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# *Getting a Hand By Cutting Them Off: How Uncertainty over Political Corruption Affects Violence*

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Criminal violence differs from other conflicts because illegal cartels primarily use violence to eliminate rivals rather than overthrow the state. However, politicians' ability to influence cartel behavior remains unclear. This article argues that politicians alter the use of violence by setting their jurisdiction's police enforcement levels, but that cartels can bribe politicians to look the other way. Because cartels are uncertain about politicians' corruptibility, not every bribe is successful. Following an election, cartels must invest resources into learning politicians' level of corruption. Cartels only increase their level of violence after successfully bribing political leaders, which implies that local violence levels should increase the longer parties remain in office. The study formalizes this argument and tests its implications using data on homicides and political tenure from Mexico. The results link incumbency to violence and suggest Mexico experiences an additional 948 homicides for each year of increased political tenure after holding an election.

*Keywords*: corruption; bribery; bargaining; violence; Mexico

Criminal organizations and cartels perpetrate violence that kills thousands annually.[1] Unlike insurgents trying to overthrow the state, cartels generally direct their violence at rivals to eliminate market competition. Therefore criminal organizations should strategize where and when to use violence. Although criminal violence exhibits significant sub-national variation, prior research has mainly used international or national-level mechanisms to explain it.[2] Frequently cited mechanisms include changes in cartels' relative military capabilities, exposure to national drug interdiction policies and policing priorities, and leader decapitation. The mechanisms through which politicians can directly influence cartels' behavior are less understood.

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[1] Bateson 2012; Carreras 2013; Lessing 2014; Rios 2015. Beyond the ongoing drug war in Mexico, other relevant examples of violence over criminal rents includes gang violence in the United States, Central America, and South America (Kronick 2014) as well as drug and diamond smuggling in West Africa.

[2] Dickenson 2014; Espinosa and Rubin 2015; Rios 2012.

In this article, we examine how politicians and political parties affect violence in their districts in Mexico. A key factor determining whether cartels use violence is local police enforcement levels. Cartels avoid producing violence against rivals in areas with high levels of enforcement because it is likely to draw the attention of federal police or the US Drug Enforcement Agency (DEA), which may seize contraband and matériel. Thus cartels prefer to bribe politicians in order to create low-enforcement areas in which to operate.

Cartels cannot know exactly how much to pay to induce compliance; they do not want to overpay. Yet the willingness to accept a bribe is an internal attribute. Our approach contrasts with other studies of bribery and bargaining, which assume complete information about levels of corruption.[3] To determine the impact of uncertainty over corruption, we develop a model of bribery and enforcement in which a local cartel attempts to reduce enforcement by offering a bribe to political elites. Elites weigh their desire to minimize violence against bribery's monetary benefit when deciding whether to accept a bribe. Finally, the local cartel uses violence to maintain control of valuable territory against a rival cartel.

Uncertainty plays a critical role in determining the outcome of the interaction, and thus helps explain sub-national variation. When the cartel knows the politician's corruption level, it can choose the precise level of bribe to ensure that enforcement will be lax. Consequently, levels of violence rise. In contrast, when the cartel faces great uncertainty about the politician's corruptibility, it may offer smaller bribes that the politician rejects. Here, we expect levels of violence to be lower because the politician is more likely to enforce the law. Thus, counter to standard models of costly conflict, we expect uncertainty to *decrease* levels of violence.

Given this prediction from our formal model, we hypothesize that municipalities with newly elected leadership have lower levels of violence. This might seem counterintuitive because experience in office should increase politicians' skill in overseeing police work, thereby decreasing violence. Alternatively, standard theories of retrospective voting would predict that voters punish parties for increases in crime.[4] Our model demonstrates that these predictions make sense when levels of corruption are *low*, such as in the United States.

In contrast, our model shows a positive correlation between violence and leader tenure when levels of corruption are high. Drawing from recent theoretical and empirical conceptualizations of uncertainty, we argue that cartels know less about politicians' preferences early in their political tenure.[5] During these times, cartels are more likely to see their bribes fail, and to see laws properly enforced. As their tenures progress, cartels gain additional knowledge about politicians' preferences. The chances of reaching an agreement correspondingly increase. Successful bribes, in turn, lead to fewer interdiction efforts and police enforcement – and increasing levels of violence.

To investigate our model's empirical predictions, we draw on evidence from the ongoing drug war in Mexico. Using data collected by the Mexican Government on extralegal deaths from 2000 to 2011, we show that there is a positive correlation between a leader's tenure and that district's homicide rate. This result, moreover, is robust to a variety of model specifications and units of analysis. Increased tenure at both the local (municipality) and federal levels, for example, is positively associated with increases in homicide rates. To concretize the effect we

[3] Dal Bó, Dal Bó, and Di Tella 2006; Lessing 2013. Uncertainty over corruption is not the only type of uncertainty that complicates bribery. For example, Lessing (2013) models uncertainty over drug revenues, which determines a cartel's reservation value. Nevertheless, uncertainty over corruption generates interesting empirical implications, which is why we focus on it.

[4] Fiorina 1981; Kinder and Kiewiet 1979; Kinder and Kiewie 1981. Cummins (2009), for instance, finds that American governors and their political parties suffer at the polls when crime rates are high.

[5] Rider 2013; Spaniel and Smith 2015; Wolford 2007.

observe, we find that each additional year a politician serves in Congress leads to approximately one additional homicide in their district every two years. Across the 2,371 municipalities in our dataset, this leads to an additional 948 homicides for each year of increased political tenure following an election.

Our article contributes to prior work on criminal violence. By focusing on sub-national variation, our empirical strategy highlights the role that local politicians play in determining levels of violence. Research on the Mexican drug war highlights how the 2000 election destabilized earlier truces between the ruling Partido Revolucionario Institucional (PRI) party and cartels, which in turn caused substantial increases in violence.[6] While this focus on national politics is important, it fails to explain why some municipalities are more violent than others.

We also make several contributions to the literature linking clientelism with political conflict. Prior research on clientelism generally focuses on how politicians use clientelistic networks to influence electoral outcomes.[7] By inverting the principal–agent relationship between politicians and voters, clientelism reduces voters' ability to hold politicians accountable for their actions in office. Although ongoing research explores how campaign donations and lobbying influence politicians' incentives, we provide insights about how criminal organizations use bribery to distort policy.[8] Our results also suggest that elections and the threat of political exit are insufficient to prevent all types of politicians from accepting bribes. This suggests that clientelist relationships exist between both politicians and voters *and* between politicians and criminal organizations.

## KEY FEATURES OF CARTEL COMPETITION AND POLICE ENFORCEMENT

In the following section, we develop a model in which a cartel can bribe a politician to overlook its use of violence. To ensure substantive plausibility, we first outline five features of cartel competition and police enforcement that are critical to incorporate.

First, multiple cartels sometimes resort to violence against each other. This assumption does not preclude co-operation between cartels, but it does require them to resort to arms should co-operation break down.[9] In practice, this happens. Cartels are distinct from firms in the formal economy because they lack access to institutionalized dispute resolution mechanisms with third-party enforcement. Courts generally settle disputes between firms, yet they are unavailable to cartels because their business dealings are illegal.[10] Empirically, cartels use violence to compete with each other over territory, access to smuggling routes and rents.

Secondly, we assume that cartels lack complete information about politicians' corruptibility. In other words, we assume that a politician's willingness to take bribes is not publicly observable and that cartels must invest time and resources to learn it. We justify this assumption theoretically. First, politicians have incentives to misrepresent their willingness to take bribes. Even highly corruptible politicians would signal to cartels that they are less corrupt in order to receive larger bribes. Moreover, there are few predictors of corruptibility that can be observed *ex ante*.

[6] Osorio 2013; Resa Nestares 2001; Sabet and Rios 2009.

[7] Cruz and Keefer 2015; Cruz, Labonne, and Querubin 2017; Gans-Morse, Mazzuca, and Nichter 2014; Stokes 2005.

[8] Bonica 2013; Romer and Snyder 1994.

