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

Roxana Gutiérrez-Romero+ and Mónica Oviedo♦

Abstract

This paper assesses the impact that drug cartels and their associated violence have had on development in Mexico. For this purpose, we monitor 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 to a large extent 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 the number of employers and remunerations declined in key industries, such as manufacturing. In the least violent areas poverty increased possibly due to people migrating from the more violent places.

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

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

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1. 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] Cities and towns turned into battlefields with the local population becoming pray to extortions and other thefts (Gutiérrez-Romero and Conte, 2014).

Earlier studies have found that unemployment and migration from border areas to the United States increased in areas affected by drug related homicides (BenYishay and Pearlman, 2013; Dell, 2011; Ríos, 2014b; Robles et al., 2013). We contribute to the literature by estimating, for the first time, the impact that drug cartels and separately drug related homicides have had on poverty and inequality. We also explore how drug trafficking and drug violence could have affected these statistics. We do so by assessing the changes in internal migration, education drop out, economic activity, and the number of employers, employees, remunerations and investment across various industries.

We evaluate the impact of cartels and drug related homicides using 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 survey official records; national and international media reports; and specialized blogs. We also use

[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.

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 representative at municipality level.

We find that in areas where cartels were active without incidents of drug related homicides inequality declined but had no changes in poverty. In contrast, in areas that had both the lowest and the highest rates of drug related homicides poverty increased whilst inequality did not change. Two reasons could explain this increase in poverty. The number of employers and remunerations in manufacturing declined in the areas with the highest rates of drug related homicides. Changes in population size and migration patterns also suggest people moved from more to less violent areas, perhaps relocating poor people within the country.

These impacts refer 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 new regions. Focusing on this period has the main advantage of capturing the immediate short-term impacts of cartels moving on to new areas. But it has the disadvantage of excluding those areas that suffered drug violence much earlier. In the robustness section we show that areas that experienced drug related homicides in an earlier period, during 2001-2005, also suffered an immediate rise in poverty, which increased even further during 2006-2010.

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 statistics. Section 6 tests the mechanisms that could explain our results. Section 7 shows the robustness checks, and Section 8 concludes.

2. The causes of Mexican drug violence

Most illegal drugs consumed today in the United States come through Mexico (Payan, 2006).[3] 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

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

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 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.[4] 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.[5] 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.[6] However, violence ignited again in 2008 and to unforeseen levels in 2010.[7] 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).

[4] 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.

[5] 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.

[6] 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).

[7] 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.

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 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.[8] 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, such as real state, finance and retailing. These industries are easy targets as they can receive large amounts of cash and due to weak regulation in money laundering. 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).

[8] 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. The 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, potentially paying higher salaries to keep personnel, 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).

$$Y_{it} = AK_{it}^{\alpha} L_{it}^{1-\alpha} \tag{1}$$

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)

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

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:

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

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, $k_{i,t+1} \le k_{it}$. A poverty trap will arise if and only if

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

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 number of owners, employees, remunerations and investment across various industries. These changes could reveal if production factors shifted from more to less violent areas, for instance. 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 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.[9] 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 suffer changes not necessarily because of the drug violence, but perhaps due to unobserved characteristics, such as levels of corruption.

[9] 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)

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. 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).[10] 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 poor-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

We use the 2005 and 2010 population censuses to assess the impact on inequality (Gini coefficient), migration, education and electricity consumption. As the 2005 mid-census does not provide figures for unemployment, for that statistic we use the 2000 and 2010 censuses.

We also use the official poverty statistics. An independent Mexican institute, CONEVAL, estimated these statistics combining household surveys (Encuesta Nacional de Ingreso y Gasto) with the population census using small-area statistics.

To identify the mechanisms affecting our poverty and other welfare measures, we analyse four industries: manufacturing, retail trade, wholesale trade, and real state. Specifically, we analyse the number of business-owners, employees, remunerations, and investment of each of these industries at municipality level.[11] Since surveys are unrepresentative at that small-area level, instead we use the economic census of 2004 and 2009. These censuses were conducted between 1 January to 31 December 2003 and 2008 respectively.

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

[10] We estimate all regressions in Stata with the command xtreg. We obtain the kernel-weighs using the command psmatch2 by Leuven and Sianesi (2003).
[11] Total investment refers to stock variation of gross fixed capital stock, so it can take positive or negative values.

Drug related homicides

To identify which areas experienced drug violence we use two data sources: official statistics and online reports.[12] 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 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.[13] 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).[14] Ninety per cent of these municipalities experienced drug related homicides again between December 2006 and September 2011, according to official statistics.

We also surveed 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.

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[12] 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.

[13] 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).

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

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.

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.[15] 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 to traffic drugs, 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

[15] Table 5 shows that in 20% of buffer areas homicide rates increased by two or more standard deviations above their historical average.

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 ratio (288.15) than the rest (23.5) (Figure A.1). We split the remaining 90% of the areas affected by drug homicides into equally sized 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 scores for each of the four subgroups treated by drug related homicides (the 10th decile and tertiles). We estimate these scores ensuring they satisfy the balancing property within the region of common support.[16] Then, we match 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. These matched areas have the same distribution of characteristics before treatments began (See Table A.4). Also, the distribution of their propensity scores overlap well, as Fig. A.2 shows.

In Table A.5 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.

[16] 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.

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 homicide rates, poverty and an index of marginalization[17] 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 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, poor-relief subsidies per capita and the state's unemployment rate. To avoid endogeneity problems we include all these 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 in these areas decreased by 0.391 standard deviations (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 0.170 standard deviations) among the areas in the top decile of highest rate of drug related homicides. Patrimony poverty also increased (by 0.153 standard deviations) among the areas that experienced the lowest rate of drug related homicides, relative to their control group. In net terms, drug related homicides increased the number of people living in food poverty by 25,577 and the number of people living in patrimony poverty by 88,966 in these areas.

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

[17] 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.

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.

Impact on migration and population

We evaluate the impact on migration by focusing on two indicators. The percentage of people who claimed to have lived in another state five years ago and the percentage of people who claimed to have lived in the US five years ago. We are likely to underestimate migration patterns using these statistics as they do not capture, for instance, if people relocated within the same state, but to a safer municipality. To capture some of these internal migration patterns we also assess the change in municipalities' population size.

We find that, areas where drug cartels were active without drug related homicides did not experience as a result changes in their population size or migration patterns (Table 1, panel A, columns 5-7). Neither of these statistics changed in areas with the highest drug related homicides rates. In contrast, areas with the lowest drug related homicide rates, in the first tertile, had a large increase in the percentage of people who lived in another state five years ago (1.55 standard deviation). Population size also increased in these areas, and those in the second tertile, relative to their control group (Table 1, panel B, column 7). These impacts suggest that population might have migrated from more to less violent areas.

Impact on human capital

To assess the impact on human capital we focus on: the percentage of children aged 6-14 out of school and the percentage of population aged 15+ without complete primary.[18] Neither of these statistics changed in areas where cartels were active without drug related homicides (Table 1, panel A, columns 8-9). In contrast, both statistics increased in areas that experienced at least one drug related homicide, and especially so in the areas with the lowest rates of drug related homicides. The percentage of children aged 6-14 out of school also increased in the areas in the second tertile (Table 1, panel B, column 8).

[18] 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.

Earlier we showed that both internal migration and population size increased in areas with the lowest incidence of drug related homicides. Thus, education outcomes might have worsened because of population pressures. Table 1 columns 10-11 show that the population of education age increased in areas in the first and second tertile, while it decreased in areas in the top ten decile of drug related homicides. Nonetheless, the number of schools and teachers per pupil did not change in the first tertile, and the ratio of teachers per pupil even improved among the areas in the second tertile (Table 1, columns 12-13). Thus, it is unlikely that education outcomes worsened because of a shrinking supply of schooling. Rises in poverty, drug dependency and children engaging in drug trafficking could perhaps explain the rise in schooling dropout. 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 economic activity and unemployment

We estimate the impact on area's economy by assessing the changes in electricity consumption. The literature uses this statistic to measure changes in overall activity, especially in the informal economy. For instance, Robles et al. (2013) find that electricity consumption did not change in areas with the highest increase in overall homicides rates -drug related and not- in Mexico. Suggesting the economy in these areas did not slow down, despite the violence.

We find no change in consumption of electricity in areas where cartels operated peacefully, or in the bottom 90 percent of drug related homicides (Table 1, columns 14-15). However, electricity consumption increased in areas with the highest rates of drug related homicides, in the tenth decile. Despite the high-level of drug violence, the economy in these areas increased, suggesting that it was driven by the informal activity. We explore next the impact on unemployment rates, another statistic of economic activity.

Previous studies have found that unemployment rates increased in municipalities affected by drug related homicides using quarterly labour surveys. Although these surveys are nationally representative, they are not representative at municipality level. Since our interest is to measure the impacts at small area level we instead use the population censuses, which are representative at municipality level. Since unemployment rates are not available in the mid census, conducted in 2005, we can only estimate the change in unemployment rates between the years 2000 and 2010.

We find no impact on the unemployment rate or number of unemployed in areas where cartels were active but without drug related homicides (Table 1 Panel A, columns 16 and 17). Similarly, the number of unemployed remained unchanged across all the subgroups affected by drug related homicides. However, the unemployment rate decreased among the municipalities with the lowest incidence of drug related homicides, whilst remaining unchanged in the other groups.

Our results on unemployment do not necessarily contradict earlier studies. We are using different data sources, and exploring changes over different periods. Importantly our definition of

treatment varies as well. In Section 7, we show that unemployment increased among the areas that experienced the highest jump in overall homicides rates, when we use the same treatment definition as Robles et al.

6. Potential mechanisms: 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 census used earlier, we redefine slightly our treatment and control groups.[19]

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 the 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.6. 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.7). These areas, also had on average the same distribution of characteristics before treatments began (Table A.8)

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

[19] 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.

Impact on manufacturing

Workers in the manufacturing industry experienced a decline in their remunerations in areas where cartels were active without drug related homicides. Also in areas that experienced at least one drug related homicide (Table 2, column 3).

The number of owners, workers and remunerations in this industry also declined in areas with the highest rates of drug related homicides, those in the 10 decile. (Table 2, panel B, column 1, 2 and 3). In contrast, the number of owners increased in the areas in the first and third tertiles (column 2).

The increase in extortions and thefts that the most violent areas experienced could perhaps explain the decline in the number of owners in manufacturing, thus in remunerations. This decline in remunerations supports the findings of Velásquez (2014) who using a panel survey shows total earnings declined in areas with the highest homicide rates. It is less clear why the number of owners increased in areas with fewer drug related homicides. Migration of entrepreneurs from more to less violent areas is one possibility.

Impact on retailing and wholesale business

Cartels allegedly launder money in the industries of retailing and wholesale business (The Economist, 2014). We cannot infer whether such allegations are true. However, our results reveal how resilient these industries have been in areas affected by cartels and drug violence.

In the areas where cartels were active without drug related homicides the number of owners and investment increased in the industry of wholesale business (Table 2, column 10 and 12). Remunerations in retailing also increased in these areas (column 7).

Similarly, in areas that experienced at least one drug related homicide, the number of owners, employees, and investment in retailing and wholesale business increased (Table 2, columns 5-12). The increase in investment, however, comes only from the areas that experienced the lowest drug related homicides rates (first and third tertiles). Investment in retailing even declined in areas with the highest drug related homicides rates.

Impact on real state

Major real state agencies argue that the drug violence has harmed them as people are reluctant to buy properties in affected areas (Sigler, 2012). Cartels have also allegedly harmed "legitimate" investors in real state by laundering money in this industry (CNN Expansión, 2010). We cannot ascertain whether these allegations are true. However, our findings fail to suggest a slow down of this industry in affected areas, relative to the control group.

For instance, we do not find any change in number of employees, owners, remunerations or investment in real state in areas where cartels were active without drug related homicides (Table 2, panel A, columns 13-16). In contrast, the number of owners increased in areas where there was at least one drug related homicide (Table 2, Panel B, column 14). The number of workers and owners also

increased in the municipalities with high levels of drug related homicides, within the third tertile (Table 2, panel B, columns 13 and 14).

Impact on total tax revenue

We analyse next the net change in tax revenue, as this statistic might reveal overall changes in the "legitimate" economy (Table 2 column 17). Tax revenue did not change among the areas where drug cartels have been active without drug related homicides. Tax revenue increased only in the areas with the lowest rates of drug related homicides (first tertile). This increase of tax revenue is consistent with the fall in unemployment rates in these areas, and with the increase in the number of employers in manufactures, retailing and wholesale business in these areas as well. All these changes could have been driven by employers migrating from more to less violent places.

In sum, we find no evidence of economic slowdown in the areas with the lowest rates of drug related homicides that could explain its increase in poverty. As shown earlier, the population increased in areas least affected by the violence relative to their control group. So, population movements from more to less violent areas could perhaps have relocated poor people in the country. Population could have moved into areas least affected by drug related homicides despite of experiencing drug violence, given that they also improved their economy, relative to their control group (in terms of unemployment rates and tax revenue).

7. Robustness checks

7.1 Buffer areas

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 test the extent to which our estimators change when we vary the boundaries for the exclusion of 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. Hence, we tested our main results excluding buffer areas within 15 and 20 kilometres, finding very similar results.

For instance, Table A.9 presents the results of excluding buffer areas within a radius of 20 kilometres. Setting this boundary excludes another 406 control areas. However, the patterns of inequality, poverty, migration and education remain the same as those presented earlier.

7.2 Placebo tests

We use placebo tests to assess the robustness of our findings. To this end, we randomly assign the areas used as control group to two placebo treatments. One treatment assumes that cartels were active in the area without drug related homicides. The second treatment assumes areas experienced drug related homicides. In this second treatment, we also assign different rates of drug related homicides,

according to the ones in fact experienced by treated areas. We produce these random placebo treatments so we remain with the same ratio of areas in the control and placebo treated as the one found between our treated and control areas.

We use probit regressions to estimate the propensity scores. As before, we assume the baseline period is 2000-2005 and the treatment period is 2006 or after. We use the same covariates in these regressions as before. The matched placebo and control areas have the same distribution of characteristics.

Table A.10 shows the placebo test finds 10 out of the 102 ATT coefficients statistically significant when analysing the impact on welfare statistics. That is a 10% rate likely to have been found by chance. Using the non-placebo data we found 23 out of 102 ATT coefficients statistically significant at 10% level.

Table A.11 shows the placebo test finds 10 out of the 106 ATT coefficients significant when analysing the impact on industries. That is a rate of 10% likely to have been found by chance. In contrast, we found 41 out of 106 ATT coefficients statistically using the non-placebo data.

