El Salvador. Second, I address the concern that gang presence is endogenous by using confidential information on where gang leaders were born. Furthermore, in the analysis, I include pre-1996 observations that allows me to test whether these places were different before the deportations and include municipality specific trends. Finally, and perhaps most importantly, the data allow me to estimate effects on a wide-range of long-term outcomes such as gang recruitment and child migration. These estimates allow, for the first time, to estimate spillover effects not only in El Salvador where these criminals arrived but also the spillover effects on the US. Moreover, by exploiting historical differences in political and economic organization, I am able to assess what factors are important for the expansion of gangs.

[5]For a more extensive review of the history of gangs from El Salvador see Savenije 2009

youth that become one of the biggest gangs in Los Angeles (DeCesare 1998; Dunn 2007; Lopez and Connell 1996). At the same time, a group of Salvadoran youth came together in what would later be called the MS-13 or Mara Salvatrucha (Hayden 2005). The MS-13 partly originated as a self-defense group in response to discrimination and threats from other Mexican gangs (Johnson 1989). Although relatively peaceful at first, this changed in the mid-1980s when some of the MS-13 members spent time in prison. Prison served as a place where MS-13 members could learn illegal practices, gain social connections, and plan future illegal activities. By 1985, the MS-13 had evolved, and started taking up small-scale drug trafficking or extorting money from corner drug dealers (Ramsey 2012). They also developed a fierce rivalry with the Eighteenth Street Gang which has persisted to this day.

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

Deportations increased further in 1996 and 2003 due to the Illegal Immigration Reform and Immigration Responsibility Act (IIRIRA) and the Homeland Security Act. The IIRIRA of 1996 drastically increased immigration enforcement, by creating expedited removal procedures, adding new grounds for deportation, and increasing the number of border patrol agents. The Homeland Security Act approved in 2002 and implemented in 2003 created the Department of Homeland Security with the mandate of preventing and reducing the vulnerability of the United States to terrorist attacks. In practice, this had a profound impact on the number of forced removals by US immigration authorities, which increased sharply after that year.
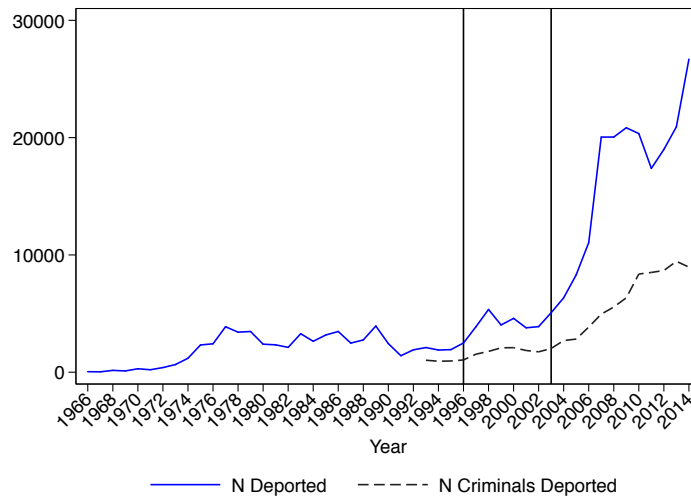
Figure 1 shows the number of individuals being deported from the US to El Salvador from 1966 to 2014. As of 1993, there is information on whether the deported individuals were convicted criminals. As shown in the figure, there was a substantial increase in the number of deported individuals after 1996 and after 2003.

I argue that 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 a indirect effect due to the recruitment of others, spreading criminal skills and connections acquired in US prisons. There is little evidence about whether an influx of criminal capital is an underlying cause of broader gang participation and criminal activity.

There is anecdotal evidence that the arrival of deported gang members in El Salvador spread US-style gang culture in the country. This included the name of gang organizations (i.e. MS-13 and Eighteenth Street Gang), as well as the use of tattoos, utilization of hand signs to identify gang members, clothing, and, most importantly, the use of violence and criminal behavior (Cruz 2007a, Santa Cruz and Concha-Eastman).

The criminal knowledge and connections brought to El Salvador by deported criminals is especially relevant given that the majority of Salvadoran gang members joined within the country

Figure 1: Deportations to El Salvador by year

and have never been outside the country. A study conducted in 1996 showed that only one in every ten gang members had joined the gang organization in the US (Cruz and Portillo Pena 1998). According to a more recent study, only 12 % of gang members said they had been in the U.S (Santa Cruz and Concha Eastman 2001), and the most recent study available conducted only with imprisoned gang members revealed that only 7.3 % had been in the United States (Aguilar 2007).

In the 1990s, when deportations begun to increase, gangs members did not receive much attention from police authorities in El Salvador. At that time, youth gangs were primarily involved in feuds with rival gangs rather than confrontations with police. However, this changed after 2003 with the enactment of the *Mano Dura* Act. *Mano Dura* was a wide-spread government effort to tackle gangs and gain public support for the approaching elections in 2004 (Aguilar 2004). A law was enacted in July 2003 aimed at detaining and prosecuting suspected gang members based on the newly classified felony of "illicit association" (Thale and Falkenburger 2006). By mid-2004, this initiative evolved to a superlative form called *Super Mano Dura*. The *Super Mano Dura* gave complete authority to the police and military personnel to carry out arrests based on arbitrary decisions and thin evidence. Police could use the presence of tattoos, hand signals, and even physical appearance as evidence of gang membership (Hume 2007).

MS-13 and Barrio 18 are currently the two major youth gangs in El Salvador and Central America. Between 2002 and 2006, both gangs comprised more than 87% of gang membership in El Salvador (Aguilar and Miranda 2006; USAID 2006). The gangs are known not only because of their control of Salvadoran neighborhoods and most of the prisons, but also because they have evolved to become powerful criminal groups with an 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, about 3% of GDP, to gangs, according to a study by the country's central bank and the UN Development Program ([Penate et al. 2016](#)). El Salvador's extremely high murder rate is largely due to gang turf wars. [Penate et al. (2016)](#) estimate that the total cost of violence, including the amount households spend on extra security and the lost income of people deterred from working, is nearly 16% of GDP, the highest level in Central America.

Figure [A.1](#) presents a timeline of the main events taking place between 1979 and 2006.
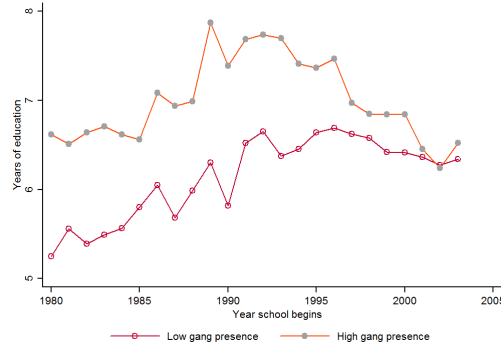
3 Data

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

Data on educational outcomes comes from the 2007 El Salvador census. Census data includes information on total years of education completed by individuals who are born before 1989. These are the individuals who turned 18 by 2007 and have likely finished their education. I also use the 1992 census to provide information on baseline characteristics across municipalities with gang presence.

