Violence and Growth in the Mexican Drug War *

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Abstract

This paper documents how violence resulting from the Mexican Drug War hindered local economic growth by affecting production. Focusing on exports allows us to control for demand factors, and hence measure effects on local supply. We compare exports of the same product to the same country of destination, but produced in municipalities with different exposure to violence after a close electoral outcome. Municipalities exogenously exposed to the Drug War experienced a 45% decrease in 3-year export growth. The effects concentrate on larger exporters, along with exports of more complex, capital-intensive, and skill-intensive products.

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I Introduction

The path for developing countries to achieve higher long-term growth and living standards is linked to their capacity to industrialize and compete in international markets. For instance, recent papers have shown that exports can be an instrument to close the productivity gap between low- and high-income countries.[1] Researchers and policymakers highlight several factors that could explain the lack of competitiveness of developing economies. Among others, crime and violence are perceived as important obstacles.[2] Accordingly, governments spend a significant amount of resources in policies aimed at attenuating violence and crime.[3] In this paper, we show how an anti-crime policy that relies on the use of force can have the reverse effect on violence and hinder economic growth.

For several reasons, the Mexican Drug War is an appealing setting for this kind of study. First, the anti-drug policy, launched in 2006 by president Felipe Calderón, is associated with a dramatic increase in homicides. From 2006 to 2011, the homicide rate almost tripled, increasing from 7.9 per 100,000 people in 2007 to 22.9 in 2011. Second, data from surveys indicate that firms were negatively affected. For instance, according to the World Bank Enterprise Survey, between 2006 and 2009 the percentage of establishments paying for security increased from 41.5% to 59%, and the percentage of establishments experiencing losses as a result of theft, robbery, or vandalism doubled from 15% to 30%. Third, Mexico is an important developing economy. It is the 15th largest economy in the world with a nominal GDP of $1.2 trillion in 2018 according to the IMF. It has a relevant trade activity, exporting around $400 billion every year.[4] Lessons from Mexico are pertinent to emerging economies in similar development stages.

Relating the surge in violence that ensued from the anti-drug policy to economic activity has identification challenges. The deployment of law enforcement tends to be

[1] Exporting activity affects aggregate (Melitz (2003), Bernard et al. (2003)) and firm (Atkin et al. (2017), Garcia-Marin and Voigtländer (2019)) productivity, technology adoption (Bustos (2011), Aw et al. (2011)), among others. The importance of participation in international markets is also reflected in large amounts invested in policies that promote market access. See, for instance, Lederman et al. (2010).

[2] Violence is highly regarded as an obstacle for development. See, for instance, the Sustainable Development Goal 16 from the United Nations Development Program states: *Some regions enjoy sustained peace, security and prosperity, while others fall into seemingly endless cycles of conflict and violence. This is by no means inevitable and must be addressed. High levels of armed violence and insecurity have a destructive impact on a country's development, affecting economic growth and often resulting in long-standing grievances that can last for generations.*

[3] For instance, in 2015, Brazil spent 2.2% of the GDP in domestic security and the justice system, while for Mexico this figure represented 1% of the GDP at the federal level. According to the OECD, in the same year Colombia's governmental expenditure in public order and safety was 2.14%, a value similar to the amount that Chile spent, 2.09%. The OECD average governmental expenditure in public order and safety was 1.7%.

[4] According to the World Bank, the ratio exports/GDP in Mexico was 30.4% in 2005 which is significant compared to other economies in the region. In the same year, this ratio was 15.2% in Brazil, 23.2% in Argentina, 16.8% in Colombia, 40.2% in Chile, and 26.8% in Peru.

correlated with trends in violence and with other economic conditions. Moreover, the spike in violence can affect the economy through both the capacity of firms to supply markets and a reduction in demand. To solve these identification challenges we use three tools. First, one party (PAN: *Partido de Acción Nacional*) led the war on drugs. As proposed by Dell (2015), who documents a large increase in homicides caused by the drug war, this fact allows us to use close municipal elections as a source of exogenous variation in the intensity of the fight against drug cartels. Second, we use exports to diminish concerns that the effects are driven by local demand. Third, we control for aggregate foreign demand shocks by using product-destination fixed effects. In a nutshell our identification strategy is summarized by the following experiment: we compare firms producing the same product and selling it to the same country of destination, but exposed to different and exogenous levels of violence because of a close electoral outcome in their municipality. Hence, this paper estimates an effect of violence on local supply that is unrelated to aggregate external demand factors.[5]

Using public data on municipality exports in Mexico we first document aggregate effects. We find that export growth in municipalities electing a PAN mayor in a close election experience an average decrease of 45% over the mayoral term, 3 years, in comparison to municipalities that elect a non-PAN mayor.[6] This effect is persistent and does not vanish in the next mayoral term: the 6-year growth rate in exports decreases by 50% in municipalities that elect a PAN mayor.[7] We confirm these results using private firm-level data on exporters operating in single municipalities.[8] Firm-level export growth decreases by a yearly average of 22% as a consequence of a PAN mayor elected in a close election.

We then study the mechanisms through which violence affects economic activity. Firms could adjust through different margins depending the type of costs violence imposes on production. Firms may reduce the amounts they supply on each market (intensive margin) or may drop from such markets altogether (extensive margin) as a response to an increase in violence. Relying on firm-level data, we observe only significant effects at the intensive margin. The main implication of this finding is that violence only seems to increase marginal operating costs.[9]

The effects of violence can also be heterogeneous across product characteristics. To

[5]See Paravisini et al. (2014), who implement a similar strategy by comparing exports of the same product to the same destination to estimate the impact of bank credit shocks on trade.

[6]Because we use log of export growth, this result translates into an average annual decrease of 15% in export growth.

[7]The fact that shocks to exports can have long-lasting consequences has been explored in the literature that studies the effects of bank shocks. See Xu (2018).

[8]The micro-data does not allow us to differentiate exports coming from a particular municipality when firms have multiple plants in different municipalities within the same state. This restriction is applied to guarantee the correct assignment of exports to the municipality of origins.

[9]If increases in violence manifest in the form of marginal cost increases, we should observe effects in the intensive margin. If the effect comes from an increase in fixed costs of exporting, this would change exporting decisions at the extensive margin. See, for instance, Melitz (2003).

investigate this possibility we use different product classifications. We first use the complexity classification defined by Hausmann et al. (2014). We find that exports of more complex products – the ones that require more knowledge and complementary capacities to be produced – experience larger negative effects. Export growth of the more complex products drops by 65% over 3 years. The effect is not significant for less complex products. The fact that the effect is concentrated in knowledge- and coordination-intensive products is relevant for future local economic performance as complexity correlates with future economic growth (Hausmann et al. (2014)).

Consistently, patterns at the firm-level suggest that violence has a larger effect on products demanding higher specialization. We find larger negative effects for larger firms. In addition, we use product-level measures of capital and skill intensity (Shirotori et al. (2010)), and external capital dependence (Rajan and Zingales (1998)) to separate across sectors where firms operate. We show that the negative effects of violence concentrate on capital intensive, skill intensive, and external capital dependent sectors. Finally, we also find suggestive evidence of a decrease in foreign direct investment on municipalities with narrowly elected PAN mayors.

One possible criticism to our identification strategy is that negative estimates may be driven by PAN mayors themselves, and not by the associated violence. This is improbable. In the absence of the Drug War, municipalities governed by PAN are likely to receive an economic benefit for several reasons. PAN is more market-friendly than its peers. The federal administration is likely to benefit PAN municipalities, which are politically aligned.[10] Moreover, potential spillovers to the control group attenuate our estimates. All these potential biases lead to underestimation of the negative economic effects of violence. We can argue that our results offer a lower bound of the true effect.

Nevertheless, we formally investigate this conjecture by performing a series of placebo tests. At the onset of the war most of the violence concentrated in northern Mexico. Accordingly, we split the sample into two parts: north and south.[11] As *ex-ante* violence is an important determinant of the deployment of law enforcement, a PAN municipality in the South was less likely to be affected by the war, but still experienced the results of policies that are specific to this political party. We find that the effect is only present in the northern regions. In the southern regions a close PAN win is associated with an increase in export growth. This finding suggests that increases in violence are responsible for the effect. It also supports the claim that our estimates are a lower bound of the negative effects of violence.

Similarly, we use data collected by Coscia and Rios (2012) to define municipalities with *ex-ante* drug cartel activity. The drug war explicitly targeted these illegal organizations,

[10] Azulai (2017) shows, in the context of Brazil, that partisan connections distort the allocation of public goods towards localities with connected authorities.

[11] Northern Mexico is defined as municipalities located north of the median latitude of the country

and, therefore, was implemented mostly in places with pre-existing cartel activity.[12] The results are similar to the North vs South split: municipalities with pre-existing cartel presence experience a significant decrease in export growth after a close PAN win. In the absence of pre-existing cartel activity, close PAN wins are correlated with an increase in export growth. Finally, we run placebo tests using previous local elections. We find that, in the absence of the war on drugs, the effect of a PAN win is not statistically significant.[13]

Our paper contributes to a growing literature that documents the negative economic consequences of violence. First, it addresses identification challenges. A challenge to the existing literature is the endogeneity problem. Crime is correlated with local non-observable economic variables that affect firms' prospects. There is also a reverse causality concern, as researchers have shown that crime reacts to local economic shocks.[14] Our study overcomes these issues by exploiting exogenous variation in the local exposure to violence controlling for demand factors. Second, our paper addresses a different question than the rest of the literature on the economics of conflict. While a broader segment of the literature has studied the economic consequences of conflicts or terrorist activity, fewer papers study the economic consequences of violence triggered by "law-and-order" government interventions. Moreover, little evidence exists on the specific mechanisms through which violence may affect economic outcomes, or what industries are more vulnerable. Our paper helps to fill these gaps in the literature, documenting various ways in which violence can erode local growth prospects.

Relevant papers in this literature include Ksoll et al. (2016), who study the effects of electoral violence on exports in Kenya. They focus their analysis on one product – flowers – and find that export volumes decrease, due in part by an increase in worker absenteeism. Pshisva and Suarez (2010) use firm-level data in Colombia to analyze the impact of kidnappings on corporate investment. They show that firm investment is negatively correlated with kidnappings that target firm owners and managers. Rozo (2018) uses firm-level data and heterogeneous provision of government security in Colombia to show that violence decreases production through a decrease in output prices. She also finds negative effects on exit. Abadie and Gardeazabal (2003) explore the unilateral truce declared by ETA in 1998 and find that stocks of firms with a significant part of their business in the Basque Country showed a positive relative performance. Besley and Mueller (2012) find a negative relationship between killings and house prices in Northern Ireland. Similarly, Frischtak and Mandel (2012) provide evidence that the pacification of favelas caused an increase in house prices in Rio de Janeiro, Brazil.[15]

[12] In an unreported regression we find violence increases only in municipalities with pre-existing cartel activity.

[13] These results are largely consistent for the municipality-level and the firm-level data.

