

# The Violent Consequences of Trade-Induced Worker Displacement in Mexico \*

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## Abstract

Mexican manufacturing job loss induced by competition with China increases cocaine trafficking and violence, particularly in municipalities with transnational criminal organizations. When it becomes more lucrative to traffic drugs because changes in local labor markets lower the opportunity cost of criminal employment, criminal organizations plausibly fight to gain control. The evidence supports a Becker-style model in which the elasticity between legitimate and criminal employment is particularly high where criminal organizations lower illicit job search costs, where the drug trade implies higher pecuniary returns to violent crime, and where unemployment disproportionately affects low-skilled men.

*Keywords:* Violent crime, trade competition, worker displacement

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# 1 Introduction

The illicit drug trade is a multi-billion dollar industry that plausibly imposes very high social costs. Notably, conflicts over drug trafficking during the past decade have transformed Mexico into an epicenter of global violence, claiming over 100,000 lives (Beittel, 2017). Between 2007 and 2014, the total number of violent deaths in Mexico exceeded the combined total in Iraq and Afghanistan by 60 percent (Breslow, 2015) and in 2016, Mexico ranked as the world's second most deadly conflict zone, with its number of violent deaths surpassed only by Syria (International Institute for Strategic Studies, 2017). More generally, the world's highest rates of violence are concentrated in urban areas of developing countries that are involved in the cocaine trade. Comprehensive data compiled by the Igarape Institute (2017) document that 43 of the world's 50 most violent cities are in Latin America, with cities along cocaine routes in Mexico and Central America topping the list. Brazil, the world's second largest cocaine market and a transit hub to European drug markets, dominates the list's middle with similarly high homicide rates, with the bottom rounded out by Colombia, a major cocaine producer, and the United States.

These striking patterns raise the question of why participating in the drug trade is so attractive and fights to control drug routes are so violent. Anecdotal evidence suggests that limited economic opportunities and lackluster macroeconomic performance could play a central role. For example, when asked how he got involved in the drug business, Joaquin "El Chapo" Guzman - named the world's most powerful drug trafficker by the U.S. government - responded: "in my [geographic] area...there are no job opportunities" (Penn, 2016).

El Chapo's assesment is consistent with Gary Becker's 1968 seminal model of criminality, which highlights that a decline in legitimate job opportunities will increase criminality by reducing the opportunity cost. However, a large subsequent literature - focused primarily on strongly institutionalized, high income countries - concludes that Becker's insights have limited applicability to violent crime. For example, a recent review by Draca and Machin (2015, p. 4) argues: "the [Becker] model is less useful...in that, in most settings, relative labor market opportunities seem less likely to be a significant determinant of violent crime." It is unclear, however, that these insights apply to more weakly institutionalized contexts, where much of the world's violent crime occurs and where numerous factors could strengthen the link between local labor market conditions and criminality. The existence of extensive criminal organizations plausibly lowers criminal job search costs, large-scale conflicts between criminal organizations may increase the demand for violent criminality, weak criminal justice institutions lower the detection probability, and the social safety net is limited.

This study examines how changes in manufacturing job opportunities resulting from international trade competition have affected drug trade-related violence in Mexico. Trade

competition, in particular with China in the U.S. market, has been an important driver of local labor market conditions in Mexico, generating considerable popular and policy interest. Beyond being important in and of itself, it also provides plausibly exogenous variation in local employment opportunities that is uncorrelated with pre-period trends in drug trafficking and violence. Our baseline analysis focuses on elucidating the extent to which trade-induced job loss contributed to violent drug conflicts during the administration of President Felipe Calderon (December 2006-2012), the period for which we have the richest data to elucidate mechanisms. Three quarters of municipalities experienced manufacturing employment declines during our baseline period. We also document qualitatively similar results in other periods.

Mexican drug trafficking organizations (DTOs) dominate U.S. wholesale illicit drug markets, with 90 percent of cocaine consumed in the U.S. transiting through Mexico (U.S. Drug Enforcement Agency, 2011). Data from DTO accounting records suggest several reasons why urban labor market conditions would influence illicit sector wages, which in turn plausibly condition drug trafficking routes and violence.<sup>1</sup> DTO local franchises (*plazas*) are well above the 99th percentile of the Mexican firm size distribution, and labor costs, along with bribes, form the bulk of DTO expenditures. Lookouts, who monitor the movements of authorities and competing DTO operatives, form the largest category of employees and require extensive local knowledge to blend in and perform their duties. Hence this type of labor cannot be easily imported, and a fall in the local unskilled wage would increase the profitability of operating trafficking routes through a location. This plausibly increases the incentives for DTOs - or factions within them - to fight to gain control, as DTOs rarely peacefully cohabit the same routes (Williams, 2012; Guerrero, 2011, p. 10, 106-108). In our data, the vast majority of drug trade-related homicides involve drug traffickers killing each other.

We use an instrumental variables strategy to examine whether it is indeed the case that trade-induced changes in local labor markets influence drug violence. We begin by constructing a municipality-level measure of international competition that is higher if the municipality has a larger share of employment in industries where Chinese exports to the U.S. are expected to grow during the sample period, based on their initial share. This is similar in spirit to the approach developed by Autor et al. (2013) and applied to Mexico by Utar and Ruiz (2013) and Iacovone et al. (2013).

Identification requires that international competition only affects changes in drug trafficking and violence through impacts on local labor markets. We argue that it is unlikely that Chinese exports to U.S. markets directly affect patterns of drug violence in Mexico. One potentially important concern is that municipalities with a comparative advantage in products

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<sup>1</sup>These summary facts about the business operations of DTOs, drawn from confiscated accounting books, are discussed in a report by the Organization of American States (2013).

facing more predicted Chinese competition could also happen to have a comparative advantage in the drug trade, leading directly to differential trends in drug trafficking and violence. However, trade-induced employment changes during our sample period are uncorrelated with changes in drug trafficking and violence throughout the 15 preceding years.

