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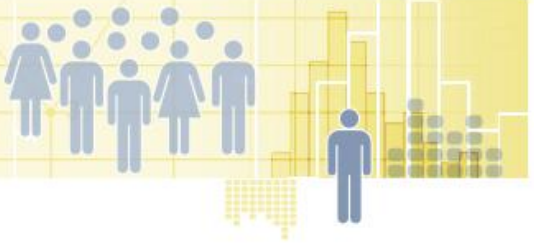

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The good, the bad and the ugly: The socio-economic impact of drug cartels and their violence in Mexico

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The good, the bad and the ugly: The socio-economic impact of drug cartels and their violence in Mexico*

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Abstract

This paper assesses the impact that drug cartels and their associated violence have had on development in Mexico. For this purpose, we monitored official and media reports to identify where cartels have operated with and without drug related homicides. Using the difference-in-difference kernel matching method, we find that on the one hand, inequality declined in areas where cartels were active without incidents of drug related homicides. On the other, poverty increased in areas that had both the lowest and the highest rates of drug related homicides. Two reasons could explain this increase in poverty. In the most violent areas, production, profits, remunerations per employee, the number of establishments and employees declined in key industries, such as manufacturing. In the least violent areas remunerations in manufacturing also declined, and people migrated from the more violent places. Most of these migrants were mainly of low income.

JEL Classification: K49; O160; O170; R59; C26

Keywords: Drug Cartels; Violence; Poverty; Inequality; Education; Migration; Kernel matching

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Introduction

Once upon a time, drug cartels operated "peacefully" in Mexico, smuggling illegal drugs to the United States. As the new millennium approached, cartels started fighting one another for territory. About 6,680 people died as a result of the battle among cartels between 2001 and 2005 (Ríos and Shrik, 2011). Felipe Calderón, the then recently elected President, concerned about the growing violence, declared war against cartels in December 2006. Instead of focusing on seizing drugs, as many of his predecessors had done, Calderón deployed more than 40,000 soldiers to tackle cartels in several areas (BBC News, 2009). He also arrested more cartel leaders than ever before.[1] As efforts against cartels intensified, so did the violence and bloodshed (Dell, 2011). Over 63,000 killings occurred, the majority alleged drug traffickers, just between 2006 and 2012 (Molzahn et al., 2013; SNSP, 2011).[2]

We contribute to the literature by estimating, for the first time, the impact that drug cartels and separately drug related homicides have had on economic development in Mexico. Specifically, we assess the impact on poverty, inequality and human capital and also explore how drug trafficking and drug violence could have affected these outcomes. We do so by assessing the changes in internal migration and economic activity of the main industries in the country, focusing only on the industries where it is possible to identify from census records where their production is taking place at small-area-level (municipality).[3] We analyse manufacturing, one of the biggest industries in Mexico accounting for 35% of Gross Domestic Product, as well as real estate and wholesale trade. In each of these industries we analyse changes in production, profits, number of establishments, workers, remunerations and investment in capital.

Gutiérrez-Romero and Conte (2014) shows that extortions, thefts and other crimes increased in areas affected by drug related homicides. Using crime victimisation surveys she finds that people in the areas with the highest drug related homicides spend on security 1,116 US dollars more than in areas without such homicides. Also, earlier studies show that unemployment and migration from border areas to the US increased in areas affected by drug related homicides (BenYishay and Pearlman, 2013; Dell, 2011; Ríos, 2014b; Robles et al., 2013). Thus, we hypothesise the rise in these drug related homicides is likely to have affected businesses' profits, production, investment, jobs and salaries. These impacts in turn might have affected poverty and displaced people from more to lesser violent areas within the country. We show with a theoretical model that drug violence can cause poverty traps, which may persist in the long-run.

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[1] Twenty eight top tier cartel kingpins were arrested or killed during Calderon's administration (Guerrero-Gutiérrez, 2011). Another 36,332 people were arrested for drug offenses -more than triple the number of arrests of the previous administration of Vicente Fox (Molzahn et al., 2013). Public security spending also increased seven times faster under Calderón's than under Fox's administration (Justice in Mexico Project, 2011).

[2] According to the Mexican General Attorney 90% of these casualties were members of drug cartels, 7% members of the army and police forces and the rest civilians.

[3] We omit therefore industries such as construction or finance for which it is not possible to identify from the census where exactly their production is taking place, if in the municipality where the headquarter company is based at, or in any other area in the rest of the country.

To evaluate the impact of cartels and drug related homicides we use the difference-in-difference kernel matching estimator (Heckman et al., 1998). Specifically, we estimate the change in outcomes before (2000-2005) and after cartels settled in areas for the first time (2006 or afterwards). We compare that change in outcomes to the ones experienced in areas that did not have cartels or drug related homicides over the same periods. We match areas -treatment and controls- based on their characteristics and their likelihood of experiencing cartels and drug related homicides. We identify the factors influencing the likelihood of areas having cartels and their associated violence according to the recent literature. These factors, described in detail in the next section, refer to the stricter policies imposed against cartels, and the political decentralization that Mexico experienced (Castillo et al. 2012; Dell, 2011; Ríos, 2014a).

To identify the areas where cartels have been active (with and without related homicides) we surveyed official records; national and international media reports; and specialised blogs. We also use the recently released official statistics on drug related homicides that are available only for the period December 2006 until September 2011 (SNSP, 2011). These statistics give the location and number of people killed in the battles among cartels and with the state authority. We also use the population and economic censuses, and poverty statistics, all of which are representative at municipality level.

We find that inequality declined in areas where cartels were active without incidents of drug related homicides. This decline in inequality is however unlikely to be related to a relative increase in the income of the poor, as we find no change in poverty rates. The fall in remunerations in manufacturing is more likely to explain the decline in inequality that these areas experienced. In contrast, in areas that had both the lowest and the highest rates of drug related homicides poverty increased while inequality did not change. Two reasons could explain this increase in poverty. The overall production, profits, number of establishments and workers and the remunerations per employee in manufacturing declined in the areas with the highest rates of drug related homicides. Also, changes in population size and migration patterns suggest people moved from more to less violent areas. For instance, areas with the highest levels of drug related homicides received fewer migrants from the rest of the country and from the US. In contrast, migrants, particularly those of low earning levels and those coming from more violent places relocated to areas with lower levels of drug related homicides. Thus, the drug related homicides seem to have displaced poor people within the country. The rise in poverty, with families' income being unable to cover for their health and education needs, contributed to the worsening in education outcomes. For instance, on average the percentage of children aged 6 to 14 out of school increased in the areas affected by drug related homicides.

Although manufacturing and real estate were affected by the drug related homicides, wholesale trade was not. Not even in the areas experiencing the highest levels of drug related homicides. Drug cartels have increasingly used legitimate businesses in wholesale trade to launder money, one reason that might explain why we failed to find any impact on this industry.

All this evidence refers only to the areas that experienced cartels or drug related homicides for the first time in 2006 or afterwards, the period during which drug cartels expanded to many new regions. Focusing on this period has the main advantage of capturing the immediate short-term impacts of cartels moving into new areas. But it has the disadvantage that we have to exclude from our analysis those areas that suffered drug violence much earlier. As a robustness check we show that areas that experienced drug related homicides for the first time in an earlier period, during 2001-2005, also suffered an immediate rise in poverty and decline in the number of workers in manufacturing. Both these impacts worsened even further during 2006-2010, when drug related homicides intensified.

Our findings suggest that local population is not benefiting from drug trafficking in areas where drug cartels work "peacefully". At least not enough to reduce poverty or unemployment rates in these areas. Instead, we find plenty of evidence on the damaging effects that these cartels can have, particularly when associated with an increase of killings for territory. Although our results refer only to the case of Mexico, they are also relevant for other similar developing countries at prey of expanding Mexican drug cartels. These cartels are allegedly working in over 50 countries including the Americas, Africa and Europe.

The paper continues as follows: The next section explains the reasons behind drug cartels fighting each other. Section 3 discusses the impact that cartels and their violence can have on development. Section 4 presents the econometric method and databases used. Section 5 estimates the impact of cartels and drug related homicides on welfare and migration. Section 6 assess the impact on industries. Section 7 shows the robustness checks, and Section 8 concludes.

2. The causes of Mexican drug violence

Most illegal drugs consumed today in the US come through Mexico (Payan, 2006).[4] It is no coincidence the world's biggest consumer of narcotics and the world's biggest supplier of narcotics happen to be neighbours (Keefe, 2012).

Drug trafficking is not new in Mexico. Cartels have been active in the country for over a century, and until recently without mayor episodes of violence. The peaceful coexistence among cartels was possible thanks to their agreement with some members of the state-authority, dominated by the 71-year old ruling Institutional Revolutionary Party (PRI). PRI's authoritarian regime enjoyed a strong supremacy of power across all levels of government. The lack of power switching, and the weak checks and balances, made the political system not only permissive, but protective of drug cartels (Astorga and Shirk, 2011; Buscaglia, 2013). In exchange for bribes, cartels were given protection from members of the state-authority to work in certain areas and shipment routes, called *plazas*. Campbell (2009) describes "Control of a *plaza* gives the drug lord and police commander of an area the power to charge less powerful traffickers tolls. . . The cartel that has the most power in a

[4] Ninety per cent of cocaine and a third of heroin and marijuana available in the US enter via Mexico (Cook, 2007).

particular *plaza* receives police and military protections for its drug shipments." (p. 23-24). These *plazas* came with a code of conduct. Cartels needed to restrain from selling drugs in the domestic market, inciting violence and fighting directly with the state-authority (Gómez and Fritz, 2005). Cartels that violated agreements -for instance by trespassing into areas not authorised to work in- would be penalised by the state seizing drugs or eventually arresting or killing the cartel's leaders (Guerrero-Gutiérrez, 2009).

By the late 1990s, PRI's domination was met with growing internal political opposition, resulting in major electoral reforms in 1997. These reforms increased electoral victories for opposition parties at the sub-national level.[5] Battles among cartels over territory soon emerged. PRI's defeat in the 2000 presidential election to the National Action Party (PAN) was a further blow to the stability and mediating role the state-authority had played with organised crime (Ríos, 2014a). So the turf war among drug lords intensified. At least 8,901 people were executed in the turf war among cartels during much of President Fox's administration 2001-2006 (Molzahn et al., 2012; Ríos and Shrik, 2011). The victims were mainly cartels members and to lesser extent policemen and military personnel.[6] In response to the new wave of violence, Fox increased security expenditure in areas mostly affected by violence. In 2006, the PAN party won for the second time the presidency. However the victory of PAN's candidate, Felipe Calderón, was marred by allegations of rigging and stealing the presidency from the closest contender from the Party of Democratic Revolution. To regain legitimacy, critics suggest, Calderón chose to tackle the growing problem of drug violence (Ravelo, 2012).

Calderón actively prosecuted drug cartels with military force in their hotspots, reducing temporarily the violence in 2007.[7] However, violence ignited again in 2008 and to unforeseen levels in 2010.[8] According to official statistics, 47,515 people died because of the conflict among cartels and the state from December 2006 to September 2011. These casualties represent half of all national homicides (Fig. 1). By 2011, Mexico had 12 out of the 50 most violent cities in the world (CCSPJP, 2011).

Despite the efforts against drug trafficking, cartels also multiplied. In 2006, there were six major cartels, by 2010 they had multiplied to 16 (Guerrero-Gutiérrez, 2011). The number of cartels increased partly because some fractured into two or more over leadership disputes. New cartels also

[5] Ríos (2014a) explains that 2,162 out of the 2,475 municipalities were ruled by the same party across all levels in 1990. The number of municipalities sharing the same party across all government's levels declined to 1,654 in 1998 and to 1,433 in 2010.

[6] Half of the executions took place in Michoacán, a state by the pacific coast, which witnessed the cartels "La Familia" and "Los Zetas" battle over territory. Another 30% of the executions were concentrated in the northern states of Sinaloa and Tamaulipas. The violence also affected major cities such as Acapulco, Guadalajara, Mexico City and Tijuana.

[7] According to official estimates 60% of the police force was already infiltrated by drug-traffickers, one of the reasons why Calderón deployed the army instead (Guerrero-Gutiérrez, 2011; Salinas de Gortari, 2011).

[8] Two parallel conflicts fuelled this violence (The Economist, 2012). The Sinaloa cartel fell out with its former allies, the cartels of Juarez, Tijuana and Culiacán. Also, the Gulf cartel fell out with the Zetas, an ex-military group that it had hired as its enforcer since 1996.

emerged. Others became transnational, like the Sinaloa cartel, allegedly active now in over 50 countries (Keefe, 2012).

Several researchers agree that Calderón's enforcement strategy was largely responsible for increasing drug violence and multiplying cartels (Dell, 2011; Escalante, 2011; Guerrero-Gutiérrez, 2011; Lessing, 2012; Merino, 2011; Osorio, 2012). For instance, Guerrero-Gutiérrez (2011) using event history analysis shows that after the government arrest of a cartel's kingpin, drug related violence immediately follows and intensifies over three months as drug cartels fight over leadership. Similarly, Dell explains that Mayors from the PAN party are more likely to ask for federal support to intensify crackdowns against cartels. Using regression discontinuity, Dell shows the probability of experiencing drug related homicides increased by nine percentage points in municipalities where the PAN party won the local elections (by a close margin compared to areas where the PAN lost by a close margin). The drug violence spread to areas with good transport networks and in close proximity to borders and the coast. Overall, Dell estimates that cartel attempts to control new territories after the arrest or death of rival cartel leaders explain over 85% of drug related homicides.

Ríos (2014a) provides a complementary explanation for the drug violence. She recalls that during the permissive era of the PRI's 71-year ruling, the state would arrest and even kill drug's lords from time to time. Yet, cartels would not retaliate with violence. So, Ríos argues that decentralization is the key element that drove the new violence under the Fox and Calderon administrations. The decentralization meant that for the first time some municipalities did not share the same political party as the federal or state administration. Hence, the coordination between different levels of state-authority and cartels became difficult. Cartels were forced to seek new agreements with the new political actors, and armed themselves to protect their territory or confront rivals.

The ease with which cartels armed themselves is explained by Dube et al. (2013). They recall that in 2004 the US Federal Assault Weapon Ban expired. The expiry of this law lifted the prohibition on domestic sales of military-style firearms in most of the US, but with important differences across border states. California retained the pre-existing state-level ban. In contrast, many other US-Mexican border states did not, including Texas, Arizona and New Mexico. This explains why homicides rose by 60% more in Mexican municipalities at the non-California entry ports, in comparison with municipalities 100 miles away.

Castillo et al. (2012) explain yet another change, outside of Mexican politics, that contributed further to the violence. Colombia's anti-drug strategy shifted in July 2006 when Juan Manuel Santos (today's President of Colombia) became the Minister of Defence. This new strategy shifted the emphasis from attacking the drug production chain to seizing cocaine, intercepting drug shipments and destroying cocaine processing labs. This policy drove Colombian cartels to relocate in Mexico. As the supply of cocaine was successfully reduced, the price of street cocaine in the US increased. This incentivised criminal organisations to fight to keep their lucrative market, fuelling more violence.

3. The impact of drug cartels and their violence

Drug cartels represent an important industry in the economy. According to RAND Corporation Mexican cartels make about $6.6 billion in gross revenue from exporting drugs just to the US (Keefe, 2012). Lee estimates that more than 50% of the profits earned by the cartel's leaders never return to the country (Cited by Ríos, 2008).

The drug money that eventually makes its way back to Mexico will bribe whoever needs to be bribed to keep the business going.[9] Some of these drug profits will also fund growing more marijuana and poppy, producing more synthetic drugs (mainly methamphetamine and ecstasy), and buying more cocaine from South America. Ríos (2008) estimates that the illicit drug industry hires 468,000 people in Mexico, making it the fourth largest employer among all the main industries. Cartels' direct labour demand includes low-skill workers to produce and transport the drugs to the US, and high-skill workers such as chemists, lawyers, accountants and those in charge of security. Security services, for instance, include trained mercenaries, but also civilians watching out for any changes in federal security or along the US border, known as falcons (Keefe, 2012).

The job opportunities and extra capital offered by cartels have the potential to benefit the economy, reduce poverty and inequality in the local areas where they work. There is anecdotal evidence that some rural areas have benefited from drug money. For instance, Marín (2002) recalls that he expected to find poverty and lack of infrastructure in his field work in rural areas in Sinaloa, the cradle of drug trafficking in Mexico. He found the opposite. Farmers he interviewed recounted that out of need, they chose to work for drug dealers instead. One of the interviewees explained "…[Drug traffickers] pay in cash, upfront, up to five years in advance. They absorb any real losses, give good profits, subsidise irrigation infrastructure, harvest and help farmers that get arrested by soldiers by financially supporting their families and paying the lawyers" (p. 4, own translation).

Drug money also gets "legalized" by filtering into various industries, especially those that can receive large amounts of cash and with weak money laundering regulation. Money laundering has recently increased considerably in wholesale trade as financial institutions have been more heavily scrutinised by both Mexican and US authorities to prevent cartels laundering their money. For instance, bank HSBC has been accused of failing to monitor $670 billion in wire transfers from HSBC Mexico and fined severely (Smythe, 2013). Although drug cartels may filter capital into local economies, over time drug money can affect long-term development. The endemic corruption that allows cartels to operate might distort incentives for investing in other sectors. Drug money that gets legalized can also drive legitimate businesses into bankruptcy. Former State Department official Jonathan Winer explains "…the drug trafficker is happy to pay 6% or 8% or 10% loss, reverse interest, to have that money laundered. So they have a competitive advantage over everybody. So they go into a business…they can take...over. " (Zill and Berman, 2013).

[9] Genaro García Luna, Mexico's former secretary of public security, estimates cartels spend more than a billion dollars annually just bribing the Mexican municipal police (Keefe, 2012).

Drug violence is another externality. Cartels have two options when their informal pacts with the state break down: exit business or resort to violence to establish control over territory. Violence is aimed at building the organization's reputation and inhibiting deviations from agreements and potential rivals. For this purpose, Mexican cartels have hired militias. Typically, these militias had been people who deserted the army or police. But, as the violence spread and intensified, cartels have also recruited unemployed youth (usually with a criminal record), and even children. Between 30,000 and 50,000 children in Mexico have been recruited by various cartels as mercenaries (Derechos Infancia, 2010). Cartels then, can reduce the human capital stock if young people drop out of school for short-term profit or because of drug dependency.

Violence, whether resulting from war or crime, can affect development (Soares, 2009). In Mexico, the drug related violence apart from its large humanitarian costs; has also affected civilian populations and businesses. Using crime victimization surveys in Mexico, Gutiérrez-Romero and Conte (2014) find that population in areas affected by drug related homicides increased their security spending and changed behaviour to prevent being victims of crime (such as avoiding going out at night). Despite these extra precautions, extortions and other thefts increased in these areas. They argue cartels battling for territory, reflected in killings, might be compensating for their extra expenses of hiring mercenaries by diversifying their activities in other crimes. These extra risks associated with living in these areas provide people incentives to flee. As a result, local businesses might see their market shrinking and their costs rising. Cost could rise out of the need of increasing security spending and the possibility of cartels extorting firms directly. Thus, businesses might either reduce their investment or eventually flee the area, destructing jobs (Evans et al., 2012; Rodríguez and Sánchez, 2012). This could explain why other studies have found that unemployment increased in areas affected by drug related violence in Mexico (BenYishay and Pearlman, 2013; Dell, 2011; Robles et al., 2013).

The high incidence of drug related homicides, casualties mostly of Mexican origin, suggests that some of the local population is involved in drug trafficking. Thus, it is not obvious whether poverty will be affected and how. Government intervention might be able to offset some of the negative impacts of drug violence by transferring extra resources to people and areas that need it. However, if government's extra security spending comes at the expense of reducing social and public services, then government intervention might be unable to offset a potential negative effect. Remittances, a large source of income for many Mexican families, could also offset some of the impacts of the drug violence.

3.1 A theoretical model on the impact of drug cartels and their violence

We summarise our discussion on the potential impact of drug cartels on development by adapting the standard neoclassical growth model. We assume that a country has $i=1,\ldots,n$ municipalities. Municipality i has a Cobb-Douglas production function, with constant returns to scale as in Eq.(1).

$$Y_{it} = AK_{it}^{\alpha} L_{it}^{1-\alpha} \quad (1)$$

where Y_{it} is municipality output at time t. A is the level of technology, K_{it} is the municipality's level of capital and L_{it} is the level of labour. Assume the capital comes from two industries: a legal one and an illegal one dedicated to trafficking drugs. The total amount of capital is given by $K_{it} = \varphi K_{it}^{l} + (1-\varphi) K_{it}^{d}$, where K_{it}^{l} is the amount of capital in the legal industry and K_{it}^{d} is the amount of capital in the illegal drugs industry. The share of capital coming from each industry depends on φ, a parameter measuring the strength of institutions, which influences how easily drug cartels can operate. Similarly, the total amount of labour is given by $L_{it} = \varphi L_{it}^{l} + (1-\varphi) L_{it}^{d}$, where L_{it}^{l} is the amount of labour in the legal industry and L_{it}^{d} is the amount of labour in the illegal drug industry. For simplicity we ignore the stock of human capital.