Second placebo test (using 1990-2000 as pre-treatment vs. 2001-2005 as post-treatment)

We perform additional placebo tests. This time we assume that our treatment areas were affected by cartels or drug related homicides earlier than they were. 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.

Table A.12 shows the results of this placebo test for our main welfare statistics of poverty, inequality, total population and human capital. From the 42 ATT presented, only two are statistically significant at 10% significance level. For the period 2000 vs. 2005 we do not have statistics on unemployment or electricity consumption. So we instead tested changes in GDP per capita finding that none turn statistically significant (hence not shown in the table).

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 Changes in total homicides rates 2006-2010

So far, we have evaluated the impact of areas experiencing extra homicides caused by the turf war among cartels and the state. A different research question would be to evaluate the impact of the change in the level of total homicides rates, whether drug related or not. This is also an important issue as there is the possibility that other homicides might have increased in areas where cartels hold battles.

For instance, Robles et al. have evaluated the impact on areas that experienced an increase by two or more standard deviations in their total homicide rates since 2006 with respect to their historical average. They found that 26.3% of the municipalities in the country experienced such an increase in

their total homicide rates. Using instrumental variables, these authors find that unemployment rates increased in these areas, as mentioned earlier.

We re-estimate the impact on all our statistics, following the definition of Robles et al. Specifically, we redefine treatment areas as those that experienced an increase of two or more standard deviations in the total homicides rates in any pair of years since 2006 with respect to the historical average homicide rate 1998-2005. The control group are those areas that experienced a smaller change in homicide rates than the treated. We test this impact with the same method we used before, difference-in-difference with kernel matching.

Tables 3 and 4 show the impact in areas that experienced an increase of two or more standard deviations in homicides rates on welfare statistics and key industries. A problem with using this treatment definition is that it includes areas that experienced drug related homicides or cartels earlier than 2006. Hence, in these tables we also present the results of excluding areas that experienced cartels or drug related homicides during 2000-2005 and excluding from the control group buffer areas within a radius of 10 kilometres. Robles et al. did not exclude from their analysis neither of these areas.

Despite our differences in method and data sources used we find similar results to those of Robles et al. That is, unemployment rates increased (by 0.196 standard deviation) among the areas that experienced an increase of two or more standard deviations in their historic homicides rates. The increase in unemployment is even sharper when excluding buffer areas and those areas that had cartels or drug related homicides during 200-2005. Similarly, we do not find a change in the electricity consumption in these areas.

In addition, we do not find a change in poverty rates but we still find a harmful effect on education outcomes, and an increase in inequality (Table 4, Panel A, columns 1-9). We find no impact on investment across the industries analysed or on tax revenue (Table 4). In contrast to our earlier results the number of workers and owners decreased in retailing (Table 5, columns 5-6). Similarly, the number of owners decreased for wholesale business, whilst we find no change in manufacturing.

The differences with the results we presented earlier are due to the differences in the areas being compared. Table 5 shows among the areas that experienced a jump in their total homicide rates the percentage that were used in our earlier analysis as treated, control or buffer areas. For instance, only 3.98% of the areas that experienced an increase of two-or more standard deviations from their historical homicide rates are within the top ten decile of areas with the highest drug related homicide rate. The other three tertile groups (the areas divided according to their drug related homicides rates) are evenly spread among those areas that experienced a sharp jump in their total homicides rates.

7.4 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 exclude 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 2000-2005. 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.[20]

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 nor in the baseline characteristics. Fig. 7 shows that the matched areas had parallel trends in both homicides rates and poverty statistics before the violence erupted among cartels.

Table 6 shows that poverty increased in the areas that were affected by drug related homicides during 2001-2005, relative to their control group. The majority of these areas (86%) also experienced drug related homicides during 2006-2010. Poverty increased even more during that period, probably reflecting as well that the number of killings intensified. We also find a decline in the number of workers in manufacturing between 2000 and 2010.[21] Thus, 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.

[20] 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.

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

8. Conclusion

We quantified the impact of drug cartels and drug related homicides on development in Mexico. Using the difference-in-difference kernel matching, we found that inequality declined in areas where drug cartels were active without drug related homicides. These areas did not have any other impacts in terms of poverty, human capital, population size or economic activity, relative to their control group. We found a different picture for areas suffering drug related homicides. For instance, poverty increased in the areas that experienced both the highest and lowest rates of drug related homicides.

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 (drugs). 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. Particularly so, for the case in poverty as we found a decline in human capital, number of employers, and jobs in some industries in the areas affected by drug violence. These areas then need urgent complementary policies to ensure that these negative impacts do not persist over time. We showed that children are dropping out of school in these areas, despite not experiencing a decline in the number of schools or teachers per pupil population. Thus, likely reasons for school drop out are rises in poverty, engaging in drug trafficking and drug dependency.

These findings deepen our understanding of the effects drug cartels have on development, when engaging in violence and not. Policy implications as to whether and how to regulate drug markets are not obvious. However, this paper has contributed to the debate on what the priorities should be for policy makers to lessen the negative effects of drug trafficking and violence.

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Figures and Tables

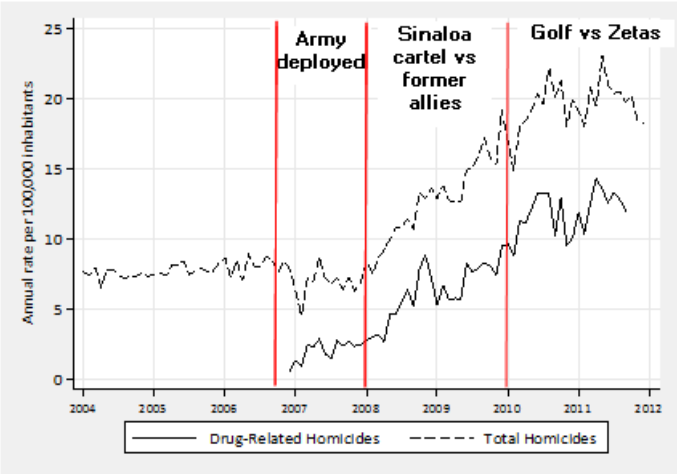
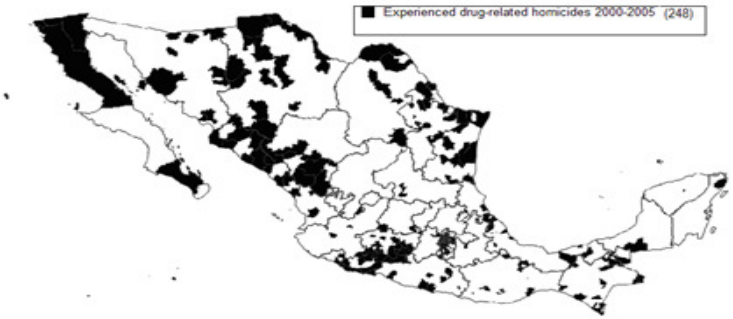


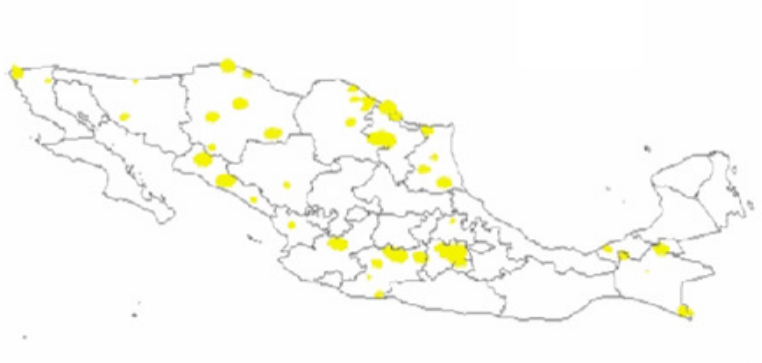
Fig. 1 Homicide rates in Mexico 2004-2012

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

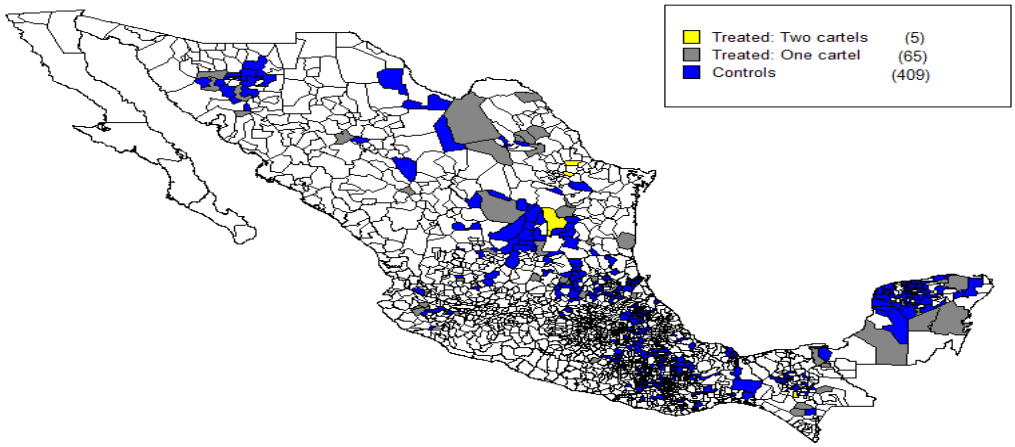


Fig. 3 Municipalities where cartels started operating for the first time in 2006 or after without drug related homicides vs. controls in region of common support

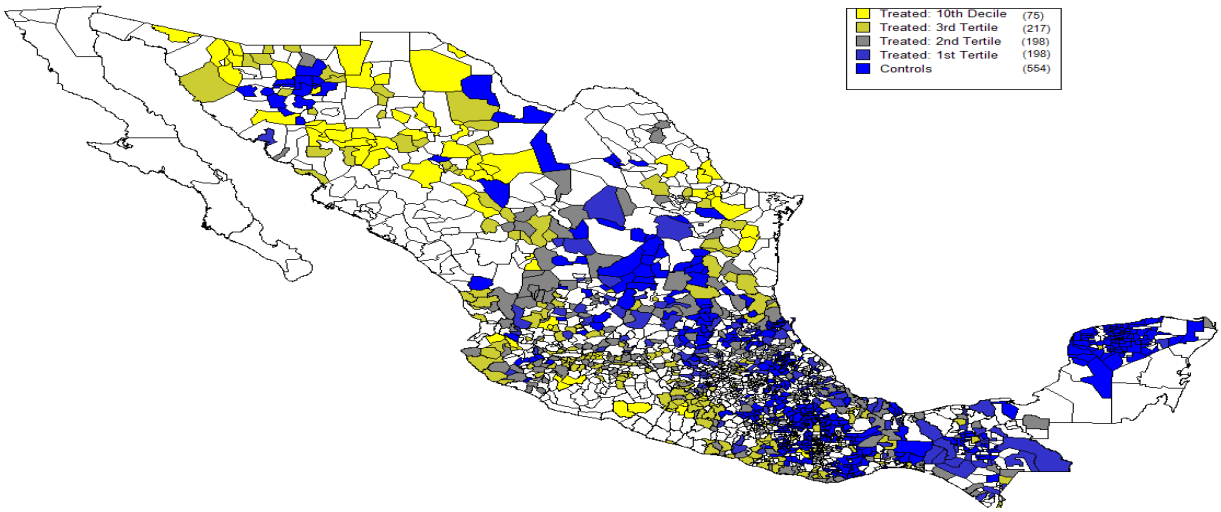


Fig. 4 Municipalities that experienced drug related homicides for the first time in 2006 or after vs. controls in region of common support