I complement data from the Census with data from Household Surveys (Encuesta de Hogares de Propósitos Múltiples) that have been conducted annually in El Salvador since 1995. Household survey include demographic variables, educational enrollment and attainment, health, labor force participation, as well as income and consumption of Salvadoran individuals and their households. Each survey consists of a stratified sample of over 20,000 households, for a total sample size of over 85,000 individuals. Figure [2](#) plots the years of schooling in gang and non-gang areas. Individuals starting school in 1990 had more years of schooling in gang related areas than in non-gang areas. However, by 1996, the gap is reduced by half. A similar pattern is present when using Census data. I also examine educational attainment by gender and find similar trends (see Figure [A.2](#) in the Appendix).

Figure 2: Average years of education in gang and non gang municipalities in El Salvador using household surveys in 2012 and 2013

Data on municipal-level homicides for the years 1995 and 1999 to 2010 was provided by the National Civil Police of El Salvador. This information is complimented with data on homicides committed by gangs from 2002 to 2010. Gang presence is defined as municipalities that experienced at least one homicide committed by a gang in 2002. Table 1 shows that in 1992, before the shock, gang areas have higher education than non-gang areas. In addition, there is no evidence that gang leaders self-selected into areas that were more unequal or more affected by civil conflict.

Table 1: Baseline 1992 gangs and non gang municipalities

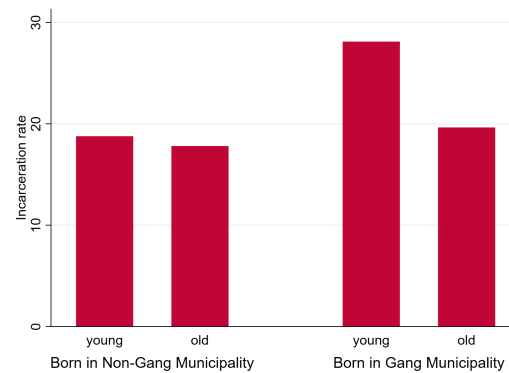| Variable	Non-gang	Gang	Diff.	$|t|$	$\Pr(|T| > |t|)$
Complete family	0.543	0.549	0.006	0.92	0.3577
Members living abroad	0.132	0.117	-0.016	1.60	0.1105
Males living abroad	0.064	0.066	0.001	0.32	0.7491
Participated in the armed force	0.009	0.008	-0.000	0.12	0.9051
Years of education	4.849	5.991	1.142	7.94	0.0000***
School attendance 1995	0.654	0.682	0.028	3.07	0.0021***
Homicides rates in 1995	17.014	23.551	6.537	1.11	0.2699
Land reform (=1)	.118	.146	-.0276	-0.663	0.509
Number of deaths during civil conflict	23.343	26.812	3.469	0.28	0.78

In order to examine whether children exposed to the arrival of gangs are more likely to engage in crime as adults I use confidential data on the universe of individuals that entered prison from 1980 to 2016. These data allow me to track cohorts that were exposed to deported gang leaders during childhood across different municipalities. I exploit variation in place of birth and date of birth to explore how childhood exposure to the criminal deportations affects criminal behavior in later life.

The data contain about 140,000 individuals incarcerated in El Salvador between the ages of 18 and 60. It contains information about their exact municipality and date of birth, whether they belong to a gang, their education and type of crime.

From this sample, I keep only individuals born in El Salvador and construct exposure to gang leaders during youth and early adulthood (those who were exposed between age 4 to 20). 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 born per municipality and cohort. On average there are 20 offenders per cohort-district of birth cell.
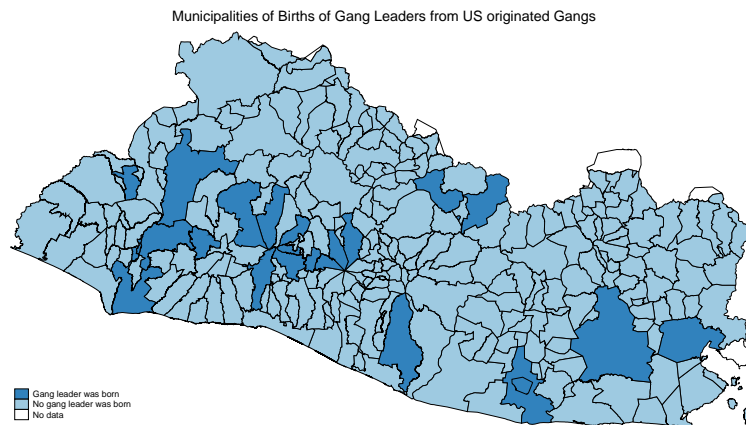
Figure 3 shows that incarceration rates are higher for individuals exposed to gangs during childhood. Moreover, there is no change for individuals from non-gang areas. This helps motivate my main empirical specification.

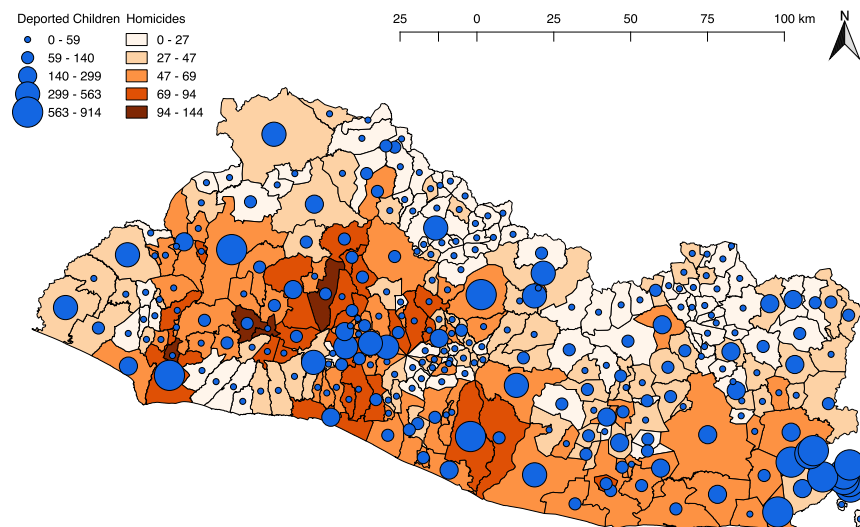Figure 3: Differences in incarceration rates by ages

Data on gang leaders was collected from a special investigation done by one of the main newspapers in El Salvador, El Faro, which provided the names of the main gang leaders. Most of these gang leaders grew up in the US but were born in El Salvador. To obtain information on their place of birth, I use data from criminal sentences in 2012 from the Ministry of Justice in El Salvador, the US Department of Treasury, and newspapers investigations. Figure 4 presents the municipality of birth of leaders. Most of these municipalities are the ones that experience a large increase in homicides after the arrival of deported gangs.

Figure 4: Gang's Leaders Place of Birth in El Salvador

Municipalities of Births of Gang Leaders from US originated Gangs

Gang leader was born
No gang leader was born
No data

Finally, I take advantage of administrative data on the universe of minors deported from the US between 2012 and 2016. These data contain information on children's place of birth, allowing me to explore the effect of gang violence on child migration. Figure A.3 shows child deportation over time for children from municipalities in El Salvador with low, medium, and high exposure to gangs, as proxied by homicides committed by gangs. Figure 5 shows the spatial distribution. Both figures show that there is a larger share of deported children coming from municipalities with high levels of homicides. One limitation of these data is that there is no information on when these children left El Salvador. Therefore, I assume that the children had left El Salvador within 6 months of being deported from the US.