Assuming a constant saving rate, s, such that $S_t = sY_t$, and a capital depreciation rate δ per period, which we assume to be equal in both industries, the annual investment is equal to $I_t = \Delta K_{t+1} + \delta K_t$. The dynamics of capital accumulation are given then by Eq. (2)

$$K_{i,t+1} = (1-\delta) K_{it} + sY_{it} \quad (2)$$

Expressing quantities in per capita terms, the intensity of capital is given by $k_{it} = K_{it} / L_{it}$ and the production function $y_{it} = Y_{it} / L_{it}$. Thus, dividing Eq. (2), the capital accumulation by L_{it}, we obtain:

$$(1+n) k_{i,t+1} = (1-\delta) k_{it} + sy_{it} \quad (3)$$

where n is the population growth rate.

Following the modification proposed by Miguel and Roland (2011), we assume that there is a minimum subsistence consumption level, $c_{min}>0$, below which consumption cannot fall. Then, the savings per capita in municipality i will be given by $s_{it}=\min\{y_{it}-c_{min}, sy_{it}\}$. In the case where the per capita consumption hits the c_{min} constraint, then the municipality will be caught in a poverty trap. In such a case, there will be no further per capita accumulation, $k_{i,t+1} \leq k_{it}$. A poverty trap will arise if and only if

$$Ak_{it}^{\alpha} \leq (n+\delta) k_{it} + c_{\min} \quad (4)$$

There is a $k_{trap}>0$, below which inequality (4) is satisfied. A higher minimum consumption, faster population growth and higher depreciation all increase the poverty trap level of k_{trap}.

Assuming that there is no factor mobility across municipalities, in terms of capital or population, the steady-state level of capital accumulation per capita, k^{*} will be defined by $(1+n)k^{*} = (1-\delta)k^{*} + sAk^{*\alpha}$. Thus, municipalities with a higher level of total capital (regardless if legal or illegal in origin) will converge to a higher steady state than those with lower level of total capital.

Now assume that at a later time, $m<n$ municipalities face an idiosyncratic shock: drug related violence. This random shock represents an extra expense, in terms of consumption of security measures which affects both industries. Depending on the magnitude of the extra expense required to safeguard security, investors might be able to stay afloat, that is if $k>k_{trap}$. Investors in the formal and illegal industries however, might face a different ability and willingness to compensate for the shock. Consider that in net terms total capital falls below the level needed k_{trap}. Then, municipality m will fall into a poverty trap permanently if there is no factor mobility, or government or remittance assistance that could absorb the shock. The rest of the municipalities not experiencing such a shock will continue along their normal path of growth.

A different scenario could emerge if capital and labour could flow into municipalities not affected by the shock until the marginal returns of these factors is equalized across the affected and non-affected municipalities. Also external intervention (in the form of government aid or remittances) could increase the income of the affected municipalities. Whether these municipalities manage to escape the poverty trap will depend on the size of the intervention.

In our empirical analysis we will be unable to provide a break down of capital coming from legal or illegal industries. However, we can evaluate what happened, in net terms, to the overall production, profits, number of establishments, employees, remunerations and investment in capital across various industries. We would expect larger changes in industries with more flexibility to outsource their production to other areas, or which depend more on national or international markets, rather than the local market, such as manufactures. Businesses that depend more on the local market , such as real estate, might find it more difficult to shift their production to avoid violence, thus are more likely to adjust more slowly.

In the next section we evaluate empirically the impact of cartels and their violence. These will reveal short-term impacts. However, our theoretical discussion here, suggests that some of these impacts could also persist in the long-run.

4. Econometric strategy and data sources

To estimate the impact of drug cartels and their associated violence we rely on the methods proposed by the quasi-experimental literature. Quasi-experiments do not assign treatments randomly.[10] So, we cannot estimate accurately the impact of drug violence by simply comparing areas that experienced this violence and those that did not. This simple comparison would ignore that drug cartels might be more active in certain areas given their underlying characteristics, such as closeness to the US border and degree of political decentralization. This simple comparison would also ignore that areas might

[10] According to Shadish et al. (2002) "Assignment to conditions is by means of self-selection, by which units choose treatment for themselves, or means of administrative selection, by which ...bureaucrats… or others decide which persons should get which treatment." (p. 13-14)

suffer changes not necessarily because of the drug violence, but perhaps due to unobserved characteristics, such as levels of corruption.

To address these concerns we combine the difference-in-difference estimator with propensity score matching, as proposed by Heckman et al. (1997). This estimator compares the change in outcomes of treated areas, before and after they get treated, to the change in outcomes of "comparable" areas used as control group. These areas are matched based on the likeness of their characteristics. To this end, Rosenbaum and Rubin (1983) estimate a propensity score, which measures the conditional probability of areas receiving the treatment (D_i=1) given a vector of observable baseline characteristics X_i. Areas are then matched according to their propensity scores, p_i, which summarise in a single index the distribution of their baseline characteristics.

$$p_i = \text{pr}(D_i = 1 \mid X_i) \tag{6}$$

Based on the estimated propensity score, Heckman et al. (1997) estimate the average treatment effect on the treated (ATT) as in Eq. (7):

$$ATT = \frac{1}{n_1}\sum_{i=1}^{n_1}\left[(Y_{1ti} - Y_{0t'i}) - \sum_{j=1}^{n_0} W(i,j)(Y_{0tj} - Y_{0t'j}) \right] \tag{7}$$

where Y_1 and Y_0 are the observed mean outcomes under the condition of treatment and non-treatment respectively. t denotes the time point after treatment, and t' the time point before treatment. n_1 represents the size of the treatment group and n_0 the size of the control group, both in the common support area of the estimated propensity scores. $W(i,j)$ represents the weights assigned to each control municipality j, which depend on the particular matching estimator employed. We use kernel matching, which uses the estimated propensity scores to calculate a weighted mean such that it gives more weight to those control municipalities that are closer matches and downweights more distant observations. Kernel matching also has the advantage of using more observations than other matching algorithms, thereby reducing the estimation's variance (Guo and Fraser, 2010, p. 245).Thus, the weighting function is equal to:

$$w_{ij} = \frac{G\left[\dfrac{p_j - p_i}{a_n}\right]}{\sum_{k=1}^{n_0} G\left(\dfrac{p_k - p_i}{a_n}\right)} \tag{8}$$

where $G(\cdot)$ denotes the kernel function. a_n is a bandwidth parameter, and p_i is the estimated propensity score of the treated municipalities. p_j and p_k are the estimated propensity scores of municipalities in the control group.

Combining the PSM and DD has two main advantages. First, we match comparable treatment and control areas based on their observable characteristics. Second, by estimating the changes over time we remove time invariant unobserved characteristics that might affect outcomes (Smith and Todd, 2005). Our estimator could still be biased if there are any time variant unobserved characteristics that affect our outcomes over time. We could face this issue, if for instance, municipalities suffering from drug related homicides receive more subsidies than other areas to cope with the harmful effect of the violence. To lessen the risk of such a bias, we estimate the PSM-DD estimator controlling for covariates that might have changed over time thereby influencing our outcomes, as in Eq. (9).[11] We estimate this regression using panel fixed effects at municipality level.

$$Y_{it}(w_i) = \beta_0 + \beta_1 Post_t + \beta_2 Treatment_i + \beta_3 (Post_t * Treatment_i) + \beta_4 r_{it} + u_i + \varepsilon_{it} \qquad (9)$$

where Y_{it} is the outcome of interest for the municipality i at time t (t=0 before, and t=1 after treatment). $Treatment_i$ is a dummy variable equal to 1 for treated and 0 for the control municipalities. $Post_i$ is a dummy variable representing whether the observation is after treatment. Thus, the regression coefficient β_3 measures the difference-in-difference estimator. That is the impact of cartels (or drug related homicides). u_i and ε_{it} represent the residuals. r_{it} is a vector of time-varying variables. These are: the growth in remittances and poverty-relief subsidies per capita, both at municipality level; and the state's unemployment rate to consider the labour market of the region. All variables in r_{it} are lagged by two years to avoid having endogeneity issues with the intensity of drug related violence.

4.1 Data

To measure the impact on welfare we use the country's official poverty statistics and Gini coefficients. CONEVAL, an autonomous public agency, estimated these statistics combining household surveys (Encuesta Nacional de Ingreso y Gasto) with the population census using small-area statistics.[12]

To analyse changes in migration we draw from the population censuses the number of migrants coming from another state of residency or from the US. Unfortunately, the census does not provide information about the municipality where immigrants were living previously, only their state of previous residency. Thus, to discover whether people are moving from more to less violent areas we estimate the number of those who moved from another state with higher overall homicides rates.

[11] We estimate all regressions in Stata with the command xtreg. We obtain the kernel-weighs using the command psmatch2 by Leuven and Sianesi (2003).

[12] Consejo Nacional de Evaluación de la Política de Desarrollo Social (CONEVAL) is in charge of evaluating indicators in Mexico to improve public policy in Mexico.

We also assess the number of migrants coming from another municipality within the state of current residency; and the earning income of immigrants. Since that information was not released publicly, we estimate these two statistics from the micro-census sample data. This micro-data set is a sample of 16% of all records in the census, provided by INEGI in collaboration with the Minnesota Population Center (2014).

We estimate the change in municipalities' population size to capture the net effect of migration, births and deaths. To estimate the impact on human capital we assess the change in the percentage of the population aged 6-14 that is out of school. We obtain all these statistics from the population census.

Since our interest is to also measure the changes in unemployment at municipality level, we use the population censuses, which are representative at that level. Unemployment rates are not available in the mid census conducted in 2005. Thus, we estimate the change in unemployment rates using the census conducted in 2000 and 2010. We further breakdown the unemployment rate according to people's education attainment at municipality level, using the weighted 16% sample of the population census in 2000 and 2010.

To identify further the reasons behind the changes in our poverty and other welfare measures, we analyse three key industries: manufacturing, wholesale trade, and real estate. For each of these industries we analyse: total production, profits, remunerations per paid worker, number of workers and establishments per 10,000 inhabitants and investment in capital per worker. [13] We get all these statistics at municipality level. Since surveys are unrepresentative at that small-area level, instead we use the economic censuses.

We do not analyse other industries, such as construction and finance where cartels allegedly launder money, because the census does not distinguish in which municipalities their production took place.

Drug related homicides

To identify which areas experienced drug violence we use two data sources: official statistics and online reports. [14] The official statistics refer to the casualties credited to the conflict among cartels and the state. According to these, 1,148 out of 2,456 municipalities experienced at least one drug related homicide between December 2006 and December 2010. In total there were 34,612 drug related

[13] To prevent specific companies to be identified whenever a municipality has only one or two establishments INEGI does not specify the exact number of establishments in these areas. In these few instances, we assumed that these municipalities had exactly two establishments. Our results however do not change had we assumed these areas had only one establishment. Profits refer to the difference between income from the goods and services provided and the expenses incurred to provide these. Investment refers to the gross formation of capital.

[14] Previous articles have monitored online media records to identify where cartels operate with and without drug violence at small area level (Osorio, 2012; Coscia and Ríos, 2012). To the best of our knowledge, none of these datasets have been available to public. In contrast to these previous efforts, we searched for online reports manually, not relying on automated algorithms. Reading the media reports and watching the online TV reports help us to reduce errors as to where cartels operated with and without violence.

homicides during that period, 42% concentrated in just 2 out of the 32 Mexican states (Table A.1 in Appendix).

For the period during which there are no official statistics on drug related casualties we surveyed government and media reports, as well as specialized blogs. Our search was limited to identifying which municipalities experienced killings as a direct result of confrontations among cartels and the state. (That is, we do not estimate the incidence of drug related homicides.)

There are disadvantages in using media reports to detect drug cartels. For instance, for fear of retaliation some journalists are censoring news on cartels. [15] Thus, we left our search open to all online media reports, not focusing on a particular local or national media. We also surveyed online government reports to lessen a potential bias in media self-censorship. Although the government until 2006 was not systematically counting the number of drug related homicides, bulletins reporting such incidents were issued occasionally.

We found that 248 municipalities experienced drug related homicides between January 2000 and December 2005. Most of these areas, Osorio (2012) also identified as having been affected by drug violence during the same period (Fig. 2).[16] Ninety per cent of these municipalities experienced drug related homicides again between December 2006 and September 2011, according to official statistics.

We also surveyed online reports for drug related homicides for the period where there is official information on these casualties. Our search during that period focused only on the areas that official statistics regarded as free of drug related homicides. We found 63 municipalities with media reporting drug related homicides in these areas, yet not appearing in the official statistics. We excluded these 63 areas from our analysis to lessen the risk of potential double counting of casualties (in case the government identified these casualties but credited them to other areas), and also to control for potential differences in the definitions used by the government and media houses as to what counts as drug related homicides.

Cartels without drug related homicides

We also surveyed online reports to identify the areas where cartels are active without instances of drug related homicides. We surveyed government bulletins, for instance, on arrests of drug cartels members, seizing of drugs or drugs labs, as well as online media reports and specialized blogs. We found 243 municipalities where cartels were active without instances of drug related homicides between January 2000 and December 2005. Another 145 municipalities had cartels working without instances of drug related homicides from January 2006 until December 2010.

[15] Mexico ranked as the fifth deadliest place in the world for journalists in 2010 with over 30 deaths or disappearances of journalists and media workers since Calderón took office (Committee to Protect Journalists, 2010).

[16] Osorio (2012) monitored 11 national newspapers; 47 local newspapers; and press releases from the army, navy, federal police and the Attorney General's Office.

5. Estimating the impact of cartels and drug related homicides

5.1 Control group selection

We use as control group (for all our treatment groups described below) municipalities that were free of cartels and drug related homicides during 2000-2010. Some of these control municipalities are near areas that experienced drug related violence, a closeness that could bias our impact estimates. To minimise this possibility we exclude "buffer" municipalities. That is, areas free of drug related homicides during 2000-2010, but which are near to those municipalities that experienced drug related homicides. In the next section we present the results which remove buffer areas located within 10 kilometres of the epicentre of affected areas. These are our preferred results as the remaining control areas are still near enough to the treated areas to serve as proxies of the labour market conditions of the affected areas, yet without being too close thereby minimizing spill over effects. In Section 7 we show that our results remain similar even if we remove buffer areas that are further away from the affected areas.

5.2 Treatment group selection

We estimate separately two types of impacts: drug cartels being active in an area with and without violence. To measure the impact of drug cartels alone, without violence, we define the treatment group as municipalities where cartels moved into, and did so for the first time between December 2006 and December 2010, and that did not suffer any drug related homicides during 2000-2010.

To measure the impact of drug related homicides we define the treatment group as municipalities that experienced at least one drug related homicide for the first time between December 2006 and December 2010 according to official records, and that did not have any cartels or drug related homicides during 2000-2005.

Given the high variance in drug related homicide rates, the impact of this violence is unlikely to be linear or even quadratic. To assess whether the impact differed according to the intensity of homicides, we divide the second treatment group into four subgroups. The first subgroup consists of municipalities in the tenth decile according to their rate of drug related homicides per 100,000 inhabitants. This group has a much higher average drug related homicide rate (282.2) than the rest (22.4). We split the remaining 90% of the areas affected by drug related homicides into tertiles.

5.3 Propensity score matching

We estimate the propensity scores of areas experiencing cartels with and without violence using probit models. In these models we use covariates that jointly influence the likelihood of treatment and outcomes. Following the literature on drug cartels, we use as covariates: municipalities' ruling party (PAN or PRI); a dummy variable on whether the municipality has the same ruling party as the state (decentralized). We also use: municipality's population size; location (by coast or border); closest distance to border and coast; GDP per capita; percentage of children attending school; percentage of

households receiving remittances; subsidies received; trends in homicide rates; whether urban, rural or mixed.

Table A.2 shows the results from the probit regressions, as marginal effects, for the two types of treatments: experiencing cartels with and without drug related homicides. Table A.2 also includes the covariates used to estimate the propensity scores for each of the four subgroups treated by drug related homicides (the 10th decile and tertiles). We roughly used the same set of covariates to estimate the propensity score in each group, however we varied it slightly to ensure that the estimated scores satisfy the balancing property within the region of common support.[17] We matched the treatment and control areas using Epanechnikov kernel matching with a bandwith of 0.06.

Table A.3 shows that there are no statistically significant differences in the covariates used to estimate the propensity scores between the matched treatment and control areas. Tertiles differ in size given that each group had a different number of municipalities that remained in the area of common support. The large differences in drug related homicide rates between the top decile and the rest of tertiles remain after we select further the treatment and control groups, as shown in Fig. A.1

The matched areas have the same distribution of characteristics before treatments began (Table A.4). Also, the distribution of their propensity scores overlap well, as Fig. A.2 shows. Table A.5 shows the summary statistics for welfare and migration before and after treatment.

In Table A.6 we show the areas we use as treatment and control groups by state. Fig. 3 shows the matched areas used to estimate the impact of cartels without incidents of drug related homicides. We have 70 treated municipalities and 409 control municipalities within the region of common support. Fig. 4 shows the areas used to estimate the impact of drug related homicides. We remain with 668 treated municipalities and 554 control ones within the region of common support. Fig. 4 also shows that the areas least affected by drug related homicides (first and second tertile) are mostly in the south and central part of the country. The areas with the highest levels of drug related homicides are in the northern part of the country. This confirms the intensity of battles among cartels intensifies closer to the US border, the end drug market.

We find the matched treatment and control areas had parallel trends across various statistics long before treatment began, which is essential for the difference-in-difference estimator to be unbiased. Fig. A.3, A.4 and A.5 show the trends in total homicide rates, poverty and an index of marginalization[18] between the treatment and control group from 1990 until 2010. Fig. A.3, Panel A shows that treatment areas where cartels were active without drug related homicides had a parallel trend in total homicide rates with their control group from 1990 until 2008. In 2009, the control group

[17] Following Dehejia and Wahba (2002), we identify the region of common support as the overlap between the two distributions of the propensity scores of the treatment and control groups.

[18] The index of marginalization measures the percentage of population: that cannot read or write, without complete primary, without drainage or bathroom, without electricity, without piped water, co-habiting in overcrowding conditions, living in a household without soil floor; living in population of less than 5,000 inhabitants, earning up to two minimum salaries.

reported even more deaths, reflecting that this treatment group was not affected by drug related homicides. Similarly, Fig A.3 Panel B shows the treatment areas that were affected by drug related homicides had a parallel trend in total homicide rates with their control group from 1990 until mid-2000. This parallel trend breaks after 2006, when this treatment group started experiencing drug related homicides, unlike the controls.

After ensuring the matched areas are suitable treatment and control groups we ran the panel fixed effects regression. We included as covariates: the growth in remittances, poverty-relief subsidies per capita and the state's unemployment rate. To avoid endogeneity problems we include all these variables lagged for two years.

Impact on poverty and inequality

We analyse the impact on three measures of poverty. Food poverty measures the percentage of the population that cannot buy a basic food basket. Capability poverty adds those who cannot cover their health and education needs. And patrimony poverty adds those who cannot cover their clothing, housing and public transport needs.

Areas where cartels were active without drug related homicides did not suffer a change in poverty, relative to their control group. However, inequality -measured by the Gini coefficient- in these areas decreased by 1.8 points (Table 1, panel A, columns 1-4). In contrast, inequality did not change in areas affected by drug related homicides, relative to their control groups. However, food poverty increased (by 3.1 percentage points) among the areas in the top decile of highest rate of drug related homicides. Patrimony poverty also increased (by 2.6 percentage points) among the areas that experienced the lowest rate of drug related homicides, in the first tertile, relative to their control group.

It is unclear why drug related homicides had a non-linear effect on poverty, affecting only the areas with the highest and lowest drug related homicide rates. The geographic location of these areas might explain these results. Areas in the first tertile are along the route where cartels traffic cocaine from South America to US, but not where the cultivation of marijuana and poppy has increased the most. So, the economic benefits that cartels bring to these areas might not offset the negative effects caused by the violence, thereby increasing poverty. In contrast, the areas with most drug related homicides are in regions that experienced a sharp increase in cultivation of illegal drugs. These are mostly in states by the Pacific coast and the so called golden triangle formed by Sinaloa, Durango and Chihuahua. The sharp increase in drug production is also reflected in the efforts of the Mexican government to destroy illegal crops there (Fig. 5). The drug economy in these areas might offset some of the negative effects of the violence. But, it is likely that as the violence intensifies, so do its negative effects. This could explain why we find an increase in poverty in areas in the top decile. Migration patterns might also explain the non-linear effect of drug homicides, as we show below.

Impact on human capital

To assess the impact on human capital we focus on the percentage of children aged 6-14 out of school.[19] This statistic did not change in areas where cartels were active without drug related homicides (Panel A, columns 5). In contrast, this statistic increased, albeit to a small degree by 0.3 to 0.4 percentage points, among the areas in the first, second and third tertiles, relative to their control groups (Panel B, column 5).

We also find that the overall number of children aged 6 to 14 increased in areas in the first and second tertile, while it decreased in areas in the top ten decile of drug related homicides (column 6). This finding supports the evidence presented in the next subsection that both internal immigration and population size increased in areas with the lowest incidence of drug related homicides. Hence, children might have dropped out of school in these areas because of population pressure. Columns 7 and 8, nonetheless shows the number of schools and teachers per pupil did not change in the first tertile. Teachers per pupil even improved among the areas in the second and third tertile. Thus, it is unlikely that education outcomes worsened because of a shrinking supply of schooling.

We cannot rule out that drug dependency or children engaging in drug trafficking could perhaps explain the rise in schooling dropout. However, the increase of children out of school in the areas with lowest drug related homicides is consistent with the rise in poverty these areas experienced, thus a higher percentage of families unable to cover their education needs. Our results then add evidence to the detrimental effects of violence on education found by Magaloni (2012) who show test scores worsened in areas affected by drug violence.