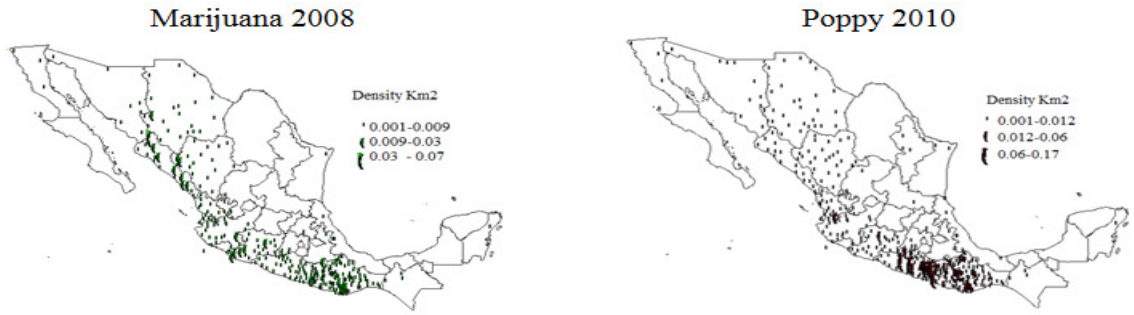


Fig. 5 Illicit crops eradication

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) Lived in another state 5 years	(6) Lived in U.S. 5 years ago	(7) Total population	(8) Aged 6-14 out of school	(9) Aged 15+ without primary	(10) Population aged 6-14	(11) Population aged 15-17	(12) Schools (primary to highschool) per pupil	(13) Teachers (primary to highschool) per pupil	(14) Total energy consumption	(15) Energy consumption per capita	(16) Unemployment rate 2000-2010	(17) Number unemployed 2000 vs 2010
Panel A: Cartels without drug related homicides																	
ATT: time*treated	-0.197	-0.186	-0.148	-0.391***	0.169	-0.930	-0.030	0.052	-0.001	0.003	-0.001	-0.029	0.029	-0.069	0.019	-0.358	-1.566
	(0.150)	(0.152)	(0.156)	(0.136)	(0.205)	(0.671)	(0.044)	(0.066)	(0.024)	(0.017)	(0.024)	(0.041)	(0.059)	(0.184)	(0.087)	(0.612)	(1.144)
Observations	958	958	958	958	958	958	958	958	958	958	958	924	822	582	582	949	949
R-squared	0.072	0.057	0.033	0.148	0.343	0.356	0.098	0.403	0.902	0.053	0.254	0.202	0.224	0.065	0.018	0.540	0.351
Panel B: Drug related homicides																	
Areas with at least one drug related homicide																	
ATT: time*treated	-0.033	-0.028	-0.013	0.073	0.530*	0.725	0.080	0.093***	0.032*	0.049**	0.033	-0.013	0.042	-0.370	-0.069	-0.347	-0.823
	(0.053)	(0.057)	(0.071)	(0.081)	(0.299)	(0.758)	(0.050)	(0.035)	(0.017)	(0.023)	(0.032)	(0.019)	(0.028)	(0.390)	(0.128)	(0.427)	(1.822)
Observations	2,484	2,484	2,484	2,480	2,484	2,484	2,484	2,484	2,484	2,484	2,484	2,332	2,042	1,504	1,504	2,468	2,468
R-squared	0.052	0.029	0.004	0.179	0.089	0.502	0.112	0.404	0.893	0.015	0.213	0.117	0.209	0.015	0.008	0.605	0.414
Top 10 decile of drug related homicides																	
ATT: time*treated	0.170*	0.156	0.105	-0.212	-0.105	0.103	0.010	0.005	0.013	-0.039***	-0.032**	0.059	-0.036	0.782*	3.574*	-0.163	0.773
	(0.093)	(0.103)	(0.134)	(0.177)	(0.131)	(0.586)	(0.030)	-0.129	(0.031)	(0.014)	(0.014)	(0.082)	(0.103)	(0.466)	(1.996)	(0.818)	(1.023)
Observations	1,022	1,022	1,022	1,020	1,022	1,022	1,022	1,022	1,022	1,022	1,022	998	796	404	404	1,015	1,015
R-squared	0.073	0.062	0.055	0.177	0.313	0.424	0.062	0.224	0.843	0.175	0.054	0.078	0.112	0.063	0.287	0.575	0.331
Third tertile of drug related homicides																	
ATT: time*treated	0.032	0.041	0.070	0.045	0.145	0.642	0.023	0.086	0.018	0.005	0.011	0.014	0.137***	-1.256	-0.319	0.557	1.182
	(0.064)	(0.067)	(0.082)	(0.101)	(0.157)	(0.694)	(0.033)	(0.053)	(0.022)	(0.015)	(0.020)	(0.031)	(0.046)	(0.852)	(0.290)	(0.481)	(1.264)
Observations	1,428	1,428	1,428	1,428	1,428	1,428	1,428	1,428	1,428	1,428	1,428	1,374	1,160	766	766	1,420	1,420
R-squared	0.107	0.073	0.029	0.136	0.248	0.430	0.053	0.336	0.861	0.043	0.165	0.166	0.299	0.027	0.032	0.568	0.331
Second tertile of drug related homicides																	
ATT: time*treated	-0.089	-0.086	-0.056	0.035	0.577	-1.082	0.083*	0.096*	0.028	0.065**	0.024	-0.038	0.122**	0.481	-0.010	-0.106	0.264
	(0.063)	(0.066)	(0.080)	(0.111)	(0.591)	(0.823)	(0.047)	(0.050)	(0.022)	(0.030)	(0.032)	(0.026)	(0.060)	(0.671)	(0.190)	(0.489)	(1.796)
Observations	1,180	1,180	1,180	1,178	1,180	1,180	1,180	1,180	1,180	1,180	1,180	1,134	1,038	750	750	1,172	1,172
R-squared	0.133	0.090	0.018	0.128	0.074	0.500	0.207	0.449	0.905	0.022	0.244	0.219	0.323	0.033	0.023	0.625	0.381
First tertile of drug related homicides																	
ATT: time*treated	0.065	0.090	0.153*	-0.050	1.556**	0.039	0.322**	0.113**	0.042*	0.151***	0.158***	-0.035	0.001	-0.571	-0.396	-1.538**	1.373
	(0.083)	(0.083)	(0.088)	(0.144)	(0.663)	(0.867)	(0.128)	(0.054)	(0.025)	(0.057)	(0.060)	(0.025)	(0.043)	(0.407)	(0.295)	(0.691)	(2.875)
Observations	728	728	728	728	728	728	728	728	728	728	728	682	670	570	570	718	718
R-squared	0.044	0.038	0.053	0.119	0.132	0.625	0.126	0.587	0.929	0.064	0.312	0.237	0.267	0.042	0.030	0.718	0.332

*Controls used in specifications (1) to (15): poor-relief subsidies per capita, growth in annual remittances and state's unemployment rate, all lagged for two years. Controls used in specifications (16) and (17): poor-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*

Table 2
Impact of drug cartels and drug related homicides on industries and tax revenue

	Manufactures				Retail trade				Wholesale business				Real Estate				Tax revenue
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
	workers	owners	remuneration	investment	workers	owners	remuneration	investment	workers	owners	remuneration	investment	workers	owners	remuneration	investment	
Panel A: Cartels without drug related homicides																	
ATT: time*treated	-0.153	0.024	-0.185**	-0.996	0.156	0.105	0.239**	0.248	0.226	0.312*	0.010	0.558**	0.109	0.041	-0.234	-0.907	0.635
	(0.151)	(0.029)	(0.080)	(0.607)	(0.132)	(0.111)	(0.102)	(0.404)	(0.253)	(0.167)	(0.179)	(0.271)	(0.114)	(0.038)	(0.340)	(0.632)	(0.610)
Observations	1,348	1,348	1,348	1,348	1,348	1,348	1,348	1,348	1,348	1,348	1,348	1,348	1,348	1,348	1,348	1,348	1,348
R-squared	0.054	0.118	0.032	0.154	0.456	0.453	0.036	0.022	0.189	0.379	0.074	0.101	0.067	0.064	0.016	0.045	0.250
Panel B: Drug related homicides																	
Areas with at least one drug related homicide																	
ATT: time*treated	-0.074	0.037	-0.164**	-0.320	0.243***	0.219***	0.061	0.356**	0.352***	0.156**	-0.054	1.138***	0.129	0.046*	-0.105	-0.063	0.328
	(0.060)	(0.024)	(0.064)	(0.250)	(0.070)	(0.066)	(0.066)	(0.174)	(0.095)	(0.077)	(0.083)	(0.394)	(0.080)	(0.025)	(0.151)	(0.253)	(0.388)
Observations	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510
R-squared	0.027	0.039	0.023	0.042	0.368	0.367	0.039	0.011	0.095	0.272	0.012	0.015	0.028	0.039	0.010	0.002	0.079
Top 10 decile of drug related homicides																	
ATT: time*treated	-0.348*	-0.108**	-0.231*	-0.034	0.292**	0.282**	0.032	-0.202*	0.361*	0.518	-0.088	0.073	0.041	-0.080	-0.224	-0.390	-0.380
	(0.190)	(0.046)	(0.121)	(0.097)	(0.138)	(0.139)	(0.099)	(0.119)	(0.201)	(0.363)	(0.100)	(0.122)	(0.142)	(0.082)	(0.272)	(0.239)	(0.292)
Observations	1,288	1,288	1,288	1,288	1,288	1,288	1,288	1,288	1,288	1,288	1,288	1,288	1,288	1,288	1,288	1,288	1,288
R-squared	0.056	0.021	0.105	0.057	0.317	0.370	0.078	0.057	0.101	0.216	0.025	0.034	0.021	0.095	0.023	0.012	0.122
Third tertile of drug related homicides																	
ATT: time*treated	-0.038	0.154*	-0.156**	-0.306	0.246**	0.292***	0.058	0.348**	0.193	0.209*	-0.078	1.121*	0.137***	0.097***	-0.098	-0.014	-0.177
	(0.087)	(0.085)	(0.066)	(0.236)	(0.105)	(0.105)	(0.068)	(0.177)	(0.120)	(0.114)	(0.128)	(0.597)	(0.048)	(0.035)	(0.166)	(0.218)	(0.297)
Observations	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792
R-squared	0.040	0.070	0.023	0.109	0.362	0.367	0.024	0.026	0.061	0.284	0.028	0.025	0.124	0.075	0.020	0.002	0.133
Second tertile of drug related homicides																	
ATT: time*treated	-0.118	0.069	-0.198***	-0.758**	0.204**	0.195*	-0.025	0.359	0.440**	0.107	-0.124	0.425	0.314	0.144	-0.124	0.124	-0.302
	(0.093)	(0.064)	(0.073)	(0.346)	(0.103)	(0.107)	(0.095)	(0.235)	(0.189)	(0.118)	(0.116)	(0.304)	(0.249)	(0.111)	(0.200)	(0.397)	(0.373)
Observations	1,244	1,244	1,244	1,244	1,244	1,244	1,244	1,244	1,244	1,244	1,244	1,244	1,244	1,244	1,244	1,244	1,244
R-squared	0.085	0.133	0.050	0.123	0.372	0.354	0.073	0.020	0.091	0.285	0.024	0.051	0.044	0.119	0.019	0.004	0.178
First tertile of drug related homicides																	
ATT: time*treated	-0.064	0.036*	-0.153	-2.356	0.294***	0.213**	0.130	1.269**	0.524***	0.176*	0.182	2.028*	0.189	0.020	-0.064	-0.463	3.846**
	(0.123)	(0.019)	(0.133)	(1.689)	(0.103)	(0.092)	(0.098)	(0.566)	(0.163)	(0.092)	(0.130)	(1.224)	(0.139)	(0.031)	(0.225)	(0.520)	(1.897)
Observations	1,046	1,046	1,046	1,046	1,046	1,046	1,046	1,046	1,046	1,046	1,046	1,046	1,046	1,046	1,046	1,046	1,046
R-squared	0.129	0.132	0.032	0.083	0.481	0.449	0.046	0.059	0.166	0.463	0.008	0.020	0.051	0.094	0.004	0.017	0.108

*Controls used in all specifications: Poor-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 3
Impact on welfare statistics among municipalities that had two or more standard deviations increase in their total homicide rates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
	Food poverty	Capability poverty	Patrimony poverty	Gini	Lived in another state 5 years ago	Lived in U.S. 5 years ago	Total population	Aged 6-14 out of school	Aged 15+ without primary	Population aged 6-14	Population aged 15-17	Schools (primary to highschool) per pupil	Teachers (primary to highschool) per pupil	Total energy consumption	Energy consumption per capita	Unemployment rate 2000-2010	Number unemployed 2000 vs 2010
Panel A																	
ATT: time*treated	0.016	0.013	0.002	0.109***	0.020	0.722***	0.042**	0.043**	-0.007	0.013	0.020*	0.012	0.023	0.059	0.040	0.196*	0.239
	(0.034)	(0.035)	(0.037)	(0.037)	(0.036)	(0.261)	(0.017)	(0.021)	(0.008)	(0.010)	(0.012)	(0.013)	(0.018)	(0.036)	(0.031)	(0.100)	(0.303)
Observations	4,764	4,764	4,764	4,758	4,764	4,764	4,764	4,764	4,764	4,764	4,764	4,516	3,868	2,848	2,848	4,732	4,732
R-squared	0.026	0.015	0.009	0.039	0.079	0.237	0.055	0.249	0.809	0.019	0.063	0.116	0.193	0.004	0.003	0.528	0.139
Panel B: Excluding buffer areas and municipalities that experienced cartels or drug-related homicides during 2000-2005																	
ATT: time*treated	0.017	0.015	0.011	0.089	0.128***	0.803***	0.042**	0.062**	-0.009	0.028**	0.021*	0.004	0.001	0.052	0.029	0.638**	0.606*
	(0.043)	(0.044)	(0.048)	(0.057)	(0.042)	(0.275)	(0.018)	(0.029)	(0.010)	(0.012)	(0.012)	(0.020)	(0.026)	(0.041)	(0.049)	(0.253)	(0.345)
Observations	2,682	2,682	2,682	2,680	2,682	2,682	2,682	2,682	2,682	2,682	2,682	2,502	2,208	1,652	1,652	2,666	2,666
R-squared	0.042	0.025	0.005	0.041	0.072	0.333	0.060	0.279	0.855	0.022	0.099	0.118	0.228	0.013	0.004	0.542	0.160

*Controls used in specifications (1) to (15): poor-relief subsidies per capita, growth in annual remittances and state's unemployment rate, all lagged for two years. Controls used in specifications (16) and (17): poor-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*

Table 4
Impact on industries among municipalities that had two or more standard deviations increase in their total homicide rates

	Manufactures				**Retail trade**				**Wholesale business**				**Real Estate**				**Tax revenue**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Panel A	workers	owners	remuneration	investment	workers	owners	remuneration	investment	workers	owners	remuneration	investment	workers	owners	remuneration	investment	
ATT: time*treated	-0.011	0.068	-0.033	0.011	-0.109***	-0.118**	-0.021	0.011	-0.031	-0.088*	0.042	0.022	-0.031	-0.040	-0.089*	-0.066	0.014
	(0.049)	(0.101)	(0.040)	(0.060)	(0.039)	(0.047)	(0.043)	(0.057)	(0.040)	(0.052)	(0.042)	(0.044)	(0.035)	(0.028)	(0.050)	(0.129)	(0.073)
Observations	4,480	4,480	4,480	4,480	4,480	4,480	4,480	4,480	4,480	4,480	4,480	4,480	4,480	4,480	4,480	4,480	4,480
R-squared	0.016	0.038	0.015	0.005	0.247	0.288	0.051	0.003	0.025	0.201	0.020	0.008	0.053	0.039	0.004	0.015	0.047
Panel B: Excluding buffer areas and municipalities that experienced cartels or drug-related homicides during 2000-2005																	
ATT: time*treated	0.046	0.110	-0.013	0.113	-0.129**	-0.113*	-0.073	0.195	-0.042	-0.137*	0.015	0.057	-0.040	-0.025	-0.028	0.181	0.048
	(0.086)	(0.144)	(0.047)	(0.084)	(0.060)	(0.068)	(0.064)	(0.167)	(0.062)	(0.072)	(0.047)	(0.166)	(0.046)	(0.034)	(0.055)	(0.510)	(0.143)
Observations	2,710	2,710	2,710	2,710	2,710	2,710	2,710	2,710	2,710	2,710	2,710	2,710	2,710	2,710	2,710	2,710	2,710
R-squared	0.019	0.032	0.015	0.004	0.271	0.298	0.045	0.007	0.029	0.207	0.030	0.008	0.049	0.032	0.003	0.011	0.042

*Controls used in all specifications: poor-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 5
Municipalities that had two or more standard deviations increase in historical homicide rates

	According to Robles et al definition: Had jump in total homicides rates by two or more standard deviations from historical average	
	Observations	Percentage
Used as controls no drug related homicides 2000-2010	167	16.2
1st Tertile of drug related homicides 2006-2010	124	12.03
2nd Tertile of drug related homicides 2006-2010	123	11.93
3rd Tertile of drug related homicides 2006-2010	123	11.93
10th Decile of drug related homicides 2006-2010	41	3.98
Municipalities excluded from earlier analysis:		
Had drug related homicides during 2000-2005	145	14.06
Areas (control or treated areas) had cartels operating during 2000-2005	108	10.47
Buffer areas, without drug related homicides	200	19.4
Total	1,031	100

