A Model of State-Crime Relations:
Theory and Evidence

Heesun Yoo[*]

April 28, 2023

Abstract

Governments have various approaches to dealing with organized crime, ranging from aggressive crackdowns to passive tolerance and even collaboration. To understand the logic behind the varied responses of governments, I develop a formal model that highlights the intertwined interests between the national government, organized crime groups (OCGs), and the community. I propose that the "illicit benefit" that ordinary citizens derive from the presence of OCGs is a key factor in determining the intensity of criminal violence and the government's response. When citizens benefit more from OCGs' businesses and social services, OCGs are more likely to reduce violence in order to secure citizens' support and increase their chances of survival. This reduction in violence may then perpetuate the collusion between the OCG and the government. The argument is tested in the case of the construction sector in Canada, where the mafia infiltration was revealed by a public inquiry in Quebec. In line with the theoretical prediction, the analysis demonstrates that the improvement in the performance of the mafia-infiltrated economy is associated with violent crime reduction, particularly in areas where the mafia is active.

[*]Ph.D. Candidate, Department of Political Science, Vanderbilt University. heesun.yoo@vanderbilt.edu
This paper combines two essays ("A Model of State-Crime Relations" and "Gray Stakeholders in Criminal Business") of the dissertation.

1 Introduction

A government's response toward organized crime can be diverse, ranging from crackdown to hands-off and even collusion, and it may undergo several shifts from one kind to another over time. Many historical cases document this pattern: Governments in Italy (Blok, 1975), Mexico, Japan (Hill, 2003), Myanmar (Koivu, 2018), China (Martin, 1991), and South Korea (Porteux, 2013), at one point, had built a deep friendly connection with organized crime groups (hereafter, OCGs) operating within their territory, but later, these governments decided to launch a crackdown on them. When does the state-crime collusion sustain, and when does it not? When does a government shift its response from one to another?

While the existing literature focuses primarily on explaining criminal groups' behaviors, we know little about under what conditions governments choose to combat or accommodate criminal groups and how they come to such decisions. Especially, the government's crackdown decision has often been treated as exogenous and non-strategic, and thus the explanation behind the such decision has been under-developed[1]. Departing from the previous approach, this paper sets out with the notion that a government is a strategic actor and explores the incentives driving a government to adopt a certain response to criminal groups.

Based on the central premise that governments are revenue-maximizing entities (Levi, 1988), I theorize how a government balances between the incentive to minimize governance costs and the incentive to survive in office, which ultimately shapes the relationship between a government and criminal groups. I posit that governments face a dilemma when deciding whether to tolerate organized crime groups. On the one hand, tolerating these groups can be economically advantageous as it avoids the high costs of crackdowns, enables the collection of bribes, and allows for leveraging public goods provision by criminal groups. However, this approach carries the risk of the government being removed from office if the violent competition among criminal groups becomes too intense and disruptive to citizens, leading to public blame on the government's lenient crime policy.

This dilemma suggests that a government's concern for survival, particularly reelection, is a mechanism that connects the government, OCGs, and citizens. While prior studies tend to examine bilateral relations among these actors separately[2], this paper takes a comprehensive approach by looking at these relationships through the lens of a reelection perspective. To systematically study their relationship, I construct a formal model that captures the intertwined trade-offs faced by citizens, the government, and criminal groups in the presence of the electoral constraint as well as

---

[1]While a few studies have looked at the motivations behind the government's crime policy, the majority of research has focused on examining the effect of different crackdown tactics on reducing violence: conditional versus unconditional repression (Lessing, 2015), beheading strategy (Calderón et al., 2015; Phillips, 2015), or drug interdiction (Castillo and Kronick, 2020).

[2]See the papers focusing on OCG-state relations (e.g., Acemoglu et al., 2013; Alesina et al., 2019; Lessing, 2015; Snyder and Duran-Martinez, 2009; Trejo and Ley, 2021), on OCG-Society (e.g., Lessing, 2020; Magaloni et al., 2020), and on inter-OCG (e.g., Castillo and Kronick, 2020; Osorio, 2015). Arias (2006) is one exception that identified intertwined *quid pro quo* relationships among these three actors.

criminal groups' operations.

At the core of these trade-offs is the concept of "illicit benefits," which refers to the benefits citizens gain from the illicit economy or public goods provided by criminal groups. In settings with limited state capacity, OCGs often act as a parallel government, filling the void left by the state and providing social services and job opportunities that yield illicit benefits (Leeds, 1996; Goldstein, 2003, p.207-209). In contexts with high state capacity, however, illicit benefits may take the form of economic advantages granted to business people collaborating with OCGs. This can happen through the OCGs' infiltration of the legitimate economic sector and partnerships with ordinary businesspeople[3].

Citizens' trade-off is that they may enjoy these illicit benefits provided by organized crime groups, but their presence poses a security risk. Citizens may experience reduced welfare, such as fear and insecurity of crime (Dolan and Peasgood, 2007; Dolan et al., 2005), hindered economic growth (Robles et al., 2013), and loss of education (Jarillo et al., 2016), caused by violent competition between these groups vying for contested territories or illicit markets. Similarly, the government's trade-off is that it may benefit from tolerating criminal groups, but at the same time, it may face the heightened risk of electoral sanctions if competition between these groups intensifies. Finally, the model accounts for the trade-offs faced by criminal groups, where employing extreme violence may increase their chances of success in competition but also raises the risk of pushback from citizens and the government, potentially leading to a crackdown (Durán-Martínez, 2017, p.38-39).

This paper presents the key insights obtained from the comparative statics analysis of the model, with a particular emphasis on how variations in illicit benefit affect the intensity of violence and the government's approach towards OCGs. I find that as the amount of illicit benefits increases, criminal groups become more likely to *restrain* violence to secure the support of citizens. This strategy aims to enhance the incumbent government's prospects of reelection, making it more inclined to overlook the activities of the criminal groups and to maintain the existing collusion with them. However, while reducing violence may decrease the harm caused by inter-cartel competition for citizens, it perpetuates the government's collusion with the criminal group by increasing its incentive to continue colluding.

To test these predictions, I examine the case of the mafia-infiltrated construction industry of Canada. Organized crime has been a significant threat in Canada since the 1960s, with thousands of organized crime groups still operating today. In particular, the vast corruption scandal in 2009 revealed the extensive infiltration of the Italian mafia in Canada's construction industry. The public inquiry in Quebec uncovered evidence of the mafia's connections with local politicians, as well as collusion between ordinary business people in the construction industry and the mafia (Charbonneau and Lachance, 2015). This specific context provides an excellent example of ordinary business

---

[3]The primary distinction between these two cases is the extent to which OCG operations benefit the general population, with the former benefiting a broader group and the latter benefiting a narrower scope of business people. However, this difference was not taken into account in the baseline model.

3

people being involved in a criminal business, where the concept of "illicit benefit" can be applied.

Consistent with my theory, I find that an improved mafia-infiltrated economy leads to a decrease in violent crime, and this effect is particularly significant in areas where the mafia is present. Along the line of the theory, I also investigate the link between the construction economy performance and political support for the incumbent. Political support is measured by political contribution for the incumbent at the municipal and provincial election levels. The results suggest that the construction economy has differential impacts on political contributions in municipalities with and without mafia presence.

2   Related Literature

There is a growing body of literature that examines the collusive relationship between the state and criminal organizations. Arias (2006) suggests that criminal groups' main survival strategy is to establish illegal social networks and contacts with civic actors and state officials, as it can help them avoid repression and garner public support. Snyder and Duran-Martinez (2009) describes the state-crime relation as more of an institutionalized transaction. The authors particularly focus on the context of local-level cooperation where the public officials exercise "non-enforcement" of the law within their jurisdiction in exchange for a share of the profit generated by criminal organizations. By contrast, focusing on state-level collusion, Koivu (2018) suggests that the state-OCG partnership could be a willful decision of the state to achieve the economic or political developmental goal. My paper substantively builds on these previous studies that highlight different incentives and modes of state-crime collusion, but at the same time, attempts to overcome their common limitation where the analysis is confined to a pair-wise relationship such as inter-OCG, state-OCG, and OCG-society.

In my model, electoral accountability is the mechanism that connects the body of citizens to state-crime relations. The presence of organized crime groups creates two critical issues that citizens should consider when deciding whether to sanction or not sanction the incumbent government: corruption and violence.

(1) Corruption

Collusion or corruption by the government with organized crime groups yields negative social effects such as erosion of institutional trust (e.g., Chang and Chu, 2006; Morris and Klesner, 2010) and economic inefficiency. Despite these adverse effects, previous studies on corruption and voting behavior indicate that voters sometimes tolerate the politicians involved in corruption. Past empirical research has identified various factors that can cause voters to overlook corruption, including the incumbent's delivery of economic prosperity (e.g., Klašnja and Tucker, 2013; Zechmeister and Zizumbo-Colunga, 2013), the provision of public good (e.g., Pereira and Melo, 2015; Winters and Weitz-Shapiro, 2013), particularistic benefits such as job creation and material benefits (e.g., Bauhr and Charron, 2018; Chang and Kerr, 2017; Klašnja et al., 2021), lack of information and partisanship (e.g., Anduiza et al., 2013; Klašnja, 2017; Weitz-Shapiro and Winters, 2017; Winters

and Weitz-Shapiro, 2013), and prevalence of corruption (e.g., Klašnja and Tucker, 2013; Pavão, 2018).

This paper builds on the trade-off argument where the voters condone corruption in exchange for economic benefit and particularistic benefits. It focuses specifically on the context where the government's corrupt partner is an organized crime group that significantly contributes to the economic benefits to citizens (e.g., licit or illicit revenue, job creation, public goods provision). If citizens are beneficiaries of these economic benefits (which I refer to as the "illicit benefit"), they would have a greater incentive to tolerate corrupt politicians having a friendly relationship with an organized crime group. Broadly speaking, this narrative is similar to the "insider-outsider" framework proposed by Chang and Kerr (2017). However, my model differs in that the citizens in my model derive their benefits directly from the organized crime group's business and social services, rather than from government-provided spoils, thus distinguishing it from patronage or clientelistic politics. Instead, my model concurs with Bauhr and Charron (2018) which operationalizes insiders as individuals "who potentially have something to lose politically and economically by a political change resulting from an election" (p.429). In my model, citizens may still back the incumbent government with corruption, because the incumbent government protects the organized crime groups, ensuring that citizens' benefits remain undisrupted.

(2) Violence
However, the use of violence by these groups creates a dilemma for citizens. As specialists in violence, organized crime groups' penchant for violence disrupts citizens' security and welfare. Though organized crime groups' violence can be directed at any actors, my model specifically focuses on violent competition *among* organized crime groups, and considers its collateral impact on civilians. Unlike the issue of corruption, citizens may have the incentive to sanction politicians who do not effectively keep these organized crime groups at bay.

The ways and circumstances in which civilians respond to insecurity and victimization have been studied extensively in the conflict literature, and the findings are rich and varied. For instance, studies on civil conflicts show that civilians tend to punish belligerents for their civilian-targeted violence by switching their support to the opposition, providing assistance, or voting for them (Balcells and Stanton, 2021, p.59). Yet, in identifying whom and how much to punish, people display diverse patterns of blame attribution. These patterns can be influenced by in-group bias (Lyall et al., 2013) and whether one has been directly or indirectly exposed to the violence (Pechenkina et al., 2019). Also, there is a tendency to place more extensive blame on the incumbent government than on the insurgent counterpart, which can create a disadvantage for the former in elections (Birnir and Gohdes, 2018)[4]. Civilians also tend to punish belligerents for collateral damage, such as unintended civilian casualties, although the effect is moderated by preexisting political preferences in the area

---

[4]Daly (2019) argues that voters in the post-war election may not necessarily punish the belligerents for their past victimization experiences (vengeful voting), but vote based on prospective credibility and competence on security issues (security voting) which is signaled by belligerents' relative military strength at war's end.

([Condra and Shapiro, 2012](#)). My model focuses on citizens' responses to collateral damage instead of civilian-targeted violence.