Mexican municipalities with higher predicted increases in international competition between 2007 and 2010 experience significantly greater manufacturing job loss during this period, which we focus on because it offers the richest data for elucidating mechanisms. Using international competition as an instrument, we estimate that a one standard deviation decline in manufacturing employment increases the drug-related homicide rate by 5.4 per 100,000 residents per annum, relative to a mean drug-related homicide rate in 2010, a peak year of violence, of 18 per hundred thousand. These effects are robust to examining alternative time periods in which enforcement policies and overall trends in violence were quite different and to using international competition in other markets as the instrument. Moreover, the impacts are concentrated in municipalities with a transnational DTO presence, where a one standard deviation decline in employment increases the drug-related homicide rate by 30. In contrast, the impact on overall and drug-related homicides in municipalities without known drug trade operations initially is a precise zero. This underscores the role of criminal organizations in linking labor market conditions and violent crime.

We would also expect effects to be strongest where declines in employment affect low-skilled, young men, who form the majority of DTO low-level employees. Our data on the demographic characteristics of drug homicide victims show that over 95 percent were male, and around half were under age 30. Indeed, impacts appear larger in municipalities where international competition is likely to disproportionately affect young, less-educated men.

We hypothesize that declines in the opportunity cost of pursuing criminal employment make it more lucrative for DTOs to traffic drugs that involve the extensive mobilization of local labor, and this in turn leads criminal organizations - or factions within them - to fight for control of these territories. Indeed, municipalities experiencing a decline in local employment opportunities also witness a large increase in cocaine confiscations, a reasonable proxy for cocaine traffic given that we do not find evidence of major changes in enforcement. Cocaine, which is highly lucrative and overwhelmingly exported to the U.S., involves the extensive mobilization of lookouts, the largest group of DTO employees. There is some evidence for substitution away from the trafficking of domestically produced drugs - i.e. primarily lower value marijuana, which is sold in part domestically and in part to U.S. markets.

While other mechanisms could link labor market conditions to criminality, we are able to rule out some key alternative stories. Mexico's PAN political party played a major role in spearheading local crackdowns on the drug trade during our sample period, and one alternative story is that trade-induced job loss changed political preferences, making municipalities

more likely to elect PAN mayors and hence indirectly increasing drug violence through PAN-initiated crackdowns.<sup>2</sup> This would not violate the exclusion restriction, since the effects of international competition would still be triggered by job loss, but the interpretation would be quite different. It is indeed the case that trade-induced job loss leads to changes in citizen attitudes, as measured in public opinion data, but there are not impacts on local election outcomes. Moreover, trade-induced declines in employment before the PAN crackdown had started likewise lead to increases in drug trafficking and the homicide rate. More generally, we discuss evidence that changes in local government spending are unlikely to drive results.

It is also unlikely that the increases in trafficking and violence result from increased local drug demand due to unemployment. Mexican drug traffickers earn between 14 and 48 billion USD annually in U.S. wholesale drug markets, whereas Mexico's domestic drug market is estimated to be worth 560 million USD annually (U.S. State Department, 2009; Secretaría de Seguridad Pública, 2010). If the effects were driven by local drug demand, we would expect to see them as much in places where transnational DTOs dominate as in places where they do not operate, and we would expect to see substitution towards lower cost drugs like marijuana that are more affordable to the local populace, whereas our estimates if anything suggest the opposite.

Far from being an anomaly, criminal organizations operate on a large-scale in drug transit and producing countries, where violent crime typically occurs at high rates. By providing extensive employment opportunities, lowering criminal job search costs, and engaging in violent disputes to control lucrative territory, they plausibly play a central role in linking violent crime to local labor market conditions. These results underscore the value of a Becker-style approach that views violent criminality through a lens that includes economic incentives. Incorporating these incentives into models of criminality influences what types of policy prescriptions are worth considering. For example, they would suggest that strengthening the social safety net for workers displaced by trade competition could reduce criminality through improving the outside option. When violent crime is instead viewed as determined overwhelmingly by passion or deep-seated cultural values, such policies appear less relevant.

This study lies at the intersection of research areas that have garnered considerable attention from labor, development, and trade economists. However, our focus on urban crime in the developing world - and in particular the connection between trade-induced displacement and the drug trade - is relatively unique, despite the fact that the world's highest rates of homicide are concentrated in poor, urban areas involved in the drug trade.

Our results inform a classic literature exploring labor market conditions as a causal determinant of crime. This work has primarily focused on high income, strongly institutionalized countries, with early studies finding inconsistent results (Freeman, 1982). More recent stud-

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<sup>2</sup>See Dell (2015) for an empirical analysis of how this impacted violence.

ies have found that labor market shocks are anticyclically related to property crime (Raphael and Winter-Ember, 2001; Fishback et al., 2010), whereas the general consensus is that labor market conditions have a limited influence on violent crime (Draca and Machin, 2015).

At the opposite end of the institutional spectrum is a literature that considers how economic incentives shape conflict in developing countries. In particular, a large literature links civil war to negative weather shocks (see Hsiang et al. (2013) for a meta-analysis), and the opportunity cost of joining a rebel movement is one proposed mechanism (Miguel et al., 2004). However, it is not clear the extent to which these findings generalize to crime and to more urbanized, industrialized settings. Most closely related is work examining how commodity price fluctuations affect rural farmers who may engage in illicit drug cultivation. Dube et al. (2016) document that less favorable corn prices lead farmers to grow more marijuana in Mexico, subsequently increasing drug seizures and killings. Similarly, Dube and Vargas (2013) find that a sharp fall in coffee prices during the 1990s lowered wages and increased violence in Colombia. Our results are highly consistent, but focus on urban areas and trade-induced job loss, a topic that has generated considerable recent policy interest.

Finally, our results contribute to an emerging literature that documents the unintended consequences of international trade through local labor market effects. This literature finds that trade exposure is linked not only to job loss but also to persistent unemployment, increased uptake of government transfers, and declines in local tax revenues (Autor et al., 2013). In addition, trade exposure can lead to an increase in mortality (Pierce and Schott, 2016), less marriage (Autor et al., 2017), and electoral outcomes such as support for more extreme parties (Dippel et al., 2015), support for protectionism (Che et al., 2016), and political polarization (Autor et al., 2016).<sup>3</sup> Atkin (2016) documents that the arrival of new manufacturing jobs in Mexico increases school drop out rates. Dix-Carneiro et al. (2017) document that violent crime in Brazil increased following trade liberalization in regions initially more versus less specialized in industries, including agriculture, that experienced a greater decline in tariffs. We contribute to this literature by documenting how declines in manufacturing employment have contributed to violent conflicts over illicit sector opportunities, highlighting the role of criminal organizations and labor-intensive drug trafficking.