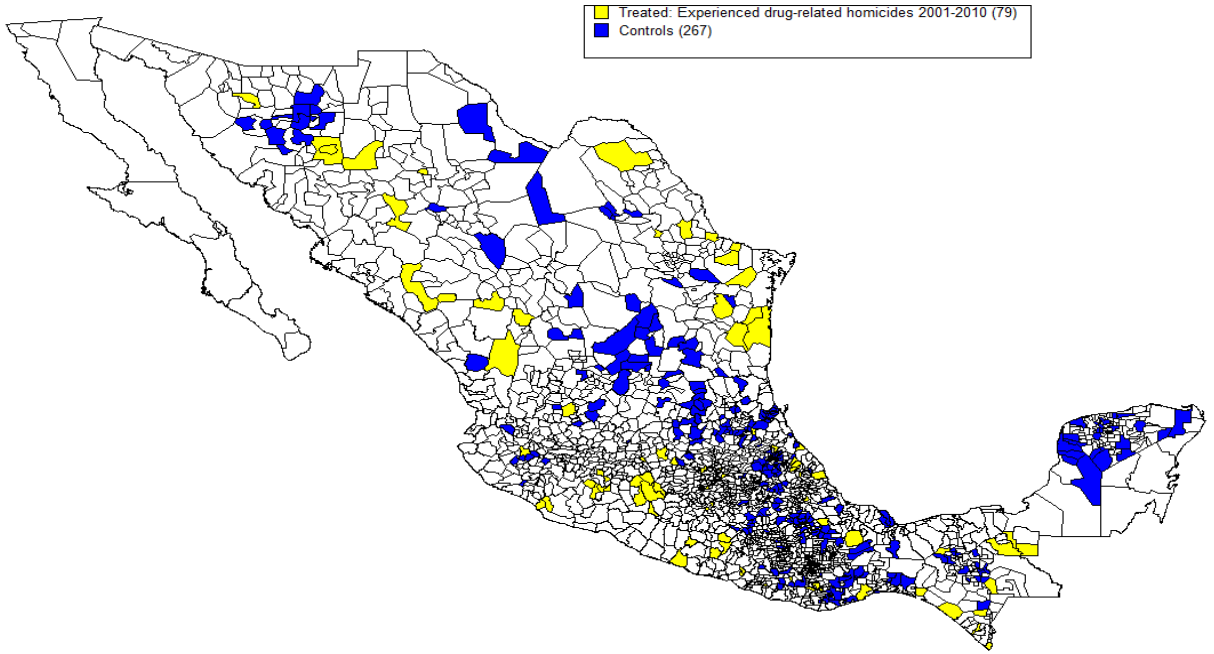


Fig. 6 Municipalities that experienced drug related homicides for the first time in 2001 or after vs. controls in region of common support

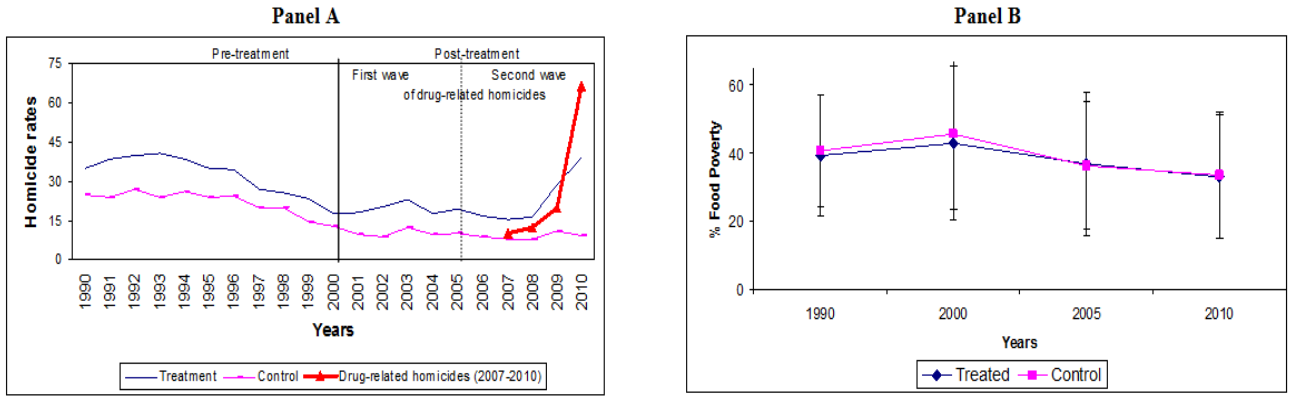


Fig. 7 Homicide rates and food poverty in municipalities that experienced drug related homicides for the first time in 2001 or after vs. controls in region of common support

Table 6
Impact on municipalities that experienced drug related homicides during 2000-2010

	Changes 2000 vs. 2005						Changes 2000 vs. 2010							
	(1)	(2)	(3)	(4)	(5)		(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Food poverty	Capability poverty	Patrimony poverty	Gini	Total population	Workers in manufactures	Food poverty	Capability poverty	Patrimony poverty	Gini	Total population	Unemployment rate	Number unemployed	Workers in manufactures
ATT: time*treated	0.174*	0.150	0.091	-0.123	0.001	-0.496	0.112*	0.106*	0.086	-0.075	-0.033	-1.012	-2.320	-0.745*
	(0.101)	(0.103)	(0.105)	(0.114)	(0.042)	(0.429)	(0.066)	(0.062)	(0.059)	(0.112)	(0.082)	(0.639)	(1.753)	(0.438)
Observations	672	672	672	672	672	636	672	672	672	672	672	672	672	636
R-squared	0.247	0.197	0.055	0.429	0.016	0.020	0.629	0.576	0.193	0.773	0.117	0.585	0.448	0.038

*Excluding buffer areas. Controls used in all specifications: poor-relief subsidies per capita, growth in annual remittances 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*

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).

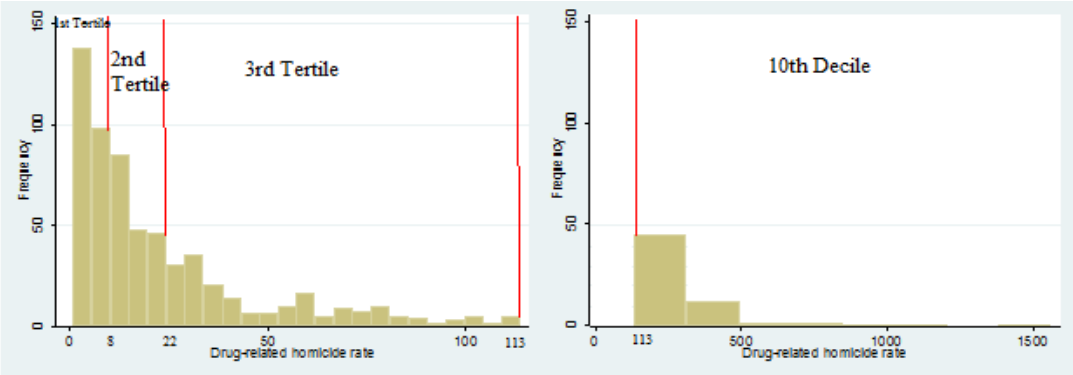


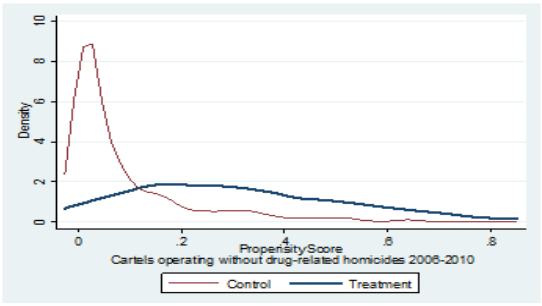
Fig. A.1 Rate of drug related homicides per 100,000 inhabitants by tertiles and 10th decile

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	-0.004	-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	-0.023***	-0.004	
	(0.005)	(0.009)	(0.004)	(0.009)	(0.006)	
Food poverty, 2000	0.009*	0.021**	0.005	0.018**	-0.001	-0.001
	(0.005)	(0.009)	(0.003)	(0.009)	(0.006)	(0.000)
Decentralized, 2005	-0.053**	0.070*	0.001	-0.027	0.012	-0.018
	(0.025)	(0.039)	(0.015)	(0.047)	(0.035)	(0.020)
Mixed type municipality (urban/rural)	-0.059***	-0.052	-0.020	-0.063	0.002	-0.004
	(0.017)	(0.056)	(0.016)	(0.049)	(0.043)	(0.004)
Mixed type*Decentralized	0.039		0.102	0.242**	0.085	
	(0.065)		(0.088)	(0.106)	(0.076)	
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)	
Log Population 2005	0.045	-0.017	0.016	0.043	0.594***	0.167*
	(0.096)	(0.177)	(0.049)	(0.172)	(0.185)	(0.101)
Squared log population	-0.000	0.015	-0.001	0.003	-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	0.122	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**	0.024***	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	-0.082**	-0.043	-0.005
	(0.023)	(0.049)	(0.011)	(0.038)	(0.030)	(0.006)
Municipality ruled by PRI only	-0.029	-0.011	-0.003	-0.077*	-0.017	-0.003
	(0.022)	(0.048)	(0.014)	(0.043)	(0.032)	(0.005)
Homicide rate*decentralized 2005	0.000		-0.000	-0.001	-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)			
Dummy, by pacific coast or not				0.320*	0.243	0.094
				(0.167)	(0.165)	(0.097)
Minimum distance to any border (north, south, pacific coast)				-56.790**	-43.642**	
				(24.307)	(20.249)	
Decentralized*Minimum distance to any border (north, south, pacific coast)						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*

Panel A: Cartels without drug-related homicides



Panel B: Experiencing drug-related homicides

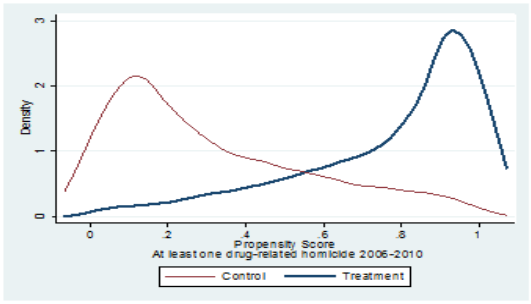


Fig. A.2 Distribution of propensity scores between treatment and control groups

Panel A: Cartels without drug-related homicides

Panel B: Experiencing drug-related homicides

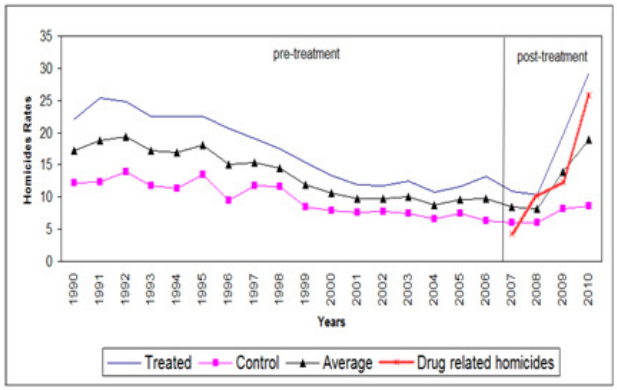
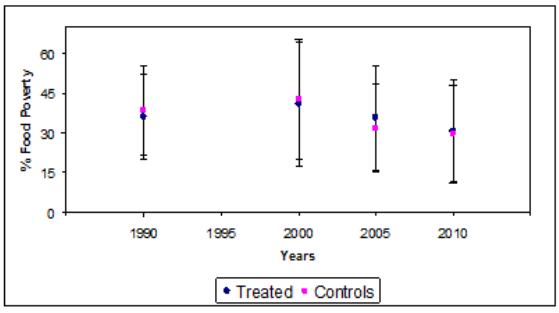


Fig. A.3 Trends in homicides rates between treatment and controls after kernel matching

Panel A: Cartels without drug-related homicides



Panel B: Experiencing drug-related homicides

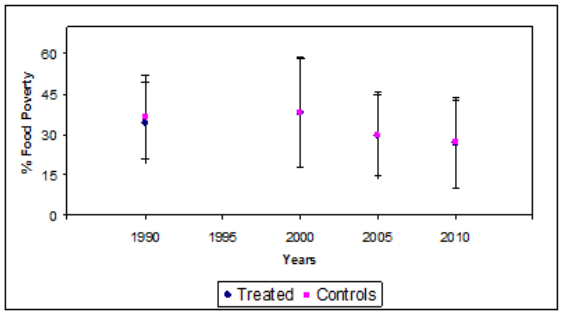
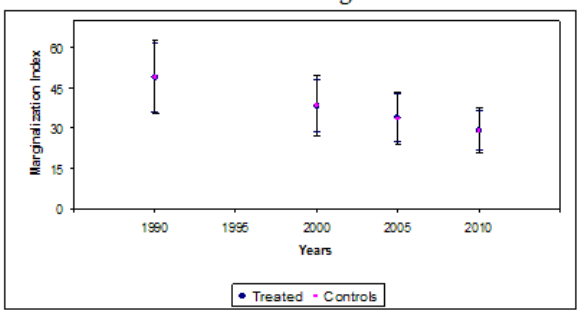


Fig. A.4 Trends in food poverty between treatment and controls after kernel matching

Panel A: Cartels without drug-related homicides



Panel B: Experiencing drug-related homicides

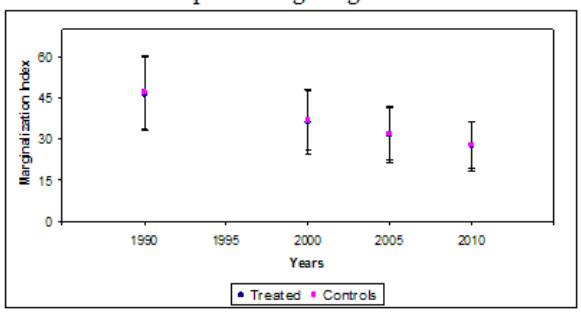


Fig. A.5 Trends in marginalization index between treatment and controls after kernel matching