Impact on migration and population size

We focus on the number of people who claimed to have lived in another state or in the US five years ago. We get these statistics from the population census conducted in 2005 and 2010. We also estimate the impact on the number of people who claimed to have lived within the same state but in a different municipality five years ago. We get this information using the 16% micro-data population census from 2000 and 2010, since this information is not publicly available nor asked in the mid 2005 census.

Columns 1 to 8 in Table 2 show areas where drug cartels were active without drug related homicides did not experience as a result changes in their population size or internal migration patterns. However, these areas experienced a decline in the number of people that moved from the US, relative to their control group (a decline of 26 immigrants per 10,000 inhabitants).

Column 1 shows the areas in the top ten decile experienced a sharper decrease in the number of people who moved from the US, relative to their control group. Specifically, these areas had a decline of 76 immigrants per 10,000 inhabitants. The areas in the top decile experienced a decline in the number of people who came from other states with overall higher homicide rates. These areas also

[19] In the Mexican schooling system children aged 6-11 are normally in primary school, those aged 12-14 in secondary school and those aged 15-18 in high school.

experienced a sharp decline in the number of people who came from a different municipality within the same state (columns 3 and 4, panel B).

The findings uncovered thus far suggest that the areas with most drug related homicide rates are attracting fewer people from abroad and from within the country. Nonetheless the overall population size in these areas did not change, relative to their control group (column 8).

We find a similar pattern among the areas in the third tertile of drug. Columns 1 show these areas experienced a decline in the number of people coming from the US. Column 3 demonstrates the number of immigrants coming from other states with overall higher homicide rates also declined in these areas.

While the areas with the highest drug related homicide rates attracted fewer immigrants, the opposite is happening for areas with the least drug related homicides. Column (7) shows the total number of immigrants, those coming from abroad or from other parts of the country, increased in the areas in the first and second tertile. This increase in immigrants helps explain why population size in these areas increased, relative to their control group (column 8).

Columns 5 and 6 show most people that immigrated to the areas in the two bottom tertiles had lower earning incomes than those of the non-immigrant population. The revealed migration patterns suggest drug related homicides redistributed poor people within the country, migrating from more to less violent areas.

Why are people moving into areas that suffered low levels of drug related homicides, instead of going to the control areas, free of drug homicides? One possibility is that drug money has created more job opportunities in these areas. Because these areas have low drug related homicide rates, their legitimate economy is unlikely to have suffered much. We test this hypothesis next.

Impact on unemployment

We find no impact on the number of unemployed or unemployment rate in areas where cartels were active but without drug related homicides (Table 2 columns 9-12). Similarly, the number of unemployed remained unchanged across all the subgroups affected by drug related homicides. However, the unemployment rate for people with high school or more increased among the areas with most drug related homicide rates. That is, those areas in the second, third tertile and in the top decile (column 12). The unemployment rate for those with lower education attainment also increased in the areas in the third tertile, relative to their control group.

The total unemployment rate decreased among the areas in the first tertile, while remaining unchanged in the other groups analysed. This decline in unemployment rates among the areas with lowest levels of drug related homicide rates might explain why immigrants moved to these areas. These immigrants were perhaps attracted to these areas given their job opportunities, relative to their control groups, despite their low levels of drug related homicides.

6. Impact of cartels and drug related homicides on industries

In this section, we evaluate the impact on key industries. We do so to understand why cartels and drug violence affected poverty and other welfare statistics. We take the information on industries from the economic census. Since the economic censuses were conducted in different years to the population censuses used earlier, we redefine slightly our treatment and control groups.[20]

Areas that did not have cartels nor drug related homicides during 2000-2008 serve as our control group. As before, we exclude from this group buffer areas within 10 kilometres of those that experienced at least one drug related homicide during 2000-2008.

We redefine slightly the first treatment group as: municipalities where cartels moved into to traffic drugs for the first time between December 2006 and December 2008; and that did not suffer any drug related homicides during 2000-2008.

The second treatment group is: municipalities that experienced for the first time at least one drug related homicide between December 2006 and December 2008; and that did not have any cartels or drug related homicides during 2000-2005. As before, we divide the areas that experienced drug related homicides into four subgroups (by tertiles and the top tenth decile).

6.2 Propensity score matching

We estimate the likelihood -propensity scores- of areas experiencing cartels with and without violence using probit regressions. To estimate these scores we use the same covariates as in the previous section. We show the results of these probit regressions, as marginal effects, in Table A.7. All estimated scores satisfy the balancing property. The distribution of scores overlap well between the treatment and control groups (Fig. A.6). There are no statistically significant differences in the covariates used to estimate the propensity scores between the matched treatment and control areas (Table A.8). Table A.9 shows the summary statistics for each of the industry analysed before and after treatment.

After matching the areas, we include as controls in the panel fixed effects regression: the two year lagged growth in remittances, poverty-relief subsidies per capita and the state's unemployment rate.

Impact on manufacturing

Table 3 suggest that drug related homicides affected sharply the manufacturing industry. For instance, areas in the first tertile had a larger decline in remunerations per paid worker than the one noted in areas where drug cartels were active yet without drug related homicides (column 3). Areas in the

[20] The latest economic census refers to data gathered in 2008. Thus, we are unable to assess the impact of drug related homicides that peaked in 2010. According to official records there were 9,725 drug related homicides between 2006-2008. This figure increased to 34,612 deaths during 2006-2010. Between December 2008 and December 2010 drug related homicides spread to 195 municipalities that had previously been free from drug related homicides.

second tertile besides the decline in remunerations per paid worker, also had a decline in profits and investment in capital per employee. Areas in the third tertile, besides the decline in remunerations per paid worker and profits, also had a decrease in production and number of workers. The areas in the top 10 decile besides their decline in remunerations per paid worker, profits, production and number of workers also had a decline in the number of establishments per 10,000 inhabitants. Thus, these findings suggest the higher the drug related homicide rates, the greater the harmful effect on manufacturing.

The decline in remunerations in manufacturing supports the findings of Velásquez (2014) who using a panel survey shows total earnings declined in areas with the highest homicide rates in Mexico. Our evidence however, suggests that areas where drug cartels were active without killing one another also experienced a decline in remunerations. The presence of these cartels might affect entrepreneurs' expectations about the profitability of these areas, reducing remunerations, especially if they expect extortions of firms or other thefts to rise.

Impact on real estate

Real estate is another industry that could have been harmed by drug related homicides. On the one hand, people are reluctant to buy properties in areas where cartels are fighting for territory, and this has affected real estate agents (Sigler, 2012). On the other, real estate is one of the industries which cartels allegedly use to launder their money. Major real estate agencies in Mexico agree that money laundering is occurring and is hiding how "legitimate" investors have been harmed in the industry (CNN Expansión, 2010). With the data available it is not possible to breakdown whether legitimate or money-laundering real estate agencies have been affected by the violence. Nonetheless, we do find different impacts between the areas where cartels work with and without drug related homicides.

On the one hand, we find no change in statistics in real estate in areas where cartels were active without drug related homicides (Table 4, panel A, columns 1-6). On the other, the higher the drug related homicides rates are, the greater is the negative impact on real estate. For instance, areas in the second tertile experienced a decline in the number of workers in this industry, relative to their control group. The areas in the third tertile had a decline in production (sales) and profits, relative to their control group. The areas in the top decile, experienced a decline in production, although also an increase in the number of establishments in real estate per 10,000 inhabitants in the areas. It is unclear why the number of establishments in these areas would increase. After all, people in these areas are likely to be more reluctant to buy or rent properties there given the ongoing violence. However, if indeed cartels use real estate agencies to launder drug money, perhaps more establishments are needed to launder the money in these areas, where we know various cartels are present and fighting for territory.

Impact on wholesale trade

Cartels have increasingly relied on wholesale trade businesses to transfer their dollars in the US into pesos in Mexico (The Economist, 2014). For this purpose, cartels use brokers in the black US-peso exchange market. These brokers then contact legitimate wholesale trade businesses that import and export goods between both countries. If for instance a legitimate importer in Mexico wants to buy $50,000 worth of dresses in the US, then the broker arranges for the drug cartel to pay the bill to the dresses wholesale retailer in the US in dollars. The importer in Mexico pays the agreed amount in pesos to the broker, who after taking a cut passes the rest of the payment to the cartel in pesos (Mozingo et al., 2014). According to US prosecutors, legitimate wholesale trade businesses have enabled cartels to smuggle large amounts of dollars into Mexico. The laundering is done without having to wire dollars and convert through financial institutions "which not only carries transaction fees, but also a threat that their illegal activity will be detected." (Walker, 2014).[21]

The exact number and location of legitimate wholesale trade businesses involved in the black US-peso exchange market is unknown. Our results reveal how resilient this industry has been. Columns 7 to 12 in Table4 show that none of the six indicators analysed in this industry were impacted among the areas affected by drug related homicides nor where cartels work without drug related homicides. We can only hypothesize that the increasing money-laundering carried out in this industry has allowed it to remain unaffected even in areas with the highest drug related homicides rates.

To summarise, the results reported in Table 3 and 4 show that the areas with the highest rates of drug related homicide (in top decile) suffered the sharpest decline in remunerations per paid worker, production, profits, decline of establishments and workers in manufacturing. The changes in these areas are consistent with the observed increase in food poverty and unemployment rates of those with high school education or more. These detrimental changes in economic activity might also explain why these areas with high levels of violence are also attracting fewer migrants from abroad or from the rest of the country.

The areas with medium levels of drug related homicides (third and second tertile) experienced a decline in the number of workers in manufacturing and real estate. These changes help explain the increase in unemployment rates (when analysed by people's education attainment) in these areas. Areas in the top decile, had an even sharper decline in the number of workers in manufacturing. This reflects that these areas also had a sharper increase in the unemployment rate among those with high school or more.

Remunerations in manufacturing declined in the areas in the bottom first tertile, though these areas did not experience a decline in the number of workers across any of the industries analysed. This

[21] The State Department estimates drug trafficking organizations send annually from the US between $19 and $29 billion to Mexico using various money-laundering schemes, sending not only cartel's drug sales, but also their profits from kidnappings and other illegal activities (Mozingo et al., 2014).

decline in remunerations might also be explained by the increase in number of migrants and population that these areas experienced, thereby increasing the labour supply and driving a larger fall in remunerations than in the second and third tertiles. This sharper fall in remunerations then is consistent with the rise in poverty in these areas (unlike in the second and third tertiles).

7. Robustness to distance to buffer areas, placebo regressions and impact on areas that experienced by drug violence in an earlier period

7.1 Buffer areas

We have so far shown that drug related homicides have increased poverty and harmed manufacturing and to lesser extent real estate. These findings, however, do not preclude the possibility that alternative measures of distance with respect to our selected buffer areas might yield different results. In our earlier analysis of the impact of cartels and drug related homicides we excluded buffer areas to reduce the chances of effects spilling over to these areas. We set an arbitrary radius of 10 kilometres near treated areas. We also tested the extent to which our estimators change when we vary the boundaries for excluding buffer areas. Since most municipalities are geographically small, removing areas within a radius of 40 kilometres excludes about 90% of the control areas, resulting in too small a control group. So, we tested our main results excluding buffer areas within 15, 20 and 30 kilometres, finding in general similar results.

For instance, Table A.10 presents some of our results of excluding buffer areas within a radius of 20 kilometres for some of our results. Setting this boundary roughly halves the number of control areas. However, the impact patterns on poverty, inequality and education remain similar to those presented earlier.

7.2 Placebo tests (using 1990-2000 as pre-treatment vs. 2001-2005 as post-treatment)

We also use placebo tests to assess the robustness of our findings. To this end, we perform placebo regressions by assuming that our treatment areas were affected by cartels or drug related homicides earlier than they were. As before, we use probit regressions to estimate the propensity scores. However, we set this placebo treatment so the pre-treatment period dates back to 1990-2000 and the post-treatment refers to 2001-2005. We use as control group the same areas as in our central analysis in Sections 5 and 6 respectively, and ensuring that the matched areas have the same distribution of characteristics.

Table A.11 shows the results of this placebo test for our main welfare statistics of poverty, inequality, migration and human capital. We are able to find data for our placebo for the majority of the statistics earlier presented. In total, from the 48 placebo difference-in-difference estimates presented, only one is statistically significant at 10% significance level. In these placebo regressions we are unable to compare the changes in unemployment rate for the period 2000 vs. 2005 as

unemployment rate is not available in the mid-census of 2005. So we instead tested changes in GDP per capita finding that none turn statistically significant (hence not shown in the table). We do not present the number of migrants coming from the US as this information is not available in the 2000 census. We are also unable to compare internal migration patterns given that migration within the same state but to a different municipality are not available in the 2005 census.

In Table A.12 and A.13 we present placebo regressions for the manufacturing, real estate and wholesale trade industries. From the 108 placebo difference-in-difference estimates presented, only seven are statistically significant at 10% significance level. That is a rate of 6% likely to have been found by chance. In contrast, we found 23 out of 108 ATT coefficients statistically significant using the non-placebo data at 10% significance level.

In sum, all these placebo tests suggest the impacts showed earlier are unlikely to have been driven by chance or by unobserved characteristics.

7.3 Impact on areas that experienced drug related homicides since 2001

So far, we have estimated the impact for areas that experienced cartels or drug related homicides for the first time in 2006 or afterwards. This period is of particular importance as violence intensified to unprecedented levels and cartels expanded to areas that had not experienced cartels nor drug violence before. However, by focusing on this period we have excluded from our analysis those areas that experienced violence since the beginning of the millennium, when the drug violence started.

In this sub-section we assess the impact on the areas that experienced drug related homicides, during 2001-2005. For this purpose, we redefine our treatment areas as those municipalities that were free of cartels and drug related homicides during 1990-2000 but that experienced drug related homicides during 2001-2005. The controls are areas that at no point experienced cartels or drug related homicides during 1990-2010.

We identified the areas where cartels were active with and without drug related homicides by surveying government and media reports. We estimate the impact of drug related homicides for all areas that experienced at least one drug related homicide, without subdividing this group further according to the intensity of violence. As before, we use difference-in-difference kernel matching to assess the impacts of cartels and their violence. We use roughly the same covariates as before to estimate the propensity score, but lagged for our new baseline period 2000.[22]

In Fig. 6 we show the matched treatment and control areas that satisfy the region of common support in the propensity score matching. None of these areas have statistically significant differences in covariates used to match them. Fig. 7 shows that the matched areas had parallel trends in both homicides rates and poverty statistics before the violence erupted among cartels.

[22] Specifically we used, the 1990 marginalization index; 1990 Gini index; minimum distance to US border; 2000 GDP per capita; 1990 population measured in logarithm; whether municipality was decentralized in 1998; trends in homicides rates 1990-1997.

Table 5 shows that food poverty increased in the areas that were affected by drug related homicides during 2001-2005, relative to the control group and the base line year (2000). The number of workers in manufacturing also decreased, relative to the control group.

Most of the areas (86%) first affected by violence during 2001-2005 also experienced drug related homicides during 2006-2010. Poverty (food and patrimony) also increased further comparing 2000 vs. 2010, probably reflecting the number of killings intensified further after 2006. We find an even sharper decline in the number of workers in manufacturing comparing 2000 vs. 2010.[23] Besides this decline in number in workers we find no other impact in manufacturing, real estate or wholesale. However, it is worth noting that since we do not have information as the exact incidence of drug related homicides during the period 2001-2005 it is not possible to disaggregate the impact on affected areas according to their levels of drug violence. Nonetheless, the overall impact on areas that were affected by drug violence since beginning of the new millennium are in line with our previous analysis, despite looking at an earlier start period and overall longer time frame.

8. Conclusion

We quantified what impact of drug cartels and separately drug related homicides have had on development in Mexico. Using the difference-in-difference kernel matching, we found the inner-country migrations that occurred because of the drug related homicides have displaced people from more to less violent areas. Areas with the lowest levels of drug related homicides have received more immigrants with low earning incomes than immigrants with high levels of earning income. These areas also experienced a decline in remunerations per employee in manufacturing, which explains further why poverty increased in these areas.

Areas with medium levels of drug related homicides experienced a decline in the number of workers in manufacturing and real estate. These changes are consistent with the rise in unemployment rates, particularly for those with high school education or more.

Areas with the highest levels of drug related homicides experienced an even sharper decline in production, profits, number of establishments, number of workers and remunerations per employee in manufacturing. All these harmful impacts are also consistent with the sharper increase in the unemployment rate among those with high school education, and increase in food poverty.

In sum, we found strong evidence that drug related violence is harming development, at least in the short-run. We adapted a theoretical model on poverty traps first proposed by Miguel and Roland (2011) to consider an economy with two industries: a formal and an illegal one (drug-trafficking). We used this model to show that although all our empirical findings refer to short-term impacts, some of them could persist in the long-run. This is likely to be the case of poverty, as we found a decline in human capital, number of employers, and jobs in the areas affected by drug violence. Children are also

[23] For this group we did not find any other statistically significant impacts, hence we did not present them but are available on request.

dropping out of school in these areas, despite not experiencing a decline in the number of schools or teachers per school-aged population. Thus, likely reasons for school drop out are rises in poverty, engaging in drug trafficking and drug dependency.

While we uncovered that drug related homicides have detrimental effects on development, we did not find positive impacts for areas where drug cartels work "peacefully", that is without drug related homicides. For instance, remunerations in manufacturing declined in these areas, which might explain the decrease in inequality experienced.

These findings deepen our understanding of the effects that drug cartels have on development, when engaging in violence and not. Policy implications on whether and how to regulate drug markets are not obvious. However, this paper has contributed to the debate on what and where the priorities should be for policy makers to lessen the negative effects of drug trafficking and violence in terms of poverty, education, migration and economic activity. In our analysis we controlled for poverty-relief subsidies that people received from the government, as well as for remittances from abroad. The fact that despite these transfers poverty is still on the rise in areas affected by drug violence suggests that these areas need urgent complementary policies to ensure that these negative impacts do not persist over time.

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Figures and Tables

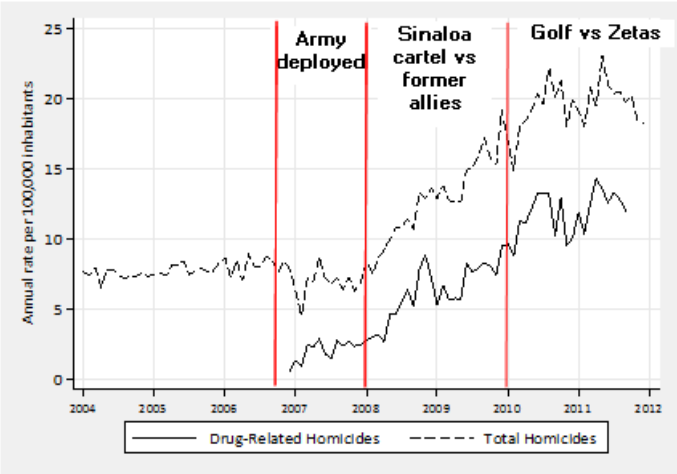
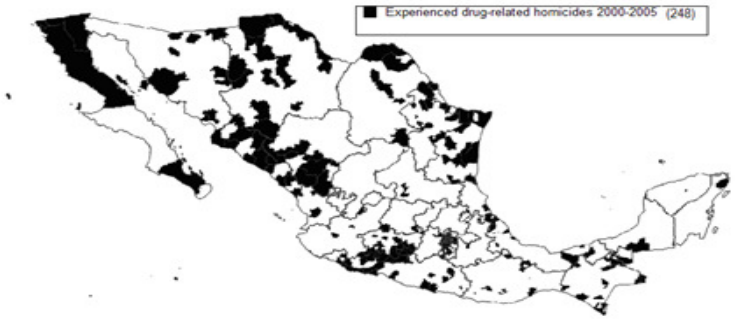


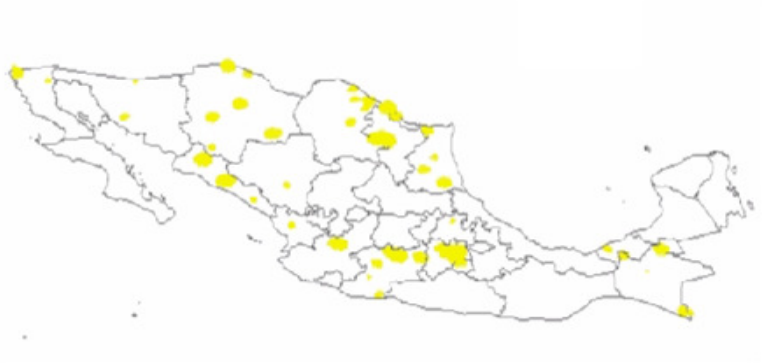
Fig. 1 Homicide rates in Mexico 2004-2012

Panel A



Source: Authors own estimates from surveying media, specialized blogs and official records.

Panel B



Source: Osorio (2012). Note: Map displayed in 3-dimension with kernel distributions to depict intensity of drug-related homicides.