The rest of the study is organized as follows. Section 2 introduces the study’s unique data sources and the empirical strategy. Section 3 discusses the results, the mechanisms generating them, and an extensive array of robustness checks. Section 4 concludes.

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<sup>3</sup>There is also a group of papers that analyze the consequences of competition with China for Mexico specifically. This includes Utar and Ruiz (2013) and Iacovone et al. (2013), who analyze the impact of competition with China on the performance of Mexican manufacturing plants, Sugita et al. (2017), who investigated the impact on the changes in transaction partners in the US market, and Chiquiar et al. (2017), who examined the impact for Mexican regional labor market outcomes.

## 2 Methods

### 2.1 Data

Our baseline analysis elucidates the relationship between manufacturing job loss and drug trade-related violence during the administration of President Felipe Calderon (December 2006-2012). Confidential government data provide individual-level information on drug trade-related homicides between 2007 and 2010. Homicides were classified as drug trade-related by federal security officials. We also examine publicly-available homicide data from the Mexican national statistical agency (INEGI), which measure total homicides at the municipality x year level for 1992-2013.

To examine drug trafficking, we use month x municipality level information on illicit drug seizures for 1992-2011.<sup>4</sup> We group drugs into two types: domestically produced drugs, which consist largely of marijuana as well as some heroin and methamphetamine, and cocaine. Confidential government data on municipality-level DTO presence and identity in 2008 provide another key data source for elucidating mechanisms.

To construct manufacturing employment, we utilize the Monthly Survey of Manufacturing Industry (EMIM). EMIM is conducted by INEGI and begins in 2007.<sup>5</sup> The baseline analysis uses four digit industries. We also use the Economic Census, conducted every five years, to measure initial non-agricultural employment and to conduct analyses for periods for which EMIM is unavailable. The Economic Census was conducted in 1999, 2004, 2009, and 2014, with 1998, 2003, 2008 and 2013 reference periods. We do not use the 2008/2009 round because it was conducted at the height of the Great Recession.<sup>6</sup> Finally, data on international competition are from COMTRADE. The data appendix provides more details on these and additional data sources.

### 2.2 Empirical Strategy

The ideal experiment for causal identification would be to randomly assign trade-induced job loss and observe the subsequent impacts on drug-related violence and trafficking. While such an approach is not feasible or ethical, we can closely approximate it by isolating a component of trade exposure that: 1) has a strong effect on local labor markets, 2) is independent of potential drug trade outcomes, and 3) only impacts the drug trade through changes in local

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<sup>4</sup>To our knowledge, the current presidential administration, which took office in 2012, has not made data on seizures during its administration available.

<sup>5</sup>EMIM provides a census of large firms.

<sup>6</sup>Employment fluctuated significantly during this period. To the extent that the constant reference period was not fully understood by respondents, variation in the timing of the survey could generate significant measurement error.

employment. Specifically, we exploit variation in Chinese exports to the U.S. market, which are a primary source of competition for Mexican manufacturing firms, providing evidence that they are plausibly exogenous to changes in drug violence in Mexico. Following the trade literature, we use the following measure of trade competition:<sup>7</sup>

$$\Delta ICW_{iy} = \sum_j \frac{L_{ij,0}}{L_{Mj,0}} \frac{\Delta UC_{jy}}{L_{i0}}$$

$$\Delta UC_{jy} = \frac{Exp_{j,0}}{Exp_0} \Delta Exp_y$$

where  $\Delta ICW_{iy}$  is the change in international competition per worker faced by Mexican municipality  $i$  between the initial year 0 and year  $y$ .<sup>8</sup>  $L_{ij,0}$  is employment of industry  $j$  in municipality  $i$  in the initial year,  $L_{Mj,0}$  is total initial Mexican employment for industry  $j$ , and  $L_{i0}$  is total non-agricultural employment in municipality  $i$ .  $\Delta UC_{jy}$  is the predicted change in Chinese exports to the US in industry  $j$  between year 0 and year  $y$ . It equals the value of Chinese exports to the U.S. of industry  $j$  goods as a share of total Chinese exports to the U.S. in the initial year -  $\frac{Exp_{j,0}}{Exp_0}$  - times the change in the total value of exports from China to the U.S. between the initial year and year  $y$  -  $\Delta Exp_y$ .  $\Delta ICW_{iy}$  can be interpreted as the change in exposure to international competition per worker in municipality  $i$  (in USD terms) and is higher if a municipality has a larger share of employment in industries where Chinese exports to the US are predicted to grow, based on their initial share.

We use the ICW measure in the following first stage specification:

$$\Delta L_{iy}^m = \beta_0 + \beta_1 \Delta ICW_{iy} + \mathbf{\Gamma X}_i + \epsilon_{iy} \quad (1)$$

where  $\Delta L_{iy}^m$  is the change in manufacturing jobs between the initial year and year  $y$  in municipality  $i$ , normalized by the size of the initial non-agricultural labor force.  $\mathbf{X}_i$  are a set of municipality-level control variables and state fixed effects. They absorb residual variance, but make little difference for the point estimates (see Appendix D for a detailed description and robustness analysis), suggesting that indeed changes in predicted competition are orthogonal to other factors influencing the outcomes of interest. The regression is weighted by the size of the non-agricultural labor force. We limit the sample to urban municipalities, in addition to controlling for the initial manufacturing employment share, so variation in  $\Delta ICW_{iy}$  is driven by the initial industrial composition. In the baseline analysis, the initial year is 2007 and the end year is 2010. This allows us to elucidate mechanisms using the unique data on the

<sup>7</sup>For example, Bloom et al. (2015) and Utar and Ruiz (2013) use a similar approach.

<sup>8</sup>We use municipalities rather than commuting zones because the latter (as constructed by INEGI) can encompass extremely large areas that would take many hours to traverse via public transit - the only mode of transport available to most manufacturing workers - and hence do not effectively proxy local labor markets in larger mega-cities. Moreover, the political outcomes we examine are at the municipality level.

drug trade compiled by the Calderon administration while avoiding 2008 and 2009, which were atypical due to the Great Recession. IV regressions are analogous, using  $\Delta ICW_{iy}$  to instrument  $\Delta L_{iy}^m$ .