[14] See Dell et al. (2019) and Dix-Carneiro et al. (2018).

[15] Other relevant papers in the literature on the economic effects of violence are Adhikari (2013),

In an interesting contemporaneous paper, Utar (2018) shows that an increase in violence driven by the drug war in Mexico generates a decrease in production to local markets, but not a decrease in exports - which we do find in our study. There are reasons for the discrepancy. The papers diverge importantly in their identification strategies. While controlling for firm-level unobservables, Utar (2018) instruments for differences in local violence with the interaction between cartel baseline presence, the governor's choice to join the drug war, and the estimated price of cocaine. Cartel baseline presence and the governor's choices are potentially correlated to municipal unobservable characteristics. Furthermore, given Mexico's importance in cocaine trafficking, it is possible that prices are affected by trends in the Mexican economy.[16] Our paper exploits a different source of exogeneity that is unlikely to correlate with local unobservables.[17]

We also relate to the literature that explores the effects of the Mexican Drug War. Dell (2015) finds negative effects of the war on local violence levels. Our study advances the literature and finds negative consequences of the Drug War on local exports controlling for demand factors, hence identifying a shock on the local supply capacity. We also provide further evidence on the mechanism through which these effects may operate. Violence acts as an increase in marginal costs of production, and these costs seem to concentrate on larger exporters, and on exporters in more capital (human and physical) and finance dependent industries. Finally, our suggestive evidence of negative effects of the Drug War on greenfield investments at the municipality level complements the work by Ashby and Ramos (2013), who document a negative relationship between crime and FDI at the state level in Mexico.

A conclusion resulting from our analysis is that policies that actively engage in violence against drug trafficking organizations can have important unintended negative consequences for the economy. They seem to hamper the growth of large firms focusing on complex, capital-intensive, skill-intensive and finance-dependent sectors of the economy, potentially eroding the local capacity to attract productive investments.

The paper continues as follows: Section II presents the empirical setting of the Mexican drug war and outlines our empirical strategy. Section III discusses the effects of the Mexican drug war on local levels of violence. Section IV outlines the effects of the Mexican drug war on exports at the municipality level. Section V presents results on exports at the firm level. Section VI presents results on greenfield FDI at the municipality level. Section VII concludes.

Clemens (2017), Chamarbagwala and Morán (2011), and Ihlanfeldt (2007).

[16] According to Beittel (2019) from the Congressional Research Service, most of the cocaine entering the US is trafficked through Mexico.

[17] Our papers also use different databases. We use administrative data, which covers a larger and more representative sample of exporting firms, including smaller ones. With survey data, Utar (2018) can test for effects on domestic trade and on workforce characteristics at the plant level.

II Empirical setting

II.A The Mexican Political Landscape and the Drug War

Throughout most of the twentieth century, Mexico experienced a non-democratic rule with single party domination. For 71 years, the Institutional Revolutionary Party (*Partido Revolucionario Institucional, PRI*) ruled the country. Elections existed, but they were not competitive. In the 1990s, politicians from different parties started winning local elections, and, in 2000, Mexico elected its first non-PRI president since 1929. Some analysts suggest that, during PRI rule, there was a tacit agreement between the government and the drug traffickers that allowed cartels to operate as long as they complied with some rules (O'Neil (2009)). For example, cartels could not cause major disruptions to civilian life. Importantly, violence was contained. When other parties gained power, this relationship was shaken; as cartels had to negotiate with new officials from other parties. The election of Vicente Fox (PAN) as president in 2000 triggered some institutional changes. At the time, these changes were limited because PAN was outnumbered in congress. It was only on 2 July 2006, when Felipe Calderón (PAN) was elected president, that changes intensified. Calderón governed from 1 December 2006 until 30 November 2012. Just after taking office, he declared the war on drugs, sending the army to several provinces. The policy had tragic consequences. The arrest or assassination of a kingpin can cause a violent dispute for power. Members from the same organization or from rival cartels can exploit the weakening of the leadership to try to gain the control of the organization. Once in charge, new leaders have to assert their authority, in many cases through the use of force. Cartels also retaliated against politicians, police officers, armed forces, and journalists.

Increases in violence also affected civilian life. During Calderón's administration, the number of homicides increased by 160%, from 10,452 in 2006 to 27,213 in 2011 (Figure I). Total homicides between 2006 and 2011 – as well as the absolute increase in homicides in relation to the total between 2001 and 2005 – were concentrated in the northern regions of the country, closer to the US border (Figure II). These are the regions where the main cartels smuggle drugs into the US. In reaction to the crackdown, there is evidence that cartels began to diversify their activities into other crimes, such as extortion, human trafficking, oil theft, kidnapping, and robbery.

The main strategy of the anti-drug policy was to use aggressive law enforcement that targeted cartel leaders. We gathered information for all confirmed deaths and arrests of highly ranked members of nine different Mexican cartels.[18] During the Calderón's presidency, governmental authorities carried out 13 killings and 54 arrests over 49 Mex-

[18]See "Mexico Drug War Fast Facts" (https://edition.cnn.com/2013/09/02/world/americas/mexico-drug-war-fast-facts/index.html) and "Timeline of the Mexican Drug War" (https://en.wikipedia.org/wiki/Timeline_of_the_Mexican_Drug_War).

ican municipalities. These operations were mainly organized at the federal level, but coordination with municipal police was important.

Regarding the role of local governments, there are a series of facts that make them important in the enforcement of anti-drug policy. All municipalities and states in Mexico control a police force. The municipality has the power to remove or appoint the municipal police chief. According to Article 115 of the Mexican Constitution, the municipal police has the responsibility to provide security and prevent crime. The important role of the mayor in the implementation of the Drug War can also be seen in practice. From 2006 until 2014, organized crime killed 63 former mayors or mayors in office.[19] Furthermore, municipal presidents have denounced extorsion from cartels.[20] Importantly, at the time of the drug war, mayors were elected by popular vote in competitive polls. Hence, it is reasonable to assume municipal elections are an important source of variation in the implementation of the Drug War policy at the local level. This assumption is crucial for our identification.

Regarding Mexico's political climate, Mexican parties are quite heterogeneous in their preferred social and economic policies. Among the major parties, PAN is more economically liberal and business oriented than its national opponents. As evidence of this, PAN was elected on an economic platform based on globalization and an increase in foreign investment (Krauze (2006)). Its main rival in the 2006 elections, the Party of the Democratic Revolution (*Partido de la Revolución Democrática, PRD*), is suspicious of free markets and globalization. Its other rival, the PRI, is more diverse. However, PAN was also more politically conservative. Especially during Calderón's presidency, PAN pursued heavier enforcement of anti-drug policies.

II.B Data

We collect data on local electoral results from the Electoral Tribunals of each state. Municipal elections are held every three years, and municipalities located in different states held them in different dates.[21] We focus on municipalities with elections in 2007 and 2008 because the terms of mayors elected in those years started and finished during Calderón's administration. Monthly data on homicides are from the National Institute of Geography and Statistics (*Instituto Nacional de Estadística y Geografía, INEGI*), available from 1990. Data on other types of crimes tend to be noisier due to underreporting. The issue of underreporting is severe in developing countries, where both the police and victims do not report all crimes. The most reliable source of crime data at the municipal-

[19] Webpage: https://cnnespanol.cnn.com/2018/04/13/violencia-contra-los-alcaldes-en-mexico-mas-de-100-asesinados-desde-2006/.

[20] Webpage: http://archivo.eluniversal.com.mx/nacion/165947.html.

[21] Only around 1/3 of states hold elections in a given year. Even within a given year, elections could be held in different months.

ity level is The National Public Security System (*Sistema Nacional de Seguridad Pública, SNSP*), which starts in 2011. Data on municipality characteristics are from the National System of Municipal Information (*Sistema Nacional de Información Municipal, SNIM*). Municipal data on exports are from the Atlas of Economic Complexity, which was developed at Harvard's Center for International Development.[22] We also use firm level data from the Mexican Tax Administration Service.[23]

II.C Empirical Strategy

Governments allocate their enforcement arms to regions where violence is increasing. Therefore a regression of homicides on some measurement of law enforcement provides biased results. A similar problem would occur if we regress a measure of local production on total homicides.

To address this challenge, we first identify the effect of the drug war on violence using heterogeneity in electoral outcomes. We use the fact that one party, PAN, implemented stronger actions against the Mexican drug cartels. Thus, following Dell (2015), we use close elections of a PAN mayor as a source of exogenous variation in the intensity of the war on drugs. We focus the analysis on the 2007 and 2008 elections. The administration of mayors elected in those years started at the beginning of the war, and finished around its peak, in 2011. We estimate the following specification

$$y_m = \alpha + \beta PANwin_m + \delta f(Margin_m, PANwin_m) + \epsilon_m \tag{1}$$

where m denotes municipalities, $PANwin_m$ is a dummy variable that takes value 1 when PAN wins, and $f(Margin_m, PANwin_m)$ is a polynomial on the vote margin and the dummy of PAN victory. We restrict the sample to municipalities where PAN won or lost by a margin smaller than 5%.[24] We first associate a PAN win with an increase violence. Furthermore, following anecdotal evidence that cartels diversified their activities during the war, we also test the effects on other crimes. Because it is likely that crime is underreported in smaller municipalities, we weight for population size. As suggested by Solon et al. (2015), we always report robust standard errors when weighting.

Studying the effect of the same shock on a measure of local production is not enough to identify the impact of violence on the production capacity of firms. Violence can

[22] Webpage: http://complejidad.datos.gob.mx. The original data comes from the Tax Administration Service (*Servicio de Administración Tributaria, SAT)*, Mexico's customs authority.

[23] Micro-level data is not publicly available. We accessed these data at Harvard's Center for International Development.

[24] In non-reported results we also use methods to estimate optimal bandwidths (Calonico et al. (2018)). The results both in homicides and exports are robust in magnitude and significance. However, optimal bandwidths are wider than 5%, which makes it unlikely that electoral outcomes could not be anticipated. To avoid this problem, we prefer to use the more conservative bandwidth.

affect both local demand and supply. For example, violence could potentially affect the economy by diminishing the likelihood or capacity of individuals to consume certain type of goods; it could disrupt production by increasing costs; it could could drive workers out of the affected locality. We advance the existing literature by disentangling the effects on supply and demand. As we concentrate on exports of the same product to the same destination, we can keep aggregate external demand factors fixed and estimate an effect that is driven by a drop in the ability of firms to supply foreign markets.[25] We estimate "reduced-form" regressions using exports as dependant variables. Exploring the fact that the trade data are at the municipality-product-country of destination level, we control for external aggregate demand shocks by including product-destination dummies, as in Paravisini et al. (2014). These dummies also control for regional specialization in serving foreign markets, an issue that gains importance in our setting because the sample of municipalities with close elections is small. Regressions take the form:

$$y_{mcp} = \alpha + \beta PANwin_m + \delta f(Margin_m, PANwin_m) + \alpha_{cp} + \epsilon_{mcp} \tag{2}$$

where y_{mcp} is the growth over the entire mayoral term (3 years) in exports of product p to country c in municipality m. Export growth is measured as the log of the amount exported in the third year of the new administration, divided by the amount exported in the third year of the previous administration, when elections took place.[26] α_{cp} is a set of country of destination-product dummies.