[9] Most instances of inter-cartel co-operation are relatively short-lived. The story of Juárez Cartel leader Vincente Carrillo Fuentes is emblematic. Carrillo formed an alliance with the Sinaloa cartel early in the 2000s. When the head of the Sinaloa cartel killed Carrillo's brother in 2004, the alliance ended (Associated Press 2014; Beittel 2010).

[10] Miron 1999.

Taking a bribe is a personal decision that research suggests does not depend on religion, political party or ideology.[11] This supports our assumption that corruptibility is a latent personality trait that is not perfectly observable to cartels.

Thirdly, we assume that drug interdiction efforts and police crackdowns increase the costs of territorial competition. To support this assumption, we rely on two observations. First, territorial competition significantly increases the homicide rate, which attracts the government's attention. In turn, the government can use the DEA and elite police squads to pacify the area.[12] The sudden increase in the number of police officers in the area makes it costlier for both the incumbent and rival cartels to manufacture and transport drugs. Secondly, when the police successfully raid cartel storehouses, they confiscate large portions of their profits. Without access to this cash, a cartel is in a worse position to bribe officials, purchase weapons and pay its workers. Alternatively, more enforcement means more arrests, forcing a cartel to train new recruits and increase hazard pay to meet that demand. Either way, a local cartel would expect to pay more to maintain its control.

Fourthly, we assume that politicians (other than the president) can influence the deployment and enforcement priorities of the police. In their study of police brutality, Jacobs and O'Brien[13] argue that politicians directly influence American police officers' incentives and behavior in the field. They find that 'police killings [of blacks] are likely to be reduced when the most powerful political official in a city is African-American', suggesting that police respond to the political establishment's real and perceived directives.[14] Similarly, Holland[15] argues that politicians influence police behavior to mobilize voters. Specifically, she finds that '[police] enforcement drops off at moments when politicians intervene' in their constituents' favor by redeploying police elsewhere.[16] It is uncommon for politicians to openly discuss their manipulation of the police, not least because doing so to support cartels is illegal. These empirical examples suggest, however, that politicians can (and do) intervene to influence the police's behavior *vis-à-vis* their supporters.

Finally, for there to be any variation in the outcome, politicians must be willing to reject low bribes. Specifically, it could be that the cost of enforcement is so high that politicians would accept any amount to avoid punishment from the cartel. In reality, the possibility of such punishment does not eliminate a politician's other incentives. There are numerous empirical examples of politicians who refused to co-operate with criminal organizations. Cartels also have incentives to exaggerate their willingness to punish, yet they might back down to avoid drawing the DEA's attention. For example, after the Knights Templar (allegedly) assassinated the mayor of Santa Ana, Felipe Calderón deployed federal troops to eliminate cartels from the area. This example highlights both a politician who stood firm against cartels and the risks criminal organizations face when using violence against politicians.

That cartels bribe politicians at all suggests that fear alone is insufficient to induce compliance. If punishment in isolation were so persuasive, cartels should offer politicians no more than their life and refuse to pay millions of dollars. Yet bribes are often enormous. The former governor of Quintana Roo was sentenced to almost eleven years in American prison for conspiracy to launder millions of dollars.[17] According to prosecutors, '[he] agreed to let the

[11] Rose-Ackerman 2013.

[12] Examples of such squads include the Compañía Jungla Antinarcóticos in Colombia, the Policía Antinarcóticos in Argentina and the División Antinarcóticos in El Salvador.

[13] Jacobs and O'Brien 1998.

[14] Jacobs and O'Brien 1998, 854.

[15] Holland 2016.

[16] Holland 2016, 3.

[17] Zabludovsky 2013.

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TABLE 1 *Notation of the Bribery Game*

| Notation | Description |
|---|---|
| $v_i$ | Cartel *i*'s level of violence |
| $\alpha$ | Cartel 1's relative advantage in producing violence |
| $k(\alpha)$ | Politician's cost of enforcement function |
| $c$ | Politician's level of corruption |
| $b$ | Cartel 1's bribe to the politician |

Juárez cartel transport cocaine in exchange for up to $500,000 per shipment'.[18] Correspondingly, we observe variance between bribery and punishment.[19]

## THE MODEL

In this section, we present our formal model of the bargaining process between cartels and politicians. Bribery is one mechanism that affects levels of violence in a district, as cartels attempt to co-opt politicians so they may use violence without restriction.[20] However, reaching an agreement is not straightforward because politicians' preferences regarding corruption are unique. Although some might gladly accept even the smallest bribe, others have strong personal convictions against co-operating with cartels.[21] These preferences are unobservable to cartels; the extent of the information problem determines the outcome of the interaction.

### *Players*

The game consists of three players: two cartels (denoted 1 and 2) and a politician.[22] Cartel 1 controls the local district and can use violence to keep Cartel 2 from encroaching. Without loss of generality, we standardize the economic value of control of the territory to 1. Cartel 2, meanwhile, can use violence to challenge Cartel 1's control. The politician wishes to keep the level of violence down, though it is willing to permit violence at the right price. Table 1 summarizes the notation for our bribery game.

### *Timing*

Play begins with Nature determining the politician's level of corruption as $c'$ with probability $p$ or $c$ with probability $1-p$, where $c' > c > 0$. As we detail in the pay-offs momentarily, politicians with a corruption value of $c'$ find bribes more attractive than the less corrupt $c$ type. The politician observes the draw, but the cartels do not. All other elements are common knowledge.[23]

[18] Zabludovsky 2013.

[19] Dal Bó, Dal Bó, and Di Tella 2006. The mechanism causing the variance that we focus on is uncertainty, whereas Dal Bó, Dal Bó, and Di Tella (2006) investigate how institutional immunity affects the relative attractiveness of each choice.

[20] We do not claim that it is the only such mechanism. Others include the election of anti-cartel politicians (Dell 2015), American drug policy and interdiction efforts (Miron 1999; Rios 2015), and the breakdown of earlier truces between cartels and political institutions (Sabet and Rios 2009).

[21] Dal Bó, Dal Bó, and Di Tella 2006.

[22] Although we ultimately care about police enforcement, we focus on political bribery because such large-scale corrupt behavior requires political consent, and these party leaders and politicians ultimately have control over police policies.

[23] Of course, there are other sources of uncertainty in these bargaining relationships. We focus on uncertainty over corruption to isolate the relationship.

Cartel 1 begins the strategic interaction by using its regional ties to offer a bribe $b \geq 0$.[24] The politician accepts or rejects the bribe. If he accepts, then a monetary transfer occurs, and the politician implements a minimal level of enforcement $\underline{\alpha}$. If the politician rejects, he chooses a level of police enforcement against $\alpha \in [\underline{\alpha}, 1]$. Higher levels of enforcement make violence costlier for Cartel 1 to produce.[25] Afterwards, the cartels simultaneously choose respective levels of violence $v_1 \geq 0$ and $v_2 \geq 0$. The game then ends.

### *Pay-offs*

The politician's pay-off depends on whether he accepted the bribe and the quantity of violence produced. If the bribe succeeds, the more corrupt politician receives $-(v_1+v_2)+bc'$ and the less corrupt politician receives $-(v_1+v_2)+bc$. Consequently, both suffer the sum quantity of violence. However, the more corrupt politician places a greater weight on the value of the bribe $b$ than the less corrupt politician.[26] This makes the more corrupt politician easier to bribe.