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			**Panel B: Drug related homicides**													
	All that experienced at least one drug related homicide			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	37.17	36.63	0.681	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	46.23	44.75	0.568	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	39.11	37.88	0.619	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	0.825	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	0.34	0.34	0.983	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	0.1	0.1	0.843	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	412.18	390.3	0.641	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	9.23	9.16	0.568	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	86.29	84.98	0.542	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	10.82	10.86	0.409	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	63.52	63.63	0.852	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	9.89	9.72	0.879	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	183.38	177.91	0.875	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	0.487	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	0.47	0.44	0.626	0.48	0.52	0.589	0.46	0.49	0.739
Homicide rate*decentralized 2005	2.56	2.68	0.924				11.52	5.98	0.159	6.84	6.76	0.961	3.96	3.05	0.333	2.66	3	0.67
Homicide rate1990	11.24	11.54	0.896															
Homicide rate1991	10.06	10.73	0.773															
Homicide rate1993	10.97	11.18	0.928															
Homicide rate1995	11.69	11.57	0.956															
Homicide rate1996	10.86	10.32	0.827															
Homicide rate1997	13.55	13.04	0.894															
Homicide rate1999	10.73	10.96	0.929															
Homicide rate2000	7.16	7	0.912															
Homicide rate2001	6.77	6.32	0.746															
Homicide rate2003	3.91	3.86	0.952															
Homicide rate 2004							16.39	11.48	0.241	12.54	12.11	0.826	8.87	8.34	0.699	6.48	6.33	0.887
Squared homicide rate 2004							1088.34	576.07	0.355	510.43	471.61	0.779	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	0.622	0.03	0.02	0.67	0.03	0.02	0.325
Minimum distance to any border (north, south, pacific coast)										0	0	0.707	0	0	0.519			
Decentralized*Distance north 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	32.10	33.69	32.69	34.48	-0.179	29.90	28.86	29.44	28.33	-0.017	26.95	17.38	26.18	24.29	0.206**
	(13.49)	(17.25)	(17.19)	(19.09)	(0.151)	(11.83)	(14.20)	(15.85)	(16.09)	(0.052)	(11.38)	(8.510)	(17.26)	(17.32)	(0.096)
Capability poverty	40.93	42.17	42.27	43.83	-0.167	38.42	37.20	38.76	37.28	-0.013	34.66	24.42	34.90	32.18	0.208**
	(14.04)	(17.67)	(18.21)	(20.16)	(0.153)	(12.63)	(15.10)	(16.99)	(17.48)	(0.056)	(12.38)	(9.925)	(18.81)	(19.17)	(0.105)
Patrimony poverty	63.97	64.12	67.09	67.58	-0.127	61.26	59.97	63.94	61.82	-0.004	56.25	47.27	59.97	55.46	0.198
	(12.78)	(15.79)	(16.36)	(18.17)	(0.156)	(12.21)	(14.65)	(15.81)	(16.76)	(0.069)	(12.51)	(12.33)	(17.96)	(19.23)	(0.134)
Gini	42.27	44.11	41.84	41.84	-0.338**	43.03	42.93	41.24	42.17	0.112	42.94	43.74	40.33	41.95	-0.178
	(3.845)	(3.111)	(3.899)	(4.246)	(0.131)	(3.616)	(3.767)	(3.822)	(4.010)	(0.092)	(3.526)	(4.080)	(3.308)	(3.574)	(0.262)
Lived in another state 5 years ago	232.8	365.3	361.0	432.4	0.088	316.5	391.8	473.7	622.9	0.309*	115.4	118.1	192.9	180.4	-0.109
	(289.0)	(447.5)	(434.6)	(572.5)	(0.123)	(342.5)	(584.6)	(518.9)	(1491.9)	(0.164)	(135.3)	(148.2)	(239.1)	(194.5)	(0.101)
Lived in U.S. 5 years ago	53.32	53.50	260.6	211.7	-1.035	83.56	89.21	378.4	419.6	0.642	54.90	58.83	258.6	250.7	0.182
	(82.20)	(72.20)	(340.8)	(311.5)	(0.754)	(103.4)	(107.3)	(410.1)	(424.8)	(0.769)	(68.60)	(56.37)	(287.0)	(255.3)	(0.693)
Total population	20598.9	25898.0	21343.9	21527.1	-0.033	25617.8	29047.7	27137.2	29778.1	0.052	10071.6	12349.1	11972.4	13220.8	0.017
	(17006.1)	(19482.7)	(18732.3)	(17777.5)	(0.036)	(20260.1)	(24366.6)	(22240.7)	(27257.5)	(0.036)	(9206.6)	(12129.3)	(13381.3)	(11696.7)	(0.026)
Aged 6-14 out of school	5.922	5.113	5.073	5.205	0.036	5.933	6.807	4.876	6.012	0.081**	7.393	7.639	5.802	6.796	0.011
	(2.454)	(2.041)	(2.666)	(2.884)	(0.063)	(2.300)	(3.593)	(2.431)	(3.389)	(0.035)	(2.602)	(4.555)	(3.081)	(3.815)	(0.118)
Aged 15+ without primary	42.10	37.82	36.57	35.51	-0.001	39.18	36.92	34.03	33.45	0.030**	43.31	37.46	37.30	34.37	-0.015
	(8.961)	(9.489)	(9.137)	(9.911)	(0.020)	(8.706)	(10.36)	(8.912)	(9.918)	(0.015)	(8.079)	(11.02)	(9.007)	(9.954)	(0.036)
Population aged 6-14	4409.1	5587.5	4290.9	4456.5	0.002	5498.0	6098.2	5374.5	5897.4	0.040**	2129.4	2432.4	2313.7	2445.3	-0.035***
	(3759.4)	(4372.5)	(3851.7)	(3915.1)	(0.014)	(4444.7)	(5245.6)	(4482.6)	(5442.1)	(0.018)	(2090.8)	(2390.7)	(2730.0)	(2190.9)	(0.013)
Population aged 15-17	1403.3	1769.5	1472.1	1509.3	0.002	1728.8	1949.9	1832.8	2006.6	0.033	681.4	796.3	784.9	852.5	-0.022*
	(1183.0)	(1341.8)	(1293.7)	(1321.5)	(0.021)	(1368.9)	(1646.3)	(1491.3)	(1799.8)	(0.025)	(641.3)	(778.8)	(906.8)	(769.0)	(0.012)
Schools (primary to highschool) per pupil	103.8	110.5	110.2	116.7	-0.025	101.2	89.12	106.0	97.67	-0.010	158.5	125.7	148.2	142.3	0.126*
	(57.07)	(58.91)	(57.99)	(56.59)	(0.038)	(50.89)	(48.45)	(52.03)	(52.26)	(0.019)	(69.41)	(73.43)	(65.39)	(74.59)	(0.075)
Teachers (primary to highschool) per pupil	304.4	320.8	327.7	338.3	0.023	292.5	285.3	313.1	313.5	0.044*	319.2	336.3	335.9	348.5	0.020
	(62.27)	(79.18)	(78.18)	(86.60)	(0.056)	(60.58)	(66.33)	(72.51)	(73.33)	(0.025)	(54.98)	(75.24)	(74.26)	(74.04)	(0.084)
Total energy consumption (thousands of pesos)	16.93	19.02	20.46	15.44	-0.035	22.11	34.52	29.89	30.78	-0.162	10.31	24.37	13.84	28.26	0.321*
	(17.99)	(17.98)	(34.62)	(19.45)	(0.075)	(21.91)	(89.55)	(43.85)	(71.18)	(0.153)	(10.39)	(50.08)	(30.80)	(52.39)	(0.194)
Energy consumption per capita	11093.0	8095.9	8941.7	6849.9	0.010	10089.5	11581.1	11283.1	10230.7	-0.050	23157.4	16368.3	9118.4	20360.9	1.121
	(24862.5)	(6100.4)	(13493.7)	(4989.8)	(0.054)	(15809.8)	(24775.6)	(19593.8)	(19200.8)	(0.079)	(47905.7)	(21774.4)	(8947.0)	(41133.6)	(0.757)
Unemployment rate 2000-2010	0.808	0.990	4.188	3.906	-0.263	0.969	1.153	4.738	4.631	-0.205	1.123	1.152	4.642	5.023	-0.258
	(0.474)	(0.607)	(3.303)	(3.122)	(0.418)	(0.488)	(0.694)	(3.178)	(2.564)	(0.302)	(0.616)	(0.792)	(2.891)	(2.551)	(0.625)
Number unemployed 2000 vs 2010	50.17	66.69	322.4	267.8	-1.114	70.01	98.06	494.3	476.7	-0.499	29.37	54.64	199.4	234.6	0.641
	(53.62)	(55.91)	(420.7)	(271.7)	(0.730)	(72.41)	(105.0)	(576.2)	(483.0)	(1.183)	(27.57)	(80.05)	(276.5)	(258.3)	(0.605)
Number municipalities	409	70				554	688				441	70			

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.4 (*continuation*)

Panel B: Drug-related homicides

	3rd Tertile					2nd Tertile					1st Tertile				
	2005		2010		ATT (no controls)	2005		2010		ATT (no controls)	2005		2010		ATT (no controls)
	Control	Treated	Control	Treated		Control	Treated	Control	Treated		Control	Treated	Control	Treated	
Food poverty	29.31	28.71	29.13	29.32	0.051	31.77	31.54	29.65	28.48	-0.092	33.48	29.57	30.74	30.91	0.063
	(11.59)	(13.41)	(16.00)	(16.69)	(0.064)	(11.79)	(13.96)	(15.26)	(14.81)	(0.063)	(11.17)	(13.80)	(14.69)	(15.81)	(0.079)
Capability poverty	37.68	37.08	38.40	38.33	0.063	40.45	40.14	39.03	37.70	-0.086	42.72	38.17	40.36	40.31	0.085
	(12.53)	(14.49)	(17.34)	(17.83)	(0.067)	(12.46)	(14.48)	(16.35)	(16.06)	(0.065)	(11.26)	(14.82)	(15.21)	(16.96)	(0.079)
Patrimony poverty	60.35	60.00	63.55	62.87	0.093	63.16	62.88	64.25	62.86	-0.046	66.15	61.20	65.80	65.07	0.141
	(12.38)	(14.69)	(16.27)	(16.33)	(0.081)	(11.67)	(13.03)	(15.02)	(15.15)	(0.076)	(9.535)	(14.73)	(12.84)	(15.78)	(0.090)
Gini	42.93	42.23	41.37	42.06	0.063	43.44	42.64	41.85	41.85	0.065	43.48	43.41	41.93	42.54	-0.022
	(3.867)	(3.487)	(3.667)	(4.373)	(0.104)	(3.636)	(3.675)	(3.758)	(3.792)	(0.104)	(3.156)	(3.682)	(4.053)	(3.951)	(0.118)
Lived in another state 5 years ago	221.1	245.9	313.4	412.2	0.091	291.2	512.7	436.2	686.5	0.325	535.2	1262.4	785.3	1712.9	1.233**
	(266.2)	(307.2)	(388.0)	(692.6)	(0.089)	(297.0)	(2365.5)	(445.2)	(3258.6)	(0.336)	(408.4)	(4325.3)	(601.4)	(5274.8)	(0.528)
Lived in U.S. 5 years ago	64.16	80.14	295.6	360.5	0.740	75.88	77.35	377.0	318.5	-0.997	108.0	117.8	580.0	566.5	0.026
	(81.88)	(101.1)	(341.2)	(389.4)	(0.683)	(92.33)	(117.2)	(404.7)	(333.5)	(0.879)	(122.2)	(170.3)	(516.2)	(597.2)	(1.677)
Total population	17930.0	20410.0	18196.6	20913.4	0.013	23677.6	27391.5	25233.9	25878.2	0.054	40733.0	59486.7	43967.9	60983.3	0.273**
	(15463.5)	(18905.1)	(17503.4)	(22147.9)	(0.025)	(16704.9)	(28936.7)	(19328.7)	(29326.3)	(0.038)	(19927.6)	(104487.0)	(20996.6)	(111040.5)	(0.113)
Aged 6-14 out of school	6.277	6.812	5.197	6.152	0.066	5.855	6.615	5.008	5.453	0.072	5.819	6.412	5.141	5.818	0.102*
	(2.559)	(4.452)	(2.558)	(3.994)	(0.051)	(2.295)	(2.642)	(2.322)	(2.258)	(0.045)	(1.966)	(2.859)	(2.223)	(3.125)	(0.057)
Aged 15+ without primary	41.40	38.02	36.03	35.00	0.012	39.85	37.10	34.35	33.49	0.019	37.46	35.60	32.48	32.19	0.036*
	(9.231)	(10.36)	(9.079)	(9.791)	(0.019)	(8.455)	(11.58)	(8.266)	(10.41)	(0.018)	(7.532)	(10.54)	(7.844)	(10.52)	(0.020)
Population aged 6-14	3776.5	4212.1	3606.7	4212.7	0.003	5095.5	5583.4	5001.5	5048.9	0.051**	8862.5	11998.9	8839.9	11422.7	0.143***
	(3399.1)	(3930.5)	(3550.8)	(4403.4)	(0.011)	(3745.9)	(5624.1)	(3958.5)	(5529.9)	(0.024)	(4389.3)	(17648.3)	(4281.4)	(16664.0)	(0.053)
Population aged 15-17	1208.0	1373.6	1243.3	1450.2	0.011	1609.4	1797.5	1722.2	1718.8	0.023	2768.1	3830.3	3005.4	3862.0	0.148**
	(1059.7)	(1279.4)	(1192.4)	(1508.6)	(0.016)	(1152.4)	(1825.9)	(1325.8)	(1818.9)	(0.026)	(1349.7)	(5947.1)	(1419.9)	(5799.2)	(0.059)
Schools (primary to highschool) per pupil	109.2	95.71	113.4	106.2	0.026	97.51	89.15	102.3	98.20	-0.024	85.19	75.75	87.67	81.87	-0.028
	(57.71)	(54.23)	(54.68)	(58.05)	(0.031)	(46.67)	(47.97)	(47.57)	(50.33)	(0.022)	(37.96)	(34.35)	(39.27)	(37.53)	(0.019)
Teachers (primary to highschool) per pupil	304.8	295.7	327.1	332.3	0.134***	294.9	285.1	313.2	317.1	0.091**	283.8	266.9	292.4	289.7	0.012
	(59.09)	(76.84)	(70.31)	(75.22)	(0.041)	(61.22)	(61.19)	(66.31)	(74.54)	(0.037)	(56.18)	(54.19)	(60.12)	(64.63)	(0.024)
Total energy consumption (thousands of pesos)	17.38	32.96	24.76	19.83	-0.509	20.13	25.23	28.00	31.11	0.154	33.29	88.28	48.86	73.06	-0.260
	(18.79)	(132.8)	(47.42)	(59.95)	(0.347)	(18.88)	(63.79)	(43.37)	(114.3)	(0.236)	(23.42)	(252.2)	(48.63)	(211.0)	(0.205)
Energy consumption per capita	12079.5	13323.2	12277.3	8655.6	-0.203	9048.7	7438.7	10233.1	7972.5	-0.009	8570.7	10970.5	11058.4	9346.1	-0.069
	(21223.0)	(42053.7)	(23236.6)	(14517.2)	(0.182)	(9866.2)	(6460.0)	(16759.4)	(16733.0)	(0.066)	(6022.1)	(17137.6)	(14647.6)	(11679.3)	(0.055)
Unemployment rate 2000-2010	0.919	1.256	4.271	4.991	0.412	0.927	1.191	4.630	4.838	-0.034	0.995	1.138	5.020	4.400	-0.859**
	(0.525)	(0.878)	(2.994)	(2.853)	(0.325)	(0.455)	(0.689)	(3.127)	(2.853)	(0.326)	(0.426)	(0.609)	(2.884)	(2.127)	(0.392)
Number unemployed 2000 vs 2010	47.27	78.68	295.2	369.8	0.672	62.27	104.2	436.0	469.3	0.276	113.0	210.3	834.5	972.9	1.018
	(50.53)	(100.3)	(390.5)	(444.2)	(0.682)	(54.89)	(183.9)	(477.8)	(636.0)	(1.097)	(81.81)	(495.0)	(637.7)	(1867.2)	(2.455)
Number municipalities	532	182				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
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						
	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 an 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 an 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%