We focus on Chinese competition in the U.S. market because it is particularly relevant for Mexican firms - generating a strong first stage - but to the extent that it proxies trade competition more generally, the interpretation would be similar. Identification would be threatened if predicted Chinese competition affected changes in the local drug trade through channels other than the labor market. It is possible - though not obvious given that illicit drug demand is highly inelastic - that Chinese competition could affect U.S. demand for drugs trafficked through Mexico. However, it is hard to tell a story where changes in demand would disproportionately affect Mexican municipalities that happened to experience employment declines due to Chinese competition, and where effects would disproportionately fall on high dollar cocaine traffic, which anecdotally is not the drug of choice for displaced U.S. manufacturing workers. Another concern is that places hard-hit by international competition were already experiencing differential trends in drug violence and traffic because they also had a comparative advantage in the drug trade, but we will show using data extending 15 years prior to our sample period that this is not the case.

### 3 Results

#### 3.1 Local Labor Markets and the Drug Trade

We begin by examining whether international competition influences changes in employment between 2007-2010, the baseline period for which we have the richest data to examine mechanisms. Table 1, column 1 shows that there is indeed a strong first stage relationship. International competition is measured in units of \$100,000 USD and the employment changes are standardized, as this makes the subsequent instrumental variables estimates easier to interpret. A one standard deviation ( $\approx$  \$10,000 USD) increase in international competition per worker results in a 0.5 standard deviation decline in employment. We can extend the period to include 2007-2011, and the first stage remains strong (column 2).

Using international competition as an instrument for changes in employment, Table 2 documents that declines in manufacturing job opportunities substantially increase violence. A one standard deviation decline in manufacturing jobs between 2007 and 2010 increases the drug-related homicide rate by 5 per hundred thousand per annum, relative to a sample mean increase of 15 between 2007 and 2010 (column 1). To put this into broader perspective, the homicide rate in New York in recent years has been around 7 per hundred thousand, whereas the homicide rate in Chicago is about twice that. Impacts of employment declines on the

overall homicide rate (columns 2 and 3) are broadly similar, whether we use the 2007-2010 period or extend through 2011, which is not possible with the drug-related homicide data since they were only collected through 2010.<sup>9</sup>

Declines in manufacturing employment translated into violence not just during the drug wars of the Calderon administration but also when the homicide rate was falling and over the longer run. Specifically, the appendix documents similar impacts in other periods, using information on the overall homicide rate and data from the Economic Census to examine how changes in employment between 1998 and 2003 (Appendix A) and 1998 and 2013 (Appendix B) affect violent crime. We consider two specifications of Chinese competition in the U.S. market: the first uses the predicted ICW from Section 2.2 whereas the second uses contemporaneous rather than predicted changes in Chinese exports to the U.S., as initial export composition in 1998 may lack predictive power since it is prior to China's ascension to the WTO. The latter specification provides a stronger first stage, but both approaches paint a similar picture to the baseline analysis. Between 1998 and 2003, a one standard deviation decline in employment leads the homicide rate to increase by around one per hundred thousand, as compared to an overall decline in the homicide rate during this period of around three. When considering the 15 year period between 1998 and 2013, a one standard deviation decline in employment increased the homicide rate by around 12 (Table B-1).

Our data on the demographic characteristics of drug homicide victims show that over 95 percent were male, and around half were under age 30. We would expect employment declines to have larger effects when they disproportionately influence the young, less skilled male workers that are most likely to fill the drug trade's low-level ranks. Neither EMIM nor the Economic Census provide information on worker characteristics, but we can proxy them using data from the 2000 Population Census. We calculate the share of employees in the young, male, less educated demographic at the municipality x three digit industry level and merge these shares with EMIM to estimate the number of jobs in that demographic in each municipality x four digit industry x year.<sup>10</sup> These demographic-specific counts are then used to construct the instrument and endogenous variable, which will approximate demographic-specific changes in employment to the extent that trade shocks hit different workers within three digit industries equally.<sup>11</sup> In Table 2, column 4, the endogenous variable is the imputed employment change for less educated, younger men, whereas the endogenous

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<sup>9</sup>Since there is inherent noise in classifying homicides as drug trade-related, part of the difference between these two rates plausibly consists of drug violence as well.

<sup>10</sup>We define young as individuals under 30 and less educated as individuals who have completed eight or fewer years of schooling - i.e. lower secondary or less. Results (available upon request) change little if we use different cutoffs or do not impose an age criterion.

<sup>11</sup>We impute municipality x industry measures of worker demographics, rather than classifying some industries as intensive in these types of workers and focusing only on those industries, because there is significant heterogeneity in the demographic characteristics of workers in a given industry across municipalities.

variable in column 5 is the change in employment for the residual category. While clearly a proxy that produces somewhat noisy estimates, coefficient magnitudes are much larger - around 14 versus 5 drug-related homicides per 100,000 inhabitants - for a one standard deviation employment decline predicted to affect less-educated, younger men.

Moreover, to the extent that the drug trade forms a key link between unemployment and violent crime, we would expect violence to be concentrated in places with drug trade activity initially. Table 3, column 1 repeats the baseline estimate of the impact of employment changes on drug violence. Column 2 documents that this effect is a precise zero in the approximately one quarter of the sample with no initial drug trade presence. Focusing on municipalities with a drug trade presence - either of a transnational DTO or a more localized drug gang - the effect is slightly larger than in the full sample (column 3). Strikingly, when we consider only municipalities with a transnational DTO - in other words, municipalities with a large-scale criminal organization whose primary aim is to transport drugs to the lucrative U.S. market - a one standard deviation decline in manufacturing employment increases the drug-related homicide rate by 30, an effect about six times larger in magnitude than that in the full sample (column 4). Given the smaller sample, the first stage is somewhat weaker and the coefficient estimate somewhat noisier than that for the full sample, but is still highly statistically significant. Columns 5 through 8 document similar patterns for the overall homicide rate. These results underscore the role of large-scale criminal organizations in linking labor market conditions to violent crime.

### **3.2 Mechanisms**

Local knowledge is a key input for low-level traffickers, and hence we would expect local labor supply to matter for DTO profitability, particularly for high value drugs like cocaine that involve the extensive mobilization of lookouts. We hypothesize that declines in the opportunity cost of criminal employment make drug trafficking more lucrative, and this in turn leads criminal organizations - or factions within them - to fight to control affected territories. We test this by examining whether drug traffic, as proxied by illicit drug seizures, increases when manufacturing employment opportunities decline.