If the bribe fails, the pay-off for both types is $-(v_1+v_2)-k(\alpha)$, where $k(\alpha)$ is a function that maps the enforcement level to a cost of exerting that effort. In the 'plata o plomo' framework, rejecting bribes risks cartel interference with the government; the higher the enforcement level, the greater the threat of punishment.[27] To reflect that, let $k(\alpha)$ be differentiable everywhere on the unit interval, $k(\underline{\alpha})=0$, $k'(\alpha)<0$, and $k''(\alpha)\geq 0$. Intuitively, this means that completely shirking enforcement is not costly to the politician, each unit of additional enforcement is more costly, and that each additional unit of enforcement is at least as costly as the last. One could imagine that these costs are borne directly from enforcement or indirectly through the cartel's response.[28]

We use a proportional contest success function to model the cartels' competition. Specifically, Cartel 1 takes $\frac{v_1}{v_1+v_2}$ portion and Cartel 2 takes the remainder, or $\frac{v_2}{v_1+v_2}$. Thus, increasing Cartel 1's violence results in a greater share of the good going to Cartel 1 and a smaller share going to Cartel 2, and vice versa. However, each pays a cost for its effort. We therefore subtract these costs from each cartel's pay-off. This leaves Cartel 2 with an overall pay-off of $\frac{v_2}{v_1+v_2}-v_2$.

Cartel 1's pay-off depends on whether the politician accepted the bribe and the enforcement level. If the bribe succeeded, Cartel 1's pay-off equals $\frac{v_1}{v_1+v_2}-\underline{\alpha}v_1-b$; if the bribe failed, Cartel 1's pay-off equals $\frac{v_1}{v_1+v_2}-\alpha v_1$. Thus Cartel 1 faces a stark trade-off: bribes are costly, but buying the politician's compliance makes violence cheaper. The bribe may therefore be worthwhile to gain advantage over Cartel 2.[29]

[24] An alternative interpretation is that our game is an approximation of an interaction in which the status quo actor has closer ties to the local politician, which appears generally true across Mexican municipalities.

[25] In the Appendix, we solve a model in which the bribe directly increases the probability that Cartel 1 wins the contest against Cartel 2. The empirical implications are equivalent to the model we present here.

[26] We are therefore analyzing a bargaining game with *quid pro quo* offers. This might seem strange given that the very nature of bribery means that such deals are not enforceable through traditional legal mechanisms. However, we could instead think of this game as the reduced form of a longer-horizon exchange. Rather than paying the entire bribe up front, the cartel could make a number of smaller payments over time. Given this repetition, the politician would not have an incentive to defect on the deal when doing so would cancel the long-term gains from cooperation (Axelrod 1984). Furthermore, punishment strategies across municipalities allow cooperation to persist even if local leadership turnover is known in advance.

[27] Dal Bó, Dal Bó, and Di Tella 2006.

[28] We leave an explicit response decision from the cartel unmodeled for the sake of parsimony. Nevertheless, it is natural to assume that these costs are increasing in enforcement effort exerted, which is the critical assumption necessary to generate the bargaining tension.

[29] One may therefore wonder whether our results would change if both cartels could attempt to bribe the politician. In fact, such an extension only strengthens our results. This is because uncertainty increases the probability of

### *Equilibrium Bribery*

Because Cartel 1 faces uncertainty over the politician's corruption level, we ultimately search for perfect Bayesian equilibria. However, to preview what follows, it is first useful to understand what would happen in the complete information case. The Appendix gives full propositions and details, but the general logic is as follows. Cartel 1 compares its higher welfare under no enforcement and its lower welfare under the politician's optimal level of enforcement. The difference represents the maximum bribe Cartel 1 is willing to pay the politician. Cartel 1 then calculates the minimum bribe necessary to convince the politician to forgo enforcement and suffer the greater value of violence. If the maximum bribe Cartel 1 is willing to pay is greater than this minimally acceptable bribe, it offers that minimum amount. The bribe is successful, and enforcement is low. If not, Cartel 1 proposes an unacceptable amount to guarantee rejection. Enforcement is high.

With that, we can now describe the results for the incomplete information framework, beginning with the case in which uncertainty proves irrelevant:

PROPOSITION 1: Suppose the corruption level for both types of politicians is sufficiently small. Then bargaining between Cartel 1 and the politician fails with certainty. Equilibrium levels of violence are low.

The logic follows straight from the complete information analysis. If the most corrupt type is not particularly corrupt, then no mutually acceptable bribe exists. In turn, Cartel 1 offers an amount insufficient to reach an agreement. But if Cartel 1 is unwilling to buy off the more corrupt type, it certainly is unwilling to buy off a less corrupt type too.

As such, uncertainty only matters in cases where corruption is generally high. We therefore focus the remainder of our analysis on situations in which both types are willing to accept the largest bribe Cartel 1 is willing to offer.[30] This is also the most substantively interesting case. Based on our qualitative discussion above, local officials and cartels seem willing to negotiate agreements with one another. Stories and criminal proceedings of corruption and collusion between cartels and officials are not limited to any particular geographic region, political party or socio-economic background. As such, we focus on that parameter space.

Knowing that the politician will accept *some* bribe does not imply that they will reach an agreement. Indeed, the cartel might wish to offer small bribes, hoping to purchase the politician's compliance at a low price. As the following proposition explains, this can lead to bargaining breakdown:

PROPOSITION 2: If the politician is sufficiently likely to be more corrupt, Cartel 1 offers a small bribe. The more corrupt type accepts with certainty while the less corrupt type rejects with certainty. Violence levels are high against the more corrupt type but lower against the less corrupt type.

The Appendix contains all of our full proofs. For intuition, suppose Cartel 1 believes it is likely facing the more corrupt type. It therefore prefers tailoring its bribe to that type, even knowing that this smaller offer induces the less corrupt type to reject; it is not worth paying more to cover the rare event that the politician is hard to corrupt. Because the less corrupt type then enforces the laws, violence diminishes. In contrast, when the bribe succeeds versus the high type, enforcement levels

*(F'note continued)*
bargaining breakdown and higher levels of enforcement. Thus, if both cartels could bribe, violence levels would be notably greater when bargaining succeeds (as now both benefit from lax enforcement) than when it fails.

[30] Another case exists in which a bargaining range exists only for the more corrupt type. Here, Cartel 1 can simply focus on settling with the more corrupt type. Violence levels overall are middling.

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drop and violence rises. Because both outcomes occur with positive probability in this case, we expect to see a middling level of violence.[31] Violence is more prominent in the next case, however:

PROPOSITION 3: If the politician is sufficiently likely to be less corrupt, Cartel 1 offers a large bribe. Both types accept with certainty. Without enforcement, violence levels are high.

The intuition here is that Cartel 1 ought to tailor its bribe to the less corrupt type because that type is likely in this case. Unfortunately for Cartel 1, this requires offering a large amount. Because the more corrupt type is receptive to small bribes, it is also willing to accept larger bribes. As a result, both types accept and do not enforce the laws. In turn, violence increases for the reasons described above. As such, the expected level of violence is greater.

### *Comparative Statics*

Later, we empirically investigate the sources of violence in Mexican municipalities. To do this, we first need to draw a comparative static that we can then use to construct a testable hypothesis. Our qualitative overview at the beginning of this article pointed to the ease of successful bribery as a critical driver of drug violence in Mexico. With incomplete information, such ease is a function of the informational environment:

PROPOSITION 4: If mutually acceptable bribes exist for both types, violence weakly increases as the difference in possible corruption levels decreases.

The basic intuition is as follows. Without uncertainty, Cartel 1 can appropriately tailor the bribe and reach a mutually preferable settlement with the politician. In the incomplete information case, the difference between types is one measurement of uncertainty.[32] As that difference diminishes, the potential types the cartel could be facing become increasingly similar. This encourages Cartel 1 to offer an amount that both would prefer to bargaining breakdown.

Essentially, Cartel 1 has two options. First, it can offer a small amount, in hopes that it is facing the more corrupt type, and suffer through full enforcement against the less corrupt type. Secondly, it can offer a large amount that induces both types to accept. This second case is expensive because it requires paying a large bribe to both types, effectively costing Cartel 1 a fixed amount whenever the politician is the more corrupt type. However, as possible corruption levels become increasingly similar, this premium becomes vanishingly small. As such, the amount 'wasted' on the bribe to the more corrupt type becomes less significant. In turn, Cartel 1 prefers offering the amount necessary to induce both types to accept.