We follow a similar procedure when using firm level data. To guarantee we identify the correct municipality where exports of a given firm are produced, we restrict the data to firms that produce only from one municipality in a given Mexican state.[27] We then estimate a regression analogous to equation 2, but using firm-product-destination data. The municipality is identified by the location of the firm's plants.

II.D Descriptive Statistics

Table I reports summary statistics for municipalities that held elections in 2007 and 2008. Panel A shows socioeconomic characteristics of each Mexican municipality. In terms

[25] Importers can reduce the demand from a region that is experiencing surges in violence in anticipation of future disruptions in the supply of goods. Thus, strictly speaking, we control for foreign *aggregate* demand factors. Local demand shocks can affect firms through the internal capital markets channel, that is, firms that sell to the domestic market and are financially constrained might be less able to export. On the other hand, Almunia et al. (2018) argue that negative local demand shocks can cause an increase in exports because short-term marginal costs decrease.

[26] The impact on annual log of exports growth is $\beta/3$.

[27] When firms have multiple plants in the same state, but in different municipalities, the data do not allow us to precisely determine which plant produced the exports. Therefore, in our main firm level regressions we decided to apply this restriction. If we do not restrict the sample and use firm level employees by municipalities to pro-rata assign firm exports to a particular municipality, we find consistent results.

of population, municipalities are small. They have, on average, 35 thousand inhabitants, while the average county in the US has 100 thousand inhabitants. Furthermore, by 2006 Mexico was already a violent country in relation to the US. The American rate of 6 homicides per 100,000 pales in comparison to 11.7 in Mexico. However, compared to some Latin American countries, such as Brazil (26), Colombia (37), Venezuela (49), and El Salvador (58), Mexico's homicide rate was relatively small in 2006 (Berthet and Lopez (2011)). Although PAN was already an important party, only 27% of municipalities had an incumbent PAN mayor. Municipalities that elected PAN mayors (treatment group) are richer, less violent and have a higher share of the population aged between 16 and 29, than municipalities that did not elect PAN mayors (control group). However, once the sample is limited to municipalities where PAN won or lost by a small margin, the baseline characteristics are not statistically different in the treatment and control groups. Moreover, the loss of power caused by the restriction of the sample does not drive the results. For all significantly different variables in the unrestricted sample, we see smaller differences when we restrict to the 5% spread. The lack of difference on observables provides reassuring evidence in favor of the assumption of random assignment in close PAN victories.

Table I Panel B shows the characteristics of trade variables. Municipalities where PAN was elected tend to export more *ex-ante*. In general, the differences are not statistically significant for the unrestricted sample; for the sample that is restricted to municipalities facing close elections, all differences are statistically insignificant.In imports we observe a similar pattern.

Panel A of Figure III shows the geographical distribution of all municipalities in which elections took place in 2007 and 2008, while Panel B shows the geographical distribution of municipalities facing close elections in the same years. In the unrestricted sample we can see that, even though PAN wins are not clustered, the losses are. In the same sample PAN loses the majority of the municipal elections. However, when we restrict the sample to municipalities with close elections, the distribution of losses and wins are regionally dispersed. This is important for our identification for two reasons. First, this undermines the possibility that regional shocks, and not the treatment, drive our results. Second, it diminishes concerns of spillovers in control municipalities when restricting to the close elections sample.

III Effects on Violence

Panel A of Table II shows the estimated results of Equation 1 when the outcome variable is the annual average of homicides over the new incumbent's term. Regressions are weighted by population size as of 2005. In the baseline WLS regression, a PAN victory

causes an increase between 25 and 41 in homicides per 100,000 population.

Panel A of Figure IV replicates the finding of Dell (2015), which is crucial for our identification. This graph shows there is a discontinuous and significant effect of a close PAN election on cumulative homicides after the election.[28]

Panel B of Table II shows that a PAN victory is not associated with any pre-trend increase in homicides: municipalities where PAN won by a close margin do not experience higher homicides rates before the election. Panel C analyses the impact on the absolute change in homicides: before and after the elections. A PAN win is associated with an increase of 37 in the homicide rate. In Panel D, we use the 2004 and 2005 elections to run a placebo test. Most mayors elected in this period finished their terms before the start of the war on drugs. The regression in Panel D helps us identify the effect of a PAN win on violence in the absence of the war on drugs. The results in this placebo show that close PAN wins are not associated with higher homicides in periods outside the war on drugs. This result suggests that a PAN victory in itself did not cause higher violence at the municipality level. It seems that the main driver of violence was the combination of a PAN victory with the implementation of the war on drugs.

Table A.1 in the Appendix reports the same regressions when we restrict the sample to municipalities where PAN won or lost by a margin smaller than 3%. The results are consistent. Coefficients increase slightly and remain significant at 5%. Results are also similar when we increase the degree of the RD polynomial (Table A.2 in the Appendix).

A natural question is whether the incidence of other types of crime also increased. It could be the case that homicides were concentrated in the war between rival cartels and the war between state and cartels. In this scenario, other crimes, such as robbery, kidnapping, and extortion, could remain unchanged. There are some limitations in documenting the effects on other crimes. Data is noisier due to underreporting. Furthermore, the most reliable source publishes crime statistics per municipality only from 2011. Therefore, differently from homicides where we could test the impact over the whole term, we can only test the impact on the level observed in 2011, and we cannot run a placebo test with previous elections. Table A.3 in the appendix reports results for six different types of crime. In general, other types of crime also increase, but the effects are not always statistically significant. Effects on extortion and robbery are statistically significant.

[28] Our sample of close elections is slightly different from Dell (2015). In Dell's paper there is an additional restriction given by the availability of confidential data on drug transportation routes. In our paper this restriction is not necessary. However, even with this difference, the results are very similar in economic magnitude and in statistical significance.

IV Change in Municipalities' Exports

IV.A Main Results

In this section we combine the identification based on close municipal elections with disaggregated trade data at the municipal-product-destination level. Our focus on export growth combined with disaggregated data allows us to concentrate on supply effects.

Regressions on export outcomes follow equation 2. We test whether the Drug War affected export growth. For each municipality m, we observe the annual amount (in Pesos) of product p exported to country c. There is one caveat about the data. When a firm has a single plant or all their plants are in the same municipality, the exports reflect directly the municipality. When firms have multiple plants in different municipalities within the same state, then an approximation is made based on the workforce of each plant. We deal with this issue in the next section of the paper, in which we study firm micro level data.

In Panel A of Table III, we report the regressions of 3-year export growth (that is, export growth during the term of the elected mayors) on close PAN wins using the same weighting by population.[29] When we control for destination-product dummies, export growth decrease by 45% over the mayoral term. Therefore, after the implementation of the Drug War, municipalities performed worse in terms of trade even when the more open party, PAN, was elected. Subtracting the result, 45%, from the baseline growth rate in municipalities with close elections and a PAN loss, we obtain a growth rate of -25%.[30] In Panel B, we show that the effects do not disappear in the short run. The effect on 6-year export growth is 50%. This result provides evidence that the negative impact of the policy on the export capacity of affected firms was not transitory. Figure V shows there is a discontinuous and significantly negative effect of a close PAN election on log export growth after the election.

IV.B Placebos

Regarding the identification assumptions behind our empirical strategy, random assignment of close PAN wins is not enough to draw conclusions about the effects of violence. We need to show that the under-performance was not triggered by the election of the PAN itself and the particular economic policies that the party advocates, but by the propensity to engage in the war on drugs and the ensuing violence that it caused.

To address this concern, we first perform two placebo tests during the period of the war

[29] Results are robust in the standard OLS regression.

[30] The average 3-year growth rate for municipalities that had close elections in 2007 and 2008 is 9.3%. If we further restrict the sample to municipalities with a PAN victory the average is 1.2%, and if we restrict the sample to municipalities with a PAN loss the average is 20.4%.

on drugs. *Ex-ante* cartel presence and high levels of violence were drivers of enforcement operations during the war. Therefore, locations with a PAN mayor but no cartel presence and low violence were less likely to be the target of anti-drug operations. Importantly, they still experienced policies implemented by PAN. If in those locations a PAN win is not associated with a decrease in exports, then we can conclude that it is not the PAN victory itself that is causing our main result. We thus exploit heterogeneity in the potential intensity of the war on drugs by splitting our analysis in areas that experienced different levels of drug-related activity and violence before the war.

We explore the prevalence of pre-existing violence and cartel activity in the North of the country, close to the US border. Most of the drug-trafficking organizations operate in this region, where the ports of entry to the US (the main consumer market) are located. We split the data into two parts: North and South. We then complement the analysis by using data collected by Coscia and Rios (2012) on cartel presence at the municipal level in Mexico. We split the sample using the presence of any cartel at the beginning of the drug war.[31]

In Table IV, Panel A, we show that the effect of a close PAN win on exports is significantly negative in the North of the country. Panel B shows the effect is either positive or indistinguishable from zero in southern municipalities. This supports the interpretation that our estimate is a lower bound of the negative effects on exports. In municipalities where the drug war was less prevalent, PAN had higher export growth on average.

In Table IV, Panel C, we show a similar pattern for municipalities with pre-existing cartel presence. The negative effect on export growth is only significant in municipalities with pre-existing cartel presence. In Panel D, when controlling for product-destination fixed effects, PAN wins in municipalities with no cartel presence experienced significantly positive export growth after the election.

Finally, we study the effect of a close PAN victory outside the period of the war on drugs. Because the data are available from 2004, and the drug war started in 2006, we consider the effect on 2-year export growth over time. Table V reports the results for all the election years for which it is possible to compute 2-year export growth. Before the Drug War, a close PAN win had a negative but not statistically significant effect on exports growth. The effects increase in magnitude and become statistically significant during the peak of the war. After the war the sign of the effect becomes positive, that

[31] Coscia and Rios (2012) collect data from relevant web sources such as newspapers and blogs on Drug Trafficking Organizations (DTO) activities in Mexican municipalities using an automatized system. However, there are some limitations in the ability to collect information since powerful cartels can suppress it (Wainwright (2016)). This problem can be especially prevalent in badly governed municipalities. Using the measure directly to predict violence could introduce a bias. Nonetheless, it is unlikely that this potential bias is correlated with the close election outcomes. This is why the main source of variation that we use is still the close election result.

is, a PAN win is associated with an increase in exports. Finally, we show in Panel C of Table III that the there is no pre-trend in the municipalities that have a close election in 2007 and 2008.