Figure 5: Child Deportations and Homicides 2003-2016

Deported Children Homicides
0 - 59   0 - 27
59 - 140   27 - 47
140 - 299   47 - 69
299 - 563   69 - 94
563 - 914   94 - 144

4 Empirical Strategy

In order to estimate the causal effect of criminal deportations on crime and education outcomes, it would be ideal to use data on where the deportees arrived. Unfortunately, this information is unavailable. Therefore, to measure the effects of criminal deportations from the US, I combine a difference-in-difference strategy with an instrumental variables approach. First, I exploit geographic variation in gang location, defined by whether the police reported violent crime associated with gangs in 2002, just before the second period of expansion of criminal deportations from the US. Second, I exploit plausibly exogenous time variation in criminal deportations induced by the US laws passed in 1996 and 2003.

The treatment variable is the total number of criminal deportees to El Salvador interacted with a dummy variable that equals one if a given municipality has gang presence. Since gangs presence is measured after the first criminal shock which brought the gang leaders, I use as instrumental variable that consists of an indicator for whether the main gang leader was born in that municipality. Equation 1 presents the baseline specification:

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

where $\textit{Gang Presence}_m$ is a measure of gang activity for municipality m, which is defined by whether there was a homicide committed by gang members in municipality m in 2002, before the second shock. $\textit{Criminal Deportations}_{t-1}$ is the instrumented number of criminal deportations from the US in year $t-1$. $\textit{Gang Presence}_m$ is instrumented by a dummy indicating whether a main gang leader was born in that municipality. $Y_{m,t}$ is the homicide rate per 100,000 population in municipality m in year t. The α_m are municipality fixed effect, ϕ_t year fixed effects, and $\sigma_d t$ department-by-year fixed effects.[6] By including these fixed effects, I control for invariant differences between gang and non-gang municipalities, and for changes in aggregate time trends across years. By controlling for department-by-year fixed effects, the identification assumption is that affected municipalities would otherwise have changed similarly, on average, compare to control municipalities within their same department. This specification controls for any characteristic that may vary at the department and year level. This is especially relevant since most political decision are made at the department level. In particular, it rules out the concern that crime and schooling results are driven by changes that vary by department and year such as an increase in police corruption or a decrease in department resources. $X_{d,t}$ controls for time trends in baseline characteristics in 1992 such as poverty, crime and education. To account for serial correlation of criminal deportations, standard errors are clustered at the municipality level.

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

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[6]El Salvador is divided into 14 departments.

comes from variation in the years of exposure to criminal deportees at different ages and from gang presence across municipalities of birth. Equation 2 presents the specification:

$$Y_{m,c} = \beta \underbrace{(Age\ 1996_c \times Gangs\ Presence_m)}_{GangShockAgex_{m,c}} + \alpha_m + \delta_c + \sigma_m c + \epsilon_{m,c} \tag{2}$$

where m indexes the municipality of birth and c the birth year. *Gangs Presence$_m$* is a dummy indicating whether gangs arrived in the municipality of birth. *Age1996$_c$* is the age in 1996. The term δ_c indicates year of birth fixed effects and controls for specific cohort effects. The term α_m indicates municipality of birth fixed effects and control for time-invariant characteristics of the municipality that may be correlated with both childhood exposure and schooling. Given that individuals in non-gang areas have less years of schooling at baseline, I also include a vector of municipality baseline characteristics interacted with year (including years of schooling in 1992 and crime rates in 1995). These interactions help control for potential differential trends across types of municipalities.

The parameter of interest is β, the effect of experiencing criminal deportations during childhood, which is identified from variation in criminal deportees across municipalities and birth cohorts. Therefore, the control group is composed of those who were born in the same municipality but in a different year, and those who were born in a different municipality but belong to the same cohort.

4.0.1   Addressing Potential Concerns

In this subsection, I show that municipalities that had gang presence are the ones expanding their gang activities in the 2000s. In addition, we discuss the exclusion, relevance, and common trends assumptions. Finally, I present a series of robustness checks that address the potential endogeneity of gang presence and differential trends across municipalities.

In the above specification, I assume that only municipalities that had gang activities in 2002 responded to the criminal deportation shock. One concern is that other municipalities could have expanded gangs in response to criminal deportations during the 2000s. To address this concern, I estimate the increase in gang homicides from 2002 to 2010 based on an whether there was gang presence in 2002. Results show a strong correlation between gang homicides in the 2000s and 2002 gang status. Homicides committed by gangs more than doubled in areas that had gang presence (see Table 2).

Given that I use the place of birth of gang leaders as an instrument for gang activity in 2002, I also provide a formal test for the *relevance assumption* in Table 3. The Kleibergen and Paap F statistic is large, indicating that the weak instrument problem is not a concern.

The second assumption that must be satisfied for the validity of the identification strategy is the *exclusion restriction*. This could be violated if the local government in El Salvador increases

Table 2: Gangs presence in 2002 and violent crimes committed by gangs in 2003-2010

	MS13	M18	Other
Gangs presence in 2002 (=1)	2.132***	2.006***	0.126
	(0.384)	(0.491)	(0.126)
Observations	2,096	2,096	2,096
R-squared	0.15	0.24	0.14

Notes: Standard errors clustered at the municipality level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

their enforcement or resources in gang areas when the US increased their criminal deportations. To address this concern, I estimate the effect on crime that is not related to gang activity. As a further robustness check, I limit the sample to the period when enforcement did not increase.

The third main identifying assumption of the baseline specification is that there would be *common trends* across municipalities with and without gangs in the absence of deportations. This assumption could be violated if, for instance, violent crime was increasing in areas where gangs arrived before the deportation shock. I address this concern by visually inspecting pre-trends and by including municipality specific linear trends. I also include a vector of municipality baseline characteristics interacted with year. These interactions help control for potential differential trends across types of municipalities.

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

This section presents two sets of findings related to short and long-run outcomes. First, the introduction of deported criminals significantly increased gang-related activities: extortion and drug trafficking with no effect on other crimes. Since these two activities require violence to work there is an increase of 50% in homicide rates. Second, the arrival of criminal deportees from the US affected children since gangs particularly recruit young children to expand their activities. As a consequence, I find that individuals that were exposed during childhood have less years of schooling and are less likely to complete primary education. In addition, I find evidence of gang recruitment of children. Affected children are more likely to be incarcerated for gang-related crimes when they are adults, suggesting that deported gang members recruited these children, increasing their future participation in gangs. All of these results are robust to the inclusion of baseline covariates interacted with year fixed effects, department-by-year fixed effects, municipality specific time trends, and migration patterns.