Fig. 2 Municipalities experiencing drug related homicides during 2000-2005

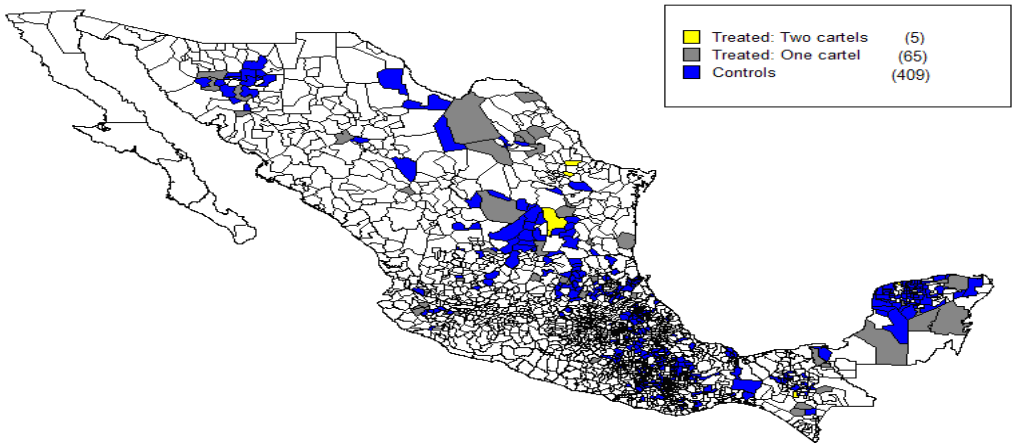


Fig. 3 Municipalities where cartels started operating for the first time in 2006 or after without drug related homicides vs. controls in region of common support

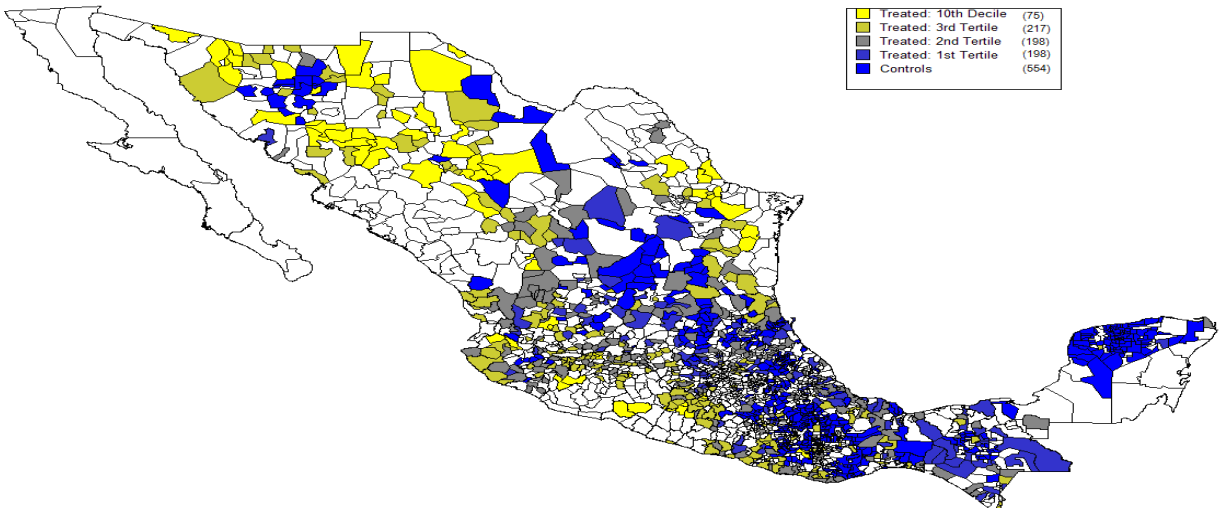


Fig. 4 Municipalities that experienced drug related homicides for the first time in 2006 or after vs. controls in region of common support

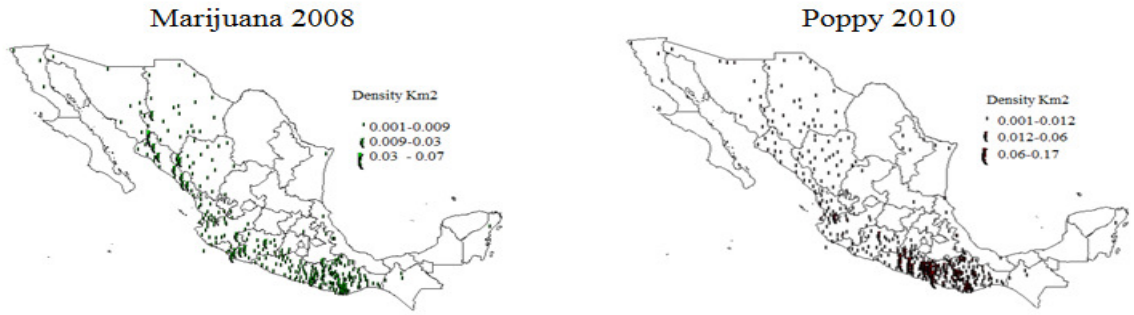


Fig. 5 Illicit crops eradication

Source: Ministry of National Defence (SEDENA), Mexico.

Table 1
Impact of cartels and drug related homicides on welfare

	(1) Food poverty %	(2) Capability poverty %	(3) Patrimony poverty %	(4) Gini	(5) Aged 6-14 out of school %	(6) Population aged 6-14	(7) Schools (primary to highschool) per pupil	(8) Teachers (primary to highschool) per pupil
Panel A: Cartels without drug related homicides								
ATT: time*treated	-3.6	-3.6	-2.5	-1.8***	0.2	9.2	-1.6	3.1
	(2.8)	(2.9)	(2.7)	(0.6)	(0.2)	(46.6)	(2.2)	(6.3)
Observations	958	958	958	958	958	958	924	822
R-squared	0.1	0.1	0.0	0.1	0.4	0.1	0.2	0.2
Panel B: Drug related homicides								
Areas with at least one drug related homicide								
ATT: time*treated	-0.6	-0.5	-0.2	0.3	0.3***	123.6**	-0.8	4.6
	(1.0)	(1.1)	(1.2)	(0.4)	(0.1)	(59.0)	(1.1)	(3.1)
Observations	2,484	2,484	2,484	2,480	2,484	2,484	2,332	2,042
R-squared	0.1	0.0	0.0	0.2	0.4	0.0	0.1	0.2
Top 10 decile of drug related homicides								
ATT: time*treated								
	3.1*	2.9	1.7	-1.1	0.0	-101.2***	3.8	-4.2
Observations	(1.7)	(1.9)	(2.2)	(0.9)	(0.4)	(37.3)	(5.2)	(11.8)
R-squared	1,022	1,022	1,022	1,020	1,022	1,022	998	796
	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1
Third tertile of drug related homicides								
ATT: time*treated	0.7	0.8	1.0	0.0	0.3*	36.5	0.3	12.8**
	(1.2)	(1.3)	(1.4)	(0.5)	(0.2)	(36.8)	(2.0)	(5.0)
Observations	1,458	1,458	1,458	1,458	1,458	1,458	1,398	1,186
R-squared	0.1	0.1	0.0	0.1	0.3	0.0	0.2	0.3
Second tertile of drug related homicides								
ATT: time*treated	-1.7	-1.7	-1.0	0.2	0.3*	173.5**	-2.0	9.6**
	(1.2)	(1.3)	(1.3)	(0.5)	(0.2)	(81.1)	(1.3)	(4.7)
Observations	1,180	1,180	1,180	1,178	1,180	1,180	1,134	1,038
R-squared	0.1	0.1	0.0	0.1	0.4	0.0	0.2	0.3
First tertile of drug related homicides								
ATT: time*treated	1.2	1.7	2.6*	-0.2	0.4**	470.7***	-1.6	0.1
	(1.5)	(1.5)	(1.5)	(0.5)	(0.2)	(178.2)	(1.2)	(2.8)
Observations	728	728	728	728	728	728	682	670
R-squared	0.0	0.0	0.1	0.1	0.6	0.1	0.2	0.3

*Controls used in all specifications: poverty-relief subsidies per capita, growth in annual remittances and state's unemployment rate, all lagged for two years. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10 Sources: Poverty and Gini statistics CONEVAL; population, controls used and education statistics INEGI.*

Table 2
Impact of cartels and drug related homicides on migration

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Number of people that resided in U.S. 5 years ago per 10,000 inhabitants	Number of people that resided in another state 5 years ago	Number of people that resided in another state with more homicides 5 years ago per 10,000 inhabitants	Number of people that resided in another municipality within state 5 years ago per 10,000 inhabitants 2000 vs 2010[a]	Number of people that moved in and had less earning income than non-migrant population 2000 vs 2010[a]	Number of people that moved in and had more earning income than non-migrant population 2000 vs 2010[a]	Total number of migrants that moved into 2000 vs 2010[a]	Total population	Number unemployed 2000 vs 2010	Unemployment rate 2000 vs 2010	Unemployment rate low educated 2000 vs 2010[a]	Unemployment rate high school plus 2000 vs 2010[a]
Panel A: Cartels without drug related homicides												
ATT: time*treated	-26.2*	29.9	2.7	-10.5	-30.0	7.9	-24.8	-362.1	-57.6	-0.2	0.3	0.4
	(15.9)	(36.2)	(5.0)	(34.4)	(45.5)	(6.5)	(47.6)	(532.4)	(42.1)	(0.4)	(0.5)	(0.4)
Observations	958	958	958	938	934	508	936	958	949	949	949	949
R-squared	0.5	0.3	0.1	0.0	0.0	0.1	0.0	0.1	0.4	0.5	0.5	0.4
Panel B: Drug related homicides												
Areas with at least one drug related homicide												
ATT: time*treated	-1.1	83.2*	-9.2***	1.3	96.2*	19.5**	112.1*	892.4	-27.4	-0.2	0.3	0.7**
	(10.8)	(46.9)	(3.1)	(17.3)	(57.0)	(8.7)	(63.1)	(554.4)	(60.5)	(0.3)	(0.3)	(0.3)
Observations	2,484	2,484	2,484	2,429	2,437	1,599	2,439	2,484	2,468	2,468	2,468	2,468
R-squared	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	0.5	0.5
Top 10 decile of drug related homicides												
ATT: time*treated												
	-75.7***	-17.3	-37.4***	-82.0**	18.6	1.4	21.1	112.8	27.9	-0.1	0.5	1.4**
Observations	(24.0)	(21.6)	(9.2)	(41.0)	(21.1)	(6.2)	(22.0)	(339.4)	(36.9)	(0.6)	(0.7)	(0.7)
R-squared	1,022	1,022	1,022	972	986	486	986	1,022	1,015	1,015	1,015	1,015
	0.7	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.6	0.5	0.5
Third tertile of drug related homicides												
ATT: time*treated	-26.6*	42.5	-13.7***	4.8	24.5	4.0	29.0	513.2	62.6	0.4	0.8*	0.6**
	(15.7)	(26.4)	(4.3)	(22.5)	(26.6)	(5.3)	(28.9)	(390.2)	(41.9)	(0.3)	(0.4)	(0.3)
Observations	1,458	1,458	1,458	1,417	1,421	789	1,423	1,458	1,450	1,450	1,450	1,450
R-squared	0.6	0.2	0.1	0.0	0.0	0.1	0.0	0.1	0.3	0.6	0.5	0.4
Second tertile of drug related homicides												
ATT: time*treated	-14.9	99.8	-5.5	10.3	200.4**	35.4*	230.3**	980.6*	9.5	-0.1	0.5	0.8**
	(12.0)	(102.3)	(4.2)	(25.7)	(101.3)	(19.6)	(114.4)	(549.5)	(64.8)	(0.3)	(0.4)	(0.3)
Observations	1,180	1,180	1,180	1,169	1,157	699	1,159	1,180	1,172	1,172	1,172	1,172
R-squared	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.6	0.5	0.5
First tertile of drug related homicides												
ATT: time*treated	5.9	372.6**	-0.2	20.9	410.2**	92.7***	487.7**	4,445.5**	64.8	-0.9**	-0.6	0.1
	(12.3)	(158.6)	(4.7)	(30.9)	(197.8)	(30.9)	(221.5)	(1,768.5)	(135.7)	(0.4)	(0.6)	(0.4)
Observations	728	728	728	717	713	545	713	728	718	718	718	718
R-squared	0.6	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.3	0.7	0.6	0.5

*Controls used in specifications (1) to (3) and (8): poverty-relief subsidies per capita, growth in annual remittances and state's unemployment rate, all lagged for two years. Controls used in specifications (4) to (7) and (9) to (12): poverty-relief subsidies per capita and state's unemployment rate, all lagged for two years. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10 Sources: [a] Own estimates using the micro-data population sample from census records, provided by INEGI and Minnesota Population Center (2014). Population, other migration and controls used INEGI.*

Table 3
Impact of drug cartels and drug related homicides on manufactures

	Manufactures					
	(1)	(2)	(3)	(4)	(5)	(6)
	production thousand USD	profit thousand USD	workers per 10,000 inhabitants	remuneration per worker thousand USD	establisments per 10,000 inhabitants	capital per worker thousand USD
Panel A: Cartels without drug related homicides						
ATT: time*treated	-1,363.3	-5,823.2	-52.0	-0.6**	1.1	-10.1
	(29,712.8)	(8,814.1)	(41.8)	(0.2)	(3.5)	(8.0)
Observations	996	996	996	996	996	996
R-squared	0.1	0.1	0.1	0.0	0.2	0.1
Panel B: Drug related homicides						
Areas with at least one drug related homicide	-24,388.0*	-10,031.1*	-34.9**	-0.5**	-0.9	-0.8
ATT: time*treated	(14,328.4)	(5,446.4)	(15.9)	(0.2)	(1.8)	(3.2)
	2,562	2,562	2,562	2,562	2,562	2,562
Observations	0.0	0.0	0.0	0.0	0.1	0.0
R-squared						
Top 10 decile of drug related homicides						
ATT: time*treated	-19,341.7**	-6,274.0*	-107.6*	-0.9*	-11.1***	1.8
	(9,390.7)	(3,419.4)	(61.5)	(0.5)	(4.0)	(3.7)
Observations	1,162	1,162	1,162	1,162	1,162	1,162
R-squared	0.0	0.0	0.0	0.1	0.0	0.0
Third tertile of drug related homicides						
ATT: time*treated	-20,050.2**	-8,503.0*	-37.1**	-0.4*	-1.6	-0.7
	(9,957.7)	(4,892.3)	(17.1)	(0.3)	(3.3)	(2.1)
Observations	2,022	2,022	2,022	2,022	2,022	2,022
R-squared	0.1	0.0	0.0	0.0	0.1	0.0
Second tertile of drug related homicides						
ATT: time*treated	-10,276.9	-10,636.7*	-10.5	-0.6**	0.2	-6.5*
	(20,329.2)	(5,779.2)	(15.0)	(0.2)	(2.4)	(3.7)
Observations	1,308	1,308	1,308	1,308	1,308	1,308
R-squared	0.1	0.1	0.1	0.0	0.2	0.0
First tertile of drug related homicides						
ATT: time*treated	-18,252.4	-5,742.1	-49.9	-0.8**	1.9	-0.2
	(51,221.8)	(17,802.8)	(40.2)	(0.4)	(3.3)	(7.3)
Observations	436	436	436	436	436	436
R-squared	0.3	0.3	0.2	0.0	0.3	0.0

*Controls used in all specifications: Poverty-relief subsidies per capita, growth in annual remittances and state's unemployment rate, all lagged for two years. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10 Source: Economic Census and controls used INEGI.*

Table 4
Impact of drug cartels and drug related homicides on wholesale business and real estate industries

	Real Estate						Wholesale business					
	(1) production thousand USD	(2) profit thousand USD	(3) workers per 10,000 inhabitants	(4) remuneration per worker thousand USD	(5) establisments per 10,000 inhabitants	(6) capital per worker thousand USD	(7) production thousand USD	(8) profit thousand USD	(9) workers per 10,000 inhabitants	(10) remuneration per worker thousand USD	(11) establisments per 10,000 inhabitants	(12) capital per worker thousand USD
Panel A: Cartels without drug related homicides												
ATT: time*treated	-58.8	-42.5	0.8	0.5	0.0	-2.9	1,748.4	982.3	3.1	0.3	0.2	-2.8
	(44.2)	(26.4)	(1.2)	(0.4)	(0.5)	(6.3)	(1,423.0)	(902.5)	(7.9)	(0.6)	(0.8)	(4.4)
Observations	996	996	996	996	996	996	996	996	996	996	996	996
R-squared	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Panel B: Drug related homicides												
Areas with at least one drug related homicide	-3.5	62.4	-0.4	-0.0	0.1	-6.1	1.9	70.0	-4.0	0.1	-0.3	-1.9
ATT: time*treated	(125.9)	(79.8)	(0.7)	(0.2)	(0.1)	(10.7)	(450.2)	(388.5)	(2.6)	(0.3)	(0.4)	(2.5)
	2,562	2,562	2,562	2,562	2,562	2,562	2,562	2,562	2,562	2,562	2,562	2,562
Observations	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
R-squared												
Top 10 decile of drug related homicides												
ATT: time*treated	-28.8*	-18.5	-0.7	-0.1	1.5**	23.6	427.8	689.9	3.3	0.1	-0.6	-2.9
	(17.2)	(12.1)	(1.6)	(0.2)	(0.6)	(24.5)	(531.7)	(742.6)	(4.3)	(0.4)	(1.1)	(2.1)
Observations	1,162	1,162	1,162	1,162	1,162	1,162	1,162	1,162	1,162	1,162	1,162	1,162
R-squared	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0
Third tertile of drug related homicides												
ATT: time*treated	-142.6*	-58.3*	0.5	-0.1	0.2	-3.9	37.9	-259.8	0.6	0.1	0.3	0.7
	(79.8)	(34.8)	(1.2)	(0.2)	(0.2)	(8.0)	(531.5)	(425.7)	(3.2)	(0.4)	(0.6)	(2.0)
Observations	2,022	2,022	2,022	2,022	2,022	2,022	2,022	2,022	2,022	2,022	2,022	2,022
R-squared	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Second tertile of drug related homicides												
ATT: time*treated	-94.4	-35.4	-2.0*	-0.2	-0.2	-2.2	1,105.6	1,134.9	-3.2	-0.2	-0.2	-0.1
	(135.0)	(68.7)	(1.1)	(0.3)	(0.2)	(13.1)	(1,126.2)	(822.7)	(4.1)	(0.4)	(0.5)	(1.7)
Observations	1,308	1,308	1,308	1,308	1,308	1,308	1,308	1,308	1,308	1,308	1,308	1,308
R-squared	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
First tertile of drug related homicides												
ATT: time*treated	-90.9	-22.6	-1.6	0.7	-0.3	-41.7	2,014.6	842.3	-5.2	0.9	0.4	-6.9
	(193.0)	(72.3)	(1.0)	(0.5)	(0.2)	(27.7)	(1,241.0)	(814.9)	(4.9)	(0.6)	(0.6)	(9.3)
Observations	436	436	436	436	436	436	436	436	436	436	436	436
R-squared	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0

*Controls used in all specifications: Poverty-relief subsidies per capita, growth in annual remittances and state's unemployment rate, all lagged for two years. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10 Source: Economic census and controls used INEGI.*

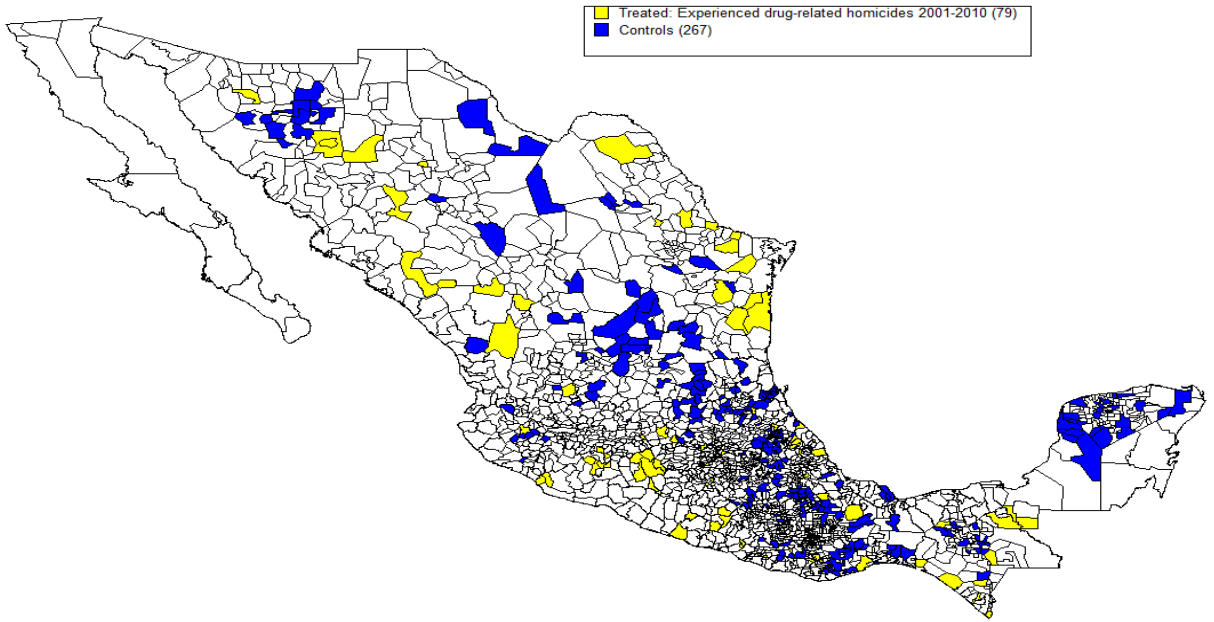


Fig. 6 Municipalities that experienced drug related homicides for the first time in 2001 or after vs. controls in region of common support