IV.C Complexity Heterogeneity

We separate the results according to the degree of complexity in different products. We use the Product Complexity Index (PCI) from the Atlas of Economic Complexity developed by Hausmann et al. (2014) to classify products. This measure uses trade data to determine the complexity of a product according to two characteristics: ubiquity and the average diversity of its exporters. In theory, a more complex product is produced by countries that export many products, but it is also produced by few countries. The measure captures this two components at the product level. Table A.4 in the appendix shows a list of products by their level of complexity in 2007. Complexity correlates with future GDP growth, and complex economies tend to grow more (Hausmann et al. (2014)). If the Drug War affected more complex products, then the long term effects could be more pernicious.

In Table VI we report a monotonic pattern in export growth. We divide products into four quartiles depending on how they rank in terms of the economic complexity index. For low complexity the effects on export growth are indistinguishable from zero, or even positive if we control for product-destination dummies. The higher the complexity the more negative and significant the effects on export's growth. This result suggests that in the treated municipalities the negative impacts are concentrated in more complex industries.

V Change in Firms' Exports

In this section we proceed to estimate the effects at the firm level. The nature of the electoral discontinuity allows us to study the economic effects of increased violence at a microeconomic level by identifying firms' municipal locations. A potential concern with the municipality-level export data is that it is constructed assuming a particular distribution of firms' exports when firms own plants in multiple municipalities. The geographical distribution of exports in these cases is assumed to be identical to the distribution of a firm's workforce as expressed in social security records. To verify that this assumption is not problematic, we validate results with firm-level export data for a sample of firms that operate in a single municipality of a state in every given year. Using administrative sources on transaction-level customs data and firm-level social security data, we assess the intensive-margin growth in exports and the extensive-margin disappearance of export

relationships at the firm, product and country of destination levels.[32]

At the intensive margin, we estimate the following equation:

$$log\left(\left[\frac{X^{t'}_{fmpc}}{X^{t}_{fmpc}}\right]^{\frac{1}{t'-t}}\right) = \beta_0 + \beta_1 PANwin_m + \delta f(Margin_m, PANwin_m) + \psi_{pc} + \epsilon_{fmcp} \quad (3)$$

Where X^t_{fmpc} stands for the exports of firm f of product p to country of destination c, located in municipality m in baseline year t. The dependent variable captures the logarithm of the average yearly growth factor in total exports at the firm, product and country of destination level between years t and t'. β_1 captures the percent difference in the average yearly growth factor of the exports by firm-product-destination for firms marginally exposed to a PAN mayor in their municipality. ψ_{pc} stands for product-country of destination fixed-effects that control for external demand. Standard errors are clustered at the municipality level, which is the level of the treatment. As with the main specifications in the municipality-level analysis, the bandwidth for close elections is 5% and we use linear controls at both sides of the electoral discontinuity.

V.A Main Results

Table VIII shows how firm-level specifications largely validate municipality level results at the intensive margin. For the sample of municipalities with close elections in 2007 and 2008, Panel A shows that a marginal PAN victory associates with a 21% drop in the annual growth of firm's exports between 2007 and 2010. Panel B shows either a null or positive pre-trend effect for firm export growth between 2004 and 2007.

Panel C provides a simple difference in difference estimate. In this regression, the difference of the effect of a marginal PAN victory at pre-trend and post-treatment is estimated assuming linear trends around the discontinuity to remain unchanged between pre and post treatment. We estimate the specification as in equation 4.

$$\begin{aligned} y_{imt} = \alpha + \beta_1 PANwin_m + \beta_2 Post_t + \beta_3 Margin_m + \beta_4 Margin_m * PANwin_m + \\ \rho PANwin_m * Post_t + \epsilon_{imt} \end{aligned} \quad (4)$$

The coefficient that captures the difference in difference estimation is ρ. This specification shows that a Marginal PAN victory associates with a drop of 13% in the export

[32] These anonymized sources were provided by the Mexican Social Security and Tax Authorities as inputs for the development of the Mexican Atlas of Economic Complexity. We worked with this data locally at Harvard's Center for International Development, which partnered with the Mexican government in developing this data visualization tool. Information about the Mexican Atlas of Economic Complexity is available at http://complejidad.datos.gob.mx.

growth factor of firms.

Similarly, Panel D shows a full difference in difference estimate that allows for linear trends to vary between pre and post treatment. The specification is described in equation 5. A marginal PAN victory correlates with a drop of 18% in export growth.

$$y_{imt} = \alpha + \beta_1 PANwin_m + \beta_2 Post_t + \beta_3 Margin_m + \beta_4 Margin_m * PANwin_m + \\ + \beta_5 Margin_m * Post_t + \rho PANwin_m * Post_t + \epsilon_{imt} \tag{5}$$

Panel A of Table VII shows that the effect of a Marginal PAN victory in 2007/2008 on future export growth is still observed into 2013, after the US economic crisis had largely subsided. Hence, we believe these results are not contingent on the crisis.[33] Panels B and C of Table VII evaluate the short- and long-term effects of a marginal PAN victory on the probability for a firm to lose an export relationship with a foreign country for a given product. Results largely show a null effect. In the context of the negative and significant effects observed at the intensive margin, the evidence is consistent with firms adapting to the increasingly violent environment by reducing the intensity of their ongoing export relationships, but not by disproportionately rescinding on these relationships. This finding can be interpreted as consequence of increasing marginal costs of exporting, assuming there exist fixed and sunk costs of developing export relationships.[34] The lack of changes in exit suggests fixed costs of exporting do not change after increases in violence.

V.B Placebos

We repeat the placebo tests that we performed at the municipality level regressions. Table IX shows similar specifications applied for a placebo sample of municipalities with close elections in 2004 and 2005. Similarly to the municipality level results, we observe a smaller effect of a Marginal PAN victory in this context. However, even though the magnitude is around half of the magnitude obtained with the 2007 and 2008 elections, the coefficient is significant at 10%. These results confirm that the effects of a marginal PAN victory are significantly contingent to the period of the war on drugs.

Table X shows similar regression discontinuity estimates, evaluating how the effects of a marginal PAN victory are contingent on baseline cartel presence. Panel A shows results for the sample of firms located in municipalities with close elections in 2007 and 2008. Regressions in columns 1 and 5 show that a marginal PAN win in municipalities with baseline cartel presence associates with a 14% to 23% drop in export growth rates between

[33] Sadly, we cannot perform difference in difference estimations for this longer time span, as data is not available for years before 2004.

[34] For a theoretical motivation behind the margins of adjustment see Melitz (2003), and for an estimation on the relevance of each method of adjustment in trade see Helpman et al. (2008).

2007 and 2010, while regressions in columns 2 and 6 show null effects in municipalities without baseline cartel presence. Regressions in columns 3 and 7 show simple difference in difference estimates between municipalities with and without cartel presence, showing a negative effect of a marginal PAN victory on export growth factors of about 20%. Finally, regressions in columns 4 and 8 capture a triple difference in difference estimate interacting the previous difference in difference with pre and post treatment status. In this setting, a marginal PAN victory in municipalities with baseline cartel presence associates with a drop in export growth factors of about 13% during the war on drugs. Panel B shows similar estimates for a placebo sample of municipalities with close elections in 2004 and 2005, showing null estimates throughout.

Table XI follows a similar strategy for northern parts of the country – more violent – and southern parts – less violent.[35] For Panel A, regressions in columns 1 and 5 show that a marginal PAN win in northern municipalities also associates with a 14% to 23% drop in export growth rates between 2007 and 2010, while regressions in columns 2 and 6 show null effects in southern municipalities. Regressions in columns 3 and 7 show a negative difference in difference effect of a northern marginal PAN victory on export growth factors between 35% and 42%. Finally, regressions in columns 4 and 8 also show negative triple difference in difference effects of about 13%. Panel B shows results for the sample of municipalities with close elections in 2004 and 2005, before the war on drugs, yielding predominantly null results.

V.C Effect Heterogeneity: Size, Product Complexity and Input dependence

There are many possible mechanisms through which violence may disrupt the exporting activities of local firms. Violence may prevent a firm's capacity to source the necessary human capital for its operations; it may hamper the capacity for firms to raise capital and leverage their operations; and it may disrupt the transportation of inputs and outputs. Effects may be more relevant for smaller firms on which the added operating costs of violence may be more onerous, or for larger firms for which part of the production process may be more exposed to the disruption caused by crime.

Ideally, to assess which of these channels may be operating, we would evaluate how a firm's size and its reliance on human capital, capital, finance and transportation services affect the the impact of a marginal PAN victory on exports. However, given the features of our administrative data, we can only make this assessment directly for the workforce size of exporters. Nevertheless, we also construct metrics of input dependence at the exported product level. We use them to assess whether the negative effects are larger for

[35]The North-South segmentation was determined by the median latitude among the municipalities in the respective sample of close elections.

product groups that disproportionately depend on a given input.

For exporter size, we split the sample of exporters around the median size of the workforce using the distribution of single-municipality exporters as of 2007. Furthermore, we test for five different product segmentation measures.[36] The measures are suggestive of the channels through which violence might be affecting export growth:

- Product Complexity: This metric from Hausmann et al. (2014) empirically approximates the diversity on the productive capacities required to export a product competitively from a given country. Hence, it can be thought of as a measure of the intensity of input complementarities for the output of a given product.

- Capital dependence: This metric from Shirotori et al. (2010)] captures the Revealed Capital Intensity of the product from international trade patterns and national capital endowments of their competitive exporters.

- Human capital dependence: Also from Shirotori et al. (2010), this measure captures the Revealed Human Capital Intensity of the product from international trade and national human capital endowment patterns.

- Finance dependence: This metric from Rajan and Zingales (1998), measures a product's dependence on external capital for its production. Cash crops with fast turnaround – like tobacco – are in the bottom of the finance dependence list, while sectors that require long-term risky investments and higher working capital – like medicines – are in the top of the list.

- Trucking dependence: We build this metric according to a product's realized dependence on trucking services as measured in the US input-output tables.

Table XII shows the correlations between the product complexity and input dependence scores for long-term capital, human capital, complexity, external finance dependence, and trucking dependence. We can see there is a positive and high correlation between complexity, long-term capital and human capital dependence. This is expected. Complexity is supposed to capture how difficult it is to produce a good, which is correlated to skill dependence.[37] Likewise, the macroeconomics's literature has provided empirical evidence of complementarities between long-term capital and human capital.[38] Therefore, it is natural that both measures are highly correlated.

[36] All input dependence metrics are converted into the 1992 version of the Harmonized System of product classification. Export data for some products cannot be matched to input dependence scores, so that export data for these products cannot be used for the subsequent analyses.

[37] See Hausmann et al. (2014).

[38] See Lewis (2011).

On the other hand, external capital dependence exhibits lower correlation with other measures. Trucking dependence is not correlated with measures of either complexity, long-term capital, and human capital dependence. It is negatively correlated with external capital dependence.

Table XIII shows regression discontinuity estimates of the effects of a PAN victory in a close municipality election in 2007 and 2008 on export growth between 2007 and 2010, conditioning for exporter size groups or for product groups divided by the relevant input dependence measure. For exporter's size we divide the sample into large and small according to the median size of the workforce. The segmentation on high and low levels of complexity or input dependence was divided according to their respective median values in the product distribution. .