Although reducing uncertainty leads to an increase in the likelihood of settlement, it also *increases* violence levels. This should be striking to researchers familiar with bargaining and conflict. Normally such models indicate that reducing uncertainty reduces conflict. On a technical level, this remains true here: the level of observed conflict (that is, bargaining breakdown) between Cartel 1 and the politician decreases as uncertainty decreases. However, the purpose of an agreement between the two is to increase the effectiveness of violence for Cartel 1. As such, decreasing uncertainty has a negative externality on outsiders (that is, private citizens) who want a decrease in violence.

[31] Cheap talk signaling cannot resolve the bargaining breakdown here. The more corrupt type has an incentive to mimic the less corrupt type; if believed, the more corrupt type receives a larger bribe than it would if Cartel 1 knew it was a more corrupt type.

[32] Formally, the difference is $c' - c$. See Reed (2003) and Spaniel and Smith (2015) for other uses of this measurement.

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*Hypothesis*

We now derive a testable implication from the model. The formal analysis demonstrates that high-quality information is critical for the parties to reach an agreement. This presents a major problem for empirical inquiry, however. Predicting bargaining failure would require the analyst to know more than the interacting parties. After all, if breakdown were perfectly predictable for the actors involved, the cartel would simply increase its offer to an acceptable level and eliminate any inefficiency. Thus, bargaining breakdown (and thus variation in violence) is in the error term.[33]

Fortunately, despite this hurdle, fruitful inquiry is still possible. Rather than assume that researchers can better understand the information asymmetry than the players involved, we can instead investigate environments that correlate with uncertainty in general. Recall that Proposition 4 measures such uncertainty using the difference in possible types. Relating this to observable factors, Wolford[34] argues that new leadership creates a shock to informational structures. Opposing actors must throw out their estimates of the old leader's resolve and restart their information gathering. However, as a leader's tenure increases, those estimates become progressively better, and therefore the difference in types decreases. Bargaining is more likely to succeed under these circumstances.

That said, Proposition 1 indicates that information – and thus tenure – only matters in areas where corruption is high in general.[35] When a political machine first takes local control, cartels will be unfamiliar with the key political elite. As time progresses, though, observable information about these leaders accumulates. Thus although corruptibility is an innate trait, cartels can narrow their expectations by seeing how leaders behave over time. Per Proposition 4, this accumulation of knowledge decreases the probability of bargaining breakdown, which in turn decreases levels of law enforcement and increases violence. We can thus summarize our hypothesis as follows:

HYPOTHESIS 1: Violence levels increase with leader tenure.

Note how our hypothesis differs from previous claims about the interaction between elites and violent organizations. In general, the relationship between elites and violent groups is cast as one of principals and agents, in which violent groups serve politicians' interests.[36] Our model shows that this is an incomplete understanding of cartel behavior. By harnessing their financial resources, cartels attempt to bribe politicians into serving as their agents. Another common argument is that, beyond passing laws or creating opportunities for criminal organizations, governments have minimal influence over violent organizations.[37] Violence occurs because cartels do not have property rights, and therefore use violence to settle disputes. In contrast, we show that local institutions play an important role in determining levels of violence.

Although our empirical focus is on uncertainty, the model also generates a number of other predictions. We briefly describe them here as they may prove useful for future research. First, although citizens do not have a strategic role in this game, there are still clear welfare implications for them. Indeed, one could treat a citizen's utility as the sum of violence. Obviously, electing officials

[33] Gartzke 1999.
[34] Wolford 2007.
[35] In places where corruption is normally low – highly functioning Western democracies, for example – we would expect tenure to matter little in this regard.
[36] Collier and Vicente 2012; Hafner-Burton, Hyde, and Jablonski 2014. Common examples include studies of electoral violence, in which politicians hire thugs to harass and intimidate opposition voters and candidates.
[37] Miron 1999; Rios 2012; Varese 2011.

with low corruption levels reduces violence. But more subtly, increasing uncertainty about corruption has a similar effect. This creates an interesting trade-off. Recent research indicates that newer leaders in developing countries often lack the basic skills necessary to efficiently implement policy[38] and instead use ethnic kinship, family ties or celebrity to secure their election.[39] Time in office may improve their enforcement capability, which may help their re-election bids. However, it also increases the likelihood of bribery. This suggests that large-n empirical work may have a difficult time finding evidence for the skill-building mechanism given uncertainty's countervailing effect.

On a similar note, increasing enforcement capacity does not have a straightforward effect on violence. If the bribe fails, lower enforcement costs encourage the politician to exert greater effort. This directly hurts the cartel. In turn, the reward the cartel receives from having a bribe accepted increases. Although the minimum necessary bribe also increases, the reward can increase more rapidly than the payment amount. Successful bribes become more likely in such cases. As such, increased enforcement capacity can counterintuitively result in *more* violence.

Finally, uncertainty decreases the bribing cartel's utility. The exact cause of the utility loss depends on which side of the risk–return trade-off the cartel chooses. If it makes the risky offer, its loses out on reaching an otherwise mutually acceptable offer with the less corrupt type. If it makes the safe offer, it overpays the more corrupt type. Either way, the cartel is worse off than in the complete information case. Thus any actor that benefits directly from the cartel's utility loss can improve its welfare by increasing uncertainty about the politician.

## EMPIRICS

### *Case Selection*

We test the above hypothesis using data from the ongoing drug war in Mexico. Many scholars credit the election of Vicente Fox in 2000 with ending a pact between criminal organizations and the Mexican Government.[40] Prior to his election, elites within the dominant PRI allegedly negotiated truces and distributed territory to cartels within Mexico.[41] After the government refused to enforce these earlier agreements, competition emerged among cartels over territory and rents. The result was a sudden increase in violence.

Mexico is not the only country to see an increase in criminal violence within the past decade. It is, however, an ideal case in which to test our model's empirical predictions due to two features. First, the Mexican Government publishes uniquely fine-grained data about the timing and location of violent events. Few countries release homicide data at the municipal level, instead preferring states or provinces, which makes it difficult to link violence to legislators' districts. As testing our argument requires us to know how long a politician has been in office, this feature is essential.

Secondly, Mexican politics features relatively frequent political turnover. During the study period, political parties remained in office for an average of 3.59 years ($\sigma = 2.90$). There is also significant geospatial and longitudinal variation in political parties' support throughout Mexico. This is important, since an essential feature of our argument is that criminal organizations face uncertainty about politicians' preferences for corruption. If a political party were locally or nationally dominant, this would greatly reduce the amount of uncertainty to trivial levels.[42]

[38] Cruz and Keefer 2015.
[39] Cruz, Labonne, and Querubin 2017.
[40] Kan 2012.
[41] Resa Nestares 2001.
[42] An example of such a country is Venezuela, where political turnover was very low until the most recent election.

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## Data

*Dependent variable*. Several attempts have quantified the ongoing violence in Mexico. We use the official dataset produced by the Office of the President (Presidencia de la República) that was released in 2011. Using data compiled from the Office of the General Prosecutor (Procuradoría General de la República), this dataset reports the total number of homicides in every municipality in Mexico from 1990 to 2011.[43] We begin our time series in 2000 for theoretical reasons. Before its electoral defeat in 2000, many scholars claim that the PRI actively brokered truces between cartels and allocated territory.[44] By preventing territorial wars, the active involvement of the federal government mitigated violence. After winning the 2000 election, the Partido Acción Nacional (PAN) ended a policy of co-operation between the government and cartels.[45] This strongly suggests two separate data-generating processes: pre- and post-the PAN election.[46] After omitting earlier observations, the resulting dataset has 28,012 municipality-year observations. These data are summarized in Figures 1 and 2.

We use the data generated by the Office of the President for several reasons. First, because a federal institution generated it, it is less likely to be geographically or temporally biased. Although numerous non-governmental organizations (NGOs) and newspapers (most notably *Reforma* and *Milenio*) record homicides in their regions, these data sources have a particular regional focus. These sources are correspondingly more likely to under-report counts outside the NGO's home region.[47] Moreover, in districts that overlap, the Office of the President data is highly correlated with the measures produced by *Reforma* and *Milenio* and by Holland and Rios[48] ($p = 0.96$). Secondly, the Office of the President's data has a longer time series. Alternate measures of drug-related violence published by the Office of the General Prosecutor report only several months of data. For example, their dataset of 'organized-crime style homicides' only spans from January to September 2011.