In the context of state repression, civilians often react through collective dissents, such as protests and revolts. Among the rich and complex literature on when the repression emboldens or demobilizes the dissent (e.g., [Carey, 2006](#); [Lichbach, 1987](#)), backlash argument suggests that the high levels of coercion intensify protests rather than deter them ([Francisco, 1995](#), [1996](#)). For example, [Francisco](#) ([2004](#)) investigated the aftermath of massacres in autocratic regimes and found that there was significant backlash following the massacres, which represents an extreme form of violent repression. In other studies as well, many authors have noted that harsh and severe repression serves as a critical tipping point that mobilizes even more dissidents and accelerates the protest (e.g., [Karklins and Petersen, 1993](#); [Lohmann, 1994](#)).

While there are some contextual differences between my model and the backlash argument in terms of the type of violence citizens experience (state repression/collateral damage from OCGs' violence), regime types (autocracy/democracy), and the form of the reaction (protest participation/voting), the idea that the level of violence matters in civilians' response can still apply. Even though the civilians in my model may tolerate some degree of violence due to economic benefits, the extreme level of crime and violence can have a critical impact on their lives, becoming a "focal event" that triggers a response. In such cases, citizens may hold the incumbent government accountable for colluding with organized crime groups and failing to effectively control crime and violence levels. When this happens, citizens may choose to express their outrage through voting, given the democratic context.

There exists some empirical evidence showing the impact of crime and victimization experiences on voting choices and political attitudes[5]. [Ley](#) ([2017](#)) suggests that voters do hold politicians accountable for the deteriorating security and increasing violent crime, but only when there is a clear attribution of responsibility, where there is a partisan alignment across different levels of government. [García-Ponce et al.](#) ([2022](#)) show that criminal violence against innocent people can trigger citizens' anger and lead to support for harsh punishment and retribution at the expense of the rule of law. Additionally, [Abadeer et al.](#) ([2022](#)) provide evidence from Egypt that exposure to the rising crime rate can prompt voters to support the authoritarian "strongman" candidate who can implement tough measures to address crime. These studies suggest that in contexts where voters perceive the incumbent government's crime control policies as ineffective, political challengers who promise a hard-line approach may be able to sway voters and win elections. My model builds on

---

[5]Related to the relationship between violence experience and citizens' electoral participation, previous empirical research has shown mixed results. [Blattman](#) ([2009](#)) and [Bateson](#) ([2012](#)) found that victimization experiences increase electoral participation, providing evidence from Uganda and a cross-country survey of 70 countries. [Berens and Dallendörfer](#) ([2019](#)) also found that in Latin America and the Caribbean countries, violent crime victimization did not necessarily lead to apathy towards politics and did not discourage participation in voting. However, [Ley](#) ([2018](#)) found that when criminal organizations intentionally target government officials during election times, it effectively demotivates voters from turning up to the polls in Mexico. Similarly, [Albarracín](#) ([2018](#)) argues that if criminal groups are hired or allied with politicians, they can coerce voters to select specific candidates, which undermines electoral accountability.

this notion of electoral accountability on the issue of crime and insecurity, while also incorporating the issue of corruption and economic benefits at the same time.

The last strand of related studies concerns OCG-society relations, specifically on the public good provision by organized crime groups. Studies in state formation and organized crime literature have long noted that OCGs ironically can be a contributor to order, security, contract enforcement, dispute resolution, and even social services for the population (Gambetta, 1996; Olson, 1993; Skaperdas, 2001; Tilly, 1985). Some scholars, particularly Mafia scholars, view public services as a commodity that can be sold to people in need by organized crime groups. They take this perspective to explain the variation in the emergence and activities of OCGs, particularly through the demand and supply logic of privately-provided public services. For example, OCGs emerge and thrive in places where gang-provided services are deemed valuable and highly demanded, such as in an illicit market where the law can't be reached, or in a booming market where the state apparatus can't promptly respond to the excessive needs of the services (Varese, 2011).

On the other hand, some scholars emphasize the "governance" aspect of public good provision over economic purposes. Lessing (2020) perceives criminal governance to be a parallel government that maintains a symbiotic relationship with the state. Lessing further suggests that citizens may not be directly charged for the public services that they received, but instead, their "lives, routines, and activities . . . are impinged on by rules or codes imposed by a criminal organization" in an indirect way. Similarly, with the exemplary case of Rio de Janeiro, Magaloni et al. (2020) suggest that OCGs develop state-like governance in the territory that they control, where they provide conflict resolution, policing, delivery of welfare benefits, and taxation.

The model's concept of "illicit benefit" is not biased towards either view, but instead was constructed by drawing from both lines of scholarship.

3   A Model

The model is a single shot game with three players - the incumbent government G, $OCG1$, $OCG2$ - where G seeks to be reelected while minimizing the cost of governance, and $OCG1$ and $OCG2$ are rival criminal groups that compete over the contested prize, for example, territorial control or the criminal market. Citizens are not being explicitly considered as strategic actors, but instead, their preference is embedded in G's reelection prospect[6].

Unlike the standard setting of a single period game, I assume that actors' payoffs incorporate not just a current payoff but also a discounted future payoff equivalent to the current payoff, where the discount factor is $\delta \in [0, 1]$. Whether actors can obtain this future payoff or not is contingent on the incumbent G's reelection, the probability of which varies depending on the outcome of the

---

[6]The reelection probability reflects that citizens are significantly less likely to re-select the incumbent government when they observe an excessive level of inter-cartel violence, as they attribute excessive violence to the incumbent government's inept handling.

game. Specifically, if G's reelection is certain, all players can retain their current payoffs in the future period. However, if G fails to win reelection, both G and OCGs are left with nothing in the future round; it not only unseats the incumbent G but also eradicates $OCGs$[7]. To summarize, the total payoff of each actor is a discounted sum of the current and future payoff, where the latter depends on G's reelection prospect.

The interaction proceeds as follows.

(1) The government G faces three choices: whether to crack down on OCGs, or to engage in collusion with the ally OCG that I will specify as OCG1, or take a hands-off approach toward OCGs. If G chooses a crackdown among these three options, the game immediately ends.

(2)-1. If G chooses collusion, G proceeds to demand a bribe $k \geq 0$. The designated ally, OCG1, decides whether to acquiesce or resist to pay the bribe. If OCG1 rejects to pay the bribe, G will immediately crack down on OCGs, and the game ends. If OCG1 agrees to pay the demand in exchange for collusion, it leads OCG1 to employ a high level of violence, denoted by $\overline{m}$, to fight with its rival OCG2.

(3) If OCG1 accepts to pay the bribe, OCG2 chooses whether to fight against OCG1 or back down. If OCG2 chooses not to fight, the game ends. If OCG2 chooses to fight, they must decide the level of violence to exert towards their opponent, either low ($\underline{m}$) or high ($\overline{m}$), and the conflict proceeds accordingly. The game ends.

(2)-2. If G chooses hands-off (HO), OCG1 chooses the level of violence to exert towards their opponent, either low ($\underline{m}$) or high ($\overline{m}$). Upon witnessing OCG1's choice of violence, OCG2 subsequently decides on the level of violence, either low or high. Conflict proceeds accordingly. The game ends.

To simplify notations, I define $m_i \in \{\underline{m}, \overline{m}\}$ to be the level of violence selected by OCG_i, $i \in \{1, 2\}$. The extensive form game is given in Figure 1.

---

[7]It means that if the incumbent G is replaced, then the newly-elected government will attempt to eliminate the OCGs immediately as they enter the office. It is consistent with the observations in reality that a new government prefers to overturn the policy of the previous government. Also, this assumption yields another implication that the OCGs are hoping for the incumbent G to survive. For this relationship to hold in reality, several social conditions are needed. For example, the new government must have a higher capacity to repress OCGs or have a far lower cost of providing public good on their own, all of which incentivize the new government to implement the crackdown. Another possibility is that the new government may seek to ally with new OCGs possibly due to economic, political, and strategic reasons.
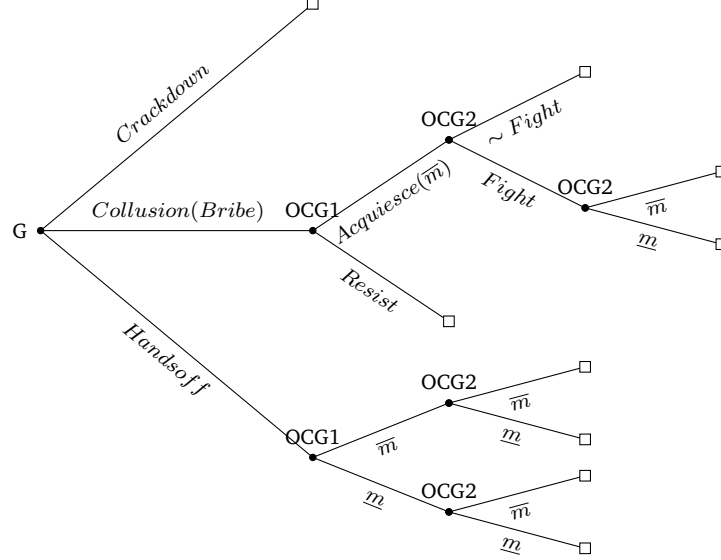
Figure 1: The sequence of the play

Outcomes

There are four possible outcomes to occur: (1) Crackdown(CD) (2) Peaceful Collusion (PC) (3) Violent Collusion (VC) (4) Hands-off (HO). First, Crackdown occurs when G chooses crackdown, or when G chooses collusion but the agreement breaks down as OCG1 refuses to pay the bribe. Second, peaceful collusion (PC) is an outcome where G chooses collusion, OCG1 accepts the demand, and such successful collusion induces OCG2 to back down. Inter-OCG violence never arises in this outcome. Third, violent collusion (VC) is the opposite outcome of peaceful collusion where OCG2 still chooses to fight despite the successful collusion. Lastly, hands-off (HO) is an outcome where G chooses hands-off and never intervenes in inter-OCG violence.

Reelection

The reelection likelihood is a major component of the players' payoff. It is determined by the utility of citizens under the realized outcome, which can be broken down into three parts. (1) The size of illicit benefit stemming from criminal group's presence; (2) intensity of inter-OCG violence in three different degrees - high, moderate, and low [8]; (3) the social cost of collusion. First, the existence of OCGs in society offers citizens the opportunity to participate in informal economic activities associated with the OCG's business or benefit from public goods provided by the OCG. The more benefits citizens could get from the OCGs, the happier and therefore more tolerant they become of the presence of OCGs. I assume that the benefits originate from the OCGs' contested prize, denoted as $V \geq 0$, and that the amount of benefits is determined by the exogenously given fraction $t \in [0, 1]$ of V. A higher value of t means that a greater share of their prize is dedicated to the citizens and

---

[8]By intensity of violence, I mean the aggregate level of violence chosen by two OCGs. To avoid confusion, I consistently use the term 'intensity' to refer to the aggregate level, which is distinct from the 'level' of violence that each OCG adopts. I define the low-intensity of violence as both OCGs select $\underline{m}$, moderate-intensity as one OCG chooses $\underline{m}$ while the other chooses $\overline{m}$, and high-intensity as both OCGs select $\overline{m}$.

yields a higher citizen utility. Taken together, the size of the illicit benefit is denoted by $tV \geq 0$. Second, aside from such benefits, citizens may experience property damage and security threats caused by OCGs' contests over the prize. The higher intensity of violence employed by OCGs, the larger the citizen's disutility from violence will be generated. Lastly, I incorporate the fact that collusion between G and OCG1 will generate the negative social costs that accrue to the citizens due to the existence of explicit corruption, the value of which is denoted by $s \geq 0$. On the other hand, a hands-off approach does not incur these costs associated with collusion.

The citizens' utility is translated to the reelection probability in the following way. At one end of the violence spectrum, for those outcomes absent inter-OCG violence – crackdown (CD) and peaceful collusion (PC) –, G's reelection would be guaranteed. At the other end, for those outcomes accompanying the highest intensity of violence where both OCGs choose the high level of violence, the reelection likelihood is fixed at the minimum level, denoted by $\epsilon \in [0,1)$[9]. Meanwhile, for those outcomes with the low or moderate intensity of OCGs' violence, the reelection probability is determined by the size of illicit benefit tV and the cost of collusion s, on top of the minimum reelection probability. Lastly, I restrict the parameter range under investigation to $tV + \epsilon \in [0,1)$ to reduce the possible cases.