Results in Table XIII suggest that the negative effects of the war on drugs are either contingent to or appear more detrimental for larger exporters. In our preferred specification, we observe that a PAN win is leads to a 27% decrease in export growth at the firm-product-destination only for large exporters. Small exporters suffer no significant change.

Firms exporting high complexity products suffer a 27% decrease in their exports located in a municipality with close PAN win in comparison to firms exporting the same product to the same destination in the control group. The results are insignificant for low complexity products. Firms producing capital intensive products suffer a decrease of 32% in export growth. There is no effect in industries with low capital intensity. Similarly, firms producing products with high human capital dependence and located in a municipality with a close PAN win, experience a decrease of 27% in export growth. There is a negative, but much smaller and not statistically significant effect on products that require low levels of human capital. The results in these product level classifications are consistent with violence affecting exports in sectors that require a more complex production process, more capital investments, and more specialized factors of production.

Turning to the question of finance dependence, we find a 21% drop in export growth associated with a marginal PAN victory. However, while effects are only significant for in this product sample, the coefficient is not statistically different from the coefficient for low finance dependence products (-19%). Another important question is whether violence decreases exports by increasing transportation costs in affected localities. To test this hypothesis we split the product sample according to our measure of trucking service dependence. Our results show no evidence of firms with more trucking dependence having a larger decrease in export growth - the results actually suggest the opposite. However, this could be partially explained by the negative correlation between external financing dependence and trucking service dependence.

The learning from this exercise is consistent with important stylized facts of trade.

Exporters tend to be firms that rely more on fixed capital and skill intensity.[39] In our results, the negative effect on exports is more pronounced precisely on these sectors. This is consistent with the findings that violence imposes a cost on exporting. Firms that would gain more from exporting in the first place are more hampered by violence. Moreover, we show that this effect is likely to be driven by increase in the cost of production that requires more physical capital and human capital, rather than by an increase in transportation costs.

VI Effects on Greenfield Investment CAPEX

While the data we have used thus far can help us assess the effects of the war on drugs on export growth and on the disappearance of export relationships, it does not allow us to assess the capacity of a locality to attract new projects from outside investors. For this purpose, we would need a yearly dataset on greenfield investments that identifies the destination municipality and the magnitude invested in the project. To our knowledge, such data is not available in Mexican statistical or administrative sources.

For this reason, we use data from fDi Markets, a service from the Financial Times with a comprehensive database of crossborder greenfield investments covering all countries and sectors worldwide, documenting every investment's capital expenditures. From this investment specific dataset we build an aggregate dataset of the CAPEX received by a Mexican municipality between 2003 and 2006 (pre-treatment), and between 2007 and 2010 (post-treatment). After restricting our sample to municipalities with close elections in 2007 or 2008, we retain CAPEX data for 39 municipalities.[40] Table XIV shows that regression discontinuity results for the post-treatment period and for a full difference in difference that allows for different trends with the timing of treatment. Both find that a marginal PAN victory associates with a reduction in CAPEX between 2007 and 2010 of $ 2 billion. Figure VI provides a visual representation of the estimates.

VII Conclusion

The Mexican Drug War has drawn widespread attention because of the scale of its consequences. We confirm the results in Dell (2015), who provides evidence that homicides increase disproportionately in municipalities where the rollout of the war effort was supported by PAN mayors. We take a step further and assess how the Drug War affected the real economy. We document a negative change in trade patterns, with export growth decreasing significantly after a close PAN win. We argue that a direct, reduced-form

[39] See Mayer and Ottaviano (2007).

[40] We expand the electoral bandwidth to 10% in order to gain more observations and reduce the variance in the estimates.

approach would yield lower-bound estimates of the negative economic effects of increased violence. To support this assumption we provide placebo estimates on previous elections, regions without ex-ante baseline Cartel presence, and regions facing ex-ante low violence. Our findings support the assumption that the direct negative economic effects of narrow PAN victories only occur in the context of the Mexican Drug War. We interpret our results as evidence of external effects of violence, as effects are not observed outside the temporal and geographic context of the Drug War.

The economic literature has studied the effects of violence on economic outcomes. However, it is difficult to separate the effects on demand and supply. Our paper also contributes to the literature in terms of identification. By combining close elections and comparing exports of the same product to the same destination, we are able to disentangle effects on supply and demand, and study how violence affects the capacity of firms to serve external markets.

We also provide new evidence on the relationship between violence and trade. Using firm-level microdata, we find that firms locating in a municipality that was exposed to a PAN mayor faced lower export growth rates, but we do not find a higher probability of firm exit from product-country markets. This is consistent with the view that violence increases the marginal costs of exporting, but does not affect significantly the fixed costs of sustaining trading relationships. Additionally, we find that the effects are stronger for larger exporters, as well as for exports of more complex, more capital-intensive, more skill-intensive and more finance-dependent products. Finally, we show suggestive negative effects of violence on the local capacity to attract greenfield investments. Violence seems to affect sectors and activities that are key for future economic growth.

The main results suggest that violence can negatively affect trade at the local level. Importantly, the increase in violence was a consequence of government policy. In the case of Mexico, the Drug War policy did not only cost lives, but damaged the supply capacity of firms in the most affected areas.

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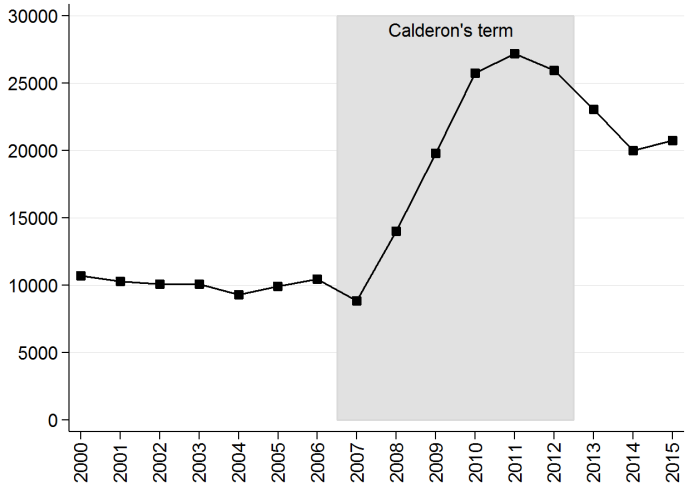
Figures

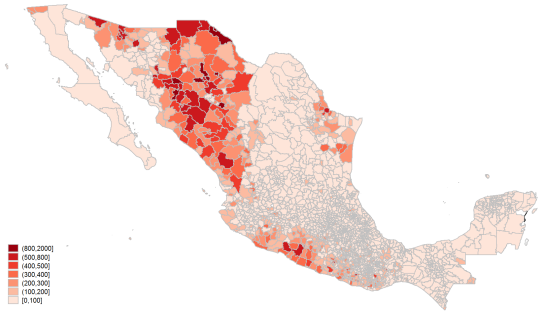
Figure I
Annual Homicides



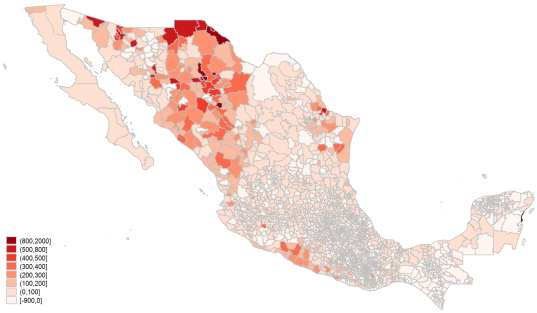
Notes: This figure shows the time series of total homicides in Mexico. The grey area shows total homicides during Calderón's presidency; i.e, during the implementation of the war on drugs.

Figure II
Spatial Distribution of Homicides

Panel A. Total homicides 2007-2011



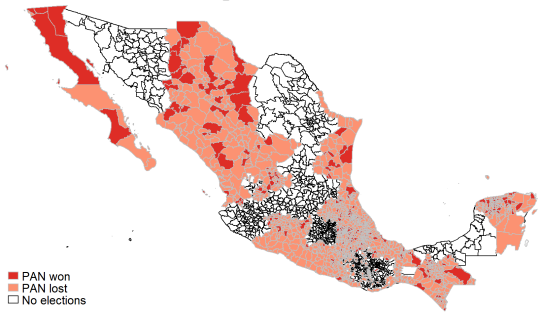
Panel B. Change 2007-2011 and 2001-2006



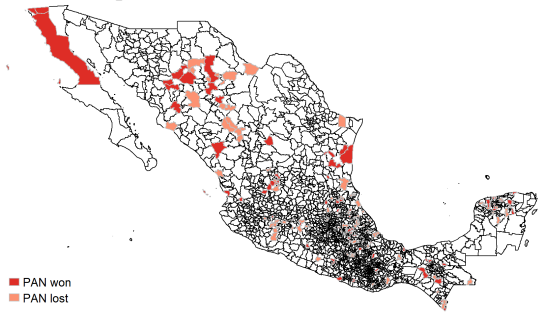
Notes: Panel A depicts the geographical distribution of total homicides between 2007 and 20011 per 100,000 inhabitants. Panel B depicts total homicides between 2007 and 2011 minus total homicides between 2001 and 2006, per 100,000 inhabitants. It is not possible to compute growth rates or logs because many municipalities have zero homicides.

Figure III
Spatial Distribution of Electoral Outcomes

Panel A. All municipalities

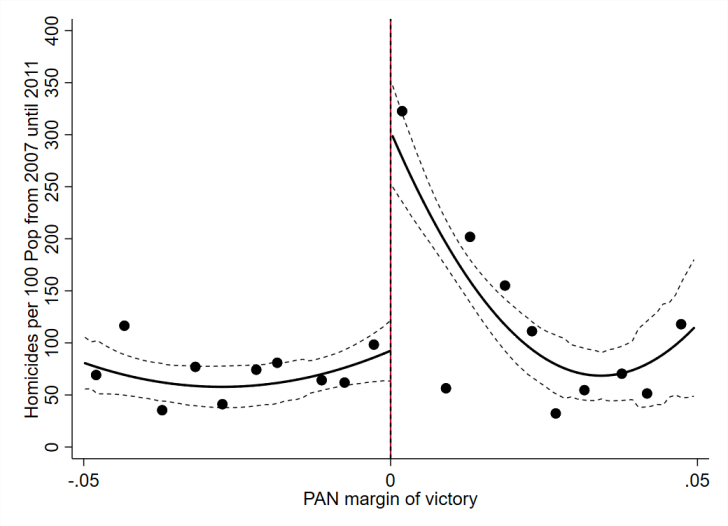


Panel B. Spread 5%



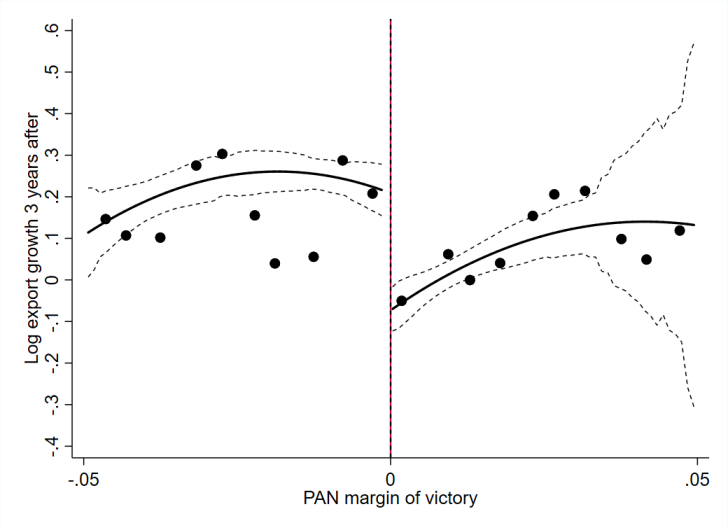
Notes: Panel A depicts the geographical distribution of PAN victories and losses in the 2007 and 2008 local elections. Panel B depicts PAN victories and losses by a margin smaller than 5%.