Drug seizures will provide a reasonable proxy for overall drug traffic - which by nature is unobserved - to the extent that changes in employment opportunities do not have large direct impacts on enforcement. In Mexico, local law enforcement is primarily funded by state and federal transfers. Data on municipal budgets compiled by INEGI show that only 10% of municipal budgets are funded by local taxes, the vast majority of which come from taxes on assets and very little of which are drawn from taxes on consumption, production,

or income.<sup>12</sup> Moreover, Appendix Table C-1 documents that changes in employment do not influence the probability that the party controlling the mayorship changes between 2007 and 2010.

Table 4, column 1 estimates that declines in local employment opportunities between 2007 and 2010 lead to a substantial increase in seizures of cocaine, a highly lucrative drug that is overwhelmingly exported to the U.S.<sup>13</sup> There are no effects, however, in places without a drug trade presence initially (column 2). In contrast, the effects are positive and statistically significant in municipalities with an initial drug trade presence (column 3) and are particularly large in areas with a transnational DTO presence (column 4), closely mirroring the heterogeneity in violence. Tables A-1 and A-2 show that declines in employment between 1998 and 2003 similarly increase cocaine seizures, though the effect falls short of statistical significance with the specification in Table A-1.

There is some evidence for substitution away from the trafficking of domestically produced drugs, which consist largely of lower value marijuana that is sold in part domestically and in part to the U.S. market. Manufacturing job loss decreases seizures of domestically-produced drugs in places with an initial drug trade presence (column 7), but the effect is smaller and statistically insignificant in municipalities with a transnational DTO (column 8). These results can be explained by a simple extension of the Becker model in which criminal organizations, particularly the smaller drug gangs, must allocate fixed business resources and flexible workers - i.e. lookouts - between cocaine and less labor intensive, lower value drugs.

An alternative hypothesis is that increases in trafficking and violence result from increased local drug demand due to unemployment, but the pattern of heterogeneity in Table 4 suggests that this is unlikely. If effects were driven by local demand, we would expect to see them as much in places where transnational DTOs dominate as in places where they do not, and we would expect to see substitution towards more locally affordable drugs like marijuana.

Another alternative story is that trade-induced job loss changed political preferences, in turn influencing election outcomes and enforcement. Table C-2 documents using state-level public opinion data that employment declines make respondents less likely to agree that politicians improve well-being, less likely to think there are more opportunities than in the past, and less likely to rate Mexico as democratic. Mayors from Mexico's PAN political party have been more likely to crack down on the drug trade, in turn generating large increases in violence (Dell, 2015), and one concern is that employment declines could increase the probability that the PAN takes office and implements a crackdown. However, Table C-1 documents that if anything, employment declines reduce the probability that the PAN gains

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<sup>12</sup>See [http://www.inegi.org.mx/est/lista\\_cubos/consulta.aspx?p=adm&c=2](http://www.inegi.org.mx/est/lista_cubos/consulta.aspx?p=adm&c=2).

<sup>13</sup>The dependent variable is the log USD value of cocaine confiscations if they are positive and zero otherwise. This measure is non-negative, as the value of cocaine confiscations is always sufficiently large.

control in municipalities where it did not hold office initially (the effect is not statistically significant in places with an initial transnational DTO presence).

A final concern is that places that experienced more job loss would have been on a different violence trajectory in any case because they had a comparative advantage in the drug trade. Table 5 conducts a series of placebo exercises where the dependent variable is changes in homicides or cocaine/non-cocaine seizures in the following periods: 1992-1995, 1995-1998, 1998-2001, 2001-2004, and 2004-2007. The treatment remains the change in manufacturing employment between 2007 and 2010, instrumented by international competition. We examine the sample as a whole, as well as municipalities with an initial drug trade presence. The coefficients on job loss tend to be small and statistically insignificant, with the few that are statistically different from zero plausibly arising by chance given the large number of regressions examined.

### 3.3 Robustness

We conduct extensive robustness analyses, described in more detail in the text at the beginning of the online appendix. Results are broadly robust to the inclusion of a wide variety of controls (Appendix D), to employing alternative measures of international competition (Appendices E-G), to using 6 rather than 4 digit industries (Appendix H), to constructing the denominator of the ICW and employment change measures using manufacturing employment from EMIM rather than non-agricultural employment (Appendix I), and to using a randomization inference style approach rather than conventional inference (Appendix J).

## 4 Conclusion

Trade-induced job loss in Mexico leads to large increases in violence, particularly in municipalities with transnational criminal organizations. When changes in local labor market conditions make it more lucrative to transport drugs through a location by lowering the opportunity cost of criminal employment, drug trafficking organizations plausibly fight to gain control.

Cities in the developing world - and in Latin America in particular - are epicenters of global violence, with drug gangs that have ties to the cocaine trade often playing a central role (Igarape Institute, 2017). Far from being irrelevant to the non-criminal populace, these conflicts consume significant public resources, overwhelm the judicial system, and terrorize citizens. In Mexico, public expenditures on fighting the drug trade approximately equal social development spending, the national clearance rate for homicide at the peak of the drug wars was only 20% - and was as low as 4% in the most violent states - and public

opinion surveys have found that security is more likely than the economy to be chosen as the biggest problem facing the country (Estados Unidos de Mexico, Gobierno Federal, 2010; Keefer and Loayza, 2010; México Evalúa, 2012). While rural insurgencies have traditionally received the lion's share of attention in the social science literature, urban violence will likely only grow in importance as urbanization continues.

This study underscores the value of a Becker-style approach that views violent criminality through a lens that includes economic incentives. When outside options are limited, the economic opportunities provided by the lucrative illicit drug trade are all the more valuable, particularly for the young, low-skilled men that dominate its lower ranks. Improving the outside option of displaced manufacturing workers - through strengthening the social safety net or other adjustment programs - plausibly has an important role to play in the arsenal of policymakers seeking to reduce high rates of organized violent crime in the developing world.