The probability of reelection associated with each outcome is formally represented below:

$$Pr(Reelect|CD) = 1$$

$$Pr(Reelect|PC) = 1$$

$$Pr(Reelect|HO, m_1, m_2) = \begin{cases} \epsilon \in [0,1) & \text{if} \quad (m_1, m_2) = (\overline{m}, \overline{m}) \\ tV + \epsilon & \text{Otherwise} \end{cases}$$

$$Pr(Reelect|VC, \overline{m_1}, m_2) = \begin{cases} \epsilon - s \in [0,1) & \text{if} \quad (m_1, m_2) = (\overline{m}, \overline{m}) \\ tV + \epsilon - s & \text{Otherwise} \end{cases}$$

3.1 Payoffs

OCGs

In crackdown, both OCGs receive zero payoffs as they both get eliminated by G. In peaceful collusion (PC), OCG1 pays the bribe k to G in exchange for the entire contested prize V peacefully conceded to OCG1. OCG2 receives zero payoff as it chooses not to fight. Since there is no violence occurred, peaceful collusion guarantees the reelection of G. OCG1's utility of peaceful collusion is given by:

$$U_{ocg1}^{PC} = (1+\delta)(1-t)V - k$$

---

[9] A technical assumption that $\epsilon \geq s$ is needed to obtain a non-negative reelection likelihood.

Conversely, OCG1 and OCG2 have a contest over V in hands-off (HO) or violent collusion (VC). Recall that $m_i \in \{\underline{m}, \overline{m}\}$ is a level of violence selected by OCG_i $i \in \{1, 2\}$. The probability of winning this contest, $p_i(m_i, m_{-i})$, is simply determined by the magnitude of violence chosen by OCGs relative to their opponents. It is formally stated below.

$$p_i(m_i, m_{-i}) = \begin{cases} q > 0.5 & \text{if} \quad m_i = \overline{m}, \ m_{-i} = \underline{m} \\ 0.5 & \text{if} \quad m_i = m_{-i} \\ 1 - q & \text{if} \quad m_i = \underline{m}, \ m_{-i} = \overline{m} \end{cases}$$

Also, employing violence incurs a direct cost to OCGs. For the sake of simplicity, I denote the cost for OCGs associated with using violence as the level of violence they choose, which is represented by m_i.

In hands-off, OCGs fight over the contested prize, and G does not intervene in their confrontation. OCGs' utility of hands-off is given by:

$$U_{ocg_i}^{HO} = \begin{cases} p_i(1 + \delta)(1 - t)V - m_i & \text{if G is Reelected} \\ p_i(1 - t)V - m_i & \text{if if G is not Reelected} \end{cases} \quad \text{where } i \in \{1, 2\}$$

In violent collusion, OCG1 pays a bribe k while its military expense, $\overline{m}$, will be covered by G under the banner of collusion. On the other hand, OCG2, excluded from the alliance, has to pay not only the cost of violence but also an additional cost, $r \geq 0$. r derives from G's attack on OCG2, launched to defend its ally OCG1. OCGs' utility of violent collusion is given by:

$$U_{ocg1}^{VC} = \begin{cases} p_1(1 + \delta)(1 - t)V - k & \text{if G is Reelected} \\ p_1(1 - t)V - k & \text{if G is not Reelected} \end{cases}$$

$$U_{ocg2}^{VC} = \begin{cases} p_2(1 + \delta)(1 - t)V - r - m_2 & \text{if G is Reelected} \\ p_2(1 - t)V - r - m_2 & \text{if G is not Reelected} \end{cases}$$

Government

The core part of the government's payoff revolves around the benefit of staying in office, denoted α. By assumption, G's crackdown ensures his reelection; yet, since there is no other entity to supply public goods than G, G should pay the cost of public good provision, labeled b, in every period and with one-time crackdown cost, labeled τ. G's utility of crackdown is given by:

$$U_g^{CD} = (1 + \delta)(\alpha - b) - \tau$$

In hands-off, G free-rides on the supply of public goods, which is provided by OCGs instead and saves the cost of the crackdown.

$$U_g^{HO} = \begin{cases} (1+\delta)\alpha & \text{if G is Reelected} \\ \alpha & \text{if G is not Reelected} \end{cases}$$

In peaceful collusion, G receives the bribe from OCGs, k, along with free-riding on the supply of public goods and saving the cost of the crackdown. G's utility of peaceful collusion is given by:

$$U_g^{PC} = (1+\delta)\alpha + k$$

In violent collusion, G has to bear a cost, C, associated with supporting its ally OCG1. This is in return for the bribe k that G receives. The cost entails the military expense that G covers for OCG1 and G's attacks targeted to OCG2 to help defend the ally OCG1.

$$U_g^{VC} = \begin{cases} (1+\delta)\alpha + k - C & \text{if G is Reelected} \\ \alpha + k - C & \text{if G is not Reelected} \end{cases}$$

3.2 Analysis

Throughout the analysis, I look at the pure strategy subgame perfect equilibria (SPE). Among four different equilibria, I will mostly focus on violent collusion and hands-off which involve some degree of inter-OCG violence. Proposition 1 below summarizes the condition under which the high intensity of violence is observed if G chooses collusion and hands-off. The model is solved by backward induction.

Proposition 1. *In any equilibrium where G colludes, there is a high intensity of violence when the following holds:*

- $\overline{m} - \underline{m} < \dfrac{1}{2}\{1 + (\epsilon - s)\delta\}(1-t)V - (1-q)\{1 + (tV + \epsilon - s)\delta\}(1-t)V \equiv m_H{}^*$

- $r \leq \dfrac{1}{2}\{1 + (\epsilon - s)\delta\}(1-t)V - \overline{m}$

- $k \leq \dfrac{1}{2}\{1 + (\epsilon - s)\delta\}(1-t)V$

In any equilibrium where G chooses a hands-off approach, there is a high intensity of violence when the following holds:

- $\overline{m} - \underline{m} < \dfrac{1}{2}(1 + \epsilon\delta)(1-t)V - (1-q)\{1 + (tV + \epsilon)\delta\}(1-t)V \equiv m_M{}^*$

OCG1 and OCG2's choice of violence critically depends on the cost difference between using high and low violence, $\overline{m} - \underline{m}$. The logic is simple. For both hands-off and violent collusion, high-intensity

violence occurs when both OCGs assess that employment of high violence is not so expensive relative to the employment of low violence. An OCG weighs between two options: one option gives him the comparable military capability to its rival OCG at the expense of the high-violence cost and the lower survival likelihood [10], while the other option gives him the low-violence cost and the higher survival likelihood at the expense of the weaker capability. When the former outweighs the latter, both OCGs will not hold back using high violence, resulting in a high intensity of violence.

The same intuition holds for both violent collusion and hands-off. However, the thresholds for the high-intensity violence attached to each outcome differ slightly, as the threshold attached to violent collusion ($m_H{}^*$) is lower than that of hands-off ($m_M{}^*$). It means that the parameter range where the high intensity of violence is observed is *wider* under hands-off than violent collusion. It is because the social cost of corruption (s) that is present in violent collusion but not in hands-off *lowers* the survival likelihood of OCGs under collusion, making them act more cautiously and conservatively when it comes to using high violence. Thus, for the OCGs to be willing to use high violence under violent collusion, the cost difference should be smaller enough to compensate for the lower survival likelihood.

When G chooses to collude, a few more conditions are required for high-intensity violence to occur. OCG2 must choose to fight against OCG1 rather than back down. Fighting occurs when the OCG2's expected payoff of fighting outweighs its expected cost that includes the damage r inflicted by G. Then, OCG2's choice of fighting and the chosen level of violence are altogether factored into the OCG1's choice of whether to accept to pay a bribe k. k is the reservation price of the bribe that OCG1 is willing to pay, and in order for OCG1 to agree to pay the bribe and reach collusion with G, k should be lower than OCG1's expected payoff of fighting.

Likewise, proposition 2 below presents the condition under which the moderate intensity of violence is observed if G chooses collusion and hands-off.

Proposition 2. *If G colludes, there is a moderate intensity of violence when the following holds:*

- $m_H{}^* \leq \overline{m} - \underline{m}$

- $r \leq (1-q)\{1 + (tV + \epsilon - s)\delta\}(1-t)V - \underline{m}$

- $k \leq q\{1 + (tV + \epsilon - s)\delta\}(1-t)V$

If G takes a hands-off approach, there is a moderate intensity of violence when the following holds:

- $m_M{}^* \leq \overline{m} - \underline{m} < (q - \frac{1}{2})\{1 + (tV + \epsilon)\delta\}(1-t)V \equiv m_L{}^*$

---

[10]The term, OCGs' survival likelihood and G's reelection likelihood, will be interchangeably used.

If G colludes, OCG1 is bound (by the assumption) to choose high violence. Then, OCG2, who makes the last decision, faces the same two options mentioned above. For the moderate intensity of violence to occur, OCG2 must choose low violence. They do so when OCG2 finds the option that gives them the low-violence cost and the higher survival likelihood, at the expense of the weaker capability, more profitable than the other option that gives OCG2 the comparable capability to fight, at the expense of the high-violence cost and the lower survival likelihood. In other words, OCG2 will end up choosing the low violence when they find the high-violence cost and the short survival likelihood combined too costly.

On the other hand, if G adopts a hands-off approach, OCG1 and OCG2 have two options each. Under these circumstances, moderate-intensity violence will occur when the cost difference between using high and low violence is significant, but not excessive. This situation arises when OCG1, the first mover, selects high violence, and OCG2, the second mover, chooses low violence, or alternatively, when OCG1 chooses low violence and OCG2 subsequently selects high violence. This intuition is reflected in the formal notation of the condition,
$$m_M{}^* \leq \overline{m} - \underline{m} < (q - \frac{1}{2})\{1 + (tV + \epsilon)\delta\}(1 - t)V \equiv m_L{}^*.$$

One thing to note from Proposition 1 and 2 is that different G's choice can lead to different intensities of equilibrium violence. Specifically, I find that under certain conditions, collusion can result in moderate-intensity violence, whereas a hands-off approach can lead to high-intensity violence. Proposition 3 outlines the specific conditions that determine the divergence in equilibrium violence depending on G's choice.

Proposition 3. *There is less violence in equilibrium after the government colludes than after the government takes a hands-off approach when:* $\overline{m} - \underline{m} \in [m_H{}^*, m_M{}^*)$

I noted earlier that the threshold attached to violent collusion ($m_H{}^*$) is lower than that of hands-off ($m_M{}^*$). For the parameter values falling between the two thresholds, the intensity of violence can vary depending on G's decision; collusion leads to moderate intensity, while hands-off leads to high intensity of violence. The reason for the divergence in violence intensity between collusion and hands-off is the social cost of corruption (s) associated with the former. In particular, violent collusion is associated with a slightly lower likelihood of survival compared to hands-off due to the presence of this cost. When $\overline{m} - \underline{m} \in [m_H{}^*, m_M{}^*)$, OCGs operating under collusion feel compelled to limit the violence they use in order to offset the lower likelihood of survival. Conversely, OCGs operating under a hands-off approach have no incentive to do so, which results in a difference in violence intensity depending on G's choice.

Comparative Statics

I have so far examined the conditions that determine a certain government response and violence intensity. Now turning our attention to the comparative statics, I focus on examining the condition under which the equilibrium intensity of violence decreases, and under which the government response can shift from one to another. In doing so, I take the comparative statics on the cutoff m_H^* with respect to the two parameters t and V.

m_H^* is the cutoff associated with violent collusion, below which we observe the high intensity of violence and above which the moderate intensity of violence. If this cutoff decreases, we can observe the equilibrium transition from high to moderate violence for some parameters, whereas if the cutoff rises, we can observe the opposite.

Here, t is a fraction of the contested prize that OCGs allocate to ordinary citizens to provide illicit benefits. Increasing t means that OCGs devote more resources to ordinary citizens at the expense of their own income, and decreasing t means otherwise. From the perspective of ordinary citizens, increasing t means that they can earn higher illicit benefits from the OCGs. The higher illicit benefits lead to a higher willingness for ordinary citizens to tolerate OCGs [11].