Figure IV
Cumulative Homicides as a Function of the PAN Electoral Share



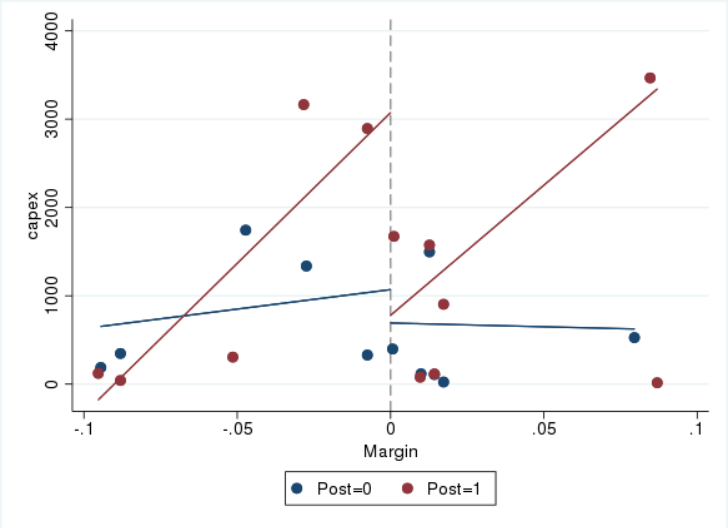
Notes: RDD graph on cumulative homicides as a function of direct electoral shares for PAN in a Mexican municipality. The graph weights homicides by Population in 2005. Confidence intervals are presented at a 95% level.

Figure V
Log Export growth as a Function of the PAN Electoral Share



Notes: RDD graph on log export growth as a function of direct electoral shares for PAN in a Mexican municipality. The graph weights log export growth by Population in 2005. Confidence intervals are presented at a 95% level. The data for exports is formed by triples of municipality, product, and country of destination.

Figure VI
Greenfield CAPEX as a Function of the PAN Electoral Share, Pre-Treatment vs. Post-Treatment



Notes: The y axis is total CAPEX investments by municipality in each period. The x axis is the margin in electoral outcomes in the 2007 and 2008 elections. The blue dots (lines) represent CAPEX before the elections, and thus before the beginning of the war on drugs, as a function of the PAN margin. The red dots (lines) represent CAPEX after the electoral outcomes as a function of the PAN margin.

Tables

Table I
Baseline Characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Total sample				Spread 5%		
	All	PAN won	PAN lost	P-value means diff.	PAN won	PAN lost	P-value means diff.
Panel A: Characteristics Baseline							
Population 2005	35019	38396	34271	0.54	59232	42934	0.44
	(97487)	(126163)	(89949)		(190580)	(103344)	
Population ages 15-29	25.6	26.2	25.5	0	26.2	25.9	0.33
(% of total)	(2.5)	(2.2)	(2.5)		(2.3)	(2.6)	
Population density, 2005	151.9	162.9	149.4	0.61	209.6	188.14	0.75
	(381.5)	(385.1)	(380.8)		(465.8)	(466.3)	
PAN incumbent	0.27	0.28	0.26	0.49	0.31	0.32	0.84
	(0.44)	(0.45)	(0.44)		(0.47)	(0.47)	
GDP per capita	5740	5996	5683	0.09	6085	6228	0.74
(USD, 2005)	(2678)	(2942)	(2613)		(3360)	(2759)	
Literacy rate ages	95.2	95.6	95.1	0.13	95.5	96.1	0.29
(ages 15-24, 2005)	(4.9)	(4.1)	(5.1)		(4.3)	(3.2)	
Mean years of	5.9	6.1	5.9	0.16	6.1	6.1	0.97
schooling, 2005	(1.4)	(1.4)	(1.4)		(1.4)	(1.4)	
Mean Homicides, 2006	11.77	9.31	12.31	0.04	12.03	12.66	0.86
Per 100th Population	(20.75)	(19.09)	(21.07)		(20.77)	(21.62)	
Observations	1416	257	1159		87	111	
Panel B: Trade Baseline							
Total exports, 2006 (Millions of USD)	80	168	60	0.09	382	224	0.56
	(931)	(1516)	(732)		(2459)	(1249)	
Exports: number of countries	19	19.4	19	0.77	21.2	22.7	0.69
	(19.9)	(21.9)	(19.4)		(26.4)	(24.9)	
Exports: number of products per country	2.2	2.4	2.1	0.1	3.1	2.6	0.49
	(2.8)	(4)	(2.4)		(6.1)	(3.9)	
Total imports. 2006 (Millions of USD)	74	156	55	0.12	366	203	0.54
	(960)	(1482)	(792)		(2410)	(1239)	
Imports: number of countries	7.7	8.4	7.5	0.47	11.4	10.8	0.95
	(16.7)	(19.7)	(15.9)		(27.1)	(20.5)	
Imports: number of products per country	2.8	3.2	2.7	0.17	4.4	3.6	0.54
	(5.5)	(6.6)	(5.2)		(9.3)	(7.5)	
Observations	1416	265	1151		87	108	

Notes: Columns 1-3 report means for all municipalities in which elections occurred in 2007 and 2008. Columns 5-6 restrict the sample to municipalities where PAN won or lost by a margin smaller than 5%. Columns 4, and 7 report p-values of t-tests on the difference in means between the PAN win and PAN loss sample. Standard errors are reported in parentheses.

TABLE II
EFFECT ON HOMICIDES

	(1)	(2)	(3)
Panel A: Average homicide 3 years after election (2007 and 2008 elections)			
PAN win	25.90**	41.22**	41.22*
	(12.65)	(18.98)	(19.79)
Linear polynomial	No	Yes	Yes
Cluster: state level	No	No	Yes
Observations	198	198	198
R-squared	0.172	0.253	0.253
Panel B: Average homicide 3 years before election (2007 and 2008 elections)			
PAN win	3.29	3.76	3.76
	(2.71)	(4.32)	(4.80)
Observations	198	198	198
R-squared	0.030	0.034	0.034
Panel C: Average homicide 3 years after election minus 3 years before election (2007 and 2008 elections)			
PAN win	22.61**	37.47**	37.47**
	(10.80)	(16.62)	(16.81)
Observations	198	198	198
R-squared	0.179	0.301	0.301
Panel D: Placebo, average homicides 3 years after election (2004 and 2005 elections)			
PAN win	-0.80	-0.81	-0.81
	(3.25)	(3.09)	(2.35)
Observations	247	247	247
R-squared	0.095	0.122	0.122

Notes: Columns 1-3 report standard WLS regressions. Weights are determined by population size in 2005. The dependent variable in panels A and D is average annual homicides per 100,000 population in the three years following local elections; in panel B the dependent variable is average annual homicides per 100,000 population in the three years preceding local elections; and in panel C the dependent variable is the difference between the dependent variables of panels A and B. In panels A, B and C, the sample is comprised of municipalities where PAN won or lost by a margin smaller than 5% in the 2007 and 2008 elections. These are the elections at the beginning of the Drug War (the treatment period). In panels D, the sample is comprised of municipalities where PAN won or lost by a margin smaller than 5% in the 2004 and 2005 elections. These are the elections before the Drug War (a placebo period). Robust standard errors are reported in parentheses.

Table III
Total Exports

	(1)	(2)	(3)	(4)
Panel A: Exports, 3-year growth				
PAN win	-0.24***	-0.54***	-0.56***	-0.45***
	(0.09)	(0.10)	(0.08)	(0.06)
Linear RD Polynomial	No	Yes	Yes	Yes
Destination FE	No	No	Yes	No
Product-destination FE	No	No	No	Yes
Observations	21,435	21,435	21,424	18,267
R-squared	0.00	0.00	0.03	0.58
Panel B: Exports, 6-year growth				
PAN win	-0.24	-0.75***	-0.77***	-0.51***
	(0.17)	(0.23)	(0.22)	(0.13)
Observations	20,513	20,513	20,497	17,579
R-squared	0.00	0.01	0.03	0.59
Panel C: Exports, 3-year growth, pre-trends 2007-2008 elections				
PAN win	0.03	-0.01	-0.03	0.06
	(0.05)	(0.10)	(0.11)	(0.08)
Observations	18,844	18,844	18,829	15,988
R-squared	0.00	0.00	0.03	0.57

Notes: Columns 1-4 report weighted regressions. Weights are determined by population size in 2005. Standard errors are clustered at the municipality level. In panel A, the dependent variable is the natural logarithmic of total exports in the final year of the new incumbent's term (3 years after the election), divided by total exports in the year when elections took place. In panel B, the dependent variable is the natural logarithmic of total exports 6 years after the start of the new incumbent's term, divided by total exports in the year when elections took place. . In panel C, the dependent variable is the natural logarithmic of total exports one year before the election took place, divided by the initial exports three years before. The sample is comprised of triples municipality-country of destination-product where (i) PAN won or lost by a margin smaller than 5% in the 2007 and 2008 elections and (ii) the value exported for the triple is positive in the years used to compute export growth.