5.1 Gang's Expansion and Violent Crime

Figure 6 and 7 show the homicides rates using police and incarceration data in gang and non-gang municipalities across time. Two observations are relevant. In periods during which the

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criminal deportations from the US increase, homicides rate increase. Second, while before 1996 homicides rates are at similar levels in areas where the gangs arrived, after 1996, gangs areas experience an increase in homicides rates.
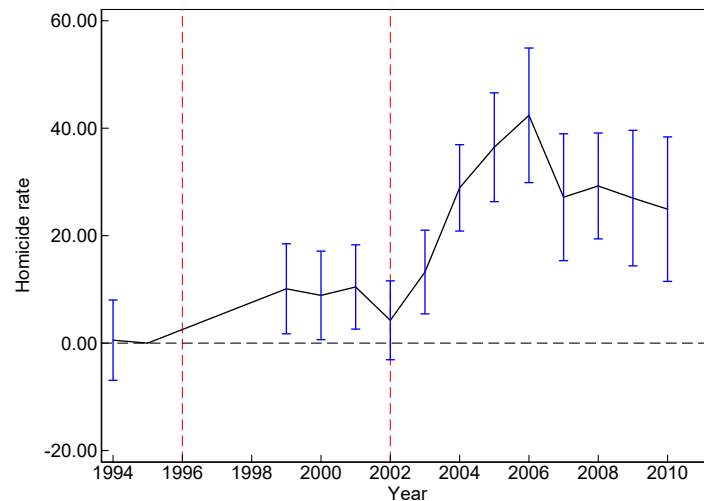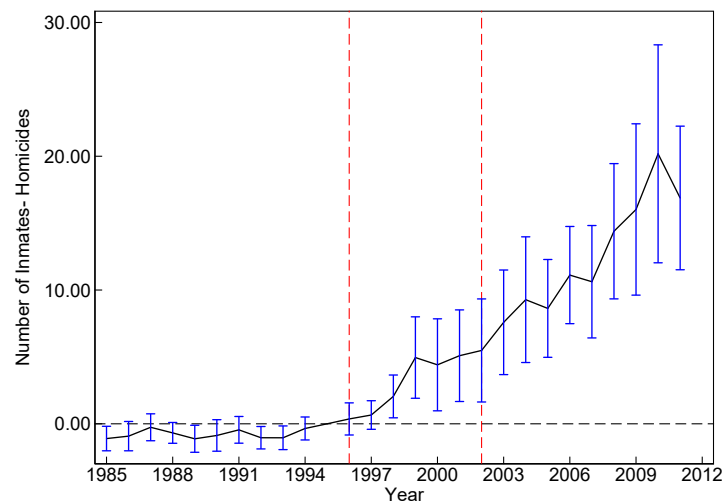
Figure 6: Criminal Deportees and Homicides

Figure 7: Criminal Deportees and Homicides

Next, I turn to estimating the causal effect of criminal deportations on homicides rates. Table 3 presents the results. Column (1) includes all observations from 1965, 1995 and 1999 to 2010. To gauge the magnitude of the estimated coefficients, consider an increase in 1,000 criminal deportees. The estimates imply that homicides rates increase by 4 individuals per 100,000 (this is equivalent to a 20% increase relative to the baseline in 1995). In Column (2), I add department-by-year fixed effects. The point estimate is statistically significant, but the magnitude is smaller.

To address the potential endogeneity of gang presence in 2002, Column (3) uses whether a gang leader was born in the municipality as an instrument. Results are similar in magnitude and significance. Given that gangs are an urban phenomenon, Column (4) focuses on only urban municipalities and results are very similar.

Finally, another potential concern is that criminal deportations from the US are correlated with enforcement efforts in El Salvador. If this is the case, the exclusion restriction would not hold. Thus, Columns (5)-(7) restricts the analysis to the period before *Super Mano Dura*.[7]

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[7]Results are also robust to restricting the analysis to the period before *Mano Dura*.

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

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gangs shock$_{m,t}$	0.005***	0.003**	0.006**	0.004***	0.008***	0.006**	0.009***	0.011***
	(0.001)	(0.001)	(0.003)	(0.001)	(0.002)	(0.002)	(0.003)	(0.003)
			First Stage, Dep. Variable: Gang shock$_{m,t}$					
Leader born$_m$ × CrimDep$_t$			0.715***					0.83***
			(0.131)					0.104
Kleiberg-Paap F-stat			32.16					67.135
Observations	3,668	3,668	3,668	1,456	2,882	2,882	1,145	1,145
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Dep*Year FE	NO	YES	YES	YES	YES	YES	YES	YES
Years	1965, 1995	1965, 1995	1965, 1995	1965, 1995	1965, 1995	1965, 1995	1965, 1995	1965, 1995
	1999–2011	1999–2011	1999–2011	1999–2011	1999–2006	1999–2006	1999–2006	1999–2006
Municipality Time Trends						YES	YES	YES
Urban Municipalities				YES			YES	YES
IV			YES	YES				YES

Notes: *Gangs$_m$ × CrimDep$_t$* is the interaction of a dummy indicating gangs presence at the municipality and the number of criminal deportations in year t-1. The baseline specification is presented in Equation 1. Column (1) presents the results for the whole period and includes controls for municipality and year fixed effects. Column (2) adds department*year fixed effects. Column (3) presents the results using as an instrument of gang presence whether a leader of the gang was born in that municipality. Column (4) restricts the analysis to urban municipalities. Column (5)-(8) restricts the analysis to the years before the Super Mano dura. Standard errors are clustered at the municipality level. Significant at *** p<0.01, ** p<0.05, * p<0.1.

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

I use incarceration data from 1985-2011 to shed light on 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. Gangs members in the US developed specific criminal capital in prisons in the US for small drug-trafficking and extortion.

Figures 8- 10 present the event study results. I find that extortion more than doubles and drug trafficking increases in the municipalities where the gangs arrive. There is a clear jump in 1996 when criminal deportees arrive and no pre-trends. Moreover, I find no effects on other crimes that are not related to gangs.

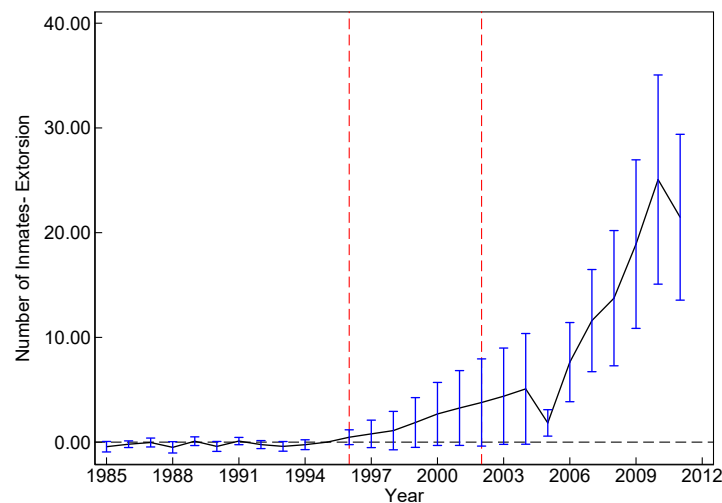Figure 8: Criminal Deportees and Extortion