Although we argue that our dependent variable is the best count of homicides available in Mexico, it has certain limitations. First, and importantly when considering cartel-related violence, it only counts killings that were reported to police agencies. There are examples in the press of cartel-related killings that were never reported to police, or were only discovered years later.[49] While undercounts such as these undoubtedly exist in our data, they bias against obtaining the statistical results we present in the next section. Undercounts should be more likely in areas where violence and inter-cartel competition is high than in completely tranquil

[43] This dataset was discontinued in 2012 without explanation.

[44] Guerrero 2009; Resa Nestares 2003.

[45] Kan 2012.

[46] There are several reasons that our theoretical model does not capture bargaining dynamics during the PRI period. First, political parties did not face a competitive environment. Without accountability from voters, parties might only nominate especially corrupt types. In this scenario, a cartel's uncertainty about a politician's corruptibility would be systematically lower. Secondly, without competitive elections, cartels bargained with party executives who in turn demanded loyalty to their decisions from local politicians. Cartels therefore had little reason to bargain or interact with local politicians, which is an important scope condition for our model. Finally, the corruption level in our model is relative to preferences for good public policy. The calculus for local politicians changed in the post-PRI period, due to both the threat of competition and the lack of a centralized bargaining partner.

[47] These NGOs and newspapers compile data from police reports, social media accounts and informer networks. To perform this kind of detailed work nationally would require journalists to have informer networks throughout Mexico.

[48] Holland and Rios 2015.

[49] For example, a henchman for the Sinaloa Cartel dissolved 'about 300' bodies in acid so they could not be identified (Nájar 2014).

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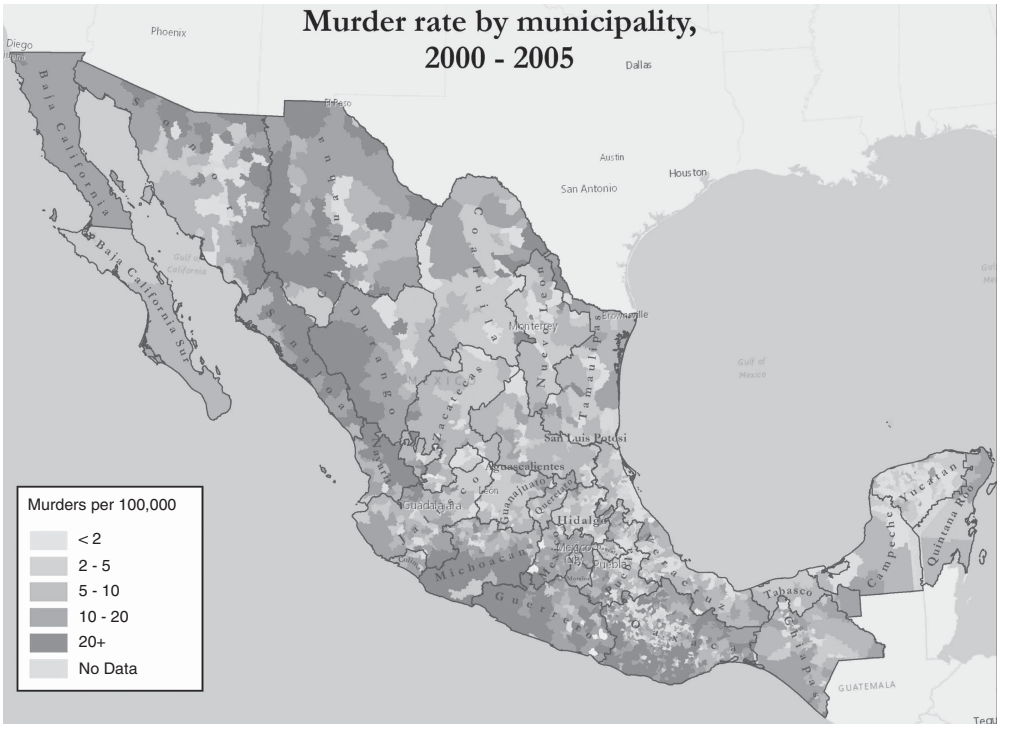


*Fig. 1. Homicide rate by municipality, 2000–2005*
*Note:* during this period, this map shows that violence was primarily concentrated in the Altiplano around Oaxaca and along the Sierra Madre Occidental.

parts of the country. As we show that increased political tenure is associated with an increased homicide count, it should follow that we would obtain stronger results if we could correct for this undercount in long-tenure, high-violence areas.

Secondly, although the dataset does not explicitly state its coding rules, it is likely that there are incidents where the death is not reported in the year it occurred. This might arise when police find the remains years after a homicide and only then begin their investigation. While this is a potential source of measurement error, it is unlikely that the late discovery of human remains is systematically correlated with political incumbency. As such, it is unlikely to bias our estimation strategy.

Finally, and perhaps of greatest concern, our preferred dataset does not distinguish between cartel-related homicides and other killings. Our model of bargaining between cartels only explains drug-related homicides and does not account for unrelated deaths. To address this concern, we re-estimate our main models using data collated by Holland and Rios.[50] Using reports collated by the Ministry of the Interior (Secretaría de Gobernación) from 2007 to 2010, they generate a measure of 'homicides that are specifically tied to drug trafficking rivalry'.[51] Using this alternate data source, our findings remain broadly consistent. This bolsters our claim that – despite measurement error – our main dependent variable is a useful measure of cartel-related violence.

[50] Holland and Rios 2015.
[51] Holland and Rios 2015, 16–17.

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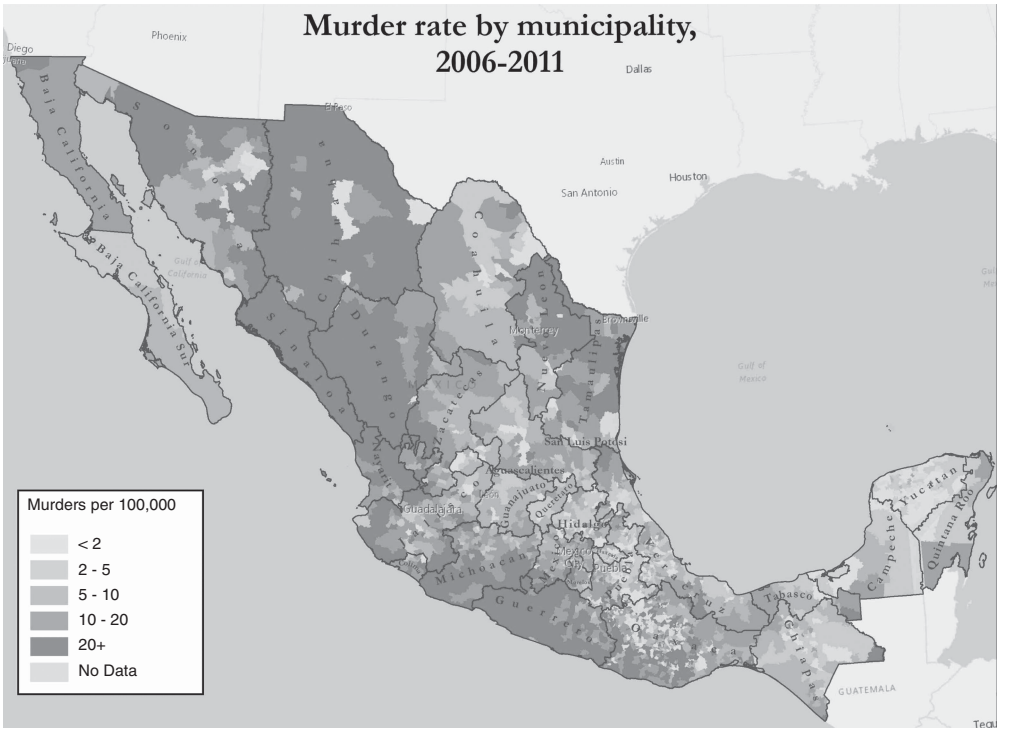


*Fig. 2. Homicide rate by municipality, 2006–2011*
*Note:* during this period, this map shows that violence spread across Chihuahua, Sinaloa, Sonora and Tamaulipas. The level of violence remains high along the Sierra Madre del Sur.