# References

- ATKIN, D. (2016): “Endogenous Skill Acquisition and Export Manufacturing in Mexico,” *The American Economic Review*, 106, 2046–2085.
- AUTOR, D., D. DORN, AND G. HANSON (2017): “When Work Dissapears: Manufacturing Decline and the Falling Marriage-Market Value of Men,” *Mimeo*.
- AUTOR, D., D. DORN, G. HANSON, AND K. MAJLESI (2016): “Importing Political Polarization? The Electoral Consequences of Riding Trade Exposure,” *Mimeo*.
- AUTOR, D. H., D. DORN, AND G. H. HANSON (2013): “The China Syndrome: Local Labor Market Effects of Import Competition in the United States,” *American Economic Review*, 103, 2121–68.
- BECKER, G. S. (1968): “Crime and Punishment: An Economic Approach,” in *The economic dimensions of crime*, Springer, 13–68.
- BEITTEL, J. (2017): “Mexico: Organized Crime and Drug Trafficking Organizations,” *Congressional Research Service*, <https://fas.org/sgp/crs/row/R41576.pdf>.
- BLOOM, N., M. DRACA, AND J. VAN REENEN (2015): “Trade Induced Technical Change? The Impact of Chinese Imports on IT and innovation,” *Review of Economic Studies*, 83, 87–117.
- BRESLOW, J. (2015): “The Staggering Death Toll of Mexico’s Drug War,” *Frontline*, <http://www.pbs.org/wgbh/frontline/article/the-staggering-death-toll-of-mexicos-drug-war/>.
- CHE, Y., Y. LU, J. R. PIERCE, P. K. SCHOTT, , AND Z. TAO (2016): “Does Trade Liberalization with China Influence U.S.Elections?” *Mimeo*.
- CHIQUEAR, D., E. COVARRUBIAS, AND A. SALCEDO (2017): “Labor Market Consequences of Trade Openness and Competition in Foreign Markets,” *Mimeo*.
- DELL, M. (2015): “Trafficking Networks and the Mexican Drug War,” *The American Economic Review*, 105, 1738–1779.
- DIPPEL, C., R. GOLD, AND S. HEBLICH (2015): “Globalization and its (Dis-)Content: Trade Shocks and Voting Behavior,” *Mimeo*.
- DIX-CARNEIRO, R., R. R. SOARES, AND G. ULYSSEA (2017): “Economic Shocks and Crime: Evidence from the Brazilian Trade Liberalization,” *Mimeo*.
- DRACA, M. AND S. MACHIN (2015): “Crime and Economic Incentives,” *Annual Review of Economics*, 7, 389–408.
- DUBE, O., O. GARCIA-PONCE, AND K. THOM (2016): “From Maize to Haze: Agricultural Shocks and the Growth of the Mexican Drug Sector,” *Journal of European Economic Association*, 14, 1181–1224.
- DUBE, O. AND J. F. VARGAS (2013): “Commodity Price Shocks and Civil Conflict: Evidence from Colombia,” *Review of Economic Studies*, 80, 1384–1421.

- ESTADOS UNIDOS DE MEXICO, GOBIERNO FEDERAL (2010): *Oportunidades: A Program of Results*.
- FISHBACK, P. V., R. S. JOHNSON, AND S. KANTOR (2010): “Striking at the Roots of Crime: The Impact of Welfare Spending on Crime during the Great Depression,” *Journal of Law & Economics*, 53, 715–740.
- FREEMAN, R. B. (1982): “Crime and the Labor Market,” *Mimeo*.
- HSIANG, S. M., M. BURKE, AND E. MIGUEL (2013): “Quantifying the Influence of Climate on Human Conflict,” *Science*, 341, 1235367.
- IACOVONE, L., F. RAUCH, AND L. A. WINTERS (2013): “Trade as an Engine of Creative Destruction: Mexican Experience with Chinese Competition,” *Journal of International Economics*, 89, 379 – 392.
- IGARAPE INSTITUTE (2017): “The World’s Most Dangerous Cities,” *Daily Chart*, <https://igarape.org.br/en/the-worlds-most-dangerous-cities/>.
- INTERNATIONAL INSTITUTE FOR STRATEGIC STUDIES (2017): *Armed Conflict Study*, International Institute for Strategic Studies, <http://www.iiss.org/en/publications/acs/by%20year/armed-conflict-survey-2017-8efc>.
- KEEFER, P. AND N. LOAYZA (2010): *Innocent bystanders: developing countries and the war on drugs*, World Bank Publications.
- MÉXICO EVALÚA (2012): *Seguridad y Justicia Penal en los Estados: 25 Indicadores de Nuestra debilidad institucional*.
- MIGUEL, E., S. SATYANATH, AND E. SERGENTI (2004): “Economic Shocks and Civil Conflict: An Instrumental Variables Approach,” *Journal of political Economy*, 112, 725–753.
- ORGANIZATION OF AMERICAN STATES (2013): “The Drug Problem in the Americas,” Tech. rep., OAS General Secretariat.
- PENN, S. (2016): “El Chapo Speaks,” *Rolling Stone*, [www.rollingstone.com/culture/videos/watch-el-chapo-s-exclusive-interview-in-its-17-minute-entirety-20160112](http://www.rollingstone.com/culture/videos/watch-el-chapo-s-exclusive-interview-in-its-17-minute-entirety-20160112).
- PIERCE, J. R. AND P. K. SCHOTT (2016): “Trade Liberalization and Mortality: Evidence from U.S. Counties,” *Mimeo*.
- RAPHAEL, S. AND R. WINTER-EMBER (2001): “Identifying the Effect of Unemployment on Crime,” *Journal of Law and Economics*, 44, 259–83.
- SECRETARÍA DE SEGURIDAD PÚBLICA (2010): *Informe del Estado de la Seguridad Pública en México*.
- SUGITA, Y., K. TESHIMA, AND E. SEIRA (2017): “Assortative Matching of Exporters and Importers,” *Mimeo*.
- U.S. STATE DEPARTMENT (2009): *International Narcotics Control Strategy Report*, available at <http://www.state.gov/j/inl/rls/nrcrpt/2009/>.
- UTAR, H. AND L. B. T. RUIZ (2013): “International Competition and Industrial Evolution: Evidence from the Impact of Chinese Competition on Mexican Maquiladoras,” *Journal of Development Economics*, 105, 267 – 287.