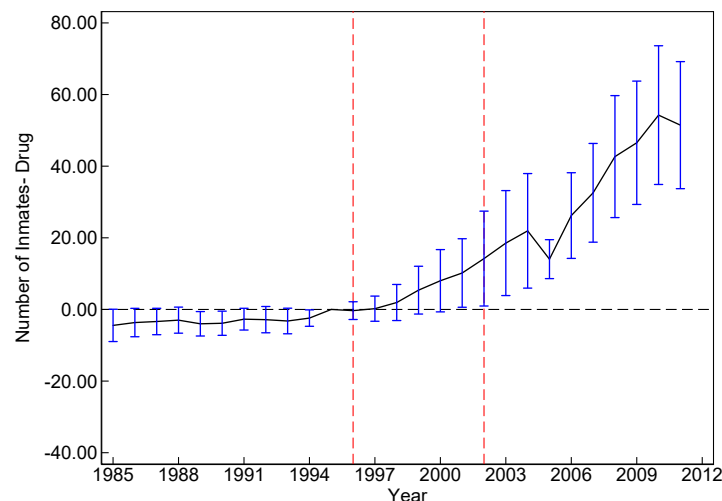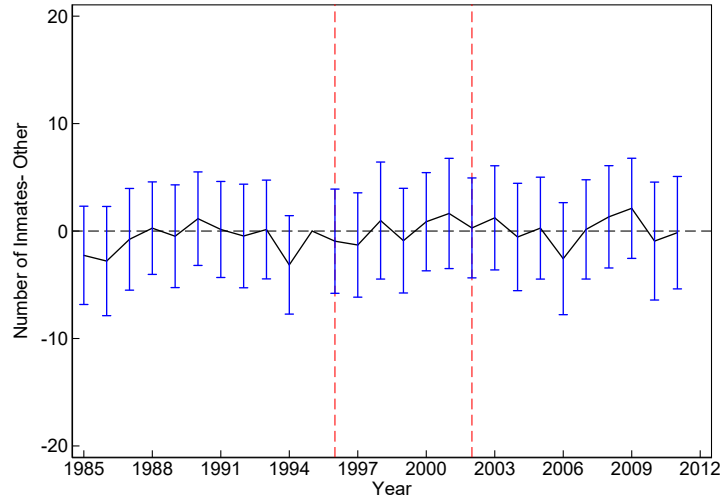Figure 9: Criminal Deportees and Illegal Trafficking

Figure 10: Criminal Deportees and Non-Gang Related Crimes

	Homicide rate	Extortion rate	Illegal Traf rate	Robbery rate	Other Crimes rate
$Gangs_m \times CrimDep_t$	0.001***	0.001***	0.001***	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Mean of dependent	4.07	0.45	2.7	18.13	4.75
Effect for avg municipality	25%	222%	37%	0.00%	0.001%
Observations	6,291	6,291	6,291	6,291	6,291
Municipality FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Dep*Year FE	✓	✓	✓	✓	✓

While there is no arrest data on other crimes at the municipality level, I use department level data as robustness check. Consistent with the idea that criminal deportees brought specific human capital to gangs, I find no effects on thefts, minor injuries and kidnapping, but I do find effects on violent crime and extortion which are the main crimes associated with these gangs in the US in the 1980s.[8]

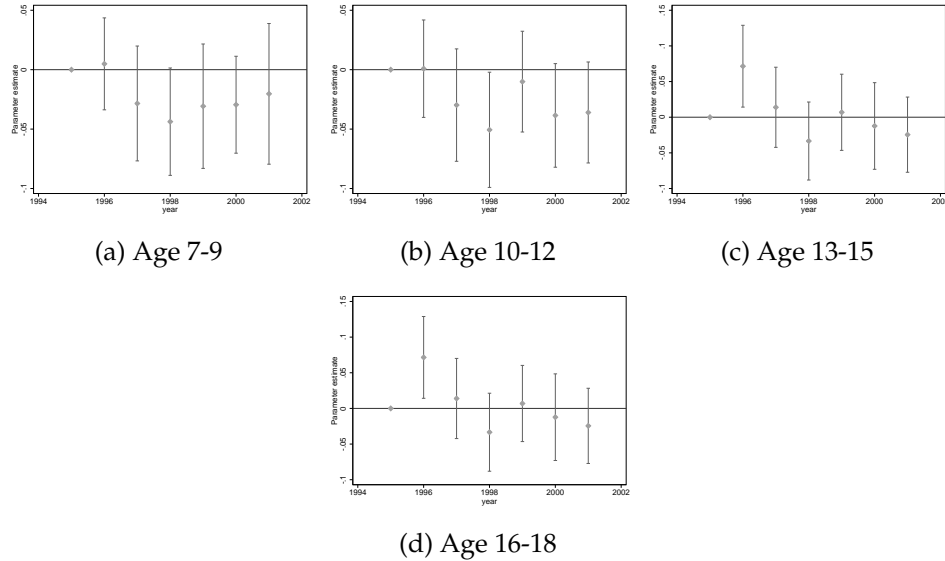## 5.3   The Role of Gangs Expansion on Human Capital

Short-run effects on school attendance and child labor: I start by estimating the effects on the probability that children are attending school at the time of the survey. Figure 11 presents the results by ages in an event study. I divide children by ages covering the four different cycles of primary and

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[8]Results are available upon request.

secondary education. After the arrival of gang leaders, school attendance declines. In particular, children aged 10 to 12 year old reduce school attendance by 5 percentage points (which is equivalent to 10 percent decline from the baseline). These are the children who are in the second cycle of basic education.

Figure 11: School attendance effects 1995-2001

(a) Age 7-9   (b) Age 10-12   (c) Age 13-15

(d) Age 16-18

Next, I study whether children that are not attending school are working. One possibility is that as gang extort businesses parents may need to send their children to work to compensate for the decrease in income. Information on child labor is only available for individuals older than 10. Figure A.4 in the Appendix presents the results. It shows an increase in the labor supply of adolescents, which is mainly driven by boys who are combining school and work. We find no effects for 10 to 12 year old's who are not attending school after the shock. This is consistent with the fact that children may have dropped to join a gang rather than working for parents (MINED, 2014).

Long-run effects on total years of schooling: Table 4 presents the results of being exposed to deportee criminals at different ages of childhood. The dependent variable is the years of schooling of individuals between 18 and 30 per cohort-municipality of birth. Individuals that were exposed to the gang leaders during childhood have less schooling relative to those who were older than 16 at the time of the first shock. Columns (3) and (4) show the results dividing the sample between individuals that have lived in the same neighborhood all their life and individuals that were born in a different neighborhood. Results are also robust to using the place of birth of gang leaders as an instrumental variable, using other age bins, and including only 18 to 40 years old at the time of the census. Overall, results show that after the arrival of the main gang leaders, educational outcomes decline.