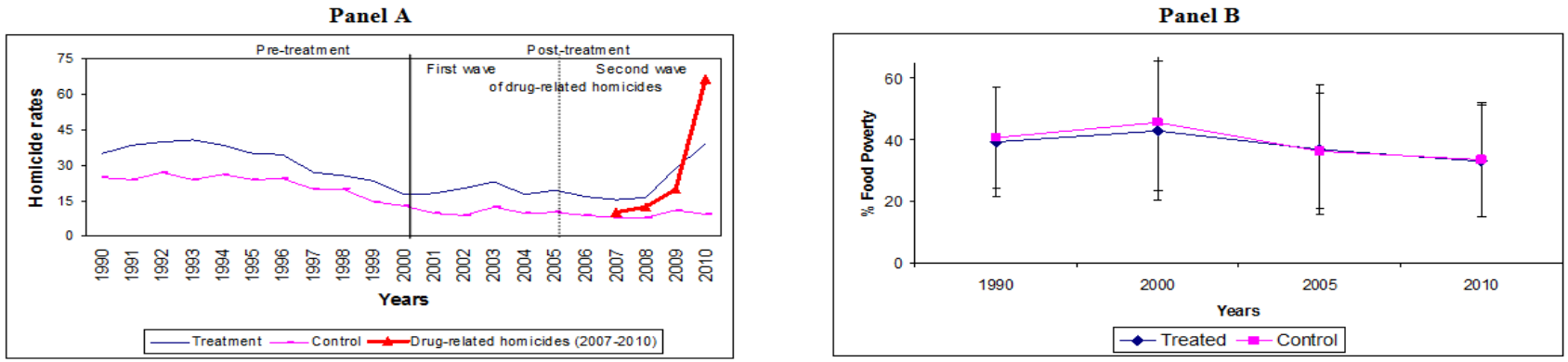


Fig. 7 Homicide rates and food poverty in municipalities that experienced drug related homicides for the first time in 2001 or after vs. controls in region of common support

Table 5
Impact on municipalities that experienced drug related homicides during 2001-2010

	Changes 2000 vs. 2005						Changes 2000 vs. 2010					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Food poverty %	Capability poverty %	Patrimony poverty %	Gini	Total population	Workers per 10,000 inhabitants	Food poverty %	Capability poverty %	Patrimony poverty %	Gini	Total population	Workers per 10,000 inhabitants
ATT: time*treated	3.9*	3.3	1.8	-0.0	12.3	-38.3*	2.5*	2.4*	1.7	-0.0	-412.9	-52.9*
	(2.3)	(2.3)	(2.0)	(0.0)	(527.9)	(21.0)	(1.5)	(1.4)	(1.2)	(0.0)	(1,038.4)	(30.0)
Observations	672	672	672	672	672	672	672	672	672	672	672	672
R-squared	0.2	0.2	0.1	0.4	0.0	0.1	0.6	0.6	0.2	0.8	0.1	0.0

*Excluding buffer areas. Controls used in all specifications: poverty-relief subsidies per capita, and state's unemployment rate, all lagged for 1998 and 2002. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10 Source: Population census, economic census and controls used INEGI.*

Appendix

Table A.1

Drug related homicides 2006-2010 by State

State	Total population 2010	Drug related homicides December 2006	Jan-Dec 2007	Jan-Dec 2008	Jan-Dec 2009	Jan-Dec 2010	Drug related homicides 2006-2010	Contribution to national drug related homicides 2006-2010
Aguascalientes	1,191,091	0	37	38	31	46	152	0.4%
Baja California	3,173,198	8	209	778	484	540	2,019	5.8%
Baja California Sur	644,860	0	6	2	1	10	19	0.1%
Campeche	825,716	0	8	7	6	10	31	0.1%
Chiapas	4,819,742	0	57	82	88	77	304	0.9%
Chihuahua	3,414,751	1	244	2,118	3,345	4,427	10,135	29.3%
Coahuila	2,758,418	0	18	78	179	384	659	1.9%
Colima	653,431	0	2	12	33	101	148	0.4%
Distrito Federal (Mexico City)	8,798,672	1	182	144	135	191	653	1.9%
Durango	1,637,236	0	108	276	674	834	1,892	5.5%
Guanajuato	5,507,486	0	51	79	234	152	516	1.5%
Guerrero	3,390,421	12	299	412	879	1,137	2,739	7.9%
Hidalgo	2,676,778	0	43	38	34	52	167	0.5%
Jalisco	7,374,128	1	70	148	261	593	1,073	3.1%
México	4,357,209	0	111	364	440	623	1,538	4.4%
Michoacán	1,781,476	24	328	289	590	520	1,751	5.1%
Morelos	15,200,000	0	32	48	114	335	529	1.5%
Nayarit	1,089,174	0	11	28	37	377	453	1.3%
Nuevo León	4,664,076	4	130	105	112	620	971	2.8%
Oaxaca	3,808,686	0	62	122	87	167	438	1.3%
Puebla	5,794,763	0	6	22	28	51	107	0.3%
Querétaro	1,836,171	0	5	6	13	13	37	0.1%
Quintana Roo	1,341,166	0	26	29	32	64	151	0.4%
San Luis Potosí	2,588,808	0	10	34	8	135	187	0.5%
Sinaloa	2,772,029	3	426	1,084	1,059	1,815	4,387	12.7%
Sonora	2,670,440	5	141	252	365	495	1,258	3.6%
Tabasco	2,246,282	1	27	35	65	73	201	0.6%
Tamaulipas	3,278,354	0	80	96	90	1,209	1,475	4.3%
Tlaxcala	1,176,409	0	0	3	6	4	13	0.0%
Veracruz	7,647,431	1	75	65	133	179	453	1.3%
Yucatán	1,957,360	1	4	18	1	2	26	0.1%
Zacatecas	1,493,518	0	18	25	50	37	130	0.4%
Total	112,569,280	62	2,826	6,837	9,614	15,273	34,612	100%

Source: Population INEGI (2012). Drug related homicides SNSP (2011).

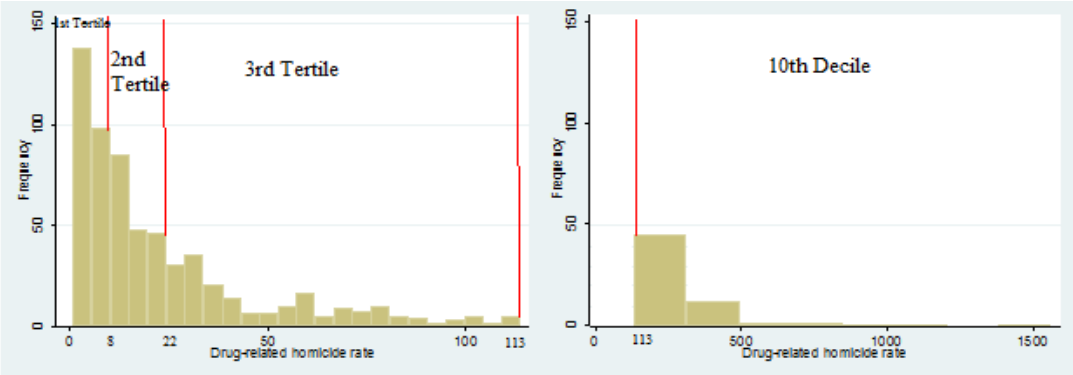


Fig. A.1 Rate of drug related homicides per 100,000 inhabitants by tertiles and 10th decile in region of common support

Table A.2
Probit marginal effects: Propensity scores used to match areas and evaluate impact on welfare statistics

		Drug related homicides by sub-groups				
	Cartels but no drug-related homicides	At least one drug related homicide	10th decile	3rd Tertile	2nd Tertile	1st Tertile
	(1)	(2)	(3)	(4)	(5)	(6)
Index of marginalization 2000	-0.000	-0.001	-0.000	-0.003	-0.002	0.000
	(0.002)	(0.003)	(0.001)	(0.003)	(0.002)	(0.000)
Capability poverty, 2000	-0.010**	-0.028***	-0.006	-0.021**	-0.004	
	(0.005)	(0.009)	(0.004)	(0.009)	(0.006)	
Food poverty, 2000	0.009*	0.021**	0.005	0.017**	-0.001	-0.001
	(0.005)	(0.009)	(0.003)	(0.009)	(0.006)	(0.000)
Decentralized, 2005	-0.053**	0.070*	0.001	0.122*	0.012	-0.018
	(0.025)	(0.039)	(0.015)	(0.073)	(0.035)	(0.020)
Mixed type municipality (urban/rural)	-0.059***	-0.052	-0.020	-0.092**	0.002	-0.004
	(0.017)	(0.056)	(0.016)	(0.039)	(0.043)	(0.004)
Mixed type*Decentralized	0.039		0.102	0.231**	0.085	
	(0.065)		(0.088)	(0.103)	(0.076)	
Rural*Distance to north border	-0.000	0.000	-0.000		0.000*	
	(0.000)	(0.000)	(0.000)		(0.000)	
Log Population 2005	0.045	-0.017	0.016	0.037	0.594***	0.167*
	(0.096)	(0.177)	(0.049)	(0.173)	(0.185)	(0.101)
Squared log population	-0.000	0.015	-0.001	0.004	-0.024***	-0.007*
	(0.005)	(0.010)	(0.003)	(0.010)	(0.009)	(0.004)
Log GDP per capita 2005	0.015	0.170**	0.017	0.143*	0.003	0.000
	(0.038)	(0.078)	(0.024)	(0.075)	(0.056)	(0.008)
%Children school attendance 2005	-0.001	-0.008***	-0.004***	-0.009***	-0.002	
	(0.001)	(0.003)	(0.001)	(0.003)	(0.002)	
Remmittances	0.002	0.011***	0.004**	0.025***	0.021***	0.000
	(0.002)	(0.002)	(0.002)	(0.006)	(0.007)	(0.000)
Squared remmitances	-0.000		-0.000*	-0.000***	-0.001***	
	(0.000)		(0.000)	(0.000)	(0.000)	
Municipality ruled by PAN only	0.001	-0.112**	-0.013	-0.095***	-0.043	-0.005
	(0.023)	(0.049)	(0.011)	(0.036)	(0.030)	(0.006)
Municipality ruled by PRI only	-0.029	-0.011	-0.003	-0.071*	-0.017	-0.003
	(0.022)	(0.048)	(0.014)	(0.043)	(0.032)	(0.005)
Homicide rate*decentralized 2005	0.000		-0.000	-0.002	-0.003	-0.000
	(0.000)		(0.001)	(0.002)	(0.002)	(0.000)
Total homicide rate 1990	0.000					
	(0.000)					
Total homicide rate 1991	-0.001					
	(0.000)					
Total homicide rate 1993	0.000					
	(0.000)					
Total homicide rate 1995	-0.000					
	(0.000)					
Total homicide rate 1996	0.000					
	(0.000)					
Total homicide rate 1997	0.001**					
	(0.000)					
Total homicide rate 1999	0.001*					
	(0.000)					
Total homicide rate 2000	-0.001					
	(0.001)					
Total homicide rate 2001	-0.000					
	(0.001)					
Total homicide rate 2003	-0.003***					
	(0.001)					
Total homicide rate 2004			0.001	0.009***	0.004***	0.000
			(0.001)	(0.002)	(0.002)	(0.000)
Squared Homicide rate 2004			-0.000	-0.000**	-0.000	
			(0.000)	(0.000)	(0.000)	
Distance to pacific coast			-0.000***			
			(0.000)			
Miniumum distance to north border			-0.000*			
			(0.000)			
Squared distance to north border			0.000			
			(0.000)			
Decentralized*Minimum distance to any border (north, south, pacific coast)				-0.001**		
				(0.000)		
Minimum distance to any border (north, south, pacific coast)				-32.031	-43.642**	
				(28.076)	(20.249)	
Dummy, by pacific coast or not					0.243	0.094
					(0.165)	(0.097)
Decentralized*Main entrance to border						0.000
						(0.000)
Pseudo R2	0.26	0.40	0.48	0.40	0.48	0.63
Observations	653	1,368	659	815	810	823

*(*) dF/dx is for discrete change of dummy variable from 0 to 1, z and P>|z| correspond to the test of the underlying coefficient being 0. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10*

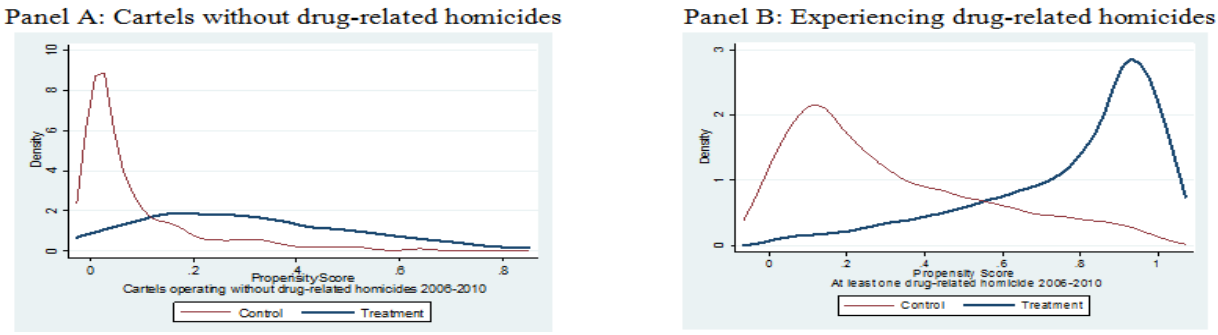


Fig. A.2 Distribution of propensity scores between treatment and control groups

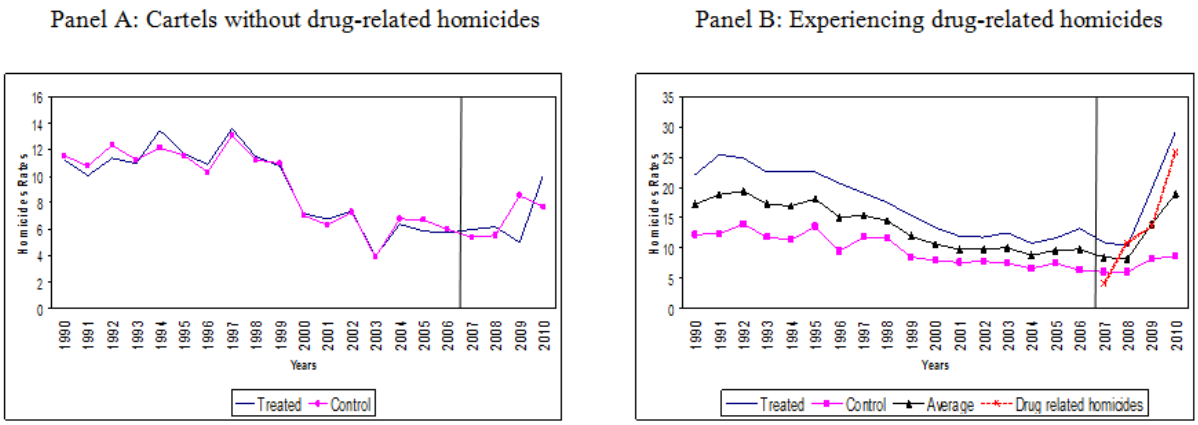


Fig. A.3 Trends in homicides rates between treatment and controls after kernel matching

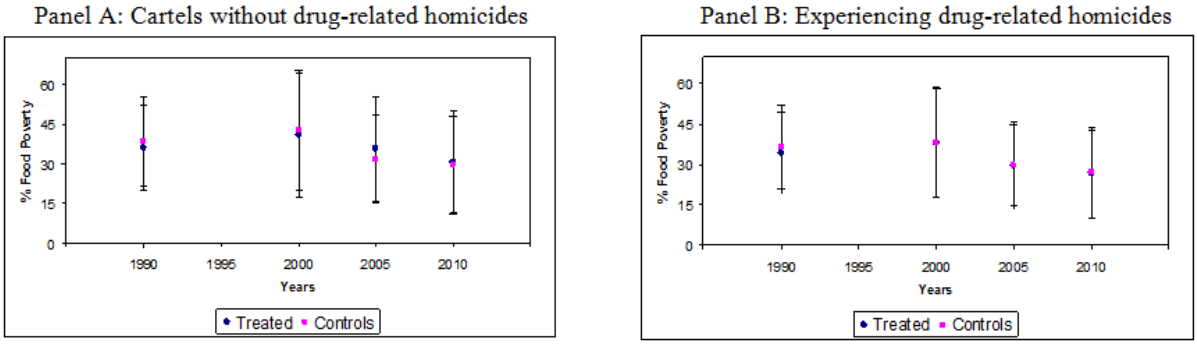


Fig. A.4 Trends in food poverty between treatment and controls after kernel matching

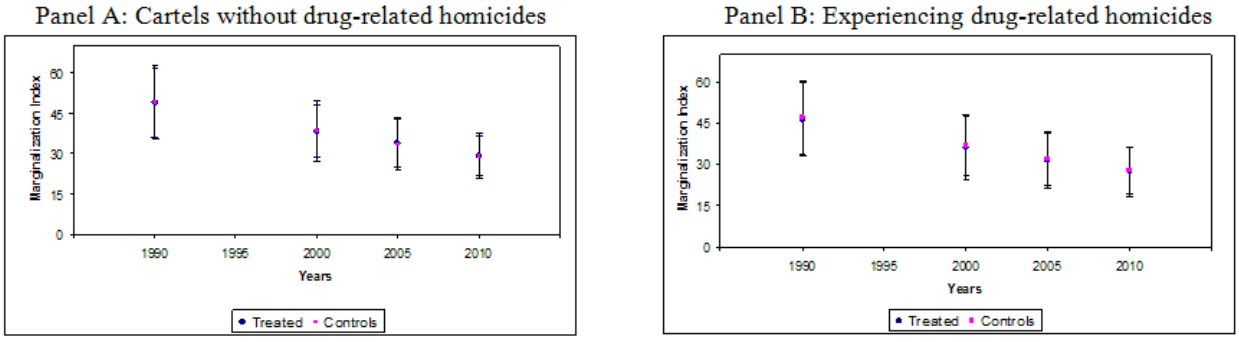


Fig. A.5 Trends in marginalization index between treatment and controls after kernel matching

Table A.3
Balancing test for covariates used to estimate propensity score to assess the impact on welfare statistics

	Panel A: Cartels without drug related homicides			All that experienced at least one drug related homicide			**Panel B: Drug related homicides**											
							10th Decile			3rd Tertile			2nd Tertile			1st Tertile		
	Mean treated	Mean controls	p-value for diff	Mean treated	Mean controls	p-value for diff	Mean treated	Mean controls	p-value for diff	Mean treated	Mean controls	p-value for diff	Mean treated	Mean controls	p-value for diff	Mean treated	Mean controls	p-value for diff
Index of marginalization 2000	38.47	38.61	0.924	36.2	36.81	0.594	35.81	32.71	0.138	36.87	36.33	0.659	36.95	36.93	0.985	36.68	37.45	0.694
Capability poverty, 2000	47.96	49.97	0.555	45.1	45.24	0.947	37.1	32.25	0.215	45.34	43.72	0.55	46.74	46.26	0.852			
Food poverty, 2000	40.93	42.9	0.554	37.87	38.18	0.874	31.12	26.49	0.204	38.3	36.9	0.582	39.31	38.9	0.867	41.68	42.6	0.722
Decentralized, 2005	0.36	0.36	0.937	0.47	0.5	0.611	0.61	0.52	0.351	0.46	0.47	0.884	0.44	0.42	0.666	0.42	0.5	0.417
Mixed type municipality (urban/rural)	0.26	0.25	0.968	0.33	0.32	0.847	0.23	0.31	0.413	0.35	0.35	0.984	0.35	0.33	0.86	0.29	0.23	0.41
Mixed type*Decentralized	0.06	0.04	0.616				0.11	0.07	0.428	0.12	0.12	0.869	0.12	0.09	0.4			
Rural*Distance to north border	391.16	392.91	0.975	382.82	379.26	0.922	327.47	299.94	0.646				408.48	371.93	0.45			
Log Population 2005	9.25	9.3	0.736	9.69	9.62	0.502	8.71	8.45	0.182	9.27	9.14	0.303	9.68	9.7	0.867	10.48	10.45	0.762
Squared log population	86.73	87.74	0.727	94.96	93.64	0.498	77.2	72.62	0.168	87.17	84.72	0.289	94.36	94.74	0.853	110.41	109.56	0.689
Log GDP per capita 2005	10.8	10.79	0.872	10.84	10.85	0.689	10.92	11.01	0.141	10.84	10.88	0.381	10.8	10.83	0.552	10.81	10.78	0.536
Children school attendance 2005	64.07	63.78	0.679	63.59	63.24	0.494	62.61	64.21	0.18	63.62	63.3	0.676	64.04	63.87	0.801			
Remmitances	7.73	7.41	0.819	8.48	8.47	0.994	10.05	9.26	0.611	10.07	9.69	0.732	7.6	7.87	0.78	6.08	5.71	0.678
Squared remmittances	146.93	140.4	0.884				173.25	153.77	0.639	186.8	172.82	0.669	119.19	120.08	0.971			
Municipality ruled by PAN only	0.37	0.38	0.908	0.26	0.28	0.801	0.21	0.2	0.82	0.23	0.27	0.415	0.26	0.27	0.796	0.35	0.32	0.727
Municipality ruled by PRI only	0.41	0.41	0.995	0.49	0.53	0.452	0.56	0.59	0.694	0.48	0.44	0.58	0.48	0.52	0.589	0.46	0.49	0.739
Homicide rate 2004*decentralized	2.56	2.68	0.924				11.52	5.98	0.159	6.84	6.53	0.859	3.96	3.05	0.333	2.66	3	0.67
Homicide rate 1990	11.24	11.54	0.896															
Homicide rate 1991	10.06	10.73	0.773															
Homicide rate 1993	10.97	11.18	0.928															
Homicide rate 1995	11.69	11.57	0.956															
Homicide rate 1996	10.86	10.32	0.827															
Homicide rate 1997	13.55	13.04	0.894															
Homicide rate 1999	10.73	10.96	0.929															
Homicide rate 2000	7.16	7	0.912															
Homicide rate 2001	6.77	6.32	0.746															
Homicide rate 2003	3.91	3.86	0.952															
Homicide rate 2004							16.39	11.48	0.241	13.37	12.08	0.528	8.87	8.34	0.699	6.48	6.33	0.887
Squared homicide rate 2004							1088.34	576.07	0.355	557.93	477.06	0.587	221.85	199.1	0.703			
Distance to pacific coast							287.01	269.5	0.599									
Distance to north border							480.84	448.17	0.583									
Squared distance to north border							338745.1	306080.1	0.595									
By pacific coast													0.03	0.02	0.67	0.03	0.02	0.325
Minimum distance to any border (north, south, pacific coast)										0	0	0.935	0	0	0.519			
Decentralized*Minimum distance to any border (north, south, pacific coast)										68.22	62.9	0.617						
Decentralized*Main entrance to border																331.51	367.39	0.591

Sources: Decentralized, own estimates using official electoral results. Data on distances own estimates using geo-coding provided by INEGI. Rest of indicators from INEGI.