*Independent variables*. Our key independent variable, *Tenure,* is coded with data from federal and local elections. At the federal level, we rely on data from the National Electoral Institute (Instituto Nacional Electoral or INE). The INE reports results at the municipal level for national elections. As voters elect new legislators to Congress every three years, we use the electoral results from the 2000, 2003, 2006 and 2009 legislative elections. Our data on local elections for mayor comes from Dell,[52] who compiled a dataset of available mayoral election returns.[53]

We code our key independent variable for both mayoral and federal elections because we do not have prior information about which institution is more likely to be corrupt. Indeed, surveys show that Mexican citizens perceive local and federal politicians to be equally corrupt. In a 2011 survey conducted by the National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía), 34.3 per cent of Mexicans perceived that corrupt acts occurred 'very frequent[ly]' in their municipal government. Similarly, 37.6 per cent of respondents felt that the federal government was very frequently corrupt.[54] Using these data, we assign *Tenure* a value of 0 in the year that a political party is first elected.[55] *Tenure* then increases by one for

[52] Dell 2015.
[53] Some states did not publish election results and are therefore excluded from our local analysis.
[54] Only 1.1 per cent of respondents felt that municipal governments were 'never' corrupt. and 1.5 per cent described the federal government in the same way.
[55] As is common for studies using leader tenure as a key independent variable, one concern is how to assign transition years since there is split responsibility during that period. The Appendix shows that the results are robust to dropping all transition years from the analysis.

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every year that a political party remains in office. Should a party lose an election in a particular district, it resets to 0 in that municipality.[56]

We measure tenure by political party – rather than individual politicians – due to a feature of Mexican law. The Mexican Constitution strictly prohibits individual politicians from being re-elected to any political office,[57] which gives political parties significant influence over politicians' career prospects, which 'contribute[s] to elite unity' around parties.[58] As Siavelis and Morgenstern[59] argue in their typology of Latin American political parties, forbidding re-election alters politicians' incentives vis-à-vis their constituents. With re-election prohibited, 'candidates are likely to cultivate prospective loyalty toward those who influence their future career destination [party elites] rather than retrospective loyalty to those who brought them to power [voters]'.[60] In the Mexican system, these observations strongly suggest that party elites wield higher levels of influence over policy than individual politicians. It is for this reason that we focus on political elites (as represented by political parties) rather than politicians in the empirical analysis that follows.[61]

*Corruption* potentially increases violence for reasons unrelated to cartel activity. Corrupt politicians are less accountable to voters,[62] which might have several downstream effects on policing behavior. Police officers might be less willing to pursue difficult cases or patrol violent areas. In turn, this would increase violence levels when compared to less corrupt municipalities.

Corruption is not systematically measured in Mexico. Every municipality has a supposedly neutral public prosecutor (síndico procurador), who audits the municipal government and reports these findings. Unfortunately, the audit process is not standardized between municipalities.[63] More problematically still, the quality of these audits is likely endogenous to corruption itself: prosecutors (síndicos) in corrupt municipalities might systematically under-report corrupt practices. Within the federal government, the Federal Superior Auditor (Auditoría Superior de la Federación) also performs audits on municipalities and state governments. Yet since these reviews are not conducted annually, there is no time series of corruption measurements in municipal or state governments.

To address this data availability issue, we proxy for corruption in two ways. First, we use data from a biannual survey conducted by Transparencía Mexico (TM), an anti-corruption NGO.[64] From 2001 to 2011, TM asked respondents a series of questions about their perception of corruption within their state government. They then standardized these perceptions into a ranking of states by corruption. Unfortunately, there are too few respondents to generate a ranking of municipalities, so we must rely on the state-level data. Secondly, drawing on theories

[56] One concern might be that some parties are more professional and therefore less likely to lose an election. However, the correlation between political party and *Tenure* (0.33) is not significant.

[57] Reforms that come into effect in 2018 relax these rules slightly. Mayors will be permitted to serve two consecutive terms, and legislators may serve for a total of 12 years. Once elected, politicians are forbidden from switching political parties.

[58] Magaloni 2008.

[59] Siavelis and Morgenstern 2008.

[60] Siavelis and Morgenstern 2008, 38–9.

[61] In a few instances, major political parties campaign in coalition with a junior party. For example, the Alianza por el Cambio was an alliance in the 2000 elections between the PAN and the Green Ecological Party of Mexico. In the following election, the alliance ended and the PAN competed separately. We do not code such party renamings as a break in incumbency.

[62] Chong et al. 2015.

[63] De La O 2016.

[64] Bohórquez 2011.

of checks and balances in divided government, we posit that corruption is easier when municipal and federal politicians come from the same party. As corruption is illegal, politicians from the same party have few incentives to tarnish each other's reputations and draw the attention of police. This in turn facilitates corrupt practices.[65]

*Political control.* Dell[66] finds that the election of PAN mayors causes an increase in drug-related violence. To control for this effect, we include an indicator variable for PAN politicians.

### *Estimation*

To test our formal model's empirical predictions, we estimate a series of ordinary least squares (OLS) models. Political tenure and violence are not randomly assigned in our data. We emphasize that although we incorporate several strategies to mitigate risks to inference from endogeneity and omitted variable bias, we cannot completely rule out model dependence.[67] First, we include municipal fixed effects to control for unobservable unit-specific factors.[68] Factors that might influence municipalities' base level of violence, yet remain unobservable to scholars, include the suitability of local infrastructure for the manufacturing of narcotics and access to drug precursors from local suppliers.

Secondly, we include a lagged dependent variable (LDV) in our models.[69] In time series data, LDVs improve estimation by first addressing autocorrelation in residuals. Using an LDV also properly accounts for dynamic political processes wherein the 'effects of [independent] variables persist into the future'.[70] As each homicide produces new grievances and demands for retaliation, observed levels of violence in the past period should be highly predictive of levels in the next period.[71]

Finally, we follow Beck, Katz and Tucker[72] and include cubic restricted time splines with two knots.[73] These splines (denoted by $\gamma$) control for unobservable factors that vary over time within our panel.[74] Examples of such factors include aberrant weather patterns, changing demand for Mexican narcotics among consumers in importer nations and crackdowns on drug production.[75]

[65] As our formal models demonstrate that *Tenure* produces corrupt policies, controlling for corruption might introduce post-treatment bias into our empirical estimates. Out of concern for this possibility, Table 2 shows our empirical results with and without our corruption variable. Our results are unchanged.

[66] Dell 2015.

[67] Ho et al. 2007.

[68] Green, Kim, and Yoon 2001. These municipal fixed effects are denoted in our models by $\sum_{j=1}^{n} \theta_j$, where $\theta_j$ represents the set of unobserved fixed parameters for each of the $n$ units in our sample.

[69] Achen 2000; Kiviet and Phillips 1993. The Nickell effect – an artificial reduction in the model's mean square error – is a potential concern when including fixed effects with LDVs (Nickell 1981). To explore whether this effect biases the results presented below, we include a series of alternate specifications in our online appendix. Our results are robust to a lagged DV without fixed effects as well as municipal- and year-fixed effects.

[70] Keele and Kelly (2006, 189). More formally, we expect that observed levels of violence in $t-1$ should be correlated with levels of violence in $t$.

[71] Downes 2007; Kalyvas 2006.

[72] Beck, Katz, and Tucker 1998.

[73] Green, Kim, and Yoon 2001. Formally, a spline function is a 'smoothly joined piecewise polynomial of degree $n$' (Durrleman and Simon 1989, 552).

[74] Dickenson 2014.