Meanwhile, V is the size of the contested prize, which is the source of revenue for both OCGs and ordinary citizens. Other things being constant, increasing V means not only higher revenue for OCGs, but also the higher illicit benefit for ordinary citizens. Even when the fraction t stays the same, increasing the entire size of V will increase the size of the allocated revenue to the ordinary citizens. In this case, the higher illicit benefit does not come at the expense of OCGs' income.

Proposition 4 summarizes the effect of increasing t and V on the cutoff m_H^* and its implication on the intensity of equilibrium violence. It also presents a set of conditions required to sustain the reduced equilibrium violence in the event of changing m_H^*.

Proposition 4. *Holding all else constant, $m_H{}^*$ decreases as t increases until $t^* \equiv \dfrac{(q - \frac{1}{2})1 + (\epsilon - s)\delta}{2(1-q)V\delta} + \dfrac{1}{2}$. Similarly, all else equal, $m_H{}^*$ decreases as V increases beyond $V^* \equiv \dfrac{(q - \frac{1}{2})1 + (\epsilon - s)\delta}{2(1-q)t\delta}$. The cutoff shift opens the parameter space where choosing collusion can reduce the equilibrium intensity of violence, initially from high intensity to moderate intensity. The parameters falling within this intervening parameter space must satisfy the following conditions for violence reduction to occur.*

- $r \leq (1-q)\{1 + (tV + \epsilon - s)\delta\}(1-t)V - \underline{m}$

- $k \leq q\{1 + (tV + \epsilon - s)\delta\}(1-t)V$

---

[11] I assume that a higher level of illicit benefit will not impact an OCG's survival in the face of the high intensity of violence. It can affect their survival likelihood only when the violence is managed at a moderate or low intensity.

Figure 2 illustrates the comparative statics analysis results where two parameters, t and V, are varied while holding other parameters constant at reasonable values. The figure categorizes parameter ranges based on the direction of movement in the cutoff m_H^*. The yellow region shows that an increase in t and V has opposite effects on m_H^*, while the pink region shows that an increase in both parameters leads to a decrease in the cutoff m_H^* [12].

Effect of increasing V and t on m_H^* ($\varepsilon = 0.2$ s $= 0.1$ $\delta = 0.9$ q $= 0.65$)

No high intensity violence
$m_H^* < 0$

Illicit benefit thesis
$t\uparrow \to m_H^*\downarrow$
$V\uparrow \to m_H^*\downarrow$

$t\uparrow \to m_H^*\downarrow$ Illicit benefit thesis
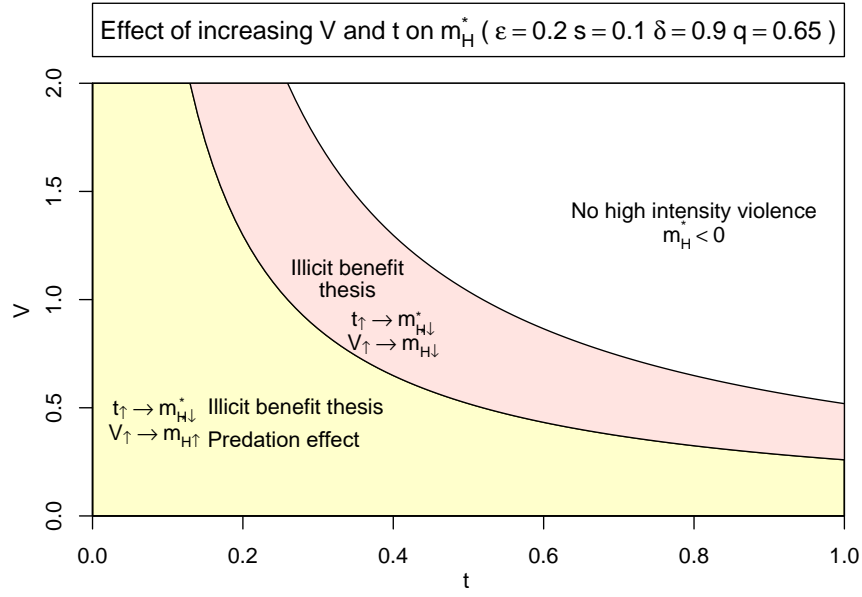$V\uparrow \to m_H^*\uparrow$ Predation effect

Figure 2: Comparative statics results

How an increase in t affects the intensity of violence

I begin with discussing the effect of increasing t on equilibrium violence, and further, I will examine its chain effect on G's response. Increasing t *up to t^** pushes down the cutoff m_H^*. The cutoff shift creates the parameter space between the prior cutoff and the new cutoff. For this intervening parameter space, OCG2 that used to choose the high level of violence now alters its choice to the low level, conditional on G choosing to collude. OCG2 does so, because now that their investment in citizens' welfare (t) increases, they expect that citizens will become more tolerant of OCGs and the colluded government, heightening the survival likelihood for OCGs and G. With the higher survival likelihood, OCG2 will find it more costly to use the high violence because the high intensity of violence will wipe out the benefit of citizens' welfare increase and thus take the survival likelihood back to the lowest point. Due to this cost, OCG2 chooses to lower the violence. [13]

---

[12]The white area represents a scenario where the cutoff falls below zero, indicating that high intensity of violence is not observed.

[13]OCG2 does not lower the violence when G chooses hands-off, because hands-off guarantees a slightly higher survival likelihood to OCGs than collusion, and therefore, when $\overline{m} - \underline{m}$ is around the cutoff m_H^*, OCG2 does not yet need to lower the violence to prop up the survival likelihood.

However, once t passes the threshold t^*, increasing t will rather push up the threshold $m_H{}^*$. Note that the value of t^* is greater than one-half. $t > t^*$ indicates that OCGs allocate more than half of their revenue to the citizens' welfare while cutting down their own income. If t passes the threshold, OCGs come to a point where the marginal cost, which is a loss of their own income, exceeds the marginal benefit of increasing the share t, which is a higher survival likelihood. In this case, increasing t will create a parameter space where the equilibrium intensity of violence increases initially from moderate to high intensity, even when G chooses collusion.

How the intensity of violence affects G's response

I will put aside the case with $t > t^*$. Focusing on the comparative statics result with $t \leq t^*$, I will examine the effect of increasing t on G's response in detail. As mentioned above, increasing t decreases the cutoff $m_H{}^*$, and reduces the equilibrium intensity of violence for some parameters. Expecting this change, G revises its policy accordingly. There are three potential scenarios: (1) G may sustain the collusion, (2) G may switch their response from crackdown to collusion, or (3) G may switch their response from hands-off to collusion.

First, consider the case where the status quo was violent collusion with the high intensity of violence. With increasing t, the equilibrium violence will reduce from the high intensity to moderate intensity, and in such a case, G will adhere to collusion. G does so because by just adhering to collusion, the equilibrium violence will subside, which makes all other conditions that support the violent collusion easier to be satisfied. The moderate intensity of violence is not only beneficial to G but also to OCGs; it increases OCGs' expected payoff of fighting by extending the survival likelihood. In turn, it eases the conditions for OCGs to accept to pay the bribe and choose to fight. Also, the government will find collusion even more appealing than the other options as they can achieve a higher likelihood of reelection under collusion due to the mitigated intensity of violence. Taken together, OCGs and G will not find any incentive to deviate from collusion, and therefore, G's collusion will be reinforced.

Next, consider the switching response cases. An increase in t can induce G to alter its choice from hands-off or crackdown to collusion. Once t increases, G will expect OCGs' violence to decline under collusion and the reelection likelihood to increase. G, which used to choose rather crackdown or hands-off because of collusion's slightly lower reelection likelihood, now finds collusion more profitable thanks to the mitigated intensity of OCG violence and thus alters its choice to collusion.

In both of the aforementioned scenarios, an increase in the value of t prompts OCGs to reduce violence, which drives the changes in G's response at equilibrium. Overall, the effect of increasing t can be summarized this way: when OCGs invest more into the ordinary citizens' welfare ($t \uparrow$), citizens earn the higher illicit benefits from the OCGs and thus will become more tolerant of them and of the government that has endorsed their presence. It will, in turn, increase the OCGs' and the government's survival likelihood, allowing them to enjoy an extended payoff stream. Upon realizing that using high violence will prevent themselves from benefiting from extended survival,

OCGs will choose to reduce their violence from high intensity to moderate intensity. With the equilibrium intensity of violence being mitigated under collusion, the government will find collusion more profitable than any other options considering the expected reelection likelihood and a bribe combined. Therefore, G will alter or consolidate its policy to collusion with OCGs.

How an increase in V affects the intensity of violence?
Moving on to the next parameter V, I discuss the effect of increasing V on equilibrium violence, and further, I will examine its chain effect on G's response. Increasing V *above* V^* pushes down the cutoff m_H^*. Similar to the previous discussion, the cutoff shift creates the parameter space between the prior cutoff and the new cutoff, where OCG2 alters its violence level from a high to a low level, conditional on G choosing to collude. Recall that increasing V increases the citizens' illicit benefit as well as OCGs' contested prize. OCG2 lowers the violence because doing so will give both OCGs extended survival[14], even though it weakens its own relative power against OCG1. This seems to indicate that OCG2 chooses to pay the cost alone for the collectively better outcome for both OCGs. When does OCG2 agree to do so? When the size of the prize is sufficiently large as indicated by $V \geq V^*$, OCG2 should find it more profitable to extract the prize for a longer period of time despite the slightly reduced probability of winning, rather than win the prize with a slightly higher probability but to enjoy it only for a shorter period of time.

By contrast, when V is below the threshold V^*, increasing V will rather push up the threshold m_H^*. In this case, increasing V will create a parameter space where OCG2 alters its choice from low to high violence even when G chooses collusion. $V < V^*$ indicates that the size of the prize is not sufficiently large. If the prize at stake is not so large, OCG2 will just focus on "winning" the prize in the short run, rather than making the prize accessible for a longer period. Thus, increasing V under $V < V^*$ will merely incentivize OCG2 to win the prize by using high violence, resulting in the heightened intensity of violence from moderate to high intensity. This logic is consistent with well-known hypothesis, the predation (rapacity) effect, which predicts that violence will intensify as the size of the contested prize increases.

How the intensity of violence affects G's response
I will put aside the case with $V < V^*$ and focus on the comparative statics result with $V \geq V^*$. Under $V \geq V^*$, the effect of increasing V on G's response choice is equivalent to that of increasing t. When $V \geq V^*$, increasing V decreases the cutoff m_H^*, and reduces the equilibrium intensity of violence for some parameters. Expecting this change, G revises its policy accordingly. Violence reduction leads to the higher reelection probability of G under collusion, and G's response, as a result, converges to collusion in all three different cases - G will consolidate the collusion or will switch their response from crackdown or hands-off to collusion.

In summary, Proposition 4, the comparative static results of the parameters t and V, offers the

---

[14]Increasing V increases the illicit benefits, which leads to the extended survival.

following insights: (1) Increasing either parameter leads to a higher illicit benefit that goes to ordinary citizens. When certain conditions are met ($t \leq t^*, V \geq V^*$) and collusion is chosen by the government, the increased illicit benefit incentivizes criminal organizations to maintain the collusive relationship with a government, leading to a reduction in violence. (2) Reduced violence increases the probability of the government's reelection, making it more likely to choose collusion once again. This chain of effects is now referred to as the *illicit benefit thesis*. In the following section, I will focus on this thesis and evaluate its predictions empirically.

4 Empirics

4.1 Empirical Predictions, Case Selection, Outline of the Hypotheses

The illicit benefit thesis posits that the intensity of violence decreases in either scenario: a fraction t of the contested prize increases or the size of the contested prize itself V increases. I focus on the changes in V to test the theoretical prediction since t is an internal decision made by criminal groups and is challenging to observe.

To reiterate, the theoretical mechanism behind the illicit benefit thesis can be divided into two parts: the violent aspect and the electoral aspect. Suppose that the status quo involves the incumbent government colluding with the criminal group. First, when the size of the contested prize (V) increases, the illicit benefit to ordinary citizens also increases, leading to a reduction in violence by organized criminal groups. As citizens' welfare and security improve, the support for the incumbent government increases, enabling collusion between the government and the organized crime group to continue. This mechanism can be translated to the following observable implications.

(1) As the mafia-infiltrated economic sector expands (i.e., the size of contested prizes increases), we would anticipate a decrease in the level of violence.