Table 4: Criminal deportations from the US and years of schooling in El Salvador

	(1)	(2)	(3)	(4)	(5)	(6)
$GangShockAge7x9_{m,c}$	-0.987***	-0.997***	-1.084***	-0.626***	-1.125***	-1.295***
	(0.238)	(0.176)	(0.220)	(0.113)	(0.261)	(0.383)
$GangShockAge10x12_{m,c}$	-0.491***	-0.496***	-0.561***	-0.290***	-0.623***	-0.692**
	(0.156)	(0.144)	(0.176)	(0.106)	(0.213)	(0.335)
$GangShockAge13x15_{m,c}$	-0.207**	-0.219**	-0.236*	-0.185**	-0.316**	-0.283
	(0.086)	(0.104)	(0.125)	(0.083)	(0.143)	(0.237)
$GangShockAge16x18_{m,c}$	-0.049	-0.055	-0.064	-0.017	-0.103	-0.104
	(0.054)	(0.062)	(0.073)	(0.050)	(0.078)	(0.128)
Observations	1,319,566	1,319,566	1,030,666	287,490	848,208	848,208
R-squared	0.130	0.793	0.794	0.796	0.834	0.834
Municipality FE	✓	✓	✓	✓	YES	✓
Cohort FE	✓	✓	✓	✓	✓	✓
Trends		✓	✓	✓	✓	✓
Sample	All	All	Non-migrants	Migrants	All	All
Urban					✓	✓
IV						✓

Notes: $GangShockAgex_{m,c}$ is the interaction between the measure of gang presence in the municipality of birth and a dummy indicating the age x in 1996. The omitted category is a dummy indicating whether individuals were between 19 and 20 years old at the time of arrival of gangs in El Salvador. The dependent variable is the total years of schooling of individual i born in municipality m in year c. All specifications control for municipality of birth and year of birth. Cluster standard errors at the municipality of birth level in parentheses. Significant at *** p<0.01, ** p<0.05, * p<0.1

Potential mechanisms behind the schooling effects: I consider three potential mechanisms for which the arrival of gangs may have affected schooling: increase of homicides, changes in the supply of education or returns to schooling, and gang presence.

To analyze whether these effects are driven by violent crime or gang presence, I exploit a recent truce in 2012 where gangs leaders committed to reduce homicides rates in exchange for lower police enforcement, jobs, and moving gang leaders to better prison facilities. The truce lasted less than two years and was completely over by 2015. While I do find evidence that violent crime declined in gang areas by 50 percent during the truce, I find no evidence that schooling outcomes improved during that period.[9]

These results suggest that effects may be driven by other factors associated with gangs and not only violent crime. Even though homicides declined during the truce, extortion practices continued and even increased during the truce. Furthermore, if effects were mainly driven by the direct effect of violence or changes in the supply of education, there should be effects for individuals aged 13 to 18, however I do not find any effects. Finally, the fact that the labor force participation of children in key ages was not affected in the short-run suggests that this may not be the main channel.

[9]Results are available upon request.

An important mechanisms could be gang recruitment of boys who are used to help in extortion practices and other low level tasks. According to a recent report from the Ministry of Education (MINED), the percentage of dropouts due to delinquency increased by 120% in the last years. This has to do with the lack of security given threats from gangs and the perils of crossing gang boundaries. In addition, gangs often recruit children at schools, making schools dangerous. MINED estimates that about 65 percent of schools are affected by the presence of gangs, while almost 30 percent have internal security threatened by gangs. A school located in gang territory is generally considered property of the gang. Gangs threaten and extort principals, teachers and students and prevent students from attending school.

5.4   Gang Recruitment of Children

I start by estimating the incarceration effects of being exposed to criminal deportations at different ages of childhood. The omitted category is a dummy indicating whether individuals were between 19 and 20 years old at the time of arrival of gangs in El Salvador. The dependent variable is the number of individuals in prison per cohort-district of birth divided by the population born in that cohort-district per 1000 individuals. Table 5 presents the results of estimating Equation 2. It shows that individuals that were at primary schooling ages when gangs arrived from the US are 30 percent more likely to be incarcerated when they are adults. These results are consistent with the previous schooling estimates showing that large and significant effects are concentrated at primary schooling ages. Moreover, it is before secondary education when children drop out of school in El Salvador. Finally, it is also consistent with qualitative evidence indicating that gangs start recruiting children during early adolescence.

Figure A.5 in the appendix presents the results by age specific dummies. Again, there are no effects for those individuals who were at secondary school.

Table 5: Exposure to Gang's from the US during Childhood on Future Criminality in El Salvador

	(1)	(2)
$GangShockAge4x6_{m,c}$	6.853***	5.314**
	(1.909)	(2.336)
$GangShockAge7x9_{m,c}$	7.251***	5.555**
	(1.958)	(2.549)
$GangShockAge10x12_{m,c}$	5.385**	6.590**
	(2.248)	(2.843)
$GangShockAge13x15_{m,c}$	5.453***	6.677**
	(1.999)	(2.580)
$GangShockAge16x18_{m,c}$	2.575	1.053
	(2.161)	(2.538)
Observations	6,026	2,392
R-squared	0.791	0.910
Municipality FE	✓	✓
Year FE	✓	✓
Municipality Trends	✓	✓
Urban		✓
IV	✓	✓

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

5.4.1 Potential mechanisms behind the incarceration effects

To provide insight into potential mechanisms, I explore the characteristics of regions that are most effected by an increase in criminal deportations from the US. In particular, I analyze to what extent the presence of guerrilla in the 1982 interacts with the arrival of gangs from the US in the mid 1990s.

The presence of guerrilla groups in the past may have affected the development of gangs due to the presence of organizational skills, the ability to threaten violence, and political activism in these regions. Table 6 presents a fully saturated version of Equation 2 that includes interactions with $Guerrilla_{m,1982}$, a dummy indicating whether municipality m had guerrilla presence in 1982. The effects are mitigated in municipalities where the guerrilla groups had control during the country's civil conflict. This could be due to the presence of specific human capital in these areas that allowed the communities to organize against gang activity. Moreover, the fact that guerrillas were formed by member of the community may have led to more social cohesion and community sup-

port in these areas, preventing children from participating in gangs. As a robustness check, I also examine an intensity measure of guerrilla presence, defined as the number of deaths during the civil war. In the Appendix, Table presents the results dividing the sample by whether the number of deaths during the civil war was above the median. It shows that most of the results are driven by the places that did not experience a large number of deaths, indicating less guerrilla presence.

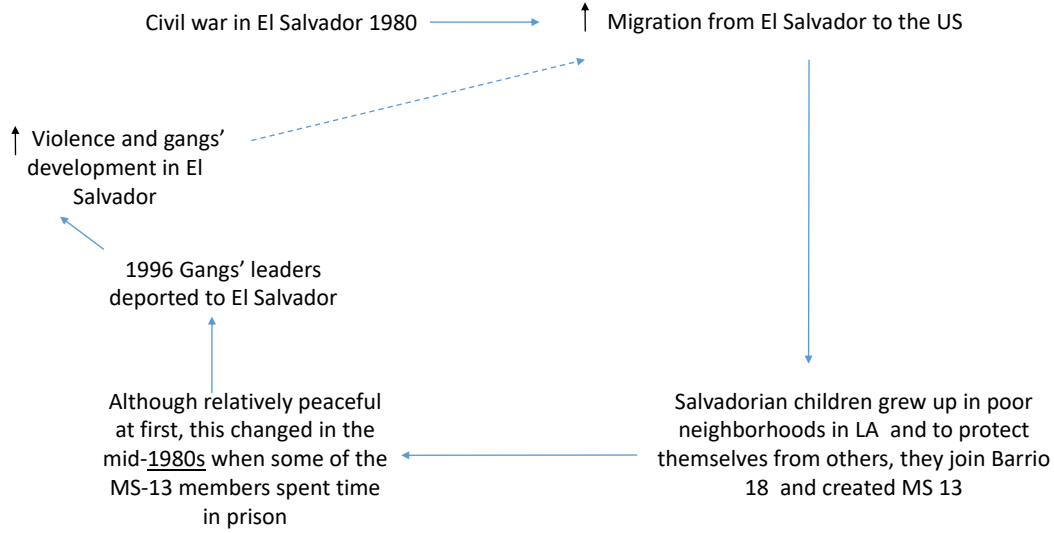Table 6: Guerrilla and Criminal Deportees