[75] Geospatial clustering is another concern. Clustering could bias our inferences by making coefficients inconsistent and inflating our model's $R^2$. To check for the presence of such clustering, we estimate a geographically weighted regression and present the results in the Appendix. We then check for clustering in our residuals by estimating Moran's $I$ (Moran 1950). The results from this analysis show that our data are randomly distributed geospatially.

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TABLE 2 *Fixed-Effects OLS of Federal Incumbency's Effect on Violence with Lagged DV*

| | Dependent variable: Homicide | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Tenure | 0.39*** | 0.17** | 0.18** |
| | (0.08) | (0.08) | (0.07) |
| L.Homicide | 0.84*** | 0.84*** | 0.87*** |
| | (0.02) | (0.02) | (0.02) |
| PAN | | | 1.86** |
| | | | (0.77) |
| Corruption | | | −0.03 |
| | | | (0.03) |
| Joint Rule | | | −0.20 |
| | | | (0.43) |
| *N* | 25,286 | 25,286 | 21,079 |
| $R^2$ | 0.77 | 0.77 | 0.80 |
| Municipal FE | Yes | Yes | Yes |
| Time Splines | No | Yes | Yes |

*Note*: standard errors (clustered on municipality) reported in parentheses. Estimates for cubic restricted time splines not reported. *p < 0.1; **p < 0.05; ***p < 0.01

With these concerns in mind, we estimate the predicted homicide level in municipality $i$ in year $t$ with Equation 1:

$$Homecide_{it} = \beta_0 + \beta_1 Tenure_{it} + \beta_2 Homicide_{(it-1)} + \mathbf{X_{it}} + f(\gamma) + \sum_{j-1}^{n} \theta_j + \epsilon_{it} \quad (1)$$

where $\mathbf{X_{it}}$ is a vector of control variables, $\sum_{j-1}^{n} \theta_j$ is the sum of municipal fixed effects and $f(\gamma)$ are cubic restricted time splines.

## *Results*

*Federal elections*. We report the estimated effect of increased tenure for members of Congress in Table 2 and for mayors in Table 3. In line with our theoretical predictions, our results show that additional years of political tenure in a district are associated with more homicides. This result is robust to municipality fixed effects, cubic restricted time splines, a number of control variables and an LDV. As Achen[76] notes, LDVs can suppress the effect of remaining independent variables, particularly when they are trending in time. Therefore our estimation strategy is quite conservative.[77] As we discuss in our Robustness section and online appendix, our results are also robust to a variety of alternate model specifications and are not an artificial result of temporal or spatial autocorrelation.

To understand the substantive impact of an additional year of tenure on homicide, we estimate the marginal effect of an additional year of tenure. After setting the other explanatory variables in Equation 1 to their median, the predicted homicide rate increases from 4.89

[76] Achen 2000.
[77] Durbin 1970.

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TABLE 3 *Lagged Fixed-Effects OLS of Local Incumbency's Effect with Municipal Data*

| | Dependent variable: Homicide | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Local Tenure | 0.43*** | 0.21** | 0.24*** |
| | (0.09) | (0.09) | (0.09) |
| L.Homicide | 1.33*** | 1.32*** | 1.45*** |
| | (0.08) | (0.08) | (0.10) |
| PAN | | | −0.00 |
| | | | (0.48) |
| Corruption | | | −0.05 |
| | | | (0.04) |
| Joint Rule | | | 0.11 |
| | | | (0.38) |
| *N* | 17,025 | 17,025 | 14,178 |
| $R^2$ | 0.79 | 0.79 | 0.88 |
| Municipal FE | Yes | Yes | Yes |
| Time Splines | No | Yes | Yes |

*Note*: standard errors (clustered on municipality) reported in parentheses. Estimates for cubic restricted time splines not reported. *p < 0.1; **p < 0.05; ***p < 0.01

($\sigma = 0.23$) at one year of tenure to 8.82 ($\sigma = 0.58$) after 12 years of tenure. These results, plotted in Figure 3, suggest that each additional year of tenure increases a municipality's predicted homicide rate by approximately 0.4. Across the 2,371 municipalities in our study, this implies that improved bargaining between cartels and politicians translates into 948 homicides for each year of increased political tenure following an election.

*Mayoral elections*. Although Mexican voters perceive federal and local politicians to be equally corrupt, it is possible that members of Congress are so far removed from their local communities that they cannot influence police officers' behavior. While this should bias against the results presented in Table 2, it is theoretically possible that these results are spurious. To address this possibility, we re-estimate Equation 1 using data on political turnover in mayorships.[78] While the INE reports federal election results, mayoral elections are conducted under the auspices of state agencies. State agencies are generally less professional than their federal equivalent,[79] which affects the quality of mayoral election data. There is missing temporal data (some years are unreported) and cross-sectional data (not all municipalities are recorded). A total of 700 municipalities that reported electoral returns to the INE are missing from our local dataset. Despite these limitations, *Tenure* remains positive and significant in Table 3. This suggests that the main mechanism identified in our formal model – information about politicians' willingness to take bribes – is not restricted to federal or local politicians.

*Drug-related homicides*. As discussed above, our original dependent variable contains both cartel-related and other homicides. This might bias our results if *Tenure* were correlated with other homicides but were independent of cartel-related homicides. In this case, our independent

[78] Dell 2015.
[79] De La O 2016.

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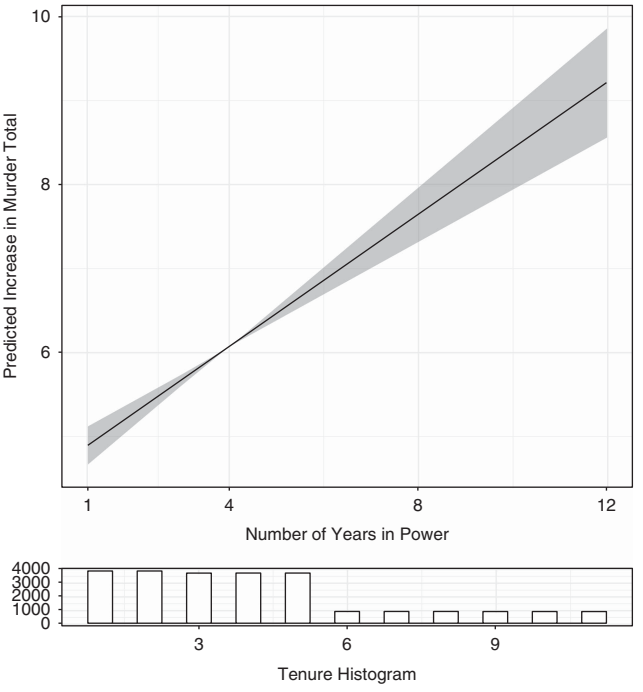


*Fig. 3. Estimated marginal effect for tenure on the number of homicides in a municipality*

variable of interest might be statistically significant for reasons that are unrelated to our proposed mechanism. To address this concern, we use data from Holland and Rios[80] on cartel-related homicides. They use reports gathered by the Ministry of the Interior from 2007 to 2010 to generate a count variable of homicides committed by cartel members. Our results using these data, presented in Table 4, are broadly consistent with our earlier findings.

*Cartel presence*. Our formal model requires that at least two cartels compete over territory. Cartels do not operate in all areas of Mexico simultaneously. According to data from Holland and Rios,[81] cartels did not have a presence in a number of municipalities throughout Mexico. To account for cartel rivalry, we subset our data on municipalities with at least one cartel and re-estimate our main models. We subset to capture observations that could have cartel violence, and then control for the number of cartels (*Cartel Count*) to measure inter-cartel competition. These results are presented in Table 5.

## *Robustness*

In the Appendix, we report alternative specifications as robustness tests. Appendix Table A1 demonstrates that our measure of corruption is not predictive of the probability with which given political parties are re-elected. This might be a serious threat to inference if political parties that took bribes from cartels parlayed those resources into campaigning. Were this the case, increased political tenure would be endogenous to successful bribery.

[80] Holland and Rios 2015.
[81] Holland and Rios 2015.