TABLE IV
LOG EXPORT GROWTH HETEROGENEITY BY MUNICIPALITIES WITH PRE-EXISTING PROPENSITY TO DRUG TRAFFICKING

	(1)	(2)	(3)
Panel A: North			
PAN win	-0.62***	-0.63***	-0.40***
	(0.17)	(0.15)	(0.07)
Linear RD Polynomial	Yes	Yes	Yes
Destination FE	No	Yes	No
Product-destination FE	No	No	Yes
Observations	17,068	17,053	14,120
R-squared	0.00	0.03	0.59
Panel B: South			
PAN win	0.13*	0.14**	0.11
	(0.07)	(0.06)	(0.09)
Observations	4,367	4,349	2,790
R-squared	0.00	0.10	0.80
Panel C: Pre-existing cartel presence			
PAN win	-0.55***	-0.56***	-0.46***
	(0.10)	(0.09)	(0.07)
Observations	16,923	16,910	13,798
R-squared	0.01	0.02	0.42
Panel D: No pre-existing cartel presence			
PAN win	-0.11	-0.13*	0.09**
	(0.08)	(0.07)	(0.04)
Observations	4,273	4,256	3,084
R-squared	0.00	0.08	0.67

Notes: Columns 1-3 report weighted regressions. Weights are determined by population size in 2005. Standard errors are clustered at the municipality level. The dependent variable is the natural logarithmic of total exports in the final year of the new incumbent's term, divided by total exports in the year when elections took place. The sample is comprised of triples municipality-country of destination-product where (i) PAN won or lost by a margin smaller than 5% in the 2007 and 2008 elections and (ii) the value exported for the triple is positive in the years used to compute export growth. In panels A and B, the sample is divided into two parts using the median of the (average) latitude of the municipalities. In panel A, we report results for the northern municipalities, while in Panel B we report results for the southern municipalities. In Panel C we report effects in municipalities with pre-existing cartel participation (as identified by Coscia and Rios (2012)). In Panel D we report effects in municipalities with no pre-existing cartel activity.

TABLE V
EVOLUTION OF THE IMPACT ON 2-YEAR EXPORT GROWTH

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Election year	11 & 12	10 & 11	09 & 10	08 & 09	07 & 08	06 & 07	05 & 06	04 & 05
PANwin	0.11	0.19**	0.08	-0.14*	-0.38***	-0.35**	-0.29***	-0.21
	(0.07)	(0.08)	(0.17)	(0.08)	(0.13)	(0.14)	(0.11)	(0.14)
Observations	16,363	18,504	33,094	14,477	18,466	25,382	5,355	14,682
R-squared	0.60	0.62	0.45	0.63	0.57	0.47	0.66	0.60

Notes: The table reports β's of the regression $y_{mcp} = \alpha + \beta PANwin_m + \delta_1 Margin_m + \delta_2 PANwin_m \times Margin_m + \alpha_{cp} + \epsilon_{mcp}$ for different election years. Regressions are weighted by population size in 2005. Standard errors are clustered at the municipality level. The dependent variable is the natural logarithmic of total exports two years after the election, divided by total exports in the year when elections took place. The sample is comprised of triples municipality-country of destination-product where: (i) PAN won or lost by a margin smaller than 5% (ii) the value exported for the triple is positive in the election year and two years after the election.

Table VI
Exports per Quartile of Product Complexity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1st quartile (low)		2nd quartile		3rd quartile		4th quartile (high)	
PAN win	-0.08	-0.12	-0.35**	-0.38*	-0.51***	-0.23	-0.83***	-0.72***
	(0.26)	(0.34)	(0.16)	(0.22)	(0.13)	(0.19)	(0.29)	(0.11)
Linear RD Polynomial	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination FE	Yes	No	Yes	No	Yes	No	Yes	No
Product-destination FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	4,492	4,046	4,409	3,795	5,395	4,545	6,854	5,711
R-squared	0.07	0.53	0.06	0.59	0.06	0.59	0.05	0.58

Notes: All columns report weighted regressions. Weights are determined by population size in 2005. Standard errors are clustered at the municipality level. The dependent variable is the natural logarithmic of total exports in the final year of the new incumbent's term, divided by total exports in the year when elections took place. The sample is comprised of triples municipality-country of destination-product where (i) PAN won or lost by a margin smaller than 5% in the 2007 and 2008 elections and (ii) the value exported for the triple is positive in the years used to compute export growth. Products are divided in 1241 categories. We divide the 1241 products in four groups according to their complexity as defined by the Atlas of Economic Complexity.

Table VII
Long-Term Intensive-Margin Regression and Extensive-Margin Regressions

	(1)	(2)	(3)	(4)
Panel A: Log growth factor of exports between 2007-2013, Close Elections from 2007/2008				
PANwin	-0.14***	-0.13***	-0.12***	-0.13**
	(0.05)	(0.05)	(0.04)	(0.06)
Destination FE	No	Yes	No	No
Product FE	No	No	Yes	No
Product-destination FE	No	No	No	Yes
Observations	14,264	14,264	14,264	14,264
R-squared	0.00	0.03	0.06	0.17
Panel B: Relationship disappearance between 2007-2010, Close Elections from 2007/2008				
PANwin	-0.04	-0.07	-0.06	-0.07
	(0.09)	(0.06)	(0.09)	(0.07)
Observations	41,900	41,900	41,900	41,900
R-squared	0.01	0.12	0.08	0.29
Panel C: Relationship disappearance between 2007-2013, Close Elections from 2007/2008				
PANwin	-0.08	-0.10*	-0.09	-0.08
	(0.08)	(0.05)	(0.08)	(0.05)
Observations	41,900	41,900	41,900	41,900
R-squared	0.02	0.10	0.09	0.27

Notes: Columns 1-5 report OLS regressions. Standard errors are clustered at the municipality level. The sample is comprised of triples firms-country of destination-product where (i) PAN won or lost by a margin smaller than 5% in the 2007 and 2008 elections. for the intensive margin the second condition (ii) is that the dependent variable for the triple is positive over the period after the election. For the extensive margin we show whether a firm stopped exporting afterwards.

TABLE VIII
FIRM-LEVEL REGRESSIONS FOR MUNICIPALITIES

	(1)	(2)	(3)	(4)
Panel A: Log export growth between 2007-2010, Close Elections from 2007/2008				
PAN win	-0.14***	-0.14**	-0.14***	-0.21**
	(0.05)	(0.06)	(0.05)	(0.09)
Destination FE	No	Yes	No	No
Product FE	No	No	Yes	No
Product-destination FE	No	No	No	Yes
Observations	17,348	17,348	17,348	17,348
R-squared	0.00	0.02	0.05	0.15
Panel B: Log export growth between 2004-2007, Close Elections from 2007/2008				
PAN win	0.09	0.13*	0.05	0.10
	(0.07)	(0.07)	(0.08)	(0.10)
Observations	20,914	20,914	20,914	20,914
R-squared	0.00	0.02	0.04	0.15
Panel C: Log growth export growth, Simple Diff-in-Diff				
Close Elections from 2007/2008				
PAN win	-0.14***	-0.14***	-0.14***	-0.14***
*Post	(0.02)	(0.02)	(0.02)	(0.02)
Observations	38,262	38,262	38,262	38,262
R-squared	0.01	0.01	0.02	0.08
Panel D: Log export growth, Full Diff-in-Diff				
Close Elections from 2007/2008				
PAN win	-0.14***	-0.21**	-0.225**	-0.22**
*Post	(0.02)	(0.09)	(0.09)	(0.08)
Observations	38,262	38,262	38,262	38,262
R-squared	0.01	0.01	0.02	0.08

Notes: Columns 1-4 report OLS regressions. Standard errors are clustered at the municipality level. The sample is comprised of triples firms-country of destination-product where (i) PAN won or lost by a margin smaller than 5% in the 2007 and 2008 elections and (ii) the value exported for the triple is positive over the new incumbent's term.

TABLE IX
FIRM-LEVEL REGRESSIONS FOR PLACEBO MUNICIPALITIES WITH CLOSE ELECTIONS IN 2004/2005

	(1)	(2)	(3)	(4)
Panel A: Log export growth between 2007-2010, Close Elections from 2004/2005				
PAN win	0.07	0.09	0.02	-0.01
	(0.08)	(0.07)	(0.10)	(0.08)
Destination FE	No	Yes	No	No
Product FE	No	No	Yes	No
Product-destination FE	No	No	No	Yes
Observations	13,201	13,201	13,201	13,201
R-squared	0.00	0.01	0.06	0.15
Panel B: Log export growth between 2004-2007, Close Elections from 2004/2005				
PAN win	0.05**	0.01	0.09***	0.11*
	(0.02)	(0.06)	(0.03)	(0.05)
Observations	16,601	16,601	16,601	16,601
R-squared	0.00	0.01	0.05	0.15
Panel C: Log growth export growth, Simple Diff-in-Diff				
Close Elections from 2004/2005				
PAN win	-0.04	-0.04	-0.04	-0.05
*Post	(0.04)	(0.04)	(0.04)	(0.04)
Observations	29,802	29,802	29,802	29,802
R-squared	0.01	0.01	0.03	0.08
Panel D: Log export growth, Full Diff-in-Diff				
Close Elections from 2004/2005				
PAN win	-0.04	0.04	0.01	-0.01
*Post	(0.04)	(0.11)	(0.09)	(0.10)
Observations	29,802	29,802	29,802	29,802
R-squared	0.01	0.01	0.03	0.08

Notes: Columns 1-5 report OLS regressions. Standard errors are clustered at the municipality level. The sample is comprised of triples firms-country of destination-product where (i) PAN won or lost by a margin smaller than 5% in the 2007 and 2008 elections and (ii) the value exported for the triple is positive over the new incumbent's term.

TABLE X
REGRESSION IN MUNICIPALITIES WITH AND WITHOUT BASELINE CARTEL PRESENCE

	(1)	(2)	(3)	(4)
Panel A: Log growth exports from 2007/2010, Close Elections from 2007/2008				
PANwin	-0.216**	-2.976		
	(0.0885)	(2.825)		
Cartels			-0.271**	
*PANwin			(0.117)	
Cartels				-0.138***
*PANwin*Post				(0.0212)
Observations	15,939	1,409	17,348	38,262
R-squared	0.135	0.899	0.152	0.081
Panel B: Log growth exports 2004/2007, Close Elections from 2004/2005 (Placebo)				
PANwin	0.00448	0.346		
	(0.0938)	(0.716)		
Cartels			-0.0415	
*PANwin			(0.0725)	
Cartels				-0.0438
*PANwin*Post				(0.0401)
Observations	12,772	429	13,201	29,802
R-squared	0.145	0.771	0.150	0.081
Fixed Effects Cartel	Destination-Product Present	Destination-Product Absent	Destination-Product DiD	Destination-Product DiD

Notes: Columns 1-4 report OLS. Standard errors are clustered at the municipality level. The sample is comprised of triples firms-country of destination-product where (i) PAN won or lost by a margin smaller than 5% in the 2007 and 2008 elections and (ii) the value exported for the triple is positive over the new incumbent's term. We measure cartel presence in before the relevant election using data constructed by Coscia and Rios (2012). The variable cartels is a dummy that determines whether there was cartel presence in a municipality. The variable post represents a value of 1 after an election and 0 before.