Table 1: First Stage

|                 | %Δ Jobs         |                 |
|-----------------|-----------------|-----------------|
|                 | (2007-10)       | (2007-11)       |
|                 | (1)             | (2)             |
| Δ ICW (2007-10) | -5.17<br>(0.60) |                 |
| Δ ICW (2007-11) |                 | -1.76<br>(0.33) |
| Obs             | 520             | 515             |
| R2              | 0.375           | 0.214           |
| Partial R2      | 0.151           | 0.052           |

Observations are municipalities weighted by the pre-period non-agricultural labor force size. The sample includes all non-rural Mexican municipalities covered by the Mexican Monthly Survey of Manufacturing Industry (EMIM) for the years specified in each column. %Δ Jobs is the difference between annual manufacturing employment levels in the relevant years divided by the pre-period non-agricultural labor force size. Δ ICW measures the predicted change in international competition per worker during the relevant years (see the text for details). Regressions include the controls described in the text, and robust standard errors are in parentheses.

Table 2: Violence

|                                               | $\Delta$ Homicide Rate |           |           | $\Delta$ Homicide Rate |              |
|-----------------------------------------------|------------------------|-----------|-----------|------------------------|--------------|
|                                               | (2007-10)              | (2007-10) | (2007-11) | (2007-10)              | (2007-10)    |
|                                               | (1)                    | (2)       | (3)       | (4)                    | (5)          |
| % $\Delta$ Jobs 2007-10                       | -5.44                  | -6.88     |           |                        |              |
|                                               | (3.23)                 | (4.38)    |           |                        |              |
| % $\Delta$ Jobs 2007-11                       |                        |           | -8.72     |                        |              |
|                                               |                        |           | (5.02)    |                        |              |
| % $\Delta$ Jobs 2007-10 (Low-Skill Young Men) |                        |           |           | -13.62                 |              |
|                                               |                        |           |           | (7.81)                 |              |
| % $\Delta$ Jobs 2007-10 (Residual Group)      |                        |           |           |                        | -4.82        |
|                                               |                        |           |           |                        | (2.83)       |
| Obs                                           | 520                    | 520       | 515       | 520                    | 520          |
| First Stage F-stat                            | 73.40                  | 73.40     | 28.85     | 40.67                  | 78.73        |
| Mean of Dep Var                               | 15.14                  | 20.86     | 20.94     | 15.14                  | 15.14        |
| Homicide Type                                 | Drug-Related           | All       | All       | Drug-Related           | Drug-Related |

Observations are municipalities weighted by the pre-period non-agricultural labor force size. The sample includes all non-rural Mexican municipalities covered by EMIM for the years specified in each column. Estimates are from instrumental variables specifications in which the endogenous variable is % $\Delta$  Jobs - the difference between annual manufacturing employment levels in the relevant years divided by the pre-period non-agricultural labor force size - and the instrument is the predicted change in international competition per worker (see the text for details). In Columns 4-5, % $\Delta$  Jobs and the instrument are constructed for males under 30 with eight or fewer years of schooling and for a residual group composed of all other workers, respectively, using 2000 Population Census data to predict employment composition at the municipality-by-industry level. Regressions include the controls described in the text, and robust standard errors are in parentheses.

Table 3: Violence and DTO Presence

|                         | Drug-Related Homicides        |                               |                               |                               | All Homicides                 |                               |                               |                               |
|-------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
|                         | $\Delta$ Homicide Rate<br>(1) | $\Delta$ Homicide Rate<br>(2) | $\Delta$ Homicide Rate<br>(3) | $\Delta$ Homicide Rate<br>(4) | $\Delta$ Homicide Rate<br>(5) | $\Delta$ Homicide Rate<br>(6) | $\Delta$ Homicide Rate<br>(7) | $\Delta$ Homicide Rate<br>(8) |
| % $\Delta$ Jobs 2007-10 | -5.44<br>(3.23)               | 0.39<br>(1.06)                | -7.17<br>(3.87)               | -30.11<br>(13.99)             | -6.88<br>(4.38)               | 0.06<br>(0.70)                | -8.59<br>(5.16)               | -41.27<br>(19.34)             |
| Obs                     | 520                           | 144                           | 376                           | 293                           | 520                           | 144                           | 376                           | 293                           |
| First Stage F-stat      | 73.40                         | 16.56                         | 55.49                         | 7.22                          | 73.40                         | 16.56                         | 55.49                         | 7.22                          |
| Mean of Dep Var         | 15.14                         | 5.67                          | 18.81                         | 19.24                         | 20.86                         | 10.04                         | 25.05                         | 25.71                         |
| Sample                  | All                           | No DTO                        | Any DTO                       | Major DTO                     | All                           | No DTO                        | Any DTO                       | Major DTO                     |

Observations are municipalities weighted by the pre-period non-agricultural labor force size. The sample includes all non-rural Mexican municipalities covered by EMIM in 2007 and 2010. Estimates are from instrumental variables specifications in which the endogenous variable is % $\Delta$  Jobs - the difference between annual manufacturing employment levels in the relevant years divided by the pre-period non-agricultural labor force size - and the instrument is the predicted change in international competition per worker (see the text for details). Regressions include the controls described in the text, and robust standard errors are in parentheses.

Table 4: Illicit Drug Confiscations

|                         | $\Delta$ Log Value of<br>Cocaine Confiscations (2007-10) |                |                 |                 | $\Delta$ Log Value of<br>Non-Cocaine Confiscations (2007-10) |                 |                |                 |
|-------------------------|----------------------------------------------------------|----------------|-----------------|-----------------|--------------------------------------------------------------|-----------------|----------------|-----------------|
|                         | (1)                                                      | (2)            | (3)             | (4)             | (5)                                                          | (6)             | (7)            | (8)             |
| % $\Delta$ Jobs 2007-10 | -1.19<br>(0.29)                                          | 0.21<br>(0.33) | -1.42<br>(0.38) | -4.11<br>(1.88) | 0.85<br>(0.28)                                               | -0.15<br>(0.32) | 0.99<br>(0.29) | -0.42<br>(1.26) |
| Obs                     | 520                                                      | 144            | 376             | 293             | 520                                                          | 144             | 376            | 293             |
| First Stage F-stat      | 73.40                                                    | 16.56          | 55.49           | 7.22            | 73.40                                                        | 16.56           | 55.49          | 7.22            |
| Mean of Dep Var         | 3.35                                                     | 1.28           | 4.15            | 4.29            | 3.90                                                         | 0.88            | 5.07           | 5.16            |
| Sample                  | All                                                      | No DTO         | Any DTO         | Major DTO       | All                                                          | No DTO          | Any DTO        | Major DTO       |