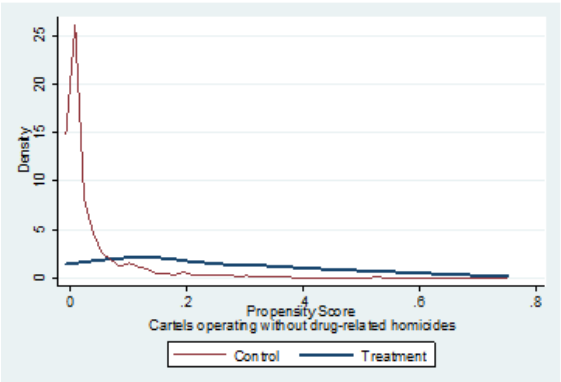
[a] Excluded if had drug related homicides during 2000-2010 or if had cartels operating in municipality before 2006. [b] Excluded if had cartels or drug related homicides during 2000-2005. Also excluded if municipality experienced drug related homicides after 2006 according to media but not to official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

Table A.6
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)
Decentralized, 2005	-0.001	0.127***	0.038***	0.026	0.001	0.014
	(0.005)	(0.033)	(0.015)	(0.021)	(0.002)	(0.021)
Mixed type municipality (urban/rural)	-0.006	-0.025	-0.010	0.009	0.001	-0.074***
	(0.005)	(0.044)	(0.009)	(0.028)	(0.003)	(0.018)
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	0.011*	-0.000	0.029	0.281***	0.069*	
	(0.006)	(0.167)	(0.031)	(0.086)	(0.041)	
Log GDP per capita 2005	0.019*	0.322***	0.035**	0.090**	0.014	0.078**
	(0.011)	(0.071)	(0.016)	(0.036)	(0.011)	(0.037)
%Children school attendance 2005	0.000	-0.002	-0.000	-0.001	0.000	-0.000
	(0.000)	(0.003)	(0.000)	(0.001)	(0.000)	(0.001)
Remmittances	0.000	0.006***	0.000	0.008***	0.001	-0.002**
	(0.000)	(0.002)	(0.001)	(0.003)	(0.001)	(0.001)
Municipality ruled by PAN only	0.003	-0.053	-0.006	0.005	-0.003	0.065**
	(0.005)	(0.039)	(0.006)	(0.021)	(0.003)	(0.030)
Municipality ruled by PRI only	-0.001	0.045	0.010	0.021	0.000	0.038
	(0.005)	(0.041)	(0.010)	(0.021)	(0.002)	(0.026)
Total homicide rate 2004	0.000		0.001***	0.001*	0.000	-0.000
	(0.000)		(0.000)	(0.001)	(0.000)	(0.000)
Homicide rate*decentralized 2005	-0.001		-0.001*	-0.000	0.000	
	(0.000)		(0.000)	(0.001)	(0.000)	
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 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)					
Index of marginalization 2000		-0.002	-0.000	-0.002	-0.000	-0.007***
		(0.003)	(0.000)	(0.001)	(0.000)	(0.002)
Capability poverty, 2000		-0.008	-0.001	-0.008**	0.001	0.016***
		(0.008)	(0.001)	(0.004)	(0.001)	(0.004)
Food poverty, 2000		0.006	0.001	0.008*	-0.001	-0.015***
		(0.008)	(0.002)	(0.004)	(0.001)	(0.004)
Squared log population		0.012	-0.002	-0.012***	-0.003*	
		(0.009)	(0.002)	(0.005)	(0.002)	
Mixed type*Decentralized			0.014	0.075	0.001	0.072
			(0.026)	(0.052)	(0.004)	(0.055)
Squared remmitances			-0.000	-0.000**	-0.000	
			(0.000)	(0.000)	(0.000)	
Squared Homicide rate 2004			-0.000**	-0.000	-0.000	
			(0.000)	(0.000)	(0.000)	
Dummy, by pacific coast or not			0.020	0.071		
			(0.040)	(0.064)		
Miniumum distance to north border			-0.000			
			(0.000)			
Minimum distance to any border (north, south, pacific coast)				-10.447		
				(10.566)		
Pseudo R2	0.30	0.35	0.27	0.26	0.43	0.27
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

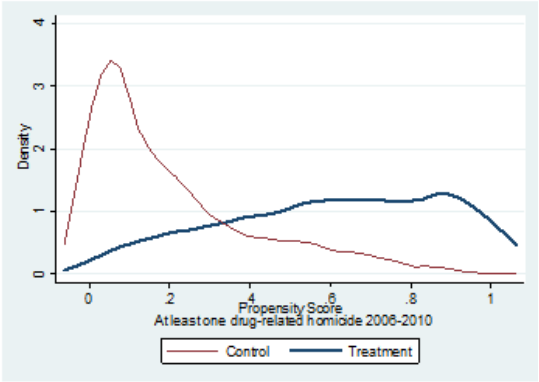


Fig. A.6 Distribution of propensity scores between treatment and control groups

Table A.7
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				35.12	35.11	0.992	37.09	36.27	0.68	34.39	34.17	0.866	34.43	34.24	0.891	31.1	31.99	0.567
Capability poverty, 2000				44.4	44.11	0.856	41.73	39.79	0.642	41.68	40.91	0.752	45.1	45.16	0.977	41.86	45.25	0.144
Food poverty, 2000				37.11	36.95	0.921	35.58	33.72	0.637	34.94	34.37	0.807	37.39	37.45	0.979	34.06	37.26	0.158
Decentralized, 2005	0.4	0.31	0.302	0.49	0.52	0.549	0.71	0.7	0.958	0.52	0.48	0.407	0.39	0.42	0.555	0.47	0.47	0.906
Mixed type municipality (urban/rural	0.23	0.23	0.907	0.32	0.31	0.76	0.17	0.13	0.525	0.4	0.43	0.68	0.29	0.27	0.761	0.27	0.24	0.541
Mixed type*Decentralized							0.1	0.08	0.676	0.2	0.18	0.683	0.11	0.1	0.934	0.13	0.11	0.606
Rural*Distance to north border	361.17	321.72	0.604	357.37	361.06	0.907	386.3	386.06	0.997	341.39	319.2	0.604	379.04	373.27	0.909	237.05	258.83	0.609
Log Population 2005	10.01	9.88	0.489	9.86	9.81	0.57	8.57	8.41	0.364	9.59	9.52	0.432	10.08	10.1	0.809			
Squared log population				98.16	97.27	0.58	74.53	71.93	0.381	92.93	91.36	0.401	102.04	102.4	0.829			
Log GDP per capita 2005	10.91	10.91	0.996	10.87	10.87	0.888	10.92	10.94	0.742	10.9	10.9	0.887	10.87	10.88	0.876	11	10.95	0.334
Children school attendance 2005	64.37	64.06	0.719	63.69	63.54	0.728	62.61	63.15	0.568	63.63	63.46	0.763	64.37	63.8	0.366	64.27	63.87	0.541
Remmittances	7.73	7.66	0.957	8.37	8.21	0.811	8.82	9.37	0.69	9.67	9.81	0.881	8.44	8.05	0.668	5.74	5.36	0.528
Squared remmitances							147.41	161.62	0.717	165.98	169.89	0.886	127.19	119.79	0.741			
Municipality ruled by PAN only	0.35	0.31	0.618	0.26	0.24	0.393	0.21	0.25	0.596	0.27	0.25	0.733	0.2	0.2	0.945	0.34	0.3	0.506
Municipality ruled by PRI only	0.4	0.47	0.449	0.49	0.48	0.908	0.54	0.49	0.511	0.5	0.49	0.922	0.51	0.48	0.642	0.45	0.5	0.443
Total homicide rate 2004	6.25	5.81	0.746				20.27	18.15	0.637	11.6	11.53	0.98	10.32	9.11	0.339	6.76	6.04	0.548
Homicide rate*decentralized 2005	1.64	1.2	0.382				11.63	10.57	0.787	6.49	5.33	0.494	4.31	3.95	0.731			
Homicide rate1991	13.49	13.19	0.925															
Homicide rate1993	12.05	12.32	0.919															
Homicide rate1995	16.11	15.55	0.873															
Homicide rate1996	13.17	12.79	0.892															
Homicide rate1999	8.53	8.02	0.803															
Homicide rate2000	7.69	7.68	0.996															
Homicide rate2001	7.25	6.98	0.871															
Homicide rate2003	8.68	7.91	0.659															
Squared Homicide rate 2004							1080.31	952.75	0.712	523.82	569.1	0.893	242.09	203.66	0.519			
By pacific coast							0.02	0.03	0.818	0.09	0.07	0.6						
Distance north border							495.42	488.3	0.903									
Minimum distance to any border (north, south, pacific coast)										0	0	0.829						

Table A.8
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									
		2005		2010		ATT (no controls)	At least one drug-related homicides 2005		2010		ATT (no controls)	10th Decile 2005		2010		ATT (no controls)
		Control	Treated	Control	Treated		Control	Treated	Control	Treated		Control	Treated	Control	Treated	
Manufactures	workers	192.7	159.1	277.0	168.5	-0.067	170.3	175.5	245.5	219.5	-0.055	126.1	180.5	210.8	105.5	-0.292*
		(335.4)	(240.3)	(412.0)	(206.0)	(0.079)	(299.5)	(364.6)	(374.3)	(312.7)	(0.041)	(264.7)	(603.6)	(403.7)	(98.68)	(0.176)
	owners	40.67	34.40	75.67	55.63	0.013	36.97	37.11	72.58	77.28	0.035	34.66	31.76	90.80	51.42	-0.140***
		(111.8)	(26.28)	(151.0)	(47.92)	(0.026)	(94.92)	(51.31)	(171.8)	(109.8)	(0.028)	(121.1)	(47.63)	(301.6)	(38.00)	(0.053)
	remuneration	41.17	54.16	54.73	52.25	-0.133**	39.34	43.81	51.77	49.25	-0.132**	30.80	35.75	41.56	27.90	-0.228*
		(42.69)	(54.44)	(53.20)	(56.34)	(0.061)	(40.95)	(47.81)	(50.49)	(41.53)	(0.053)	(40.50)	(48.36)	(49.67)	(24.32)	(0.120)
	investment	12762.1	48466.1	29093.6	11687.5	-1.315	11429.6	16711.1	22942.9	17204.8	-0.276	7175.5	-150.8	14256.7	288.3	-0.147
		(56831.2)	(238357.6)	(101736.4)	(43226.0)	(0.930)	(53259.0)	(85402.8)	(90816.5)	(89736.1)	(0.231)	(42574.4)	(6789.1)	(67496.9)	(723.5)	(0.123)
Retail trade	workers	194.7	270.9	322.2	368.5	0.062	187.2	198.9	307.5	341.8	0.184***	148.7	195.6	273.4	327.2	0.216
		(157.4)	(163.6)	(180.1)	(209.7)	(0.104)	(157.5)	(159.0)	(177.0)	(193.6)	(0.058)	(141.7)	(191.2)	(159.4)	(270.0)	(0.135)
	owners	140.5	178.0	237.8	248.7	0.047	133.6	146.7	226.9	254.4	0.149***	111.2	137.9	215.6	233.1	0.099
		(108.7)	(100.7)	(123.7)	(130.4)	(0.082)	(108.8)	(113.5)	(124.2)	(137.2)	(0.050)	(103.8)	(126.4)	(126.2)	(160.8)	(0.093)
	remuneration	33.03	38.15	37.44	40.05	0.243**	32.75	32.54	36.40	36.93	0.058	28.54	33.27	32.22	34.50	0.011
		(23.67)	(12.70)	(14.45)	(12.54)	(0.120)	(24.77)	(22.13)	(15.28)	(13.19)	(0.069)	(26.95)	(25.83)	(18.27)	(20.81)	(0.123)
	investment	4784.9	6298.5	4118.1	6729.5	0.185	4439.0	4480.1	3952.7	5293.8	0.173**	2519.7	1603.9	2680.7	745.2	-0.101
		(9114.1)	(8250.9)	(7578.7)	(12480.2)	(0.211)	(8218.2)	(8501.8)	(7560.0)	(9913.9)	(0.086)	(6189.7)	(4100.7)	(6019.1)	(3451.6)	(0.066)
Wholesale business	workers	26.42	40.31	37.34	49.66	0.148	24.73	26.82	34.83	44.68	0.276***	16.98	15.79	26.08	26.50	0.146
		(31.94)	(48.46)	(33.78)	(43.60)	(0.212)	(30.46)	(38.63)	(33.79)	(51.96)	(0.082)	(26.47)	(28.15)	(30.57)	(46.74)	(0.136)
	owners	5.554	7.555	11.54	13.51	0.213*	5.200	5.978	10.77	12.20	0.092	3.979	5.273	9.367	10.00	0.032
		(6.092)	(6.709)	(8.151)	(9.229)	(0.118)	(5.863)	(6.751)	(7.999)	(9.121)	(0.059)	(5.468)	(9.292)	(8.783)	(13.04)	(0.193)
	remuneration	46.86	63.93	56.75	69.32	-0.069	46.02	50.50	54.66	57.74	-0.066	33.79	32.21	42.95	33.16	-0.082
		(44.75)	(44.54)	(39.17)	(37.44)	(0.179)	(45.17)	(51.98)	(39.82)	(39.33)	(0.085)	(42.45)	(43.71)	(40.81)	(41.56)	(0.097)
	investment	2716.4	2102.6	1110.7	2492.2	0.345**	2716.5	2580.0	1361.7	5356.3	0.644***	1141.0	461.6	743.7	346.8	0.061
		(7038.2)	(4099.8)	(3038.9)	(5493.7)	(0.175)	(7070.4)	(13394.5)	(3440.6)	(26275.8)	(0.221)	(4055.1)	(1741.1)	(2490.9)	(937.5)	(0.066)
Real Estate	workers	6.077	6.808	7.827	9.161	0.116	5.656	4.495	7.369	8.355	0.198	5.847	6.204	6.044	6.298	0.119
		(14.03)	(8.270)	(8.737)	(12.08)	(0.190)	(13.96)	(6.875)	(8.978)	(8.715)	(0.132)	(19.07)	(14.68)	(11.21)	(10.28)	(0.242)
	owners	3.250	3.894	5.361	5.818	0.034	3.072	3.204	4.996	5.696	0.062	2.730	4.542	4.170	4.061	-0.068
		(7.407)	(4.238)	(6.142)	(5.296)	(0.060)	(8.237)	(5.154)	(6.195)	(5.896)	(0.040)	(12.65)	(10.91)	(7.574)	(5.772)	(0.132)
	remuneration	16.00	23.23	19.63	18.75	-0.244	15.75	15.70	18.93	18.23	-0.122	12.20	11.01	13.28	8.351	-0.262
		(21.84)	(31.82)	(30.23)	(19.44)	(0.338)	(21.59)	(19.76)	(30.33)	(20.50)	(0.161)	(22.74)	(24.20)	(28.33)	(14.57)	(0.251)
	investment	145.3	580.4	226.1	120.6	-0.435	137.8	135.6	209.2	157.2	-0.039	53.95	159.7	135.1	11.12	-0.170
		(631.4)	(2254.9)	(1663.8)	(418.8)	(0.299)	(578.4)	(759.6)	(1499.1)	(959.3)	(0.111)	(441.8)	(610.3)	(1416.9)	(68.64)	(0.111)
Taxes percapita (thousands pesos)		778.0	1122.1	1199.7	1859.9	0.114	725.2	702.8	1115.4	1089.8	0.141	594.4	1010.0	1002.0	1344.5	-0.198*
		(919.4)	(1345.8)	(1399.9)	(3881.8)	(0.261)	(858.0)	(818.0)	(1338.5)	(1508.7)	(0.161)	(907.3)	(950.9)	(1407.1)	(1231.9)	(0.119)
Number municipalities		637	40				874	404				602	48			