	(1)
$GangShockAge4x6_{m,c}$	7.261***
	(1.891)
$GangShockAge7x9_{m,c}$	7.519***
	(1.989)
$GangShockAge10x12_{m,c}$	6.211***
	(1.983)
$GangShockAge13x15_{m,c}$	5.763***
	(1.991)
$GangShockAge16x18_{m,c}$	2.620
	(2.222)
$GangShockAge4x6_{m,c} \times Collective\ Action_{m,1982}$	-8.602***
	(1.551)
$GangShockAge7x9_{m,c} \times Collective\ Action_{m,1982}$	-5.642***
	(1.548)
$GangShockAge10x12_{m,c} \times Collective\ Action_{m,1982}$	-7.414***
	(1.508)
$GangShockAge13x15_{m,c} \times Collective\ Action_{m,1982}$	-6.530***
	(1.247)
$GangShockAge16x18_{m,c} \times Collective\ Action_{m,1982}$	-0.936
	(1.582)

Notes: $GangShockAgex_{m,c}$ is the interaction between the measure of gang presence in the municipality of birth and a dummy indicating the age x in 1996. The omitted category is a dummy indicating whether individuals were between 19 and 20 years old at the time of arrival of gangs in El Salvador. The dependent variable is the number of individuals in prison per cohort-municipality of birth divided by the population born in that cohort-district per 1000 individuals.

6   Closing the Cycle: The Role of Gang's Violence on Child Migration

In this subsection I investigate whether the development of gangs might have created a violence trap for children in El Salvador. Figure 12 provides a summary of the events and this hypothesis. In particular, we analyze how violence created by gangs may have affected migration to the US in recent years.

Figure 12: Violence Trap

I start by exploring the relationship between homicides and child migration. Formally, I estimate the following model:

$$ChildMigration_{i,t,m} = \beta Homicides_{i,t,m} + \alpha_m + \rho_i + \gamma X_{m,t} + \sigma_i m + \epsilon_{i,t,m} \qquad (3)$$

where m indexes the municipality of birth, i the month and t the year. where $ChildMigration_{i,t,m}$ is the number of deported children. $Homicides$ are the number of homicides in month i, year t per municipality m. It controls for municipality fixed effects α_m, year fixed effects and month fixed effects. All regressions include population per year and municipality. [10] I also add municipality specific linear month trends to further account for any other systematically-varying municipality-level factors that may have coincided with changes in homicides. In alternate specifications, we further include as a control variable the number of adult migrants. This control captures overall shifts in deportations in a given municipality due to unobserved month-varying municipality characteristics.

Table 7 presents the results. There is a positive relationship between homicides and children deportations. Moreover, the history of homicides in children's municipality of births affect the decision of children to migrate (Column(5)). Overall, we find that on average an increase in 10 homicides per month translates to an increase of 3 children leaving per month. The results are robust to different specifications.

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[10]Results are robust to calculating the variables per population.

To further address the concern that the number of homicides per month is endogenous, we exploit the months of truce interacted with leaders' place of birth as an instrumental variable. The idea behind this is that the truce generated an exogenous decrease in homicides rates that was not related with trends from children migration. Furthermore, the fact that the truce was coordinated with gang leaders that were in jail reinforces the hypothesis that municipalities where the leaders had better control may have experience larger reductions in crime. Figure 13 shows the evolution per month and a larger decline after the truce in those municipalities where leaders were born.

Exploiting these sources of variation, we instrument the number of homicides by a dummy indicating the months of the truce interacted with the leader's municipality of birth. Column(6) in Table 7 shows that results are robust.

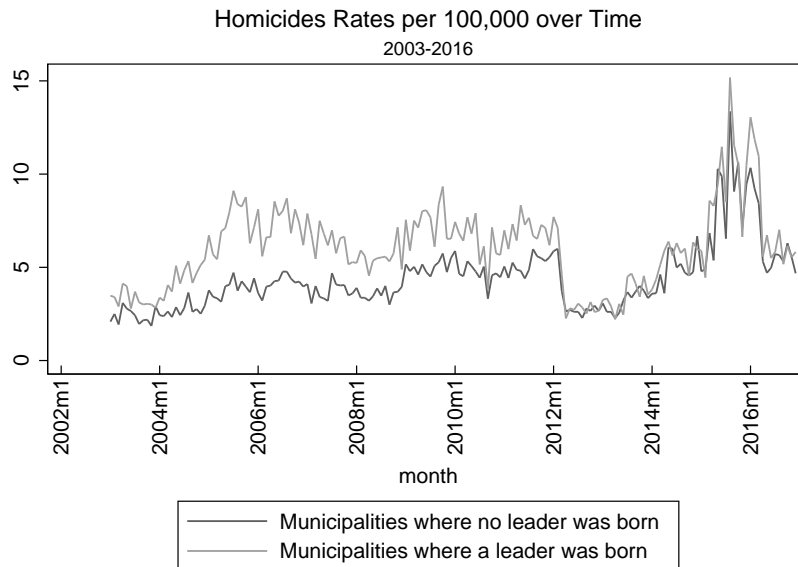Figure 13: Homicide Rates by Leader's Municipality of Birth

Table 7: Homicides and Child Migration

	(1)	(2)	(3)	(4)	(5)	(6)
$Homicides_{i,t,m}$	0.766**	0.632***	0.542***	0.519***	0.263***	0.683**
	(0.315)	(0.182)	(0.165)	(0.147)	(0.065)	(0.287)
$Homicides_{i-1,t,m}$					0.225***	
					(0.055)	
$Homicides_{i-2,t,m}$					0.237***	
					(0.053)	
$Homicides_{i-3,t,m}$					0.155***	
					(0.047)	
$Homicides_{i-4,t,m}$					0.073	
					(0.048)	
$Homicides_{i-5,t,m}$					-0.003	
					(0.054)	
Observations	12,672	12,672	12,672	12,672	12,672	12,672
R-squared	0.389	0.608	0.635	0.694	0.727	0.672
Municipality FE		✓	✓	✓	✓	✓
Month-Year FE			✓	✓	✓	✓
Municipality Trends				✓	✓	✓
IV						✓

Standard errors clustered at the municipality of birth level. Significant at *** p<0.01, ** p<0.05, * p<0.1

7 Conclusion

This paper takes a first step towards understanding how criminal deportations affect gang development and human capital in El Salvador. Although it has been suggested by many that US deportation policies contributed to the development of gangs in El Salvador, this paper is the first to provide causal evidence on this matter.