Table A.4
Descriptive statistics of welfare statistics across matched areas that fall in the region of common support

	Panel A: Cartels no drug-related homicides					Panel B: Drug-related homicides									
						At least one drug-related homicides					10th Decile				
	2005		2010		ATT (no	2005		2010		ATT (no	2005		2010		ATT (no
	Control	Treated	Control	Treated	controls)	Control	Treated	Control	Treated	controls)	Control	Treated	Control	Treated	controls)
Food poverty %	31.63	35.63	29.79	30.46	-3.3	29.53	29.51	27.10	26.76	-0.3	22.32	21.86	18.80	22.16	3.8**
	(16.62)	(19.78)	(18.34)	(19.50)	(2.8)	(15.05)	(16.32)	(16.72)	(16.18)	(1.0)	(15.31)	(13.88)	(16.67)	(17.06)	(1.8)
Capability poverty %	39.98	43.68	38.75	39.23	-3.2	37.70	37.52	35.86	35.43	-0.3	29.12	29.10	25.74	29.73	4.0**
	(17.69)	(20.46)	(20.12)	(21.05)	(2.9)	(16.16)	(17.25)	(18.55)	(17.84)	(1.1)	(16.80)	(15.08)	(19.29)	(19.22)	(2.0)
Patrimony poverty %	62.02	64.34	62.74	62.88	-2.2	59.84	59.46	60.15	59.70	-0.1	49.86	51.37	47.85	52.76	3.4
	(17.19)	(18.16)	(20.14)	(19.76)	(2.7)	(16.04)	(16.55)	(19.32)	(17.94)	(1.2)	(17.06)	(15.37)	(22.11)	(20.12)	(2.3)
Gini	42.19	43.24	41.74	41.16	-1.6**	42.88	43.35	41.04	42.07	0.5	42.67	43.58	41.32	41.37	-0.9
	(3.882)	(3.884)	(3.958)	(4.369)	(0.6)	(3.654)	(4.212)	(3.869)	(4.014)	(0.4)	(3.431)	(4.162)	(5.033)	(3.416)	(1.3)
Aged 6-14 out of school %	6.048	6.232	4.815	5.132	0.1	6.072	6.822	4.728	5.773	0.3**	5.764	7.250	4.640	6.165	0.0
	(3.080)	(2.856)	(2.714)	(2.704)	(0.2)	(2.784)	(3.588)	(2.402)	(3.296)	(0.1)	(3.034)	(4.082)	(2.981)	(3.685)	(0.4)
Population aged 6-14	3860.2	3759.1	3789.0	3694.8	6.9	4917.9	5341.0	4865.9	5419.8	130.8**	1637.7	2219.4	1607.3	2076.1	-113.0***
	(3715.9)	(3789.5)	(3758.8)	(3747.1)	(46.3)	(4285.8)	(5081.8)	(4392.3)	(5369.2)	(59.4)	(2089.6)	(2637.2)	(2146.4)	(2491.2)	(41.6)
Schools (primary to highschool) per pupil	105.1	116.7	110.9	122.7	-1.6	101.9	90.09	106.4	97.33	-0.6	125.7	130.0	123.3	141.9	7.9*
	(54.24)	(57.56)	(58.21)	(60.43)	(2.4)	(51.21)	(50.39)	(54.51)	(53.60)	(1.2)	(67.07)	(75.43)	(67.45)	(74.09)	(4.7)
Teachers (primary to highschool) per pupil	314.6	321.8	330.3	343.6	2.7	301.9	290.6	316.0	312.6	5.3*	321.8	326.4	329.1	348.2	2.5
	(80.46)	(76.27)	(85.19)	(88.96)	(6.9)	(75.62)	(72.12)	(78.98)	(73.49)	(3.1)	(84.32)	(76.00)	(88.80)	(73.69)	(10.2)
Number of people that resided in U.S. 5 years ago per 10,000 inhabitants	35.51	34.74	165.2	135.3	-29.1*	41.39	40.92	179.1	173.8	-4.8	50.48	48.03	265.7	180.4	-82.9***
	(50.08)	(46.61)	(156.2)	(136.2)	(16.5)	(47.51)	(45.12)	(151.5)	(136.9)	(11.2)	(57.55)	(50.46)	(178.2)	(134.7)	(23.7)
Number of people that resided in another state 5 years ago	181.6	203	322.8	369.0	24.7	260.9	319.0	437.3	582.8	87.2*	85.65	122.8	172.1	178.4	-30.8
	(255.0)	(341.9)	(414.9)	(535.3)	(34.6)	(310.0)	(495.9)	(496.9)	(1413.4)	(46.4)	(128.2)	(240.5)	(223.3)	(321.4)	(28.6)
Number of people that resided in another state with more homicides 5 years ago per 10,000 inhabitants	72.76	69.78	78.03	77.70	2.7	65.77	57.09	74.84	56.64	-9.5***	62.92	48.30	75.75	26.85	-34.3***
	(35.23)	(34.52)	(31.76)	(33.66)	(5.4)	(34.62)	(39.13)	(30.74)	(37.65)	(3.2)	(40.24)	(44.29)	(33.39)	(37.03)	(8.6)
Total population	18050.5	17368.4	18842.6	17646.4	-514.0	23017.4	25185.4	24533.0	27502.4	801.3	8095.5	11003.7	8245.9	11412.0	257.9
	(16978.0)	(17035.0)	(18259.6)	(17068.2)	(556.7)	(19642.3)	(23449.7)	(21795.8)	(26787.1)	(560.4)	(9802.2)	(13397.5)	(10567.7)	(14026.6)	(395.1)
Number municipalities	409	70				554	688				441	70			

Table A.4 (*continuation*)

Panel B: Drug-related homicides

	3rd Tertile					2nd Tertile					1st Tertile				
	2005		2010		ATT (no	2005		2010		ATT (no	2005		2010		ATT (no
	Control	Treated	Control	Treated	controls)	Control	Treated	Control	Treated	controls)	Control	Treated	Control	Treated	controls)
Food poverty %	30.16	30.10	25.86	26.93	1.1	30.47	31.47	27.42	26.71	-1.7	32.14	30.96	30.22	30.20	1.2
	(15.32)	(16.26)	(16.64)	(16.52)	(1.2)	(14.69)	(15.42)	(16.21)	(15.00)	(1.2)	(13.81)	(16.28)	(14.89)	(15.92)	(1.5)
Capability poverty %	38.28	38.02	34.42	35.54	1.4	38.81	39.77	36.26	35.57	-1.6	41.23	39.38	39.74	39.52	1.6
	(16.49)	(17.15)	(18.73)	(18.13)	(1.3)	(15.71)	(16.39)	(17.98)	(16.60)	(1.2)	(14.10)	(17.05)	(15.62)	(17.16)	(1.5)
Patrimony poverty %	60.11	59.70	58.58	59.71	1.5	61.18	61.64	60.61	60.28	-0.8	64.97	61.83	65.02	64.30	2.4
	(16.10)	(16.34)	(19.84)	(18.03)	(1.4)	(15.29)	(15.99)	(18.60)	(16.79)	(1.3)	(12.42)	(15.98)	(13.96)	(16.16)	(1.5)
Gini	42.70	43.11	41.33	41.77	0.0	43.15	43.10	41.62	41.93	0.3	42.76	43.52	41.91	42.56	-0.1
	(3.925)	(4.219)	(3.752)	(4.184)	(0.6)	(3.614)	(3.980)	(3.800)	(3.864)	(0.5)	(3.302)	(3.824)	(4.060)	(3.973)	(0.6)
Aged 6-14 out of school %	6.295	6.754	5.061	5.780	0.3	6.127	6.331	4.844	5.309	0.3	6.651	6.901	5.112	5.736	0.4*
	(2.970)	(3.890)	(2.768)	(3.704)	(0.2)	(2.772)	(2.694)	(2.304)	(2.209)	(0.2)	(2.682)	(3.471)	(2.204)	(3.084)	(0.2)
Population aged 6-14	3175.2	3823.5	3104.1	3786.0	33.5	4683.6	4676.6	4609.2	4767.5	165.3**	8645.7	10774.4	8662.1	11255.0	464.2***
	(3291.7)	(4075.5)	(3342.7)	(4067.1)	(36.6)	(3775.5)	(4872.8)	(3873.4)	(5265.2)	(76.4)	(4165.2)	(15589.3)	(4336.5)	(16345.9)	(172.6)
Schools (primary to highschool) per pupil	112.8	93.76	116.7	103.8	0.8	98.46	84.84	103.4	93.83	-1.5	85.78	77.05	88.41	81.52	-1.7
	(58.05)	(53.99)	(58.63)	(56.69)	(2.0)	(46.68)	(43.22)	(49.17)	(48.79)	(1.4)	(38.05)	(34.63)	(39.98)	(38.72)	(1.2)
Teachers (primary to highschool) per pupil	320.6	300.1	331.0	328.1	14.3***	304.6	285.2	315.9	315.1	11.0**	288.3	275.2	293.0	289.9	1.4
	(79.22)	(68.88)	(79.80)	(76.25)	(5.2)	(68.89)	(66.80)	(70.05)	(73.25)	(4.5)	(59.59)	(64.58)	(61.56)	(65.19)	(3.0)
Number of people that resided in U.S. 5 years ago per 10,000 inhabitants	45.08	49.45	217.1	193.0	-28.4*	37.61	36.28	176.1	157.5	-17.2	31.97	28.17	138.6	139.4	4.6
	(49.41)	(55.03)	(167.5)	(139.4)	(16.7)	(41.56)	(40.99)	(138.2)	(132.6)	(13.0)	(31.91)	(31.73)	(114.2)	(130.5)	(13.9)
Number of people that resided in another state 5 years ago	169.4	203.7	280.5	361.3	46.5*	236.6	393.8	408.5	657.2	91.5	452.8	1029.9	770.6	1695.4	347.7**
	(236.9)	(278.9)	(377.2)	(527.8)	(26.7)	(265.3)	(1883.9)	(428.5)	(3044.2)	(94.8)	(381.2)	(3778.2)	(597.7)	(5162.0)	(148.9)
Number of people that resided in another state with more homicides 5 years ago per 10,000 inhabitants	57.28	49.61	69.68	47.42	-14.6***	64.86	58.23	73.41	60.89	-5.9	69.73	67.26	78.06	75.31	-0.3
	(38.70)	(40.02)	(35.58)	(36.64)	(4.4)	(34.71)	(39.23)	(31.01)	(36.00)	(4.1)	(30.48)	(35.06)	(24.54)	(30.60)	(4.6)
Total population	15280.7	18047.7	15799.0	18979.3	413.3	22005.5	22602.2	23253.9	24674.3	823.8	40092.1	52848.1	43026.0	59975.9	4,194.0**
	(15364.7)	(19253.2)	(16590.5)	(20209.3)	(411.1)	(17246.9)	(24761.6)	(18920.2)	(27861.4)	(587.4)	(19393.1)	(91835.6)	(21311.6)	(108580.2)	(1,733.1)
Number municipalities	532	197				428	162				162	202			

*Average Treatment effect on the Treated (ATT) estimated with kernel matching and no controls. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10*

Table A.5
Descriptive statistics of migration indicators across matched areas that fall in the region of common support

	Panel A: Cartels no drug-related homicides					Panel B: Drug-related homicides									
						At least one drug-related homicides					10th Decile				
	2000		2010		ATT	2000		2010		ATT	2000		2010		ATT
	Control	Treated	Control	Treated	(no controls)	Control	Treated	Control	Treated	(no controls)	Control	Treated	Control	Treated	(no controls)
Number unemployed 2000 vs 2010	42.20	42.89	293.4	230.3	-63.8	60.05	79.50	452.1	442.9	-28.6	22.80	42.29	147.5	203.7	36.7
	(48.32)	(48.98)	(405.7)	(253.0)	(41.8)	(65.01)	(93.45)	(556.2)	(475.5)	(67.8)	(24.67)	(66.17)	(218.9)	(270.5)	(34.6)
Unemployment rate 2000 vs 2010	0.794	0.842	4.301	4.086	-0.3	0.904	1.058	4.729	4.678	-0.2	0.977	1.065	5.113	4.944	-0.3
	(0.536)	(0.595)	(3.389)	(3.068)	(0.4)	(0.522)	(0.760)	(3.281)	(2.945)	(0.3)	(0.640)	(0.789)	(4.134)	(2.996)	(0.6)
Unemployment rate low educated 2000 vs 2010[a]	0.953	0.992	4.756	5.016	0.2	1.084	1.174	5.000	5.282	0.2	1.053	1.145	5.400	5.885	0.4
	(1.125)	(0.870)	(3.871)	(3.896)	(0.5)	(1.203)	(1.378)	(3.605)	(3.997)	(0.3)	(1.051)	(1.053)	(4.734)	(3.979)	(0.8)
Unemployment rate high school plus 2000 vs 2010[a]	0.974	0.795	3.400	3.615	0.4	0.853	0.819	3.290	3.777	0.5*	0.712	0.233	3.412	4.377	1.4**
	(1.869)	(1.090)	(2.723)	(2.749)	(0.4)	(1.377)	(2.994)	(2.481)	(2.788)	(0.3)	(1.114)	(0.447)	(3.336)	(3.693)	(0.6)
Number of people that resided in another municipality within state 5 years ago per 10,000 inhabitants 2000 vs 2010[a]	176.4	311.6	193.2	221.8	-106.5	159.0	232.7	162.9	238.2	1.6	248.8	211.8	289.7	213.7	-44.0
	(241.7)	(868.5)	(236.2)	(174.0)	(110.1)	(230.0)	(320.9)	(151.5)	(332.4)	(18.9)	(226.2)	(178.2)	(258.8)	(154.5)	(42.0)
Number of people that moved in and had less earning income than non-migrant population 2000 vs 2010[a]	219.2	306.8	254.2	268.0	-71.4	265.1	400.8	294.0	524.6	93.3*	142.6	160.1	109.3	165.7	36.6
	(271.1)	(479.2)	(362.8)	(385.3)	(67.0)	(263.2)	(624.7)	(328.7)	(1469.1)	(55.9)	(190.0)	(264.7)	(119.7)	(250.6)	(27.0)
Number of people that moved in and had more earning income than non-migrant population 2000 vs 2010[a]	20.74	20.90	22.90	30.39	8.3	23.60	32.72	31.12	56.69	20.2**	9.810	16.75	14.30	23.84	2.3
	(25.30)	(24.29)	(27.43)	(44.61)	(6.7)	(24.16)	(42.04)	(32.30)	(167.6)	(8.3)	(12.91)	(33.49)	(17.74)	(46.66)	(5.9)
Total number of migrants that moved into 2000 vs 2010[a]	233.4	322.3	275.2	293.6	-67.6	283.0	428.2	322.5	579.0	109.6*	150.1	173.5	121.4	187.4	40.2
	(287.1)	(495.9)	(377.4)	(424.1)	(69.6)	(278.7)	(655.0)	(351.4)	(1627.2)	(61.6)	(198.4)	(292.2)	(130.1)	(292.1)	(28.4)
Number municipalities	532	197				428	162				162	202			

Table A.5 (*continuation*)

Panel B: Drug-related homicides

	3rd Tertile					2nd Tertile					1st Tertile				
	2000		2010		ATT (no	2000		2010		ATT (no	2000		2010		ATT (no
	Control	Treated	Control	Treated	controls)	Control	Treated	Control	Treated	controls)	Control	Treated	Control	Treated	controls)
Number unemployed 2000 vs 2010	38.96	60.67	257.2	340.0	61.1	55.13	77.86	404.8	443.4	15.8	102.5	182.8	823.6	962.3	58.3
	(45.93)	(82.69)	(365.3)	(429.8)	(38.7)	(49.87)	(150.7)	(463.7)	(608.8)	(62.8)	(73.92)	(434.5)	(636.3)	(1826.2)	(140.7)
Unemployment rate 2000 vs 2010	0.847	1.079	4.316	4.913	0.4	0.883	1.043	4.587	4.713	-0.0	0.927	1.136	5.069	4.419	-0.9**
	(0.550)	(0.794)	(3.092)	(3.133)	(0.3)	(0.551)	(0.621)	(3.131)	(2.792)	(0.3)	(0.528)	(0.907)	(2.966)	(2.147)	(0.4)
Unemployment rate low educated 2000 vs 2010[a]	0.992	1.310	4.735	5.702	0.6	1.059	1.181	4.787	5.386	0.5	1.095	1.143	5.129	4.570	-0.6
	(0.957)	(1.605)	(3.754)	(4.584)	(0.5)	(1.065)	(1.454)	(3.305)	(4.164)	(0.4)	(0.983)	(1.364)	(2.974)	(2.615)	(0.5)
Unemployment rate high school plus 2000 vs 2010[a]	0.876	0.618	3.148	3.552	0.7**	0.963	0.861	3.311	3.980	0.8**	0.837	1.250	3.503	3.727	-0.2
	(1.411)	(1.095)	(2.647)	(2.584)	(0.3)	(1.527)	(1.342)	(2.211)	(2.752)	(0.3)	(1.188)	(5.234)	(1.743)	(2.312)	(0.5)
Number of people that resided in another municipality within state 5 years ago per 10,000 inhabitants 2000 vs 2010[a]	168.9	199.9	194.8	233.5	8.4	159.0	238.8	157.3	245.8	9.0	121.5	220.5	121.5	244.4	24.5
	(213.8)	(212.8)	(160.8)	(281.1)	(25.4)	(244.8)	(380.0)	(127.4)	(322.5)	(32.0)	(241.5)	(275.5)	(108.5)	(456.6)	(32.9)
Number of people that moved in and had less earning income than non-migrant population 2000 vs 2010[a]	192.1	255.7	204.3	290.5	22.0	272.6	383.8	285.1	606.7	208.4**	436.2	932.0	527.7	1441.4	417.4**
	(242.6)	(374.0)	(255.1)	(378.6)	(27.7)	(281.8)	(1036.2)	(281.1)	(2178.7)	(103.8)	(310.7)	(2466.6)	(373.9)	(4055.9)	(195.1)
Number of people that moved in and had more earning income than non-migrant population 2000 vs 2010[a]	19.57	27.18	23.12	32.35	5.0	25.75	33.42	28.95	66.17	35.6*	41.14	69.83	48.74	160.4	92.4***
	(22.80)	(38.88)	(27.85)	(44.34)	(5.3)	(27.18)	(62.96)	(29.12)	(233.6)	(18.8)	(33.64)	(189.2)	(38.09)	(473.2)	(30.2)
Total number of migrants that moved into 2000 vs 2010[a]	206.8	277.6	223.6	321.4	26.3	292.4	410.6	311.8	670.8	238.6**	470.1	994.2	575.2	1595.5	495.4**
	(256.3)	(403.7)	(273.6)	(416.0)	(29.8)	(298.9)	(1089.3)	(301.1)	(2398.6)	(116.2)	(333.7)	(2642.8)	(399.2)	(4515.0)	(218.6)
Number municipalities	532	197				428	162				162	202			

*Average Treatment effect on the Treated (ATT) estimated with kernel matching and no controls. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10 [a] Own estimates using the micro-data population sample from census records, provided by INEGI and Minnesota Population Center (2014).*

Table A.6
Number of municipalities included as control and treated to measure impact of welfare statistics by state