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.8 (*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)
Manufactures	workers	175.9	188.4	253.0	244.9	-0.021	186.6	139.9	265.3	195.4	-0.051	261.8	258.7	352.2	329.9	-0.049
		(315.2)	(332.7)	(392.2)	(307.1)	(0.051)	(320.9)	(219.8)	(396.8)	(250.3)	(0.047)	(400.7)	(475.9)	(498.2)	(569.7)	(0.093)
	owners	36.38	43.60	72.47	98.21	0.117*	36.54	38.34	66.98	75.51	0.035	34.35	33.32	58.45	65.46	0.035
		(91.79)	(55.43)	(157.8)	(156.1)	(0.062)	(84.44)	(62.87)	(111.5)	(96.64)	(0.034)	(34.83)	(28.61)	(50.62)	(48.91)	(0.023)
	remuneration	38.97	38.98	51.43	44.29	-0.130**	40.63	44.33	53.55	50.50	-0.160***	48.94	60.14	63.22	70.71	-0.091
		(41.63)	(33.32)	(50.14)	(29.89)	(0.057)	(41.11)	(52.30)	(51.82)	(48.74)	(0.062)	(41.44)	(57.37)	(52.28)	(50.28)	(0.112)
	investment	11586.5	7303.7	25471.6	9213.8	-0.296	12123.2	15571.3	28148.1	4555.9	-0.689*	20003.5	110834.3	52784.9	74038.5	-1.775
		(52409.7)	(45095.1)	(96891.3)	(52876.4)	(0.250)	(53076.0)	(69461.0)	(99219.2)	(48413.7)	(0.353)	(63142.3)	(636675.5)	(136668.5)	(202633.3)	(1.390)
Retail trade	workers	187.3	207.2	307.4	347.1	0.211**	188.0	198.9	305.1	341.8	0.155*	226.2	220.0	341.8	370.1	0.199**
		(161.4)	(154.9)	(179.2)	(188.7)	(0.085)	(154.6)	(162.2)	(173.6)	(189.4)	(0.084)	(164.2)	(159.9)	(177.0)	(165.7)	(0.081)
	owners	134.7	154.6	229.0	267.6	0.226***	134.2	150.5	223.6	258.6	0.133*	154.7	150.6	237.0	253.3	0.134*
		(111.6)	(110.0)	(126.6)	(142.4)	(0.078)	(107.0)	(119.5)	(121.1)	(139.5)	(0.076)	(109.5)	(106.7)	(116.2)	(111.2)	(0.070)
	remuneration	31.15	30.29	36.14	35.56	0.069	33.50	33.89	37.06	36.90	-0.032	38.59	36.39	40.57	41.75	0.134
		(23.77)	(19.12)	(15.76)	(13.21)	(0.071)	(24.75)	(25.07)	(14.51)	(11.93)	(0.101)	(23.63)	(20.16)	(13.62)	(9.328)	(0.108)
	investment	4548.7	3207.5	3849.0	3878.5	0.190**	4862.8	4799.0	4267.1	5784.9	0.201	8080.8	14886.6	6555.3	17426.7	0.517*
		(8772.8)	(5745.7)	(7618.0)	(8933.9)	(0.095)	(9001.3)	(9053.2)	(7924.3)	(10964.7)	(0.140)	(11948.3)	(27554.4)	(9614.3)	(28537.2)	(0.299)
Wholesale business	workers	24.67	24.01	34.75	37.63	0.165	25.95	30.89	35.66	52.36	0.373**	35.08	39.95	44.17	61.39	0.402***
		(31.52)	(32.13)	(35.02)	(36.67)	(0.102)	(31.42)	(48.65)	(33.64)	(68.22)	(0.170)	(35.50)	(41.41)	(34.86)	(47.20)	(0.145)
	owners	5.138	6.323	10.94	13.04	0.149*	5.284	6.384	10.79	12.90	0.094	5.931	5.721	11.38	11.99	0.083
		(5.972)	(6.844)	(8.371)	(10.15)	(0.083)	(5.767)	(6.861)	(7.413)	(8.240)	(0.089)	(5.438)	(4.742)	(6.900)	(5.389)	(0.067)
	remuneration	44.03	48.17	52.84	53.59	-0.085	47.86	53.40	57.37	61.07	-0.124	57.30	62.36	63.89	76.92	0.169
		(45.00)	(58.62)	(40.38)	(37.60)	(0.135)	(44.43)	(46.67)	(39.84)	(32.67)	(0.116)	(44.86)	(46.29)	(34.66)	(40.05)	(0.125)
	investment	2702.6	1935.6	1176.8	4436.0	0.633*	2910.3	2448.2	1334.6	2556.2	0.259	5164.9	8605.7	1704.6	12836.4	1.192*
		(7062.6)	(9308.7)	(3314.4)	(30791.3)	(0.329)	(7197.7)	(7776.2)	(3496.6)	(6349.1)	(0.175)	(9476.9)	(27617.9)	(3903.8)	(35071.3)	(0.667)
Real Estate	workers	4.260	4.264	7.422	9.667	0.220***	5.968	3.948	7.392	7.947	0.208	8.257	6.262	8.845	10.90	0.323
		(8.873)	(5.600)	(8.668)	(10.68)	(0.080)	(13.41)	(4.597)	(8.334)	(7.368)	(0.168)	(16.47)	(5.850)	(8.308)	(9.947)	(0.260)
	owners	3.025	3.249	5.057	6.785	0.155***	2.966	2.754	5.005	5.533	0.056	3.720	3.790	5.945	6.444	0.021
		(8.199)	(4.419)	(6.085)	(7.340)	(0.059)	(4.564)	(3.399)	(5.658)	(5.165)	(0.048)	(5.345)	(3.500)	(5.793)	(4.575)	(0.050)
	remuneration	13.74	13.60	18.58	16.12	-0.106	16.63	15.45	19.85	18.90	-0.112	22.21	24.54	24.42	28.63	-0.079
		(17.74)	(18.79)	(30.04)	(23.72)	(0.166)	(22.36)	(18.52)	(32.07)	(16.99)	(0.200)	(24.78)	(21.60)	(30.21)	(21.10)	(0.258)
	investment	140.7	27.49	204.6	71.08	-0.012	130.3	223.8	177.0	322.6	0.041	179.6	427.2	311.7	299.2	-0.217
		(573.3)	(77.23)	(1448.8)	(310.1)	(0.098)	(553.6)	(1080.0)	(1358.4)	(1697.6)	(0.178)	(650.9)	(1111.5)	(1791.6)	(2119.1)	(0.225)
Taxes percapita (thousands pesos)		730.5	788.3	1026.3	1024.0	-0.079	665.3	607.6	1097.9	983.7	-0.100	831.9	757.9	1427.1	1514.3	1.419*
		(900.0)	(792.4)	(1211.6)	(1091.6)	(0.143)	(716.9)	(871.1)	(1324.7)	(1366.0)	(0.188)	(768.0)	(1303.0)	(1416.7)	(3199.1)	(0.733)
Number municipalities		767	141				513	122				840	135			

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.9
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) Lived in another state 5 years ago	(6) Lived in U.S. 5 years ago	(7) Total population	(8) Aged 6-14 out of school	(9) Aged 15+ without primary	(10) Population aged 6-14	(11) Population aged 15-17	(12) Schools (primary to highschool) per pupil	(13) Teachers (primary to highschool) per pupil	(14) Total energy consumption	(15) Energy consumption per capita	(16) Unemployment rate 2000-2010	(17) Number unemployed 2000 vs 2010
Panel A: Cartels without drug related homicides																	
ATT: time*treated	-0.315	-0.289	-0.229	-0.558**	0.418	-0.644	-0.149***	0.059	0.028	0.035*	0.021	-0.043	-0.090	0.057	0.100	-0.438	-1.427
	(0.223)	(0.222)	(0.220)	(0.249)	(0.326)	(0.661)	(0.053)	(0.116)	(0.035)	(0.019)	(0.034)	(0.065)	(0.114)	(0.189)	(0.090)	(0.879)	(1.881)
Observations	398	398	398	398	398	398	398	398	398	398	398	390	362	250	250	396	396
R-squared	0.140	0.126	0.104	0.159	0.353	0.377	0.212	0.298	0.879	0.142	0.236	0.145	0.209	0.052	0.043	0.513	0.367
	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(28)	(29)	(30)	(31)	(32)	(33)	(3)	(4)
Panel B: Drug related homicides																	
Areas with at least one drug related homicide																	
ATT: time*treated	0.075	0.084	0.107	0.040	0.395*	0.594	0.082	0.070	0.030*	0.100***	0.079**	-0.033	0.009	-0.255	0.029	-0.023	28.969
	(0.076)	(0.081)	(0.095)	(0.125)	(0.226)	(0.857)	(0.057)	(0.058)	(0.018)	(0.021)	(0.032)	(0.029)	(0.045)	(0.342)	(0.054)	(0.334)	(53.418)
Observations	1,592	1,592	1,592	1,588	1,592	1,592	1,592	1,592	1,592	1,592	1,592	1,508	1,350	1,004	1,004	1,583	1,583
R-squared	0.075	0.051	0.034	0.173	0.255	0.464	0.133	0.341	0.904	0.029	0.190	0.142	0.224	0.008	0.010	0.610	0.408
	(35)	(36)	(37)	0.174	(39)	(40)	(41)	(42)	(43)	(45)	(46)	(47)	(48)	(49)	(50)	(5)	(6)
Top 10 decile of drug related homicides				0.175													
ATT: time*treated	0.217*	0.216	0.200	0.176	0.024	-0.026	-0.008	-0.153	0.033	-0.023	-0.016	0.111	0.204	0.954	1.919	0.420	0.969
	(0.129)	(0.141)	(0.168)	0.177	(0.179)	(0.520)	(0.033)	(0.271)	(0.036)	(0.016)	(0.015)	(0.083)	(0.172)	(0.654)	(1.199)	(1.047)	(1.457)
Observations	230	230	230	0.178	230	230	230	230	230	230	230	222	188	124	124	230	230
R-squared	0.166	0.156	0.129	0.179	0.264	0.447	0.096	0.171	0.867	0.211	0.058	0.035	0.148	0.073	0.230	0.674	0.389
Third tertile of drug related homicides																	
ATT: time*treated	0.008	0.021	0.057	0.019	0.066	0.927	0.032	0.068	0.018	0.044***	0.046**	-0.007	0.137**	-0.683	0.075	0.101	1.502
	(0.074)	-0.078	(0.091)	(0.159)	(0.195)	(0.927)	(0.050)	(0.076)	(0.023)	(0.013)	(0.023)	(0.036)	(0.054)	(0.745)	(0.177)	(0.597)	(2.200)
Observations	792	792	792	792	792	792	792	792	792	792	792	752	650	444	444	790	790
R-squared	0.132	0.105	0.070	0.170	0.305	0.405	0.103	0.301	0.863	0.143	0.191	0.226	0.339	0.014	0.067	0.598	0.350
Second tertile of drug related homicides																	
ATT: time*treated																	
	-0.145	-0.138	-0.106	-0.219	0.943	0.351	0.243**	0.105	0.074***	0.166***	0.126**	-0.065**	0.047	1.887	0.282	0.240	9.166*
Observations	(0.125)	(0.129)	(0.133)	(0.226)	(0.848)	(1.873)	(0.108)	(0.094)	(0.024)	(0.039)	(0.056)	(0.029)	(0.059)	(1.326)	(0.177)	(0.515)	(4.930)
R-squared	714	714	714	712	714	714	714	714	714	714	714	678	622	474	474	712	712
	0.160	0.123	0.062	0.112	0.092	0.364	0.099	0.380	0.913	0.054	0.144	0.267	0.308	0.036	0.044	0.681	0.198
First tertile of drug related homicides																	
ATT: time*treated	0.183	0.213	0.269**	-0.057	0.878*	0.630	0.280*	0.088	0.070***	0.153***	0.163**	-0.053	-0.074	-0.606	-0.014	-0.460	9.389*
	(0.126)	(0.130)	(0.129)	(0.290)	(0.454)	(1.225)	(0.143)	(0.098)	(0.025)	(0.042)	(0.074)	(0.042)	(0.075)	(0.701)	(0.312)	(0.928)	(4.813)
Observations	464	464	464	464	464	464	464	464	464	464	464	442	436	372	372	458	458
R-squared	0.073	0.051	0.036	0.137	0.227	0.546	0.111	0.520	0.941	0.058	0.252	0.393	0.367	0.037	0.060	0.744	0.252