(2) Subsequently, we would anticipate a greater level of support for the incumbent government and an increased probability of their re-election.

In order to properly test these predictions, we need a case in which we can accurately determine the relationship between political authority and criminal groups. Additionally, the case should enable us to confirm, to some extent, that an increase in the value of the contested prize indeed leads to a greater illicit benefit for ordinary citizens, such as an increase in income for those who are involved in economic activities related to organized crime. However, it is difficult to identify a suitable case that meets these criteria, as corruption and collusion often take place in secret.

Fortunately, I have found that Canada's construction sector can serve as a suitable case to test the theoretical predictions, thanks to the extensive public inquiry conducted in Quebec. The Charbonneau Commission established that the Italian mafia was deeply involved in the industry, by investigating their political ties with bureaucrats and elected officials, potential distortion of the public procurement process, and their tactics and relationships with industry players such as

construction businesses, contractors, suppliers, and engineering firms. The investigation uncovered suggestive evidence of bribery of politicians and political financing to gain an advantage in the industry, which aligns with the setting of my theory. Additionally, it demonstrated the complicit relationship between the mafia and regular entrepreneurs in the industry, although revelations and denials were mixed in entrepreneurs' testimonies, with many arguing that they were coerced or intimidated to comply.

Despite the presence of coercion, the way in which the mafia manipulated market competition and access to public tenders, discovered in the commission's investigation, suggests that insider businesspeople received exclusive access to public tenders and likely profited from the mafia's presence and operations, which reduced competition. In the following section, I will elaborate in-depth on the mafia's tactics to infiltrate the industry and document my claim that the insiders of the collusion could have benefited from the mafia's operation and should have acted like stakeholders.

In the context of the construction sector, the performance of the construction sector will serve as an indicator of the size of the contested prize (V). A good performance in the construction sector will suggest an increase in the size of the prize, while a poor performance will indicate the opposite. Although it may be challenging to observe, the colluded entrepreneurs in the industry should benefit more from the improved performance of the construction industry, as more of the prize money will be funneled into the form of illicit benefit for those individuals. Then, according to the theory, the increased illicit benefit should induce violence reduction.

I will test this prediction by examining whether good performance in the construction sector is statistically associated with a reduction in violent crime. Additionally, I will assess whether the increased contested prize induces higher support for the incumbent politicians by examining the association between the economic performance of the construction sector and political donations to the incumbent party [15].

4.2 An Overview of Organized Crime in Canada's Construction Sector

4.2.1 The Charbonneau Commission

Between 2009 to 2015, a comprehensive investigation into corruption involving the mafia in Quebec's construction industry was carried out by the media and the government. The investigation was initiated by a news report in October 2009 that exposed alleged collusion and corruption in Montreal's construction industry [16]. In response to this report, the police formed Opération Marteau, an anti-corruption task force that began investigating bid-rigging, market segmentation, complementary bidding, and bribes to bureaucrats, all of which were allegedly orchestrated by the

---

[15] The selected case goes along with many other scope conditions of the theory, in such aspects as (1) violence should be visible and create collateral damage to the society, (2) voters can punish (reward) the politicians for worsening (improving) security and economic situations. These rationales will be further substantiated in the next section.

[16] Enquete, Radio Canada (2009, October 15). Collusion frontale: pratiques douteuses dans l'industrie de la construction.

Italian mafia group ([Clark et al., 2018](#)). After two years of the police investigation which yielded several arrests, the province of Quebec extended the investigation by appointing Justice France Charbonneau to lead a public inquiry on 19 October 2011[17].

This public inquiry is formally called "Commission of Inquiry on the Awarding and Management of Public Contracts in the Construction Industry (hereafter Charbonneau Commission)". It examined the existence of systematic corruption and mafia infiltration in the awarding and management of public construction contracts that occurred over the past 15 years (i.e. from 1996, when the Parti Québécois was in power). The Charbonneau Commission has made its final report publicly available in 2015, which sums up the expert and public consultations, and the testimonies of 189 factual witnesses and nearly 300 witnesses, gathered during 261 days of hearings over the two years of public inquiries. This report serves as a credible and powerful source of information that documents the existence of mafia infiltration in the legitimate economic sector[18].In the final report, the Charbonneau Commission concluded that corruption and collusion are "far more widespread than originally believed" ([CBC News, 2015](#)).

4.2.2   Presence of Organized Crime in Canada[19]

Organized crime in Canada is not as well-known as that in Latin America, Italy, or even the US. However, organized crime groups have been widespread across Canada since 1920s and, they are still prevalent today. They operate not only in major urban centers but also in small rural areas. As noted by Assistant Commissioner, Steve Graham, Commanding Officer in New Brunswick Division, "Few communities realize how pervasive organized crime can be. Organized crime can be found in communities of all sizes, and its impact in the smaller, rural areas is often far more devastating than it is in the large urban centers" ([Criminal Intelligence Service Canada, 2007](#), p.13).

Over the last two decades, five prominent organized crime groups have operated in Canada: Aboriginal-based, Asian-based, Eastern European-based, Outlaw Motorcycle Gangs (OMG), and Traditional (Italian-based) criminal groups (TOC). As can be inferred by its name, these criminal groups used to be based on ethnicity or the origin of the country, but over time, the internal composition of many organized crime groups has become multi-ethnic. The overall number of organized crime groups identified by the criminal intelligence community has been on the rise every year, increasing from 800 OCGs in 2006 to more than 2000 OCGs in 2020[20]. While some organized

---

[17]For more details on the development of the investigation, see Gyulai (2015).

[18]It should be noted that the Commission was granted extensive powers, including the ability to subpoena witnesses and compel testimony under immunity from criminal charges. This enabled them to gather substantive evidence that might not have been available through a purely academic interview process. Given the criminal nature of the matter and the fact that witnesses would have no incentive to reveal the truth in a non-compelled interview setting, it is unlikely that a similar level of evidence could have been gathered without the Commission's powers.

[19]The information in this section is gathered from the Annual Report on Organized Crime in Canada, 2003-2020, published by Criminal Intelligence Service Canada.

[20]However, the criminal intelligence authority argues that the increased number of organized crime groups can be largely attributed to enhanced reporting and efforts of the intelligence community to provide an accurate assessment of organized crime, not necessarily the indication of the growing prevalence of organized crime in Canada.

crime groups' presence is more diffuse across the country than the others, they tend to have their own geographical territory and stronghold[21].

The *Rizzuto crime group*, alleged to be involved in the construction corruption scandal, is based in Quebec and Ontario, and is arguably the largest Italian-based criminal group in Canada[22]. Violence and intimidation are common instruments for criminal groups of all levels of sophistication, as the evidence shows that seventy-three percent of the assessed OCGs in 2020 are believed to be involved in violent activities, ranging from assaults and extortion to shootings and homicides.

According to Criminal Intelligence Service Canada (2007), the illicit drug market is the most extensive and important criminal market in Canada considering the number of participating organized crime groups and consumers, and the size of the illicit revenue it generates[23]. No single organized crime group monopolizes any specific illicit drug market, either national or regional. Due to the existence of numerous players, violent competition over the control of the market often takes place[24].

While almost every criminal group, however small or large, is involved in drug trafficking, only a handful of sophisticated criminal groups are able to pursue their business in the legitimate sector using corruption and infiltration. The traditional organized crime group (Italian-based) is well-known for its involvement in public sector infiltration, as well as in some private sector industries, including accommodation and food services, retail trade, transportation and warehousing, construction, and various other services. These private businesses are often targeted because they provide OCGs with the opportunity to collect protection money, evade taxes, and launder the proceeds of criminal activities.(Criminal Intelligence Service Canada, 2020, p.7).

4.2.3 Mafia Infiltration in Construction Industry

Among several businesses in Canada under the control of the mafia, this paper's empirical analysis centers on the mafia-infiltrated construction industry. Here I show how the mafia manipulates the industry and in what ways ordinary entrepreneurs are involved in the mafia's construction business. By doing so, I substantiate the theory's key assumption that some ordinary entrepreneurs and business people are also the beneficiaries of the mafia's infiltration.

According to the report of the Charbonneau Commission, organized crime groups use manip-

---

[21]Of course, like other countries, there has been the rise and fall of the group and geographical fluidity over time, which is largely dependent on the government's crackdown.

[22]Traditional organized crime group comprises three main strands: the Sicilian mafia, the 'Ndrangheta (Calabrese), and La Cosa Nostra based in the US. Rizzuto Crime Family, which was at the center of Montreal Construction scandal, comes from a part of the Sicilian faction.

[23]Approximately 80 of all crime groups in Canada are involved in this market but their role in the supply chain may differ: myriads of street-level traffickers are at the operational level while a smaller proportion of crime groups are capable of more sophisticated operations such as wholesale distribution, importation and domestic production.

[24]However, rivalries do not necessarily dominate. Temporary alliances between crime groups are often created to pool resources necessary for the success of specific criminal ventures. For example, TOC is in a symbiotic relationship with the Hells Angels in British Columbia.

ulative tactics to obstruct the competition, namely, *bid-rigging* and *entry deterrence (closing the market)*. Bid-rigging is defined as "a particular form of collusive price-fixing behavior by which firms coordinate their bids on procurement or project contracts"(OECD, 1993). The organized crime group assumes the role of colluding the firms and bribing the official; specifically, OCGs help coordinate which firm will submit the lowest bid [25], enforce and monitor the process so that no individual firm deviates. They do so in exchange for a pizzo (protection fee) or a cut of any contract as part of the bid-rigging collusion system. In some cases, they directly partake themselves in the bid through founding, investing in, and taking over the companies. Bid-rigging results in hampering the price competition and inflating the cost of the public contracts, which will be passed on to the taxpayers ultimately [26].

While bid-rigging is a way of price-fixing, entry deterrence is to block a new entrant in the market so the small number of the companies can dominate the entire market. In doing so, the colluded firms employ the following schemes: (1) intimidation (verbal or physical threats), (2) vandalism or sabotage on the competitor's job sites (damaging machinery or vehicles), (3) multiple complaints against the competitor to the administrative agencies in order to embroil the company in administrative procedures, (4) making the competitor unable to submit a bid or unable to bid at a competitive price by disrupting their supply chain - e.g., refusing to sell the materials (or lease the equipment) or offering them at an exorbitant price (Charbonneau Commission, 2015). Mafias get involved in this process, especially when using coercion, and they likewise take a cut from the contract.

Obstructing market competition is a crucial strategy for the mafia to gain control of the market. This not only benefits the mafia but also the firms that collude with them, which is why these firms likely acquiesced to the mafia's practices. Some may argue that the colluded firms had no choice but to comply with the mafia's coercion. However, given the long-standing collusion dating back to 1996 or even earlier, it is unlikely that coercion alone sustained the enduring collusion between business and the mafia. It is more plausible that the colluding businesses received significant benefits from obstructing market competition, allowing the illicit collaboration to persist.

4.2.4 Collusion between Politicians and OCGs

As much as the mafia tried to collude with the firms, they also strove to make connections with politicians to win contracts. In general, state-mafia collusion and mafia-business collusion went hand in hand. The administrative officials or local politicians have been the main target for corruption

---

[25]Charbonneau Commission (2015) presents four specific schemes by which to coordinate and determine the winner - (1) Rotation of winners with submission of bids of convenience. The cartel members agree to take turns presenting the best offer.; (2) Rotation of winners with abstention from bidding; (3) Compensation of subcontracts or money to those companies that withdraw from the tendering process ;(4) Market sharing by type of work, customer, or geographical area.

[26]CBC News (2012) reports that "The corruption inquiry has been shedding light on collusion tactics that raised the cost of Quebec projects by as much as 35 percent — as the Mafia, certain political parties, construction companies, and corrupt city officials all cashed in on the illicit spoils."

because the management of the construction projects, ranging from procuring the public contracts to establishing and enforcing the regulation, is often conducted at the local level [27].

Especially, one common form of kickback given to the elected officials was the organization and financing of their election campaign. According to one witness who testified in the investigation, 60 turnkey elections were organized by the engineering firm hired by the mafia between 1997 and 2007, particularly in municipalities on the outskirts of Montreal. In addition, bribes can be given in the form of political contributions or party financing. According to Lino Zambito, a former Montreal construction boss, "Three percent of city contracts' value went through a middleman to Mayor Tremblay's Union Montréal party, and the other one percent was considered a "tax" by the city engineer who drew up the public-works contracts (Zambito transcript, Charbonneau Commission, 2012, 39)."