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TABLE 4 *Lagged Fixed-Effects OLS of Local Incumbency's Effect in Municipalities Using Cartel Homicide Data*

| | Dependent variable: Cartel Homicide | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Tenure | 0.91*** | 0.91*** | 1.18*** |
| | (0.15) | (0.15) | (0.203) |
| L.Cartel Homicide | 0.62*** | 0.62*** | 0.42** |
| | (0.07) | (0.07) | (0.18) |
| Corruption | | | −0.05 |
| | | | (0.07) |
| Joint Rule | | | −0.63 |
| | | | (0.84) |
| *N* | 6,929 | 6,929 | 5,775 |
| $R^2$ | 0.84 | 0.84 | 0.88 |
| Municipal FE | Yes | Yes | Yes |
| Year FE | No | Yes | Yes |

*Note*: standard errors (clustered on municipality) reported in parentheses. Estimates for year fixed effects not reported. *p < 0.1; **p < 0.05; ***p < 0.01

TABLE 5 *Lagged Fixed-Effects OLS Of Local Incumbency's Effect in Municipalities With Cartels*

| | Dependent variable: Homicide | |
|---|---|---|
| | (1) | (2) |
| Tenure | 0.41** | 0.47** |
| | (0.19) | (0.19) |
| L.Homicide | 1.15*** | 1.15*** |
| | (0.18) | (0.18) |
| Corruption | −0.03 | −0.03 |
| | (0.06) | (0.06) |
| Joint Rule | −0.33 | −0.47 |
| | (1.44) | (1.44) |
| Cartel Count | 2.39*** | 2.28*** |
| | (0.55) | (0.55) |
| *N* | 7,725 | 7,725 |
| $R^2$ | 0.94 | 0.94 |
| Municipal FE | Yes | Yes |
| Year FE | No | Yes |

*Note*: standard errors (clustered on municipality) reported in parentheses. Estimates for year fixed effects not reported. *p < 0.1; **p < 0.05; ***p < 0.01

While our principle model uses municipal fixed effects to control for unobserved heterogeneity in terms of capacity, they are time invariant. Given the growth in the Mexican economy and ongoing internal migration, there is reason to suspect that state capacity has changed over time. Tables A2 and A3 consider whether alternate measures of local state capacity affect our results. In Table A2, we re-estimate our main model with state-year fixed

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effects. In Table A3, we control for municipalities' economic inequality and poverty rate. These controls do not substantially change our estimates.

Table A4 considers whether border states have higher levels of violence.[82] We create an indicator variable for border states and re-estimate our model using random effects. Our results remain substantively unchanged.

Table A5 explores whether some unobserved process conditions which political parties are re-elected. Were this to be the case, political parties that are re-elected might be qualitatively different from those that are not. To explore this possibility, we generate simulated data at various levels of correlation with *Tenure* to measure how robust our results are to a potential unobserved variable. Our results are robust up to a simulated confounder correlated with *Tenure* at 0.50. If this confounder existed in reality, it would need to predict re-election better than PAN (–0.05), PRI (–0.10), poverty (0.04) or inequality (–0.03). We are therefore confident that our results are not biased by some alternate factor explaining which political parties succeed or fail in office.

Finally, we also consider the sensitivity of our results to modeling our dependent variable as count data via a Poisson regression (Table A6), controlling for time effects with year fixed effects (Table A7), dropping years in which political parties transition in office (Tables A8 and A9), estimating a first-differences model (Table A10) and controlling for geospatial dependence. Our results remain substantively unchanged.

## CONCLUSION

In this article, we explored whether politicians and political parties influence levels of local criminal violence. We uncovered an additional mechanism that shapes when cartels use violence: political corruption. We argue that cartels bribe politicians to decrease law enforcement levels in the politician's district. When enforcement is low, cartels produce greater violence against rivals without fear of provoking intervention by the federal police or US DEA. Unrestrained violence against rivals helps locally dominant cartels retain territory and rents, and prevents incursions by rival groups.

The insight that political corruption affects where cartels produce violence helps explain sub-national variation in conflict intensity. Even if cartels have incentives to continually bribe politicians, every bribe is the result of a bargaining process.[83] Cartels cannot immediately discern a politician's reservation price the moment they come to office. Our formal model investigates this strategic dynamic, demonstrating that the probability that criminal organizations will successfully bribe politicians increases over time as they gather more information about the officials. Equilibrium analysis suggests that longer tenures result in more agreements, which in turn causes more violence.

We test this implication using data from the ongoing Mexican drug war. We exploit the fact that until recently Mexican electoral law prohibited politicians from running for re-election, allowing us to use the length of time a political party has remained in office at the local and federal levels as a proxy for information about politicians' corruptibility. Our results show a clear association between a political party's tenure and increases in their district's homicide rate. This association is robust to a variety of model specifications, including subsetting on districts with active cartels, omitting homicides that have no clear link to cartel violence, and controls for corruption and political control. This result highlights the role that uncertainty about corruption plays in police enforcement and decreasing levels of violence.

[82] Dube, Dube, and García-Ponce 2013.
[83] Dal Bó, Dal Bó, and Di Tella 2006.

Beyond suggesting a new mechanism that produces violence, our results have several implications for the relationship between political institutions and conflict. First, our formal model suggests that violent groups strategically decide whether to use violence against state institutions or bribery to co-opt them.[84] Much like civilian victimization, this decision is likely endogenous to the group's access to rents.[85] Access to rents increases the odds a group will choose bribery as its strategy. This insight potentially explains why wealthy criminal organizations appear to be willing to coexist with state organizations in Latin America, while poorer groups use direct violence against state institutions.[86]

Secondly, our results raise questions about the relationship between democratic institutions and violence. The literature on clientelism and corruption highlights democracy's positive consequences for political accountability.[87] Accountability to voters should decrease political rent seeking and tolerance for violence and corruption.[88] Varese[89] argues that reductions in the number of political strongholds helped decrease violence during the United States' alcohol prohibition and weaken the Mafia's grip in Italy. Paradoxically, democratic transitions appear to increase criminal violence in Latin America. Although it is beyond the scope of our formal model, our findings might help explain this paradox. Democratic turnover alone might be insufficient to reduce rent seeking; it is necessary to have independent anti-corruption agencies with the power to arrest and try politicians. The development of these institutions in some countries made it too risky to co-operate with criminal organizations. These institutions, rather than elections, might be the key to reducing criminal organizations' co-optation of politicians and governing institutions.

Thirdly, the model demonstrates an unfortunate trade-off for voters. To minimize violence, voters would ideally want to elect a competent official and allow their enforcement capability to increase with experience. However, maintaining office for long periods facilitates agreements with cartels. As such, voters cannot obtain their first-best outcome. Instead, they must weigh the benefits of maintaining an official to grow enforcement capacity versus risking that cartels buy out that enforcement capacity.

Fourthly, our model treats leadership turnover as homogenous. However, in countries with heavy cartel activity, assassinations are not uncommon. Because of Mexico's historical term limits, individual leaders are less important than the party machine, and thus assassinations have a muted effect. In contrast, our informational mechanism indicates that assassinating pivotal politicians may not ultimately solve a cartel's enforcement problems. Although the death of an unco-operative leader is beneficial, the cartel faces a new information problem. One implication of our model is that, regardless of the deal offered, the cartel pays a price for uncertainty. This may help explain why assassinations are not more common: cartels simply prefer the devil they know. Future research on assassinations should consider how these incentives interplay.

Finally, our project is limited to understanding how cartels and politicians conspire with each other for mutual benefit at the expense of rival cartels and local citizens. This is only one strategic aspect of cartel behavior during periods of criminal violence. Future research might consider how cartels negotiate and enforce agreements with each other, as well as how national intervention in local affairs complicates this bargaining and enforcement process.

[84] McAdam, Tarrow, and Tilly 2003.
[85] Weinstein 2006.
[86] As an example, compare the different targets selected by Mexico's Zapatista movement (resource poor) and cartels (resource rich).
[87] Chong et al. 2015; De La O 2016; Rose-Ackerman 2013; Stokes 2005.
[88] Cummins 2009.
[89] Varese 2011.

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