*Controls used in specifications (1) to (15): poor-relief subsidies per capita, growth in annual remittances and state's unemployment rate, all lagged for two years. Controls used in specifications (16) and (17): poor-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*

Table A.10
Placebo impact on welfare statistics, splitting control group into control and placebo treatment (2000-2005 vs. 2006-2010)

	(1) Food poverty	(2) Capability poverty	(3) Patrimony poverty	(4) Gini	(5) Lived in another state 5 years ago	(6) Lived in U.S. 5 years ago	(7) Total population	(8) Aged 6-14 out of school	(9) Aged 15+ without primary	(10) Population aged 6-14	(11) Population aged 15-17	(12) Schools (primary to highschool) per pupil	(13) Teachers (primary to highschool) per pupil	(14) Total energy consumption	(15) Energy consumption per capita	(16) Unemployment rate 2000-2010	(17) Number unemployed 2000 vs 2010
Panel A: Cartels without drug related homicides																	
ATT: time*treated	-0.134*	-0.127	-0.111	-0.047	-0.135**	0.188	-0.028	-0.020	-0.039	-0.008	-0.005	0.089	0.046	0.056	0.130**	1.017	-0.454
	(0.081)	(0.082)	(0.086)	(0.105)	(0.064)	(0.462)	(0.026)	(0.103)	(0.029)	(0.012)	(0.015)	(0.079)	(0.057)	(0.100)	(0.058)	(0.830)	(0.784)
Observations	1,098	1,098	1,098	1,098	1,098	1,098	1,098	1,098	1,098	1,098	1,098	1,084	892	524	524	1,091	1,091
R-squared	0.040	0.058	0.132	0.059	0.263	0.195	0.090	0.163	0.827	0.052	0.224	0.145	0.121	0.029	0.024	0.391	0.199
Panel B: Drug related homicides																	
Areas with at least one drug related l	-0.078	-0.066	-0.048	-0.077	0.077	-0.095	-0.012	0.085	-0.021	-0.010	-0.008	-0.072	0.026	-0.287*	-1.028**	0.063	-0.100
ATT: time*treated	(0.059)	(0.060)	(0.064)	(0.084)	(0.068)	(0.301)	(0.019)	(0.059)	(0.021)	(0.008)	(0.012)	(0.052)	(0.050)	(0.158)	(0.512)	(0.523)	(0.587)
	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,132	932	552	552	1,141	1,141
Observations	0.025	0.043	0.114	0.058	0.265	0.217	0.066	0.210	0.829	0.075	0.193	0.151	0.133	0.035	0.033	0.391	0.175
R-squared																	
Top 10 decile of drug related homicides																	
ATT: time*treated	-0.058	-0.044	-0.024	-0.083	0.174	-0.026	0.003	0.046	-0.009	0.002	0.039	-0.037	-0.080	-0.754	-0.728	1.579	0.339
	(0.106)	(0.105)	(0.102)	(0.141)	(0.119)	(0.457)	(0.050)	(0.115)	(0.062)	(0.014)	(0.031)	(0.083)	(0.080)	(0.549)	(0.621)	(1.622)	(1.057)
Observations	458	458	458	458	458	458	458	458	458	458	458	458	370	210	210	456	456
R-squared	0.026	0.058	0.189	0.180	0.294	0.227	0.050	0.263	0.737	0.068	0.191	0.190	0.167	0.054	0.053	0.355	0.233
Third tertile of drug related homicides																	
ATT: time*treated	-0.141**	-0.127*	-0.090	-0.146	0.164	0.057	-0.025	0.120	0.007	-0.003	-0.002	-0.095	-0.015	-0.260	-0.688	-0.341	-0.200
	(0.069)	(0.069)	(0.073)	(0.121)	(0.112)	(0.415)	(0.026)	(0.074)	(0.027)	(0.010)	(0.018)	(0.059)	(0.060)	(0.161)	(0.431)	(0.664)	(0.833)
Observations	642	642	642	642	642	642	642	642	642	642	642	638	528	306	306	637	637
R-squared	0.042	0.064	0.152	0.054	0.256	0.223	0.057	0.227	0.834	0.047	0.241	0.143	0.116	0.045	0.047	0.435	0.188
Second tertile of drug related homicides																	
ATT: time*treated	-0.106	-0.092	-0.092	0.015	0.084	-0.327	-0.015	0.033	-0.010	-0.025*	-0.019	-0.039	0.044	-0.630	-2.110	-0.335	-0.482
	(0.086)	(0.087)	(0.093)	(0.129)	(0.117)	(0.291)	(0.023)	(0.089)	(0.027)	(0.015)	(0.016)	(0.063)	(0.086)	(0.438)	(1.747)	(0.733)	(0.628)
Observations	570	570	570	570	570	570	570	570	570	570	570	562	440	248	248	566	566
R-squared	0.057	0.079	0.141	0.054	0.212	0.248	0.102	0.214	0.862	0.074	0.168	0.136	0.096	0.056	0.032	0.376	0.180
First tertile of drug related homicides																	
ATT: time*treated	0.010	0.012	0.027	-0.009	0.039	-0.085	-0.001	0.084	-0.058**	-0.018**	-0.020	-0.053	0.031	-0.139	-0.854	-0.028	0.196
	(0.086)	(0.090)	(0.103)	(0.104)	(0.092)	(0.451)	(0.026)	(0.073)	(0.028)	(0.009)	(0.016)	(0.059)	(0.059)	(0.150)	(0.705)	(0.612)	(0.882)
Observations	630	630	630	630	630	630	630	630	630	630	630	622	522	316	316	626	626
R-squared	0.025	0.038	0.099	0.086	0.341	0.210	0.096	0.230	0.847	0.166	0.197	0.146	0.214	0.032	0.087	0.452	0.197

Controls used in specifications (1) to (15): Poor-relief subsidies per capita, growth in annual remittances and state's unemployment rate, all lagged for two years. Controls used for specifications (16) and (17): Poor-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*

Table A.11
Placebo impact on industries, splitting control group into control and placebo treatment (2000-2005 vs. 2006-2008)

	Manufactures				Retail trade				Wholesale business				Real Estate				Tax revenue
	(1) workers	(2) owners	(3) remuneration	(4) investment	(5) workers	(6) owners	(7) remuneration	(8) investment	(9) workers	(10) owners	(11) remuneration	(12) investment	(13) workers	(14) owners	(15) remuneration	(16) investment	(17)
Panel A: Cartels without drug related homicides																	
ATT: time*treated	-0.041	0.005	0.048	0.231	-0.059	-0.090	0.258**	0.266	0.138	-0.032	-0.168	-0.129	0.198*	0.129	0.291	0.337	0.379
	(0.101)	(0.052)	(0.100)	(0.206)	(0.090)	(0.095)	(0.107)	(0.335)	(0.098)	(0.136)	(0.125)	(0.180)	(0.116)	(0.104)	(0.377)	(0.445)	(0.283)
Observations	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158	1,158
R-squared	0.040	0.047	0.039	0.056	0.330	0.349	0.047	0.016	0.063	0.296	0.043	0.025	0.014	0.023	0.028	0.014	0.133
Panel B: Drug related homicides																	
Areas with at least one drug related l	0.079	0.059	-0.001	-0.055	0.003	0.008	-0.021	0.031	0.037	-0.025	0.037	-0.006	0.086*	0.068*	0.021	-0.100	-0.089*
ATT: time*treated	(0.106)	(0.121)	(0.043)	(0.088)	(0.076)	(0.088)	(0.068)	(0.049)	(0.064)	(0.080)	(0.059)	(0.071)	(0.047)	(0.036)	(0.048)	(0.104)	(0.048)
	1,826	1,826	1,826	1,826	1,826	1,826	1,826	1,826	1,826	1,826	1,826	1,826	1,826	1,826	1,826	1,826	1,826
Observations	0.030	0.041	0.015	0.009	0.230	0.268	0.023	0.074	0.008	0.129	0.015	0.020	0.030	0.023	0.003	0.004	0.047
R-squared																	
Top 10 decile of drug related homicides																	
ATT: time*treated	-0.019	-0.028	-0.012	0.124	-0.072	-0.059	0.008	-0.098	0.064	0.228	0.108	-0.506	0.070	0.070	-0.013	-0.448	-0.066
	(0.223)	(0.230)	(0.087)	(0.274)	(0.175)	(0.190)	(0.126)	(0.124)	(0.115)	(0.225)	(0.187)	(0.484)	(0.072)	(0.061)	(0.143)	(0.787)	(0.175)
Observations	834	834	834	834	834	834	834	834	834	834	834	834	834	834	834	834	834
R-squared	0.034	0.044	0.065	0.063	0.235	0.259	0.084	0.160	0.024	0.143	0.019	0.100	0.020	0.038	0.009	0.070	0.102
Third tertile of drug related homicides																	
ATT: time*treated	-0.128	-0.175	-0.096	0.072	0.018	0.043	-0.042	0.064	0.132	-0.118	0.271**	0.067	0.101	0.052	0.080	-0.023	-0.151**
	(0.113)	(0.114)	(0.096)	(0.116)	(0.115)	(0.137)	(0.079)	(0.069)	(0.155)	(0.124)	(0.128)	(0.059)	(0.084)	(0.034)	(0.075)	(0.041)	(0.064)
Observations	1,346	1,346	1,346	1,346	1,346	1,346	1,346	1,346	1,346	1,346	1,346	1,346	1,346	1,346	1,346	1,346	1,346
R-squared	0.025	0.036	0.031	0.009	0.231	0.272	0.043	0.052	0.011	0.116	0.021	0.013	0.033	0.025	0.011	0.010	0.044
Second tertile of drug related homicides																	
ATT: time*treated	0.298	0.284	0.017	-0.014	0.099	0.116	-0.056	-0.028	-0.045	-0.070	-0.003	-0.033	0.084	0.038	-0.011	-0.059	-0.001
	(0.238)	(0.277)	(0.041)	(0.129)	(0.130)	(0.151)	(0.152)	(0.064)	(0.056)	(0.103)	(0.050)	(0.060)	(0.069)	(0.050)	(0.046)	(0.055)	(0.090)
Observations	1,366	1,366	1,366	1,366	1,366	1,366	1,366	1,366	1,366	1,366	1,366	1,366	1,366	1,366	1,366	1,366	1,366
R-squared	0.051	0.057	0.045	0.005	0.254	0.291	0.025	0.142	0.019	0.115	0.048	0.016	0.041	0.021	0.008	0.007	0.051
First tertile of drug related homicides																	
ATT: time*treated	0.071	0.052	0.091	-0.457	-0.075	-0.106	0.049	0.103*	0.007	-0.023	-0.197**	0.051	0.061	0.104	0.003	-0.063	-0.103*
	(0.149)	(0.171)	(0.080)	(0.316)	(0.116)	(0.126)	(0.070)	(0.061)	(0.089)	(0.108)	(0.086)	(0.074)	(0.071)	(0.071)	(0.084)	(0.103)	(0.062)
Observations	1,328	1,328	1,328	1,328	1,328	1,328	1,328	1,328	1,328	1,328	1,328	1,328	1,328	1,328	1,328	1,328	1,328
R-squared	0.028	0.041	0.036	0.044	0.213	0.254	0.024	0.056	0.028	0.204	0.077	0.079	0.026	0.027	0.006	0.001	0.068

*Controls used in all specifications: Poor-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.12
Placebo test using 1990-2000 as pre-treatment and 2001-2005 as post-treatment

	Treated vs. controls						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Food poverty	Capability poverty	Patrimony poverty	Gini	Total population	Aged 6-14 out of school	Aged 15+ without primary
Panel A: Cartels without drug related homicides							
ATT: time*treated	0.209	0.214	0.223	0.005	0.006	-0.044	-0.032
	(0.134)	(0.137)	(0.147)	(0.109)	(0.022)	(0.081)	(0.029)
Observations	881	881	881	881	881	881	879
R-squared	0.164	0.134	0.071	0.389	0.048	0.636	0.896
Panel B: Drug related homicides							
Areas with at least one drug related homicide	0.069	0.060	0.020	0.012	0.043	0.022	-0.009
ATT: time*treated	(0.063)	(0.067)	(0.083)	(0.086)	(0.039)	(0.047)	(0.017)
	2,301	2,301	2,301	2,301	2,301	2,301	2,301
Observations	0.284	0.229	0.069	0.411	0.038	0.718	0.902
R-squared							
Top 10 decile of drug related homicides							
ATT: time*treated	-0.029	-0.035	-0.023	0.211	-0.025*	-0.077	-0.075*
	(0.153)	(0.152)	(0.144)	(0.204)	(0.014)	(0.135)	(0.042)
Observations	698	698	698	698	698	698	698
R-squared	0.208	0.155	0.030	0.659	0.105	0.436	0.836
Third tertile of drug related homicides							
ATT: time*treated	-0.038	-0.048	-0.073	-0.083	0.010	-0.005	0.022
	(0.066)	(0.072)	(0.090)	(0.090)	(0.038)	(0.056)	(0.022)
Observations	1,354	1,354	1,354	1,354	1,354	1,354	1,352
R-squared	0.256	0.197	0.044	0.433	0.010	0.680	0.863
Second tertile of drug related homicides							
ATT: time*treated	-0.003	-0.013	-0.055	-0.038	0.039	-0.007	-0.005
	(0.072)	(0.076)	(0.091)	(0.095)	(0.030)	(0.046)	(0.019)
Observations	1,090	1,090	1,090	1,090	1,090	1,090	1,088
R-squared	0.237	0.191	0.058	0.318	0.021	0.776	0.925
First tertile of drug related homicides							
ATT: time*treated	0.153	0.148	0.117	-0.142	0.034	0.095	0.019
	(0.127)	(0.135)	(0.149)	(0.114)	(0.039)	(0.072)	(0.023)
Observations	705	705	705	705	705	705	705
R-squared	0.349	0.303	0.159	0.357	0.112	0.795	0.941

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

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