Observations are municipalities weighted by the pre-period non-agricultural labor force size. The sample includes all non-rural Mexican municipalities covered by EMIM in 2007 and 2010. Estimates are from instrumental variables specifications in which the endogenous variable is % $\Delta$  Jobs - the difference between annual manufacturing employment levels in the relevant years divided by the pre-period non-agricultural labor force size - and the instrument is the predicted change in international competition per worker (see the text for details).  $\Delta$  Log Value of Cocaine Confiscations reflects the change in the log value of cocaine confiscations between 2007 and 2010 and  $\Delta$  Log Value of Non-Cocaine Confiscations is defined analogously. Regressions include the controls described in the text, and robust standard errors are in parentheses.

Table 5: Placebos

|                           | $\Delta$ Homicide Rate |                 | $\Delta$ Log Value<br>Cocaine Conf. |                 | $\Delta$ Log Value<br>Non-Cocaine Conf. |                 |
|---------------------------|------------------------|-----------------|-------------------------------------|-----------------|-----------------------------------------|-----------------|
|                           | (1)                    | (2)             | (3)                                 | (4)             | (5)                                     | (6)             |
| <i>Panel A: 1992-1995</i> |                        |                 |                                     |                 |                                         |                 |
| % $\Delta$ Jobs 2007-2010 | -4.52<br>(0.95)        | -1.42<br>(0.64) | 0.69<br>(0.39)                      | 0.69<br>(0.39)  | 0.15<br>(0.44)                          | -0.29<br>(0.65) |
| Obs                       | 512                    | 370             | 512                                 | 370             | 512                                     | 370             |
| F-stat                    | 72.48                  | 52.92           | 72.48                               | 52.92           | 72.48                                   | 52.92           |
| Mean of Dep Var           | 2.93                   | 16.24           | 0.57                                | 1.84            | 1.26                                    | 3.72            |
| Sample                    | All                    | Any DTO         | All                                 | Any DTO         | All                                     | Any DTO         |
| <i>Panel B: 1995-1998</i> |                        |                 |                                     |                 |                                         |                 |
| % $\Delta$ Jobs 2007-2010 | 0.14<br>(0.45)         | -0.27<br>(0.31) | 0.64<br>(0.46)                      | -0.39<br>(0.61) | -0.07<br>(0.46)                         | 0.34<br>(0.47)  |
| Obs                       | 519                    | 375             | 519                                 | 375             | 519                                     | 375             |
| F-stat                    | 76.87                  | 60.58           | 76.87                               | 60.58           | 76.87                                   | 60.58           |
| Mean of Dep Var           | -1.68                  | 14.15           | 0.19                                | 3.59            | 2.73                                    | 8.61            |
| Sample                    | All                    | Any DTO         | All                                 | Any DTO         | All                                     | Any DTO         |
| <i>Panel C: 1998-2001</i> |                        |                 |                                     |                 |                                         |                 |
| % $\Delta$ Jobs 2007-2010 | 0.23<br>(0.25)         | 0.21<br>(0.25)  | 0.64<br>(0.36)                      | -0.10<br>(0.45) | 0.26<br>(0.50)                          | 0.51<br>(0.34)  |
| Obs                       | 519                    | 375             | 519                                 | 375             | 519                                     | 375             |
| F-stat                    | 78.76                  | 66.10           | 78.76                               | 66.10           | 78.76                                   | 66.10           |
| Mean of Dep Var           | -2.58                  | 11.47           | 1.56                                | 4.19            | -0.19                                   | 8.75            |
| Sample                    | All                    | Any DTO         | All                                 | Any DTO         | All                                     | Any DTO         |
| <i>Panel D: 2001-2004</i> |                        |                 |                                     |                 |                                         |                 |
| % $\Delta$ Jobs 2007-2010 | -0.15<br>(0.27)        | -0.10<br>(0.17) | 0.05<br>(0.55)                      | 0.69<br>(0.37)  | 0.17<br>(0.37)                          | 0.28<br>(0.39)  |
| Obs                       | 520                    | 376             | 520                                 | 376             | 520                                     | 376             |
| F-stat                    | 77.59                  | 65.29           | 77.59                               | 65.29           | 77.59                                   | 65.29           |
| Mean of Dep Var           | -0.83                  | 9.49            | -0.61                               | 5.59            | -0.29                                   | 8.57            |
| Sample                    | All                    | Any DTO         | All                                 | Any DTO         | All                                     | Any DTO         |
| <i>Panel E: 2004-2007</i> |                        |                 |                                     |                 |                                         |                 |
| % $\Delta$ Jobs 2007-2010 | -0.43<br>(0.49)        | -0.12<br>(0.46) | 0.17<br>(0.21)                      | -0.18<br>(0.29) | -0.48<br>(0.52)                         | -0.72<br>(0.45) |
| Obs                       | 520                    | 376             | 520                                 | 376             | 520                                     | 376             |
| F-stat                    | 75.82                  | 60.34           | 75.82                               | 60.34           | 75.82                                   | 60.34           |
| Mean of Dep Var           | -0.59                  | 8.99            | -0.47                               | 4.85            | -1.04                                   | 6.79            |
| Sample                    | All                    | Any DTO         | All                                 | Any DTO         | All                                     | Any DTO         |

Observations are municipalities weighted by the pre-period non-agricultural labor force size. The sample includes all non-rural Mexican municipalities covered by EMIM in 2007 and 2010. Estimates are from instrumental variables specifications in which the endogenous variable is % $\Delta$  Jobs - the difference between annual manufacturing employment levels in the relevant years divided by the pre-period non-agricultural labor force size - and the instrument is the predicted change in international competition per worker (see the text for details).  $\Delta$  Homicide Rate is the change in homicides per 100,000 residents.  $\Delta$  Log Value of Cocaine Confiscations is the change in the log value of cocaine confiscations, and  $\Delta$  Log Value of Non-Cocaine Confiscations is the change in the log value of non-cocaine confiscations. Regressions include the controls described in the text, and robust standard errors are in parentheses.