Results from this paper show that the increase in US criminal deportations led to an increase in homicide rates in places with gang presence at baseline. Moreover, results also show that, in such places, an increase in criminal deportations decreased educational outcomes and increased future criminality for young cohorts who were presumably exposed to higher gang presence during their adolescence years. This paper not only provide evidence of the indirect effect of gang leaders from the US on Salvadoran children but also how gang violence in El Salvador may push children out of the country to the US, increasing the number of deported children.

Results from this paper are highly relevant from a public policy perspective. Understanding what factors contributed to the extremely high homicide rate in El Salvador are highly relevant for policymakers. At the same time, the MS-13 has been designated by the US as a global criminal

organization on a par with the Zetas of Mexico, or the Yakuza of Japan. It is therefore crucial that we understand what factors may have contributed to the expansion of this criminal organization and to determine what policies could potential help undermine gang activity.

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

8 Appendix

Figure A.1: Timeline of Events

Super
Mano Dura

Civil War El Salvador   Mano Dura   2006

1979   1992   2003

1990   1996   2003

Deportations   IIRIRA   Homeland
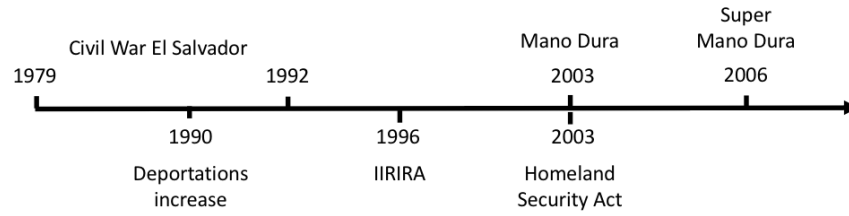increase   Security Act

Figure A.2: Years of education in gang and non gang municipalities in El Salvador

Figure A.3: Child Deportations across Municipalities with Different Exposure to Homicides Committed by Gangs
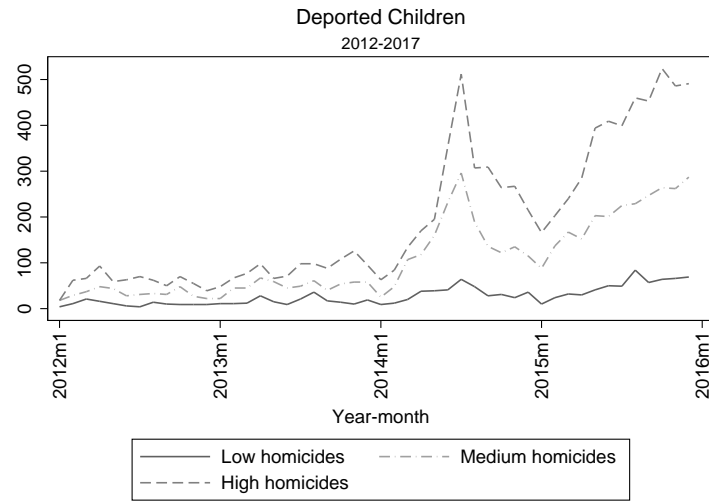

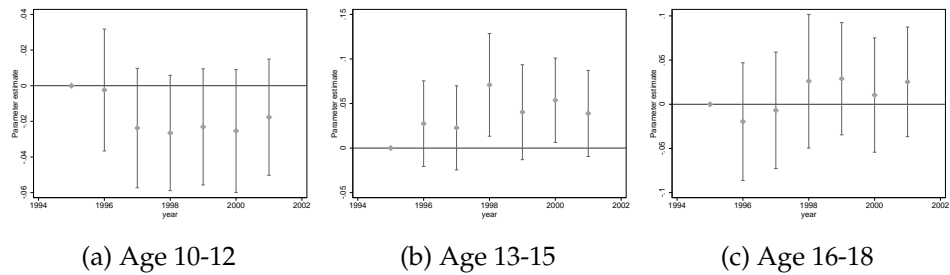
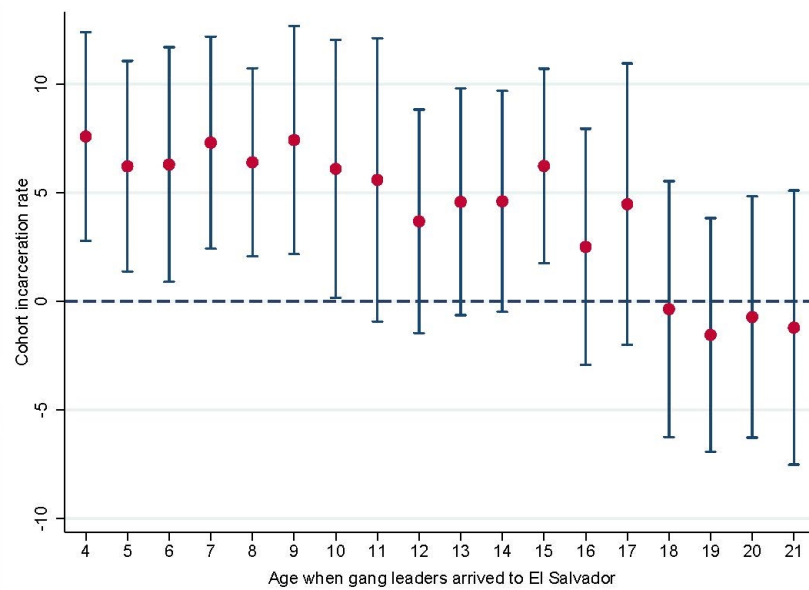Figure A.4: Child labor participation effects 1995-2001

(a) Age 10-12 (b) Age 13-15 (c) Age 16-18

Table A.1: Criminal deportations from the US and primary schooling in El Salvador

	(1)	(2)	(3)
$GangShockAge5x6_{m,c}$	-0.029***	-0.039***	-0.034***
	(0.010)	(0.010)	(0.010)
$GangShockAge7x8_{m,c}$	-0.022**	-0.032***	-0.028***
	(0.009)	(0.009)	(0.008)
$GangShockAge9x10_{m,c}$	-0.013	-0.024***	-0.024**
	(0.008)	(0.008)	(0.010)
$GangShockAge11x12_{m,c}$	-0.018***	-0.017**	-0.034***
	(0.007)	(0.007)	(0.008)
$GangShockAge13x14_{m,c}$	-0.007	-0.009*	-0.020**
	(0.005)	(0.005)	(0.008)
$GangShockAge15_{m,c}$	-0.005	-0.006	-0.003
	(0.006)	(0.006)	(0.011)
Observations	950,979	708,200	241,873
Municipality FE	YES	YES	YES
Cohort FE	YES	YES	YES
Dep*Year FE	YES	YES	YES
Sample	16-30	16-30	16-30

Cluster standard errors at the municipality level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure A.5: Incarceration rate effects by age

Notes: These graphs plot the coefficients obtained from a regression of the incarceration rate on the interaction between the gang presence in the municipality of birth and dummies at different childhood ages. The regressions control for municipality of birth, municipality time trends, and cohort fixed effects. The Y-axis shows the estimated coefficients and the X-axis shows the ages. Standard errors are clustered at the municipality of birth level.

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