TABLE XI
REGRESSIONS IN NORTHERN AND SOUTHERN MUNICIPALITIES

	(1)	(2)	(3)	(4)
Panel A: Log growth exports 2007/2010, Close Elections from 2007/2008				
PANwin	-0.149**	0.870		
	(0.0665)	(2.223)		
North*			-0.355**	
PANwin			(0.156)	
North*				-0.140***
PANwin*Post				(0.0221)
Observations	15,682	1,627	17,309	38,154
R-squared	0.128	0.816	0.152	0.080
Panel B: Log growth exports 2004/2007, Close Elections from 2004/2005				
PANwin	0.140	0.454**		
	(0.101)	(0.110)		
North*PANwin			-0.149	
			(0.192)	
North*PANwin*Post				-0.0468
				(0.0456)
Observations	9,479	71	9,550	21,674
R-squared	0.172	0.931	0.174	0.093
Fixed Effects	Destination-Product	Destination-Product	Destination-Product	Destination-Product
North	Yes	No	DiD	DiD

Notes: Columns 1-4 report OLS regressions. Standard errors are clustered at the municipality level. The sample is comprised of triples firms-country of destination-product where (i) PAN won or lost by a margin smaller than 5% in the 2007 and 2008 elections and (ii) the value exported for the triple is positive over the new incumbent's term. To measure North and South we divide municipalities by separating Mexico in two areas using the median latitude. The variable North is a dummy that determines whether the location was above or below the median latitude. The variable post represents a value of 1 after an election and 0 before.

TABLE XII
CORRELATION IN PRODUCT-LEVEL COMPLEXITY AND INPUT DEPENDENCE

	Product Complexity	Capital Dependence	Human Capital Dependence	External Finance Dependence	Trucking Dependence
Product Complexity	1				
Capital Dependence	0.79	1			
Human Capital Dependence	0.71	0.8	1		
External Finance Dependence	0.36	0.28	0.25	1	
Trucking Dependence	-0.05	-0.05	-0.01	-0.38	1

Table XIII
Heterogeneity in Effects by Exporter Size and Product Groups (Complexity and Input Dependence)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Panel A: Log growth factor of exports between 2007-2010, Close Elections from 2007/2008, Country/Product Fixed Effects													
PANwin	-0.21**	-0.27***	-0.04	-0.27***	-0.12	-0.32***	-0.06	-0.21**	-0.19	-0.27**	-0.12	0.06	-0.38***
	(0.09)	(0.09)	(0.25)	(0.08)	(0.10)	(0.07)	(0.11)	(0.09)	(0.120)	(0.10)	(0.09)	(0.19)	(0.04)
Obs	17,256	15,706	1,550	12,523	4,733	11,047	6,209	12,329	4,927	11,658	5,598	6,759	10,497
Rsq	0.15	0.16	0.39	0.15	0.17	0.15	0.16	0.16	0.12	0.14	0.18	0.16	0.15
Segment	Full	Large Exporters	Small Exporters	High Complexity	Low Complexity	High Capital Dependence	Low Capital Dependence	High Finance Dependence	Low Finance Dependence	High Human Capital Dependence	Low Human Capital Dependence	High Trucking Dependence	Low Trucking Dependence

Notes: Columns 1-13 report OLS regressions. The sample is comprised of triples firms-country of destination-product where (i) PAN won or lost by a margin smaller than 5% in the 2007 and 2008 elections and (ii) the value exported for the triple is positive over the new incumbent's term. We divide below and above median by product characteristics. Product Complexity: This metric from Hausmann et al. (2013) empirically approximates the diversity on the productive capacities required to export a product competitively from a given country. Capital dependence: This metric from Shirotori et al. (2010) captures the Revealed Capital Intensity of the product from international trade patterns and national capital endowments of their competitive exporters. Human capital dependence: Also from Shirotori et al. (2010), this measure captures the Revealed Human Capital Intensity of the product from international trade and national human capital endowment patterns.Finance dependence: This metric from Rajan and Zingales (1998), measures a product's dependence in external capital for its production. Trucking dependence: We build this metric according to a product's appeared dependence on trucking services as measured in the US input-output tables.

Table XIV
Regression on Local Greenfield CAPEX

	(1)	(2)	(3)	(4)
Greenfield CAPEX (MM US$), Close Elections from 2007/2008				
PANwin	-2,294**	-378.4		
	(891.5)	(628.4)		
PANwin*Post			213.0	-1,916*
			(860.2)	(1,094)
Observations	21	18	39	39
R-squared	0.522	0.051	0.337	0.510
Specification	2007-2010	2004-2007	Simple DiD	Full DiD

Notes: Observations are total CAPEX investments by municipality in each period. Columns 1-4 report WLS regressions, where the weight is given by the 2005 Population. Standard errors are robust. Column (1) shows the effect of a close PAN win in the period after the drug war. Column (2) shows the effect of a close PAN win in the elections before (placebo). Column (3) shows the result on a difference in difference specification. The difference in difference specification controls for all main effects and a polynomial for the electoral share. Column (4) is difference in difference specification that controls for all main effects, a polynomial for the electoral share and, and an interaction between the electoral share and the variable Post.

Appendix

Table A.1
Effect on Homicides, 3% Spread

	(1)	(2)	(3)
Panel A: Average homicide 3 years after election			
PAN win	28.97**	47.91**	47.91**
	(13.87)	(18.87)	(19.36)
Linear polynomial	No	Yes	Yes
Cluster: state level	No	No	Yes
Observations	123	123	123
R-squared	0.185	0.306	0.306
Panel B: Average homicide 3 years before election			
PAN win	4.23	2.40	2.40
	(3.15)	(4.57)	(4.85)
R-squared	0.049	0.057	0.057
Panel C: Average homicide 3 years after election minus 3 years before election			
PAN win	24.74**	45.51***	45.51**
	(11.75)	(17.29)	(18.01)
R-squared	0.182	0.340	0.340

Notes: Columns 1-3 report weighted regressions. Weights are determined by population size in 2005. The dependent variable in panel A is average annual homicides per 100,000 population in the three years following local elections; in panel B the dependent variable is average annual homicides per 100,000 population in the three years preceding local elections; and in Panel C the dependent variable is the difference between the panel the dependent variables of panels A and B. For all regressions, the sample is comprised of municipalities where PAN won or lost by a margin smaller than 3% in the 2007 and 2008 elections. Robust standard errors are reported in parentheses.

TABLE A.2
EFFECT ON HOMICIDES, RD POLYNOMIALS

	(1)	(2)	(3)	(4)
Panel A: Average homicide 3 years after election, 5% spread				
PAN win	41.22*	52.98***	53.04**	68.11**
	(19.79)	(17.57)	(21.86)	(23.88)
Degree of RD polynomial	1st	2nd	3rd	4th
Observations	198	198	198	198
R-squared	0.25	0.30	0.30	0.33
Panel A: Average homicide 3 years after election, total sample				
PAN win	14.86	24.61**	31.65*	47.36**
	(9.94)	(11.46)	(15.61)	(22.20)
Observations	1,416	1,416	1,416	1,416
R-squared	0.02	0.03	0.03	0.05

Notes: Columns 1-4 report weighted regressions. Weights are determined by population size in 2005. The dependent variable is average annual homicides per 100,000 population in the three years following local elections. In Panel A, the sample is comprised of municipalities where PAN won or lost by a margin smaller than 5% in the 2007 and 2008 elections. In Panel B the sample is comprised of all municipalities in which elections occurred in 2007 and 2008. All standard errors are clustered at the state level.

Table A.3
Effect on Other Crimes

	(1)	(2)	(3)	(4)
	Panel A: Robbery (business establishments)		*Panel B: Assaults*	
PAN win	46.5	68.5	142.9**	192.8
	(35.28)	(45.86)	(66.82)	(119.08)
Linear polynomial	No	Yes	No	Yes
Observations	139	139	139	139
R-squared	0.11	0.14	0.18	0.24
	Panel C: Extortion		*Panel D: Kidnapping*	
PAN win	1.7	4.7*	0.3	1.4
	(2.19)	(2.65)	(0.64)	(1.03)
R-squared	0.03	0.17	0.01	0.10
	Panel E: Robbery (banks branches, cash-in-transit vehicles)		*Panel F: Robbery (all cases, excluding business and banks)*	
PAN win	1.3	2.8*	455.0	917.2***
	(0.87)	(1.62)	(299.77)	(345.04)
R-squared	0.12	0.32	0.12	0.22

Notes: Columns 1-4 report weighted regressions. Weights are determined by population size in 2005. In all panels the dependent variables are averages of a certain crime type per 100,000 population in 2011. In panel A the dependent variable is robberies that targeted business establishments (including cargo theft); in Panel B, assaults; in panel C, extortions; in Panel D, kidnapping; in Panel E, robberies that targeted bank branches and cash-in-transit vehicles; and in Panel F, robberies (excluding business and banks). For all regressions, the sample is comprised of municipalities where crime data is available and where PAN won or lost by a margin smaller than 5% in the 2004 and 2005 elections. Robust standard errors are reported in parentheses.

Table A.4
Product Complexity

Lowest complexity

- Natural rubber, balata, gutta-percha, guayule, chicle and similar natural gums, in primary forms or in plates, sheets or strip
- Cocoa beans, whole or broken, raw or roasted
- Coconuts, Brazil nuts and cashew nuts, fresh or dried, whether or not shelled or peeled
- Bananas and plantains, fresh or dried
- Woven fabrics of jute or of other textile bast fibers of heading 5303
- Jute and other textile bast fibers (excluding flax, true hemp and ramie), raw or processed but not spun; tow and waste of these fibers (including yarn waste and garnetted stock)
- Sisal and Agave, raw
- Coconut, abaca (Manila hemp or Musa textilis Nee), ramie and other vegetable textile fibers,not elsewhere specified or included, raw or processed but not spun; tow, noils and waste of these fibers (including yarn waste and garnetted stock)
- Cassava (manioc), arrowroot, salep, Jerusalem artichokes, sweet potatoes and similar roots and tubers with high starch or inulin content, fresh, chilled, frozen or dried, whether or not sliced or in the form of pellets; sago pith
- Hats and other headgear, knitted or crocheted, or made up from lace, felt or other textile fabric, in the piece (but not in strips), whether or not lined or trimmed; hair-nets of any material, whether or not lined or trimmed

Highest complexity

- Vegetable parchment, greaseproof papers, tracing papers and glassine and other glazed transparent or translucent papers, in rolls or sheets
- Machines and appliances for testing the hardness, strength, compressibility, elasticity or other mechanical properties of materials (for example, metals, wood, textiles, paper, plastics), and parts and accessories thereof
- Machine tools for working any material by removal of material, by laser or other light or photon beam, ultrasonic, electro-discharge, electro-chemical, electron-beam, ionic-beam or plasma arc processes
- Lubricating preparations (including cutting-oil preparations, bolt or nut release preparations, antirust or anticorrosion preparations and mold release preparations, based on lubricants) and preparations of a kind used for oil or grease treatment
- Lathes (including turning centers) for removing metal
- Machining centers, unit construction machines (single station) and multistation transfer machines, for working metal
- Microscopes other than optical microscopes; diffraction apparatus; parts and accessories thereof
- Flat-rolled products of stainless steel, of a width of less than 600 mm
- Photographic plates and film, exposed and developed, other than motion-picture film
- Nickel tubes, pipes and tube or pipe fittings (for example, couplings, elbows,sleeves)

Notes: Using data for 2007, this table reports the 10 products with highest complexity and the 10 products with lowest complexity.