	Panel A: Experienced drug-cartels for the first time after 2006 but no drug-related homicides vs. controls								Panel B: Experienced drug related homicides for the first time after 2006 vs. controls						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Number municipalities	Excluded from analysis[a]	Excluded for being buffer area	Treated	Control	Treated in common support	Control in common support	% Municipalities analysed in treatment and control in common support	Excluded from analysis[b]	Excluded for being buffer area	Treated	Control	Treated in common support	Control in common support	% Municipalities analysed in treatment and control in common support
Aguascalientes	11	10	1	0	0	0	0	0%	2	1	8	0	7	0	64%
Baja California	5	5	0	0	0	0	0	0%	5	0	0	0	0	0	0%
Baja California Sur	5	4	0	1	0	1	0	20%	3	0	2	0	0	0	0%
Campeche	11	5	0	1	5	1	5	55%	4	0	2	5	1	5	55%
Chiapas	118	57	25	8	28	8	22	25%	28	25	37	28	35	28	53%
Chihuahua	67	61	2	1	3	1	3	6%	19	2	43	3	38	3	61%
Coahuila	38	23	2	8	5	7	4	29%	18	2	13	5	7	5	32%
Colima	10	9	0	0	1	0	1	10%	3	0	6	1	5	1	60%
Distrito Federal (Mexico City)	16	16	0	0	0	0	0	0%	16	0	0	0	0	0	0%
Durango	39	35	1	1	2	1	2	8%	22	1	14	2	14	2	41%
Guanajuato	46	37	2	4	3	3	3	13%	8	2	33	3	18	3	46%
Guerrero	81	72	5	2	2	1	0	1%	32	5	42	2	39	1	49%
Hidalgo	84	38	28	3	15	3	13	19%	3	28	38	15	32	14	55%
Jalisco	125	94	12	11	8	9	8	14%	22	12	83	8	68	8	61%
Michoacán	113	102	11	0	0	0	0	0%	50	11	52	0	50	0	44%
Morelos	33	31	2	0	0	0	0	0%	19	1	13	0	0	0	0%
México	125	101	20	1	3	1	3	3%	40	20	62	3	53	3	45%
Nayarit	20	16	2	0	2	0	1	5%	2	2	14	2	11	2	65%
Nuevo León	51	37	5	5	4	5	4	18%	22	5	20	4	16	4	39%
Oaxaca	570	138	205	4	223	4	98	18%	54	205	88	223	87	202	51%
Puebla	217	42	85	4	86	4	65	32%	7	85	39	86	35	84	55%
Querétaro	18	10	2	0	6	0	6	33%	3	1	8	6	5	6	61%
Quintana Roo	9	6	0	2	1	2	1	33%	4	0	4	1	1	1	22%
San Luis Potosí	58	24	10	2	22	2	22	41%	4	10	22	22	19	22	71%
Sinaloa	18	18	0	0	0	0	0	0%	16	0	2	0	0	0	0%
Sonora	72	47	4	4	17	4	17	29%	20	4	31	17	28	17	63%
Tabasco	17	15	1	1	0	1	0	6%	7	1	9	0	6	0	35%
Tamaulipas	43	33	2	2	6	2	4	14%	20	2	15	6	13	5	42%
Tlaxcala	60	8	46	0	6	0	6	10%	0	46	8	6	6	6	20%
Veracruz	212	98	75	2	37	2	37	18%	27	75	73	37	71	37	51%
Yucatán	106	5	9	5	87	5	74	75%	7	9	3	87	2	85	82%
Zacatecas	58	31	14	3	10	3	10	22%	8	14	26	10	21	10	53%
Total	2,456	1,228	571	75	582	70	409	20%	495	569	810	582	688	554	51%

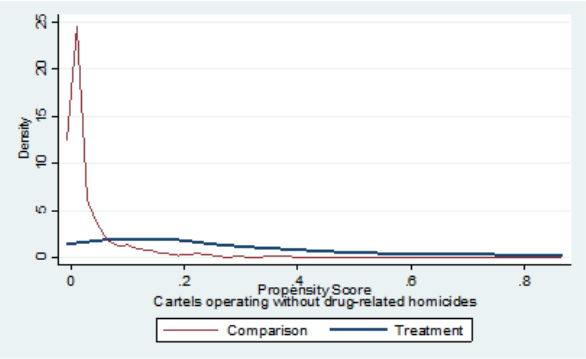
[a] Excluded if had drug related homicides during 2000-2010 or if had cartels operating in municipality before 2006. [b] Excluded if had cartels or drug related homicides during 2000-2005. Also excluded if municipality experienced drug related homicides after 2006 according to media but not to official statistics.

Table A.7
Probit marginal effects: Propensity scores used to match areas and evaluate impact on industries

			Drug related homicides by sub-groups			
	Cartels without drug related homicides	At least one drug related homicide	10th decile	3rd Tertile	2nd Tertile	1st Tertile
	(1)	(2)	(3)	(4)	(5)	(6)
Index of marginalization 2000	0.000		-0.000	-0.001	-0.000	0.000
	(0.001)		(0.000)	(0.002)	(0.000)	(0.000)
Capability poverty, 2000	-0.001	-0.002**	-0.000	-0.018***	0.001	0.000
	(0.002)	(0.001)	(0.001)	(0.005)	(0.001)	(0.000)
Food poverty, 2000	0.000		0.001	0.017***	-0.001	-0.000
	(0.002)		(0.001)	(0.005)	(0.001)	(0.000)
Mixed type municipality (urban/rural)	-0.011		-0.010	0.006	0.001	-0.000
	(0.007)		(0.006)	(0.032)	(0.003)	(0.000)
Mixed type*Decentralized	0.012		0.060		0.001	-0.000
	(0.024)		(0.060)		(0.004)	(0.000)
Rural*Distance to north border	-0.000	0.000*	0.000	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log Population 2005	-0.043	0.211***	0.038	0.060***	0.065	0.000
	(0.038)	(0.013)	(0.025)	(0.009)	(0.041)	(0.000)
Squared log population	0.003		-0.002		-0.003	-0.000
	(0.002)		(0.001)		(0.002)	(0.000)
Log GDP per capita 2005	0.020	0.350***	0.017	2.728**	0.014	0.000
	(0.015)	(0.065)	(0.011)	(1.086)	(0.011)	(0.000)
%Children school attendance 2005	0.000	-0.002	-0.001*	-0.001	0.000	0.000
	(0.001)	(0.003)	(0.000)	(0.002)	(0.000)	(0.000)
Remmittances	0.002	0.006***	0.001	0.003***	0.001	0.000
	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.000)
Squared remmitances	-0.000		-0.000		-0.000	-0.000
	(0.000)		(0.000)		(0.000)	(0.000)
Municipality ruled by PAN only	0.005	-0.078***	-0.006	0.007	-0.003	0.000
	(0.010)	(0.030)	(0.004)	(0.023)	(0.003)	(0.000)
Municipality ruled by PRI only	-0.003		0.003	0.031	-0.000	0.000
	(0.008)		(0.006)	(0.024)	(0.002)	(0.000)
Homicide rate*decentralized 2005			0.000	-0.001	0.000	-0.000
			(0.000)	(0.001)	(0.000)	(0.000)
Squared Homicide rate 2004			0.000	-0.000	-0.000	
			(0.000)	(0.000)	(0.000)	
Miniumum distance to north border			-0.000***			
			(0.000)			
Minimum distance to pacific coast			-0.000***			
			(0.000)			
Total homicide rate 1990			0.000			0.000
			(0.000)			(0.000)
Decentralized*Minimum distance to any border (north, south, pacific coast)	-0.000		0.000*	0.000	0.000	
	(0.000)		(0.000)	(0.000)	(0.000)	
Minimum distance to any border (north, south, pacific coast)			-9.606*	-0.000	4.890	
			(5.499)	(0.000)	(4.668)	
Decentralized, 2005	-0.004	0.117***		0.044	-0.000	0.000
	(0.011)	(0.029)		(0.036)	(0.004)	(0.000)
Minimum distance main entrance to border				0.000**		
				(0.000)		
Squared log GDP per capita 2005				-0.123**		
				(0.050)		
Total homicide rate 2004				0.002**	0.000	
				(0.001)	(0.000)	
Squared minimum distance to any border (north, south, pacific coast)					-1,891.388	
					(1,682.201)	
Total homicide rate 1991						-0.000
						(0.000)
Total homicide rate 1993						-0.000
						(0.000)
Total homicide rate 1995						0.000
						(0.000)
Total homicide rate 1996						-0.000
						(0.000)
Total homicide rate 1997						0.000
						(0.000)
Total homicide rate 1999						-0.000
						(0.000)
Total homicide rate 2000						0.000
						(0.000)
Total homicide rate 2001						-0.000
						(0.000)
Total homicide rate 2003						0.000
						(0.000)
Pseudo R2	0.31	0.34	0.35	0.25	0.44	0.71
Observations	965	1,401	973	1,066	1,068	1,069

*(*) dF/dx is for discrete change of dummy variable from 0 to 1, z and P>|z| correspond to the test of the underlying coefficient being 0. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10*

Panel A: Cartels without drug-related homicides



Panel B: Experiencing drug-related homicides

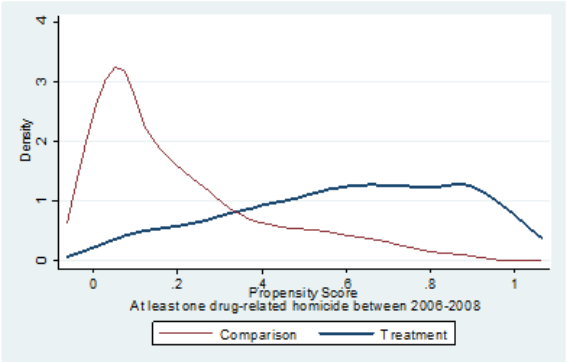


Fig. A.6 Distribution of propensity scores between treatment and control groups

Table A.8
Balancing test for covariates used to estimate propensity score to assess the impact on industries

	Panel A: Cartels without drug related homicides			Panel B: Drug related homicides														
				All that experienced at least one-			10th Decile			3rd Tertile			2nd Tertile			1st Tertile		
	Mean treated	Mean controls	p-value for diff	Mean treated	Mean controls	p-value for diff	Mean treated	Mean controls	p-value for diff	Mean treated	Mean controls	p-value for diff	Mean treated	Mean controls	p-value for diff	Mean treated	Mean controls	p-value for diff
Index of marginalization 2000	33.98	34.7	0.735				37.94	36.74	0.574	34.76	34.88	0.915	34.81	35.06	0.854	34.55	33.05	0.479
Capability poverty, 2000	43.44	43.22	0.952	44.49	43.84	0.684	43.01	42.69	0.939	42.17	42.37	0.926	45.57	45.49	0.969	46.68	43.88	0.4
Food poverty, 2000	36.09	35.95	0.969				36.78	36.5	0.945	35.41	35.66	0.906	37.91	37.92	0.997	38.72	36.06	0.405
Decentralized, 2005	0.4	0.3	0.243	0.49	0.52	0.516				0.51	0.5	0.718	0.37	0.41	0.482	0.49	0.47	0.871
Mixed type municipality (urban/rural)	0.23	0.26	0.609				0.16	0.14	0.86	0.41	0.41	0.893	0.28	0.28	0.918	0.3	0.26	0.641
Mixed type*Decentralized	0.07	0.09	0.816				0.11	0.1	0.863				0.09	0.09	0.921	0.13	0.13	0.976
Rural*Distance to north border	361.17	348.78	0.864	358.26	359.79	0.961	404.48	427.21	0.726	348.81	354.32	0.897	394.55	398.62	0.935	309.96	290.8	0.763
Log Population 2005	10.01	9.91	0.575	9.86	9.79	0.423	8.6	8.25	0.143	9.54	9.52	0.86	10.04	10.03	0.97	10.77	10.76	0.877
Squared log population	101.19	99.26	0.588				75.08	69.57	0.165	118.68	118.39	0.69	101.23	101.13	0.95	116.23	115.92	0.862
Log GDP per capita 2005	10.91	10.89	0.831	10.87	10.88	0.732	10.9	10.95	0.568	10.89	10.88	0.685	10.85	10.86	0.803	10.87	10.89	0.664
Children school attendance 2005	64.37	64.11	0.764	63.67	63.53	0.739	63.1	64.11	0.305	63.55	63.37	0.743	64.21	64.16	0.945	63.95	64.08	0.887
Remmittances	7.73	7.65	0.955	8.37	8.32	0.94	9.17	10.08	0.58	9.6	9.76	0.869	8.59	7.89	0.446	5.79	5.44	0.718
Squared remmitances	116.93	117.96	0.973				156.4	178.17	0.62				132.33	118.98	0.566	75.22	61.02	0.449
Municipality ruled by PAN only	0.35	0.35	0.979	0.27	0.24	0.455	0.2	0.29	0.351	0.26	0.26	0.948	0.21	0.21	0.978	0.34	0.35	0.909
Municipality ruled by PRI only	0.4	0.44	0.679				0.53	0.41	0.163	0.5	0.49	0.791	0.51	0.5	0.823	0.45	0.44	0.982
Homicide rate 2004*decentralized 2005							12.4	12.26	0.974	6.41	5.62	0.651	4.09	4.15	0.957	3.38	3.01	0.668
Decentralized*Minimum distance to any border	51.54	37.21	0.334				118.36	122.31	0.818	82.81	80.84	0.866	59.34	67.3	0.511			
Squared Homicide rate 2004							1103.64	1289.96	0.736	532.13	481.47	0.858	242.9	225.06	0.782			
Entrance to main port in border										710.89	711.74	0.978						
Minimum distance to any border (north, south, pacific coast)							0	0	0.835	155.76	156.13	0.971	0	0	0.97			
Squared minimum distance to any border (north, south, pacific coast)													0	0	0.93			
Distance north border							518.89	531.77	0.839									
Distance pacific coast							227.97	216.73	0.63									
Homicide rate 1990							24.97	22.58	0.765							17.61	16.11	0.628
Homicide rate 1991																15.63	13.86	0.454
Homicide rate 1993																17.28	13.69	0.144
Homicide rate 1995																17.05	14.94	0.423
Homicide rate 1996																13.8	12.17	0.507
Homicide rate 1997																15.18	12.86	0.372
Homicide rate 1999																10.11	8.36	0.167
Homicide rate 2000																10.01	9.18	0.562
Homicide rate 2001																8.05	7.95	0.934
Homicide rate 2003																8.37	7.38	0.359
Homicide rate 2004										11.63	10.41	0.538	10.11	9.51	0.651			

Table A.9
Descriptive statistics of industries across matched areas that fall in the region of common support

		Panel A: Cartels without drug related homicides					Panel B: Drug related homicides									
							At least one drug-related homicides					10th Decile				
		2005		2010		ATT	2005		2010		ATT	2005		2010		
		Control	Treated	Control	Treated	(no controls)	Control	Treated	Control	Treated	(no controls)	Control	Treated	Control	Treated	ATT (no controls)
Manufactures	production thousand USD	36060.8	73859.6	77460.2	115538.2	279.2	33845.3	69196.8	62825.7	76868.2	-21,309.1	16549.8	6963.2	33974.2	1229.7	-23,157.8**
		(110103.7)	(323470.7)	(250822.0)	(501192.7)	(37,931.5)	(131290.5)	(468507.9)	(232892.9)	(445651.1)	(13,801.7)	(115212.9)	(32127.6)	(204757.6)	(2474.7)	(11,142.3)
	profit thousand USD	11968.5	10032.5	26186.3	17671.1	-6,579.2	10753.7	19639.9	20923.8	20697.8	-9,112.3*	3761.7	3551.5	8513.2	504.5	-7,798.6*
		(34396.8)	(26939.9)	(85171.5)	(62000.1)	(10,753.9)	(40227.0)	(117908.2)	(76861.7)	(95270.6)	(4,919.1)	(30656.7)	(16240.6)	(62690.3)	(1046.4)	(4,310.1)
	workers per 10,000 inhabitants	235.7	161.5	290.6	168.5	-47.9	219.0	208.2	270.1	221.4	-37.8**	112.1	196.8	154.0	109.1	-129.6
		(332.5)	(239.1)	(388.8)	(206.0)	(35.2)	(325.5)	(368.4)	(355.1)	(319.3)	(16.3)	(214.5)	(608.0)	(289.3)	(99.51)	(82.8)
	remuneration per worker thousand USD	3.971	4.364	4.273	4.144	-0.5**	4.026	4.152	4.246	3.940	-0.4**	2.173	3.098	2.521	2.317	-1.1**
		(2.705)	(4.270)	(3.441)	(4.469)	(0.2)	(3.132)	(3.542)	(4.099)	(3.310)	(0.2)	(2.717)	(3.820)	(3.790)	(1.924)	(0.6)
	establisments per 10,000 inhabitants	31.03	24.24	42.29	34.47	-1.0	33.03	32.40	46.05	44.23	-1.2	22.04	17.18	40.23	23.73	-11.6***
		(33.31)	(19.99)	(46.45)	(34.73)	(3.2)	(64.15)	(55.83)	(92.24)	(62.41)	(1.8)	(54.54)	(14.45)	(109.6)	(20.03)	(4.0)
	capital per worker thousand USD	6.339	18.23	5.679	3.181	-14.4	7.685	6.944	7.846	6.360	-0.7	6.434	3.194	4.459	2.839	1.6
		(32.85)	(86.38)	(29.56)	(8.990)	(12.4)	(35.88)	(28.66)	(37.48)	(22.42)	(3.2)	(48.05)	(8.946)	(29.33)	(6.968)	(3.2)
Real Estate	production thousand USD	94.05	117.8	112.1	87.40	-48.5	66.10	109.6	167.1	223.0	12.4	13.30	34.94	24.23	27.28	-18.6
		(222.3)	(254.8)	(473.2)	(178.2)	(47.6)	(168.9)	(594.8)	(823.0)	(2000.4)	(118.5)	(50.51)	(139.3)	(243.8)	(89.72)	(14.7)
	profit thousand USD	43.47	71.61	58.09	51.34	-34.9	32.49	50.45	66.22	146.9	62.8	6.975	22.23	13.14	15.16	-13.2
		(80.54)	(172.3)	(194.7)	(111.4)	(27.6)	(69.66)	(369.4)	(248.2)	(1718.5)	(76.1)	(25.40)	(100.9)	(100.4)	(63.35)	(10.2)
	workers per 10,000 inhabitants	4.594	3.656	4.352	3.607	0.2	3.822	3.621	3.918	3.372	-0.3	2.763	4.620	1.823	3.309	-0.4
		(13.51)	(4.129)	(8.743)	(5.288)	(1.1)	(8.280)	(6.738)	(8.050)	(5.211)	(0.7)	(10.21)	(13.20)	(5.818)	(5.714)	(2.0)
	remuneration per worker thousand USD	1.238	1.068	1.157	1.415	0.4	1.009	0.914	1.024	0.960	0.0	0.215	0.589	0.296	0.552	-0.1
		(1.849)	(1.619)	(1.998)	(1.946)	(0.4)	(1.760)	(1.580)	(2.124)	(1.593)	(0.2)	(0.777)	(1.421)	(1.269)	(1.322)	(0.2)
	establisments per 10,000 inhabitants	1.581	1.934	1.461	1.543	-0.3	1.385	1.190	1.226	1.161	0.1	2.229	1.136	1.432	1.849	1.5**
		(2.156)	(2.987)	(1.847)	(1.939)	(0.5)	(1.848)	(1.762)	(1.782)	(1.575)	(0.2)	(4.475)	(1.691)	(3.759)	(2.606)	(0.7)
	capital per worker thousand USD	8.652	3.822	9.528	1.611	-3.1	6.009	5.777	13.27	8.286	-4.8	1.014	5.764	1.427	29.12	22.9
		(30.14)	(11.79)	(66.23)	(4.756)	(6.4)	(24.59)	(52.77)	(88.92)	(63.33)	(9.9)	(9.190)	(21.73)	(23.69)	(155.2)	(23.3)
Wholesale business	production thousand USD	4298.3	4178.7	3749.2	5114.4	1,484.9	2848.7	4582.6	2891.8	4663.9	38.3	682.8	2443.6	634.6	2670.9	275.5
		(6618.5)	(6433.6)	(5453.7)	(8747.5)	(1,163.2)	(4907.3)	(10957.6)	(5492.9)	(13237.8)	(435.1)	(2783.2)	(9599.0)	(2455.3)	(11760.2)	(419.2)
	profit thousand USD	2634.3	2681.8	2447.6	3271.7	776.6	1923.8	2757.6	1960.3	2884.7	90.5	443.3	1395.2	435.8	1876.5	488.8
		(4044.9)	(4051.1)	(4014.7)	(5297.8)	(744.6)	(3424.2)	(6168.9)	(4477.8)	(7505.8)	(374.1)	(1776.3)	(5117.4)	(1718.1)	(8373.5)	(572.5)
	workers per 10,000 inhabitants	39.28	43.33	43.09	47.58	0.4	33.82	40.26	37.28	40.32	-3.4	13.70	23.29	16.85	28.42	2.0
		(33.67)	(36.98)	(38.79)	(53.53)	(6.7)	(29.87)	(50.02)	(39.07)	(50.89)	(2.5)	(22.04)	(37.18)	(26.52)	(52.43)	(4.4)
	remuneration per worker thousand USD	4.821	5.386	4.800	5.381	0.0	4.639	4.721	4.595	4.726	0.1	2.034	2.735	2.096	2.870	0.1
		(3.080)	(3.100)	(3.147)	(3.351)	(0.5)	(3.546)	(3.318)	(3.407)	(3.779)	(0.3)	(3.179)	(3.516)	(2.830)	(3.419)	(0.4)
	establisments per 10,000 inhabitants	6.900	7.484	7.079	7.855	0.2	6.545	6.845	6.766	6.831	-0.2	4.204	5.498	5.033	5.340	-1.0
		(4.443)	(5.377)	(4.920)	(5.915)	(0.8)	(4.619)	(5.329)	(5.026)	(5.339)	(0.3)	(5.888)	(6.976)	(6.202)	(6.016)	(1.1)
	capital per worker thousand USD	4.960	7.574	5.237	5.325	-2.5	5.444	7.772	4.719	5.731	-1.3	1.748	4.096	3.207	2.222	-3.3
		(10.28)	(20.76)	(8.138)	(9.847)	(3.8)	(12.89)	(33.58)	(8.810)	(15.62)	(2.1)	(8.396)	(12.69)	(11.36)	(6.817)	(2.3)
Number municipalities		458	40				878	403				536	45			