The testimony from Charbonneau Commission (2015, p.14) reveals that they even hire straw donors to deliver the political contribution:

> Political contributions were often paid with cash that was used to reimburse straw donors. Business leaders used false invoicing schemes to obtain that cash. In some cases, they used criminal networks for false invoicing. Witnesses from both engineering firms and contractors reported paying political contributions and reimbursing straw donors with money obtained by charging the municipality for false extras.

In exchange for party financing, the mafia can obtain quasi-exclusivity on municipal contracts following the election by making a mayor on their side. Specifically, the engineering firm hands the "model tender calls" to the municipality that indicates the selection criteria built to maximize the chance of their selection. The mafia even manipulates the composition of selection committees by seating people who are in favor of the colluded firms.

4.3   The Data

Based on the background information previously provided, I expect to see three broad patterns in Canada, consistent with the general observable implications discussed above. (1) Violent crime should decrease when the construction sector is booming. (2) There will be higher incumbent support when construction is booming. (3) If violent crime decreases, incumbent official should be more likely to stay in office. The posited association (1) and (2) should be more pronounced in those areas where the Italian mafia is operating.

---

[27]The procurement bidding takes place at the municipality level. The provinces establish regulations in construction, including building codes, fire codes, plumbing codes, and electrical codes, as well as manage health and safety regulations, wages, and labor practices. However, the enforcement of these codes remains the responsibility of local authorities. It implies that the regulation and enforcement vary across the provinces and municipalities, which facilitates criminal entities to exploit regions with less effective code enforcement or lower standards with regard to certification.

Construction Sector Performance To measure the economic performance of the construction industry, I use the 2003-2020 annual building permit data. Building permit(BP) is a key indicator of the performance of the construction industry. In particular, I use the value of building permits, which indicates the the aggregate expenditure on materials, labour, profit and overhead needed for building construction[28]. This municipality-level dataset is available upon the request to Statistics Canada. The agency constructed the dataset by compiling the monthly survey of building permits issued by Canadian municipalities.

(Italian) Mafia Presence I construct the Italian mafia presence variable based on the intelligence reports. Although it is possible that other OCGs also have been involved in construction corruption, I only focus on the Italian mafia, whose infiltration into the construction industry is confirmed by the public inquiry. Different types of OCGs are spread across Canada, but there is no precise, official data for the presence of each organization. As an alternative, I refer to the annual reports on organized crime by criminal intelligence service Canada that have been published over the years (2003 through 2010, and 2019 - present) and construct the Italian Mafia Presence variable. According to the reports, their main operating areas are Greater Montreal in Quebec and Greater Toronto and Hamilton Area (GTHA) in Ontario, which remains quite constant throughout the years. Based on this information, I create a binary presence variable that indicates if a given municipality is within the main operating areas.

Violent Crime In measuring the violent crime conducted by organized crime groups, it would be ideal to use the OCG-related crime data, but due to the limitation on the current police-reported organized crime data[29], I use instead the municipal-level, violent crime rate (per 100,000 population). The data comes from incident-based crime statistics from the Uniform Crime Reporting Survey (UCR), the publicly available dataset from the Statistics Canada[30]. The measure entails total violent criminal code violations, including the incidence of Homicide, Level 1 Assault such as robbery, abduction, extortion, criminal harassment, total other violations causing death, attempted murder, sexual assault (Level1-3), and total sexual violations against children. While the original data source is available from 1998, I opt to focus on the period since 2003 because of the extensive

---

[28]https://www150.statcan.gc.ca/n1/pub/64-001-x/00101/4164036-eng.htm

[29]It covers extremely limited time period, and moreover, the level of disaggregation level is too coarse to analyze.

[30]It is important to note that the original dataset is broken down by police service jurisdiction, which does not necessarily correspond to the municipal boundary (census subdivision) or census division boundaries. As a result, geographic identifiers had to be manually coded to match the unit of analysis in other datasets.

municipality reorganization that occurred in Quebec in the early 2000s, especially in 2002[31].

Incumbent Support I consider a behavioral measure of incumbent support, measured by the amount of campaign contribution to the incumbent. As elaborated above, political contribution is a channel through which colluded business people can support, without much effort, the official who endorsed the corruption. Focusing on Quebec province, I exploit the records of political donors that are available on the Élections Québec website. I gather various information from donors, such as their name, postal code, city, the amount and the number of payments, and the political entity to which the contribution was made. Using the donors' geographic location, I aggregate the individual-level contribution data to the municipal level. Then, I obtain data on the political party in power in a particular electoral district during a given year. Using the incumbency information, I calculate the total contributions given to an incumbent in each municipality and year. I construct the dataset at both the provincial and municipal (mayoral) election levels[32]. The contribution data for the provincial election covers the period from 2011 to 2021, and those for the municipal election from 2013 to 2021. Before May 2011, donor's geographic location was not subject to disclosure requirement, but after revision of the Election Act, Article 93.1, the disclosure of the contributor's name and postal code became an requirement regardless of the contribution amount. This new mandate allows me to harness the donor information on the website and to estimate the total contribution of each municipality. Since the sample is only concerned with Quebec's election, the analysis using this variable will also be restricted to Quebec.

Electoral Outcomes I took municipal election results from the Canadian Municipal Election database (CMED). Although the original dataset includes all elections for all types of municipal government positions, I primarily focus on the mayoral elections, which elects a single mayor per municipality in most cases. Moreover, since we are interested in examining the incumbent's performance, I narrow down the sample even further, focusing on the subset of the mayoral elections where the incumbent is running for reelection[33]. Lastly, in the municipal elections, I employ the candidate level's electoral outcomes, instead of the incumbent party's reelection, as candidates are not typically affiliated with political parties.

Controls As controls, I include interactions between various control variables and annual building permit. The controls are annual consumer price index (CPI)[34] and unemployment rate of the

---

[31]In 2002, small cities were amalgamated into larger ones, resulting in significant changes to police service jurisdictions and the format of police-reported crime data. However, there is limited information available on the police jurisdiction changes, which makes it difficult to transform pre-2002 data into the post-2002 format without making arbitrary choices that could distort the data. Therefore, I have decided not to use data from before the 2002 reform to avoid potential data distortion.

[32]For the municipal races, I consider the sum of political donations instead of the donations given to the incumbent. Most municipal elections are not affiliated with political parties. There was no feasible way to isolate the donation directed to the incumbent candidate.

[33]Ultimately, I consider the races where (1) there is only one contested seat for mayor; (2) where we can identify who the incumbent is; and (3) where we know that the incumbent is running for reelection.

[34]CPI signifies the inflation rate over time of a region and also indicates the different living expense across the regions.

census metropolitan areas (CMA)[35], proxying for the region's economic characteristics, and median individual income and population of a municipality, taken from the 2001, 2006, 2011, 2016 census survey. The number of police officer positions (per 100,000 population, police service level) is also included to account for the police strength in a given municipality. Data of CPI, unemployment, and the number of police are from Statistics Canada.

The unit of analysis is municipality-year or municipality-election cycle for some analyses. Table 1 below shows the descriptive statistics for the sample.

---

[35]It includes province and territory, as well as some metropolitan areas with a population more than 100,000.

Table 1: Descriptive Statistics

Variable	Whole Sample		Presence=0		Presence=1	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Mafia Presence (binary)	0.118	0.323	0	0	1	0
Building Permit (Value, Mil CAD)	59.721	334.752	46.409	233.231	159.280	729.587
Building Permit (logged)	8.968	1.844	8.852	1.814	9.834	1.832
Violent Crime (per 100,000 ppl)	1282.050	1213.695	1339.540	1273.809	852.077	381.050
Violent Crime (logged)	6.931	0.622	6.969	0.630	6.646	0.462
Sexual Violence (per 100,000ppl)	53.675	27.608	55.362	28.633	46.281	21.032
Population	23384.070	115892.500	17546.080	68887.460	67047.050	276153.400
Median Individual Income (CAD)	28506.300	7381.253	28059.240	7343.661	31849.930	6780.014
Number of Police Officers (per 100,000 ppl)	186.506	161.962	195.588	174.591	140.574	47.050
Consumer Price Index (Annual, CPI)	120.804	9.845	120.926	9.969	119.892	8.812
Unemployment rate (Annual)	7.138	1.715	7.098	1.781	7.436	1.062
Municipal Electoral Outcome (Incumbent-running races)						
Mafia Presence (binary)	0.160	0.366	0	0	1	0
Incumbent Reelection (binary)	0.760	0.426	0.761	0.427		
Incumbent Vote Share (0-100)	52.648	18.308	52.639	18.427	52.693	17.783
Municipal Election Contribution (Quebec only)						
Mafia Presence (binary)	0.127	0.333	0	0	1	0
Number of Payments	8.107	108.708	3.752	36.212	38.003	288.071
Amount of Contribution	1757.227	21808.710	861.280	6947.633	7908.127	58040.910
Provincial Election Contribution (Quebec only)						
Mafia Presence (binary)	0.169	0.375	0	0	1	0
Number of Payments	35.031	134.779	21.930	124.573	99.335	161.842
Amount of Contribution	3399.219	14579.510	2107.484	13354.070	9739.305	18230.460
Number of Payments (to incumbent)	20.846	76.469	13.151	65.609	54.076	105.621
Amount of Contribution (to incumbent)	2141.714	8456.018	1363.283	7445.723	5503.240	11270.660
Number of Payments (to challenger)	20.929	83.433	13.761	81.032	50.180	86.668
Amount of Contribution (to challenger)	1907.705	8464.481	1218.379	7937.749	4720.815	9854.082

4.4 The Effect of Construction Sector Performance on Violent Crime

First, I perform the test to see the association between the construction economy and violent crime. I estimate the same equation as (1), but with violent crime as a dependent variable. Here, time t is defined as a year. The outcome variable, $y_{m,t}$, is violent crime rate of a municipality m in a given year t. $BP_{m,t}$ is the municipality m's value of the building permit (log-transformed) in a year t. The term $BP_{m,t} \text{x} Presence_m$ is a variable of interest, and I expect η to be negative. $\mathbf{X'_{m,t}}$ is a vector of covariates including CPI, unemployment, median income, population, and interactions between these variables and logged value of building permit. For the covariates, the double-demeaned estimator is applied. I also include a lagged dependent variable, since violent crime rate in a year t typically depends on its previous year, and previous year's crime rate may also be one of the factors that affect the municipality's construction economy of the current year, as a record of high crime rate may discourage new construction investment into the municipality.

As a placebo test, I experimented with running the analysis with sexual assault, which is typically not related with the mafia's activity and interest. The sample for the placebo test is restricted to Quebec at the moment. For better comparison, I provide the reference result next to it that estimates the same specification using the same sample, but with violent crime as a dependent variable. As another placebo test, I experimented with using province dummies in lieu of mafia presence variable. Since the Italian mafia do not operate in any other province except Quebec and Ontario, we should find no effect or opposite effect from the interaction term with the province dummies, except Quebec and Ontario. Even with these two provinces, we do not necessarily expect the result consistent with what we would get with the mafia presence variable, since not all of the municipalities within these provinces are mafia-present.

First, the main result is reported in Table 2. Column 1-2 use a level measure of violent crime while column 3-4 use a logged-transformed measure, which will create a slight difference in interpreting the result. Column 5-6 compare the effect of building permit on violent crime versus on sexual assault, employing the Quebec sample. Consistent with the main prediction, Column 1-4 show that there is a robust negative and significant relationship between construction economy and violent crime in the mafia-present areas, while there is no or marginal positive effect in the mafia-absent areas. Specifically, Column 2 reports that one percent increase in building permit is associated with 25.82 less violent crime in the mafia-present areas, which is around 3 percent of average violent crime rate in the mafia-present areas. Column 4 similarly reports that one percent increase in building permits leads to 0.019 percent decrease in crime rate in the mafia-present areas.