Table A.9 (*continuation*)

		Panel B: Drug related homicides														
		3rd Tertile					2nd Tertile					1st Tertile				
		2005		2010			2005		2010			2005		2010		
		Control	Treated	Control	Treated	ATT (no controls)	Control	Treated	Control	Treated	ATT (no controls)	Control	Treated	Control	Treated	ATT (no controls)
	production thousand USD	27942.6	15953.2	51125.7	21290.2	-17,846.2**	39493.4	78620.2	73335.6	111128.2	-1,334.3	74139.2	141070.5	163067.2	210547.0	-19,451.6
		(124425.5)	(77548.6)	(223588.9)	(109163.0)	(9,076.0)	(148497.3)	(465969.8)	(257405.2)	(681091.7)	(23,409.1)	(181705.9)	(645048.3)	(363487.6)	(946717.8)	(57,820.1)
	profit thousand USD	8109.3	6153.9	16645.9	7286.2	-7,404.3*	12969.6	24364.9	24520.6	27499.9	-8,415.9	25704.9	44536.2	55396.2	68735.0	-5,492.6
		(33722.8)	(28598.2)	(73260.8)	(32793.0)	(4,301.9)	(47459.3)	(141523.3)	(84733.4)	(164125.4)	(6,154.1)	(63593.5)	(171340.9)	(122580.2)	(268613.6)	(20,157.8)
Manufactures	workers per 10,000 inhabitants	210.1	229.2	258.2	240.5	-36.8**	229.2	155.1	270.4	187.9	-8.5	292.8	292.5	392.9	342.9	-49.8
		(330.7)	(355.4)	(371.5)	(301.3)	(16.5)	(336.2)	(190.6)	(336.7)	(215.7)	(13.7)	(358.6)	(502.8)	(445.8)	(614.6)	(42.1)
	remuneration per worker thousand USD	3.739	3.550	4.061	3.496	-0.4	4.158	4.192	4.506	3.962	-0.6**	4.635	5.525	5.216	5.400	-0.7*
		(2.878)	(2.298)	(4.083)	(2.337)	(0.2)	(2.915)	(3.786)	(3.983)	(3.823)	(0.2)	(2.328)	(3.973)	(2.848)	(3.870)	(0.4)
	establisments per 10,000 inhabitants	35.90	41.28	51.83	55.75	-1.5	31.42	31.76	42.82	43.11	-0.0	32.90	28.70	43.71	40.98	1.5
		(83.92)	(84.54)	(123.9)	(88.32)	(3.4)	(36.52)	(39.29)	(48.03)	(53.68)	(2.3)	(26.23)	(26.96)	(39.25)	(35.54)	(3.2)
	capital per worker thousand USD	6.376	3.361	7.003	3.223	-0.8	6.684	8.349	8.585	3.887	-6.4*	5.419	11.71	8.719	15.34	0.3
		(24.52)	(6.127)	(33.88)	(8.316)	(2.0)	(18.06)	(28.88)	(38.02)	(10.04)	(3.8)	(11.07)	(52.18)	(23.82)	(41.21)	(6.9)
	production thousand USD	49.39	135.9	120.3	72.24	-134.6*	73.81	153.0	188.1	267.7	0.4	195.8	184.8	300.0	273.1	-15.8
		(141.3)	(809.1)	(607.7)	(219.7)	(80.1)	(180.4)	(566.7)	(828.6)	(1869.2)	(182.5)	(306.0)	(544.7)	(1051.1)	(1226.6)	(195.7)
	profit thousand USD	23.82	61.37	58.74	39.88	-56.4	35.30	73.18	79.65	124.7	7.2	84.27	118.5	112.8	130.7	-16.4
		(57.27)	(363.3)	(230.0)	(118.4)	(35.6)	(72.84)	(521.6)	(270.0)	(834.6)	(86.2)	(104.7)	(449.2)	(293.1)	(574.7)	(75.7)
Real Estate	workers per 10,000 inhabitants	3.757	3.579	4.011	4.425	0.6	3.903	3.433	4.817	2.434	-1.9*	4.587	3.899	5.150	3.242	-1.2
		(9.195)	(6.739)	(9.796)	(7.060)	(1.2)	(5.145)	(4.961)	(10.45)	(3.015)	(1.1)	(4.439)	(4.726)	(7.477)	(3.565)	(1.1)
	remuneration per worker thousand USD	0.831	0.787	0.843	0.742	-0.1	1.101	1.038	1.203	0.958	-0.2	2.281	1.468	1.707	1.597	0.7*
		(1.574)	(1.789)	(2.013)	(1.540)	(0.2)	(1.811)	(1.799)	(2.192)	(1.575)	(0.3)	(2.366)	(1.810)	(1.551)	(1.948)	(0.4)
	establisments per 10,000 inhabitants	1.456	1.217	1.224	1.274	0.3	1.263	1.206	1.272	1.027	-0.2	1.584	1.152	1.612	0.988	-0.2
		(2.171)	(1.753)	(2.054)	(1.837)	(0.2)	(1.344)	(1.766)	(1.610)	(1.128)	(0.2)	(1.517)	(1.126)	(1.532)	(0.971)	(0.3)
	capital per worker thousand USD	5.648	0.771	10.04	2.231	-2.9	5.635	5.614	13.98	13.30	-0.7	13.82	16.48	31.48	2.457	-31.7
		(22.85)	(2.857)	(77.59)	(10.35)	(7.5)	(25.60)	(32.23)	(91.24)	(66.97)	(11.8)	(35.23)	(103.8)	(135.1)	(7.378)	(23.6)
	production thousand USD	2200.3	2548.2	2536.8	2985.7	101.0	3076.7	6433.1	3071.2	8236.5	1,808.9	7760.6	7831.4	6445.9	8596.7	2,080.1*
		(4320.2)	(6815.3)	(5559.0)	(10374.5)	(528.2)	(4932.2)	(18867.6)	(5150.0)	(35243.5)	(1,730.0)	(7460.3)	(13288.7)	(5689.2)	(16839.8)	(1,149.7)
	profit thousand USD	1507.8	1680.8	1808.6	1759.9	-221.8	2086.4	3765.2	2027.0	5348.7	1,642.9	4790.0	4822.5	4048.0	4941.5	861.0
		(3066.9)	(4185.2)	(4723.9)	(5492.3)	(406.1)	(3493.4)	(11353.5)	(4053.3)	(23527.5)	(1,280.9)	(4589.6)	(7796.9)	(3930.8)	(7328.5)	(760.3)
Wholesale business	workers per 10,000 inhabitants	32.70	31.96	35.59	35.94	1.1	38.32	49.52	41.08	49.81	-2.5	49.51	48.99	51.41	46.72	-4.2
		(29.54)	(32.95)	(36.12)	(39.23)	(3.1)	(31.73)	(69.88)	(41.24)	(71.90)	(3.9)	(29.83)	(41.75)	(36.38)	(40.17)	(4.7)
	remuneration per worker thousand USD	4.233	4.366	4.224	4.437	0.1	5.185	5.251	5.195	5.030	-0.2	6.237	5.700	5.699	5.918	0.8
		(3.099)	(3.005)	(3.237)	(4.428)	(0.4)	(3.339)	(3.543)	(3.262)	(3.108)	(0.4)	(2.692)	(2.828)	(2.541)	(3.520)	(0.5)
	establisments per 10,000 inhabitants	6.713	6.412	6.887	6.847	0.3	7.158	7.261	7.298	7.219	-0.2	7.844	7.118	7.401	7.060	0.4
		(5.225)	(5.758)	(5.364)	(5.655)	(0.6)	(4.290)	(4.994)	(4.859)	(5.631)	(0.5)	(3.776)	(3.805)	(3.867)	(4.056)	(0.6)
	capital per worker thousand USD	4.864	5.275	4.239	5.561	0.9	5.676	5.473	4.837	4.357	-0.3	8.209	14.88	6.482	8.538	-4.6
		(12.07)	(10.94)	(8.767)	(17.53)	(2.0)	(10.74)	(10.64)	(7.669)	(8.558)	(1.7)	(11.28)	(63.80)	(7.802)	(20.32)	(6.9)
Number municipalities		873	138				541	113				117	101			

*Average Treatment effect on the Treated (ATT) estimated with kernel matching and no controls. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10*

Table A.10
Impact of drug cartels and drug-related homicides on welfare statistics excluding buffer areas within 20km

	(1) Food poverty %	(2) Capability poverty %	(3) Patrimony poverty %	(4) Gini	(5) Aged 6-14 out of school %	(6) Population aged 6-14	(7) Schools (primary to highschool) per pupil	(8) Teachers (primary to highschool) per pupil
Panel A: Cartels without drug related homicides								
ATT: time*treated	-6.6	-6.5	-4.8	-2.2**	0.3	47.4	-4.0	-4.7
	(4.3)	(4.5)	(4.0)	(0.9)	(0.4)	(44.5)	(3.7)	(7.5)
Observations	536	536	536	536	536	536	528	460
R-squared	0.2	0.2	0.2	0.1	0.3	0.2	0.2	0.4
Panel B: Drug related homicides								
Areas with at least one drug related homicide								
ATT: time*treated	0.5	0.5	0.3	0.5	0.3*	285.3***	-1.3	3.3
	(1.3)	(1.5)	(1.5)	(0.6)	(0.2)	(55.0)	(1.7)	(3.7)
Observations	1,778	1,778	1,778	1,774	1,778	1,778	1,660	1,492
R-squared	0.1	0.1	0.0	0.2	0.4	0.0	0.1	0.2
Top 10 decile of drug related homicides								
ATT: time*treated	4.0*	4.1	3.5	-1.8	-0.5	-70.3	7.6	13.9
	(2.4)	(2.7)	(2.9)	(1.2)	(0.9)	(48.6)	(5.7)	(11.8)
Observations	230	230	230	228	230	230	222	188
R-squared	0.2	0.2	0.1	0.2	0.2	0.2	0.0	0.1
Third tertile of drug related homicides								
ATT: time*treated	0.2	0.4	1.0	0.1	0.2	104.4***	-0.4	12.0**
	(1.4)	(1.6)	(1.6)	(0.7)	(0.2)	(30.7)	(2.2)	(4.8)
Observations	792	792	792	792	792	792	752	650
R-squared	0.1	0.1	0.1	0.2	0.3	0.1	0.2	0.3
Second tertile of drug related homicides								
ATT: time*treated	-2.8	-2.7	-1.8	-0.9	0.3	429.2***	-3.3**	3.2
	(2.4)	(2.6)	(2.3)	(0.9)	(0.3)	(102.2)	(1.5)	(4.0)
Observations	714	714	714	712	714	714	678	622
R-squared	0.2	0.1	0.1	0.1	0.4	0.1	0.3	0.3
First tertile of drug related homicides								
ATT: time*treated	2.9	3.5	3.9**	-0.2	0.3	484.7***	-2.6	-3.9
	(2.0)	(2.1)	(1.9)	(1.1)	(0.3)	(134.4)	(2.0)	(4.0)
Observations	464	464	464	464	464	464	442	436
R-squared	0.1	0.1	0.0	0.1	0.5	0.1	0.4	0.4

*Controls used in all specifications: poverty-relief subsidies per capita, growth in annual remittances and state's unemployment rate, all lagged for two years. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10*

Table A.11
Placebo test on welfare indicators using 1990-2000 as pre-treatment and 2001-2005 as post-treatment

	Placebo treated vs. controls							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Food poverty %	Capability poverty %	Patrimony poverty %	Gini	Resided in another state 5 years ago	Total population	Aged 6-14 out of school %	Population aged 6-14
Panel A: Cartels without drug related homicides								
ATT: time*treated	4.3	4.2	3.3	0.0	-40.4	-23.9	-0.4	5.0
	(2.8)	(2.9)	(2.6)	(0.0)	(35.3)	(300.0)	(0.4)	(58.6)
Observations	905	905	905	905	905	905	905	905
R-squared	0.2	0.1	0.1	0.4	0.3	0.1	0.6	0.3
Panel B: Drug related homicides								
Areas with at least one drug related homicide	1.5	1.3	0.3	0.0	4.8	476.2	0.1	86.2
ATT: time*treated	(1.3)	(1.4)	(1.4)	(0.0)	(38.2)	(437.3)	(0.2)	(85.3)
	2,301	2,301	2,301	2,301	2,301	2,301	2,301	2,301
Observations	0.3	0.2	0.1	0.4	0.2	0.0	0.7	0.1
R-squared								
Top 10 decile of drug related homicides								
ATT: time*treated	0.5	0.1	-0.7	0.0	-1.5	-213.3	-0.6	-98.8*
	(3.4)	(3.3)	(2.7)	(0.0)	(35.5)	(183.5)	(0.6)	(56.5)
Observations	635	635	635	635	635	635	635	635
R-squared	0.3	0.2	0.0	0.6	0.2	0.2	0.4	0.4
Third tertile of drug related homicides								
ATT: time*treated	-0.8	-1.0	-1.3	-0.0	5.7	113.1	-0.0	58.9
	(1.4)	(1.5)	(1.6)	(0.0)	(30.3)	(423.4)	(0.3)	(87.9)
Observations	1,354	1,354	1,354	1,354	1,354	1,354	1,354	1,354
R-squared	0.3	0.2	0.0	0.4	0.2	0.0	0.7	0.1
Second tertile of drug related homicides								
ATT: time*treated	-0.1	-0.3	-1.0	-0.0	-43.7	449.1	-0.0	19.9
	(1.6)	(1.6)	(1.6)	(0.0)	(30.2)	(355.0)	(0.2)	(85.9)
Observations	1,090	1,090	1,090	1,090	1,090	1,090	1,090	1,090
R-squared	0.2	0.2	0.1	0.3	0.2	0.0	0.8	0.2
First tertile of drug related homicides								
ATT: time*treated	3.2	3.1	2.1	-0.0	9.9	446.1	0.5	202.9
	(2.7)	(2.8)	(2.7)	(0.0)	(36.8)	(510.5)	(0.4)	(124.9)
Observations	705	705	705	705	705	705	705	705
R-squared	0.3	0.3	0.2	0.4	0.3	0.1	0.8	0.2

Controls used in all specifications: Poverty-relief subsidies per capita and state's unemployment rate, all lagged for two years.

Table A.12
Placebo test on manufacture using 1990-2000 as pre-treatment and 2001-2005 as post-treatment

	Manufactures					
	(1)	(2)	(3)	(4)	(5)	(6)
	production thousand USD	profit thousand USD	workers per 10,000 inhabitants	remuneration per worker thousand USD	establisments per 10,000 inhabitants	capital per worker thousand USD
Panel A: Cartels without drug related homicides						
ATT: time*treated	-34,245.4	-17,576.9	-19.2	-0.6	1.4	-1.1
	(21,557.4)	(13,342.3)	(27.7)	(0.5)	(5.4)	(10.5)
Observations	868	868	868	867	868	867
R-squared	0.1	0.1	0.1	0.0	0.2	0.1
Panel B: Drug related homicides						
Areas with at least one drug related homicide	-23,324.3	-20,546.9	-17.5	-0.9	0.1	1.0
ATT: time*treated	(34,116.3)	(21,240.6)	(28.8)	(0.7)	(3.0)	(2.1)
	2,301	2,301	2,301	2,301	2,301	2,301
Observations	0.1	0.1	0.1	0.1	0.1	0.0
R-squared						
Top 10 decile of drug related homicides						
ATT: time*treated	-35,781.2	-17,287.7	-44.8	-1.0	9.3	0.6
	(23,123.8)	(14,119.3)	(58.3)	(0.6)	(17.7)	(1.4)
Observations	635	635	635	635	635	635
R-squared	0.1	0.1	0.0	0.0	0.1	0.1
Third tertile of drug related homicides						
ATT: time*treated	-35,826.8	-17,431.3	-29.4	-0.5	-1.3	3.5
	(24,600.0)	(15,168.4)	(24.6)	(0.6)	(3.9)	(3.0)
Observations	1,354	1,354	1,354	1,354	1,354	1,354
R-squared	0.1	0.1	0.0	0.0	0.1	0.0
Second tertile of drug related homicides						
ATT: time*treated	14,891.1	-9,406.8	3.5	-0.1	2.7	-7.6
	(24,214.1)	(10,054.3)	(18.0)	(0.4)	(3.6)	(5.9)
Observations	1,090	1,090	1,090	1,090	1,090	1,090
R-squared	0.0	0.0	0.1	0.0	0.2	0.0
First tertile of drug related homicides						
ATT: time*treated	43,933.6	2,689.6	19.7	-0.4	3.5	-0.9
	(29,958.4)	(7,906.2)	(21.8)	(0.3)	(4.5)	(4.6)
Observations	705	705	705	705	705	705
R-squared	0.0	0.0	0.1	0.0	0.1	0.0

Controls used in all specifications: Poverty-relief subsidies per capita and state's unemployment rate, all lagged for two years.

Table A.13
Placebo test on wholesale business and real estate using 1990-2000 as pre-treatment and 2001-2005 as post-treatment

	Real Estate						Wholesale business					
	(1) production thousand USD	(2) profit thousand USD	(3) workers per 10,000 inhabitants	(4) remuneration per worker thousand USD	(5) establisments per 10,000 inhabitants	(6) capital per worker thousand USD	(7) production thousand USD	(8) profit thousand USD	(9) workers per 10,000 inhabitants	(10) remuneration per worker thousand USD	(11) establisments per 10,000 inhabitants	(12) capital per worker thousand USD
Panel A: Cartels without drug related homicides												
ATT: time*treated	-37.7	-27.5	-1.5	-0.2	-0.5	-29.4*	1,012.8	867.3	-2.3	0.2	0.2	-3.0
	(30.3)	(17.7)	(1.8)	(0.2)	(0.3)	(16.2)	(736.7)	(702.3)	(3.4)	(0.3)	(0.5)	(4.9)
Observations	326	326	326	325	326	325	683	683	683	683	683	683
R-squared	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Panel B: Drug related homicides												
Areas with at least one drug related homicide	76.3	32.1	0.4	0.2	0.1	-18.1	15.2	-128.9	-2.2	0.0	-0.8	-1.3
ATT: time*treated	(63.8)	(21.6)	(0.8)	(0.2)	(0.2)	(21.6)	(359.8)	(309.6)	(3.3)	(0.3)	(0.6)	(1.5)
	2,301	2,301	2,301	2,301	2,301	2,301	2,301	2,301	2,301	2,301	2,301	2,301
Observations	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
R-squared												
Top 10 decile of drug related homicides												
ATT: time*treated	-11.5	-6.7	-1.4	-0.1	-0.2	18.4	168.5	482.4	-1.5	-0.4	0.4	-4.5**
	(13.0)	(9.9)	(2.1)	(0.1)	(0.8)	(15.3)	(453.2)	(631.5)	(5.7)	(0.3)	(0.9)	(1.8)
Observations	635	635	635	635	635	635	635	635	635	635	635	635
R-squared	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Third tertile of drug related homicides												
ATT: time*treated	37.3	13.9	1.6*	0.0	0.2	-8.4	-288.2	-171.5	-6.2	0.5	-1.2*	-0.6
	(54.9)	(20.2)	(0.9)	(0.2)	(0.3)	(12.8)	(348.3)	(284.8)	(4.0)	(0.4)	(0.7)	(1.2)
Observations	1,354	1,354	1,354	1,354	1,354	1,354	1,354	1,354	1,354	1,354	1,354	1,354
R-squared	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Second tertile of drug related homicides												
ATT: time*treated	81.0	17.0	0.6	-0.2	0.1	-40.5*	477.5	381.5	-1.8	-0.2	-0.1	-0.9
	(113.1)	(55.7)	(0.7)	(0.2)	(0.2)	(24.0)	(1,171.6)	(873.4)	(4.0)	(0.5)	(0.6)	(1.8)
Observations	1,090	1,090	1,090	1,090	1,090	1,090	1,090	1,090	1,090	1,090	1,090	1,090
R-squared	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
First tertile of drug related homicides												
ATT: time*treated	149.1	44.3	-0.5	0.1	-0.5**	-40.0	569.8	469.4	5.1	0.5	-1.0*	4.9
	(130.7)	(63.7)	(0.7)	(0.3)	(0.2)	(39.1)	(734.6)	(584.1)	(5.3)	(0.6)	(0.6)	(3.5)
Observations	705	705	705	705	705	705	705	705	705	705	705	705
R-squared	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Controls used in all specifications: Poverty-relief subsidies per capita and state's unemployment rate, all lagged for two years.