The estimates from Column 5 and 6 also confirm the expectation. From Column 5 with the restricted sample of Quebec, I found a similar violence-reducing effect of the construction economy in the mafia-present areas, as consistent with Columns 1 and 2. By contrast, when it comes to the sexual assault in Column 6, I found no moderation effect by mafia presence, as expected. The main impact of building permits is not statistically significant, and there is no significant difference in the

Table 2: Effect of Construction Economy on Violent Crime

VARIABLES	DV: Violent Crime (per 100,000ppl), 2003-2020				Comparison - Quebec only per 100,000ppl, 2003-2020	
	level		logged		Violent Crime	Sexual Assault Level1
	(1)	(2)	(3)	(4)	(5)	(6)
Building Permit (CAD, logged)	2.686	0.290	0.00512*	0.00124	-1.993	0.707
	(7.540)	(6.873)	(0.00264)	(0.00303)	(8.30)	(0.458)
Presence x Building Permit	-27.49**	-26.11**	-0.0206**	-0.0209**	-29.57**	-0.390
	(11.79)	(10.83)	(0.0100)	(0.00956)	(14.60)	(0.751)
Observations	20,044	18,820	20,044	18,820	10,812	10,643
Number of CSD	1,335	1,310	1,335	1,310	679	679
Controls	N	Y	N	Y	N	N
Year, Municiaplity FE	Y	Y	Y	Y	Y	Y
Lagged DV	Y	Y	Y	Y	N	N

Note: *** p<0.01, ** p<0.05, * p<0.1, Robust standard errors clustered at the municipality level in parentheses.
Controls include CPI, unemployment, median income, population,
and interactions between each of these variables and logged value of building permit.

main effect depending on the mafia's presence.

Moving on to the next placebo test, the result is reported in Table 3. As expected, the effect of the building permits is not statistically different from one province to another in most of the models, and as shown in Column 2 and Column 7, some provinces even exhibit the positive and statistically significant effects of building permits. One exception is Column 6, where the Ontario dummy is interacted with the building permit. It shows a similar result consistent with the main result. It is not a surprising result, as Ontario is one of two provinces where the mafia is operating. We can speculate that it is either because the mafia's presence is even more widespread in Ontario than specified, or there could be an additional channel through which improving the construction economy drives down the violent crime in Ontario besides the posited channel.

Due to the concern that the observations of Ontario could have driven the main result in Table 2, I ran an additional analysis, re-estimating the model 1 through 4 of Table 2 with the sample where Ontario observations are dropped. I found the robust results consistent with those in Table 2, without losing any statistical significance or the effect being attenuated, thus confirming the concern is sly. Meanwhile, as shown in Column 5 of Table 3, I do not find a statistically significant, moderation effect in Quebec, which is another mafia-present province. Overall, Table 3 demonstrates that the posited effect does not appear in any other province than mafia-present areas, confirming that mafia presence plays a crucial role in explaining the violence-reducing effect of the construction economy.

Table 3: Effect of Construction Economy on Violent Crime - Province Dummy

VARIABLES	Violent Crime (logged), 2003-2020											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Building Permit (CAD, logged)	-0.000845	-0.00103	-0.00100	-0.000959	-0.00267	0.00135	-0.00158	-0.00165	-7.67e-05	-0.000132	-0.000803	-0.000803
	(0.00295)	(0.00294)	(0.00295)	(0.00294)	(0.00384)	(0.00313)	(0.00301)	(0.00298)	(0.00306)	(0.00310)	(0.00293)	(0.00293)
1. Newfoundland and Labrador x BP	0.00240											
	(0.0188)											
1. Prince Edward Island x BP		0.0279**										
		(0.0114)										
1. Nova Scotia x BP			0.00922									
			(0.0180)									
1. New Brunswick x BP				0.0103								
				(0.0231)								
1. Quebec x BP					0.00483							
					(0.00545)							
1. Ontario x BP						-0.0198**						
						(0.00809)						
1. Manitoba x BP							0.0196*					
							(0.0112)					
1. Saskatchewan x BP								0.00668				
								(0.0100)				
1. Alberta x BP									-0.00400			
									(0.00819)			
1. British Columbia x BP										-0.00715		
										(0.00792)		
1. Yukon x BP											0	
											(0)	
1. Nunavut x BP												0
												(0)
Observations	18,820	18,820	18,820	18,820	18,820	18,820	18,820	18,820	18,820	18,820	18,820	18,820
Number of CSD	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year, Municiaplity FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lagged DV	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Note: *** p<0.01, ** p<0.05, * p<0.1, Robust standard errors clustered at the municipality level in parentheses. Controls include CPI, unemployment, median income, population, and interactions between these variables and logged value of building permit.

4.5 The Effect of Construction Sector Performance on Incumbent Support

Next, I examine the relationship between the performance of the construction economy and incumbent support, measured by political donations toward the incumbent. Donations at both provincial and municipal elections are investigated. I use the basic panel data model with the following form:

$$y_{m,t} = \alpha_m + \gamma_t + \lambda BP_{m,t} + \eta BP_{m,t} \text{ x } Presence_m + \mathbf{X'_{m,t}} \cdot \boldsymbol{\pi} + \epsilon_{m,t} \tag{1}$$

$y_{m,t}$ is the outcome variable in municipality m at time t. Time t is defined as an election cycle. In the municipal election panel, $y_{m,t}$ is the average political contribution received in municipality m over the election cycle t. In the provincial election panel, $y_{m,t}$ is the average political contribution given to the incumbent party of the municipality m over the election cycle t. α_m and γ_t denote a municipality- and election-fixed effect. $BP_{m,t}$ is the average value of the building permit (log-transformed) over the election cycle t. $Presence_m$ denotes whether municipality m is within the Italian-mafia presence area. The term $BP_{m,t}\text{x}Presence_m$ estimates the differential effect of construction economy depending on the mafia presence in m. η is a coefficient of interest, which I expect to be positive. $\mathbf{X'_{m,t}}$ is a vector of covariates including CPI, unemployment, interactions between each of these two variables and logged value of building permit. When using interaction, I use a double-demeaned estimator to avoid bias, as both interacted variables vary within units (Giesselmann and Schmidt-Catran, 2022).

The result is reported in Table 4. Panel A (Column 1-3) reports the result concerning the municipal election donations and Panel B (Column 4-8) concerning the provincial election donations. Both panels report both amount and the number of payments (frequencies) measures. For the municipal election, I use the total donation that includes the donations directed to the incumbent as well as those to the challengers. For the provincial election, both total and incumbent's donation are analyzed. The tables below all include time and unit fixed effects, and thus, coefficients indicate the within-unit effect.

Table 4 shows the robust, positive baseline effect of building permit on political donation and the negative interaction effect between building permit and mafia presence. The latter is with a greater magnitude than the former. The positive baseline effect indicates that improving construction economy increases the political donations in the mafia-absent areas (i.e, baseline). On the other hand, the negative interaction effect, with a greater magnitude, suggests that improving construction economy rather decreases the political donation in the mafia- present areas. This result conflicts with our expectation. Below I will present the potential explanation for this discrepancy.

Table 4: Effect of Construction Economy on Incumbent Support (Political Donation)

VARIABLES	Panel A: Municipal Election Donation in Quebec, 2013-2020			Panel B: Provincial Election Donation in Quebec, 2011-2020				
	(1) Total amount	(2) Total amount	(3) Total Frequencies	(4) Amount Directed at Incumbent	(5) Share(0-1) Directed at Incumbent	(6) Total amount	(7) Frequencies Directed at Incumbent	(8) Total Frequencies
Building Permit (CAD, logged)	1046**	456.9	0.516	370.6**	0.0319**	539.3**	0.868	0.826
	(457.7)	(735.6)	(2.813)	(147.4)	(0.0159)	(240.2)	(0.650)	(0.773)
Presence x Building Permit	-12260	-10653	-37.42	-1518**	-0.0533*	-2729**	-3.335	-10.09**
	(9424)	(7386)	(28.52)	(758.6)	(0.0297)	(-1316)	(3.806)	(4.775)
Acclamation (No Ballot Used)	-4259***	-4314***	-13.66***					
	(1227)	(1210)	(4.461)					
Observations	1914	1914	1914	2413	2413	2413	2310	2413
Number of CSD	668	668	668	641	641	641	636	641
Controls	N	Y	Y	Y	Y	Y	Y	Y
Election Cycles Considered	2013, 2017, 2021			2012, 2014, 2018, 2022				
Time, Municipality FE	Y	Y	Y	Y	Y	Y	Y	Y

Note: *** p<0.01, ** p<0.05, * p<0.1, Robust standard errors clustered at the municipality level in parentheses. Controls include CPI, unemployment, interactions between these two variables and logged building permit.

33

In terms of statistical significance, the estimated interaction coefficient is not statistically significant in the Panel A where the municipal election donations are considered. However, they are statistically significant in most cases of Panel B (except column 7) when provincial election donations are considered.

In Column 4-6, we can find that the estimates for the building permit and its interaction term are both statistically significant. I will use them as a basis for substantive interpretation. Column 4 tells us that a one percent increase in building permit values will increase the donation directed to an incumbent by 370.6 Canadian dollars, on average, in the mafia-absent areas of Quebec. However, the same change will decrease the donation to the incumbent by 1147 Canadian dollars in the mafia-present areas. Similarly, Column 5 indicates that a one percent increase in building permit values will increase the share of donations directed to the incumbent by 3.19 percentage points in the mafia-absent areas while the same change will decrease it by 2.14 percentage points in the mafia-present areas. Column 6 suggests that the effect is not restricted to the donations directed at the incumbent, but generally applies to the total amount of donations. The total amount of political donations increases by 539.3 Canadian dollars in the mafia-absent areas, while it decreases by 2190 Canadian dollars in the mafia-present areas, when one percent of building permit values increases.

How can we explain this result? I speculate that the revelation of the 2009 construction scandal and the related official probes that followed have significantly changed the individual's political contribution behaviors, thus yielding a result that deviates from our expectations. Note that the sample used in Table 4 corresponds to the "Post" construction scandal period.

To be specific, I suppose that the 2009 scandal has affected both groups of people – those who are involved in the mafia's business and those who are not – in the mafia-present areas. First, the scandal must have prompted the mafia and colluded individuals to lie low. Especially given that the investigation discovered that political donations were exploited as a bribing tool, the mafia and colluded individuals must have stopped donating to the incumbent politician to hide. Moreover, as the public inquiry wasn't closed until 2015, and more offshoot investigations emerged thereafter as well, I presume that they could not resume their practice while under investigation. In addition, triggered by the scandal, the then-government of Quebec amended the election law (Bill2, 2012, Chapter 26), which took effect from the first day of 2013, to lower the limit of individual donations from $1000 to $100 per year to the provincial party[36]. This law change may also have demotivated the mafia's corrupt donations.

Meanwhile, the scandal's impact may not be restricted to those involved in collusion. The scandal must have disappointed the general electorate, especially in the mafia-present areas, who politically supported the incumbent party. In fact, the scandal's impact on election was acute: in the closest election after the scandal, Quebec Liberal Party (QLP) under Jean Charlest, which had steadily

---

[36]I ran the same analysis with the sample restricted to post-2013 and obtained the qualitatively similar results but with the smaller effect size, as the donation limit dropped to the one-tenth of what it was.

secured the plurality of the seats in the provincial government since 2003, lost a considerable number of seats in the post-scandal election and got defeated by Parti Québécois (PQ). The mafia-present areas, namely, the Greater Montreal Area, have been a long-time stronghold of the Liberal Party (QLP) since 1998. In 2012 election, many of these mafia-present areas (Greater Montreal Area) still reelected their incumbent despite the scandal, but the incumbents apparently did not get as many popular votes as they did in the past and, incumbents were voted out in some districts. Given these circumstances, I suspect that voters' donation activity may have been weakened in general due to distrust and disappointment after the scandal. In fact, the number of donation payments has been on the decline every election since 2012, and to a greater extent in the mafia present areas.

In summary, while it is not a comprehensive explanation, the negative correlation between construction activity and political donations in mafia-controlled regions may be due to a combination of reduced mafia influence and apathy among voters, resulting in a decline in political donations. Although the expected correlation was not found in this particular sample, the results demonstrate that mafia-controlled areas exhibit distinct patterns from those without mafia presence, likely attributable to the presence of the mafia. This implies that significant differences may also be observed in the pre-scandal period, whether in line with the original prediction or not. In order to properly test the original hypothesis, I have acquired the raw data on political donations from the pre-scandal period of 2009 and am currently in the process of converting the dataset.

4.6 The Effect of Violent Crime on Incumbent's Reelection

Lastly, I estimate the effect of violent crime on the incumbent candidate's reelection in the mayoral election. To note, the data used in this analysis is unbalanced panel data. I look at the races where the incumbent is running for reelection, and it inevitably creates some gaps in the time variable within unit. Also, the election cycle differs across the provinces, and there are intrinsically some missing observations in the original CMED dataset. With that note, I estimate the panel data model with the following form:

$$y_{m,t} = \alpha_m + \gamma_t + \zeta\, VC_{m,t} + \beta_t\, VC_{m,t} + \mathbf{X'_{m,t}} \cdot \boldsymbol{\pi} + \epsilon_{m,t} \tag{2}$$

Likewise, $y_{m,t}$ is the outcome variable in municipality m at time t, and time t is an election cycle. The dependent variable, $y_{m,t}$, is the incumbent's reelection, represented by a binary variable with 1 indicating that the incumbent in the municipality m is reelected in the election t, and 0 indicating that they fail to be reelected. I also use the incumbent's vote share (0-100) as an outcome variable. $VC_{m,t}$ is an average violent crime rate over the election cycle t. As the extent to which violent crime affects the result of election may not be constant across time, I include the term $\beta_t \cdot VC_{m,t}$ to capture the time-varying effect of violent crime on reelection. I expect to find that the sum of coefficient associated with $VC_{m,t}$ is negative. $\mathbf{X'_{m,t}}$ is a vector of covariates including CPI, unemployment, and whether a candidate is elected through acclamation (election mode that does not use a ballot).

Table 5: Effect of Violent Crime on Incumbent Mayor's Reelection

VARIABLES	Whole Sample, 2004-2020		Presence=1	Presence=0
	(1) Incumbent's Reelection (Binary)	(2) Incumbent's Voteshare (0-100)	(3) Incumbent's Reelection (Binary)	(4) Incumbent's Reelection (Binary)
Violent Crime (base year)	-0.0103***	-0.574***	0.00277**	-0.0108***
	(0.00204)	(0.0687)	(0.00115)	(0.00238)
2005 x Violent Crime	0.00283***	0.172***		
	(0.000410)	(0.00918)		
2006 x Violent Crime	0.00731***	0.537***	0.00819	0.00176**
	(0.00129)	(0.0399)	(0.00523)	(0.000836)
2007 x Violent Crime	0.0105***	0.534***		0.0110***
	(0.00227)	(0.0751)		(0.00278)
2008 x Violent Crime	0.0102***	0.567***		0.0107***
	(0.00205)	(0.0688)		(0.00238)
2009 x Violent Crime	0.0103***	0.576***	-0.00225**	0.0107***
	(0.00204)	(0.0671)	(0.00111)	(0.00236)
2010 x Violent Crime	0.000784	0.0836**		0.000506
	(0.00129)	(0.0401)		(0.00167)
2011 x Violent Crime	0.0102***	0.565***		0.0107***
	(0.00205)	(0.0688)		(0.00238)
2013 x Violent Crime	0.0103***	0.576***	-0.00212*	0.0107***
	(0.00204)	(0.0675)	(0.00108)	(0.00237)
2014 x Violent Crime	0.0102***	0.559***		0.0106***
	(0.00206)	(0.0689)		(0.00239)
2017 x Violent Crime	0.0103***	0.575***	-0.00227**	0.0107***
	(0.00204)	(0.0676)	(0.00114)	(0.00237)
2018 x Violent Crime	0.0103***	0.567***		0.0108***
	(0.00206)	(0.0696)		(0.00239)
Observations	1,803	1,151	289	1,514
Controls	Y	Y	Y	Y
Number of CSD	835	672	126	709
Time, Municipality Fixed Effect	Y	Y	Y	Y

Note: *** p<0.01, ** p<0.05, * p<0.1,
Robust standard errors clustered at the municipality level in parentheses.
Controls include CPI, unemployment, and whether a candidate is elected
through acclamation (election mode that does not use a ballot).
Base year for columns is 2004 except (3), and that for (3) is 2005.

The result is reported in Table 5. The base year is 2004 except for Column 3, where its base year is 2005. In Column 1, the effect of violent crime on the incumbent's reelection is negative and statistically significant. Based on the base-year estimate in Column 1, having one more victim of violent crime is associated with 1.03 percentage point reduction of incumbent's reelection likelihood, which is a fairly sizeable effect. Yet, its effect vary across election years; Overall, the effect size decreases as the year goes by, with some years having only marginal negative effect or even positive effect. Among the years, 2005 and 2006 are the ones showing the relatively large negative effect following the base year, where one more victim of violent crime is associated with 0.07 percentage point reduction of reelection likelihood in 2005 and the same change with 0.029 percentage point reduction in 2006. After 2006, the effect becomes too marginal to interpret.

Similarly, based on the base-year estimate in Column 2, one additional victim of violent crime is associated with 0.574 percentage point reduction in incumbent's vote share (0-100). It means that there will be around 6 percentage point reduction of incumbent's vote share per ten more violent crime victims; however, similar to Column 1, the violent crime's effect size on vote share diminishes after 2006.

In Column 3 and 4, I report the results that re-estimate the model of Column 1, with the sub-samples partitioned by mafia presence; mafia-present area sample in Column 3 and mafia-absent area sample in Column 4. In Column 3 with mafia-present areas, I find the result opposite from our expectation, while in Column 4 with mafia-absent areas, I find the result consistent with our expectation. The base-year estimates in Column 3 and Column 4 are positive and negative, respectively, and both are statistically significant. In both columns, the size of violent crime's effect diminishes to a very marginal level, as the year progresses.

How can we explain the different results in Column 3 and 4, and why does the result in Column 3 deviate from our expectation? My theory supposes that OCGs' violence has a greater negative impact on reelection when the level of violence is past a tipping point; any violence level before this threshold will be tolerated, thus having a minimal impact on reelection. Empirically speaking, this supposition suggests that the effect of violent crime on reelection may differ depending on how concerning and salient of an issue the violent crime is within a given area. Voters in the high-crime areas may be more likely to punish their incumbents when they fail to control the crime; by contrast, those in the low-crime areas will be less likely to factor this issue into their electoral decision. As can be seen in Figure 3, mafia-present areas tend to have low violent crime rates, most of which are clustered around the average nationwide violent crime rate. On the other hand, mafia-absent areas show higher violent crime rates and wider variance thereof. I suspect that the negative association between violent crime and reelection in mafia-absent areas may be attributed to their high level of baseline violent crime rates; On the other hand, this relationship is not observed in the mafia-present areas due to their low level of violent crime rates. Relatedly, the marginal, positive association found in mafia-present areas could be spurious; it is not the violent crime rate that increases the reelection, but some electorally beneficial effects that came along with an increase in violent crime might have
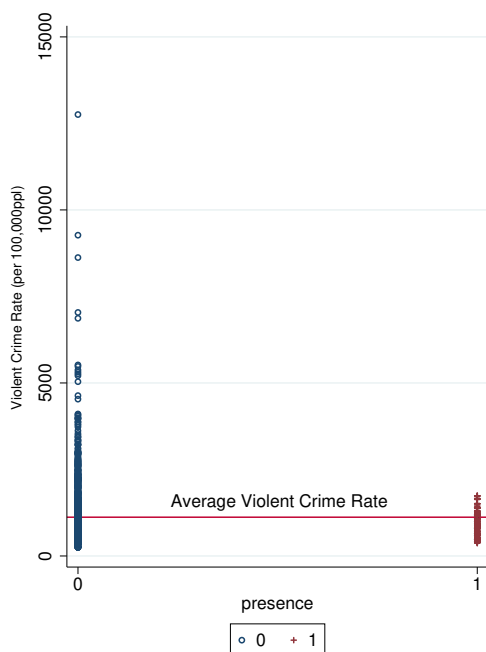
driven the result.

Figure 3: Violent Crime Rate by Mafia Presence

The link between violent crime and the incumbent mayor's reelection is a hypothesized channel through which the construction economy performance affects the incumbent mayor's reelection. The empirical test result performed in Table 5 serves as a reality check on whether a violent crime rate indeed affects the reelection of the incumbent mayor; yet, it is not supposed to check further whether the particular mechanism that I theorized is at play. Thus, multiple mechanisms, either conflicting or reinforcing, may underlie the results. For this reason, we find very nuanced and subtle results, some of which are consistent with our expectations and some of which are not, from Table 5.

5   Conclusion

This paper provides a unified theoretical framework that demonstrates when and why the state's counter-crime policy persists and shifts. Especially, I provide a direct mechanism for how the state-crime collusion is consolidated: illicit benefit thesis. The illicit benefit thesis unfolds as follows: (1) OCG's increasing allocation to ordinary citizens or increasing the size of the contested prize both lead to an increase in the illicit benefit of ordinary citizens. Depending on certain conditions, an increase in illicit benefits may raise the value for OCGs to maintain a collusive relationship with a government, leading to a moderation of OCGs' use of violence under collusion. (2) Violence reduction increases the reelection likelihood and makes the government more likely to choose collusion.

I test this theory in the context of Canadian construction industry. The corruption scandal in Quebec's construction industry that started in 2009 led to the public inquiry called Charbonneau Commission, which discovered the widespread mafia infiltration in Quebec's construction industry. The testimonies collected by the Charbonneau Commission point to the fact that the mafia colluded with both politicians and ordinary business people in the construction sector. I view that the collusion was based on the mutual benefit between the mafia and the firms, not necessarily coercion alone. The fact that the mafia's manipulation of the market using bid-rigging and entry deterrence prevented the competition, and it gave an exclusive favor to those colluded firms documents my claim. In line with the theory's description, these firms became economically involved with the mafia's criminal business in the construction sector, and therefore became stakeholders. Given this setting, I examine (a) whether booming mafia-infiltrated construction economy reduces the violent crime in mafia-present areas; (b) whether a booming mafia-infiltrated construction economy leads to a higher level of incumbent support, measured by political contribution, in mafia-present areas; ; and lastly (c) whether violent crime rate is negatively associated with the incumbent's reelection.

First, I find that performance of the construction economy differentially affects political contributions in the mafia-present and mafia-absent municipalities. Although I find the existence of the heterogeneous effect, the direction of the relationship was contrary to the expectation, presumably due to the scandal effect. The data collection on the extended time period is currently underway, which includes both before and after the scandal. Second, consistent with my theory, I find that when the construction economy is performing well, violent crime decreases in the mafia-present areas, whereas I did not find such an effect in the mafia-absent areas. Third, I find that the effect of violent crime on the mayor's reelection decreases as the year goes by. Also, the subgroup analysis shows that the expected negative effect rather stands out in the mafia-absent areas whereas not in the mafia-present areas. I attribute this result to the different underlying levels of violent crime, which determines the different issue salience and therefore, different effects on voting.

References

Caroline Abadeer, Alexandra Domike Blackman, Lisa Blaydes, and Scott Williamson. Did Egypt's post-uprising crime wave increase support for authoritarian rule? *Journal of Peace Research*, 59 (4):577–592, July 2022. ISSN 0022-3433. doi: 10.1177/00223433211052374. URL https://doi.org/10.1177/00223433211052374. Publisher: SAGE Publications Ltd.

Daron Acemoglu, James A. Robinson, and Rafael J. Santos. The monopoly of violence: Evidence from colombia. *Journal of the European Economic Association*, 11(SUPPL. 1):5–44, 2013.

Juan Albarracín. Criminalized electoral politics in Brazilian urban peripheries. *Crime, Law and Social Change*, 69(4):553–575, June 2018. ISSN 1573-0751. doi: 10.1007/s10611-017-9761-8. URL https://doi.org/10.1007/s10611-017-9761-8.

Alberto Alesina, Salvatore Piccolo, and Paolo Pinotti. Organized crime, violence, and politics. *The Review of Economic Studies*, 86(2):457–499, 2019.

Eva Anduiza, Aina Gallego, and Jordi Muñoz. Turning a Blind Eye: Experimental Evidence of Partisan Bias in Attitudes Toward Corruption. *Comparative Political Studies*, 46(12):1664–1692, December 2013. ISSN 0010-4140, 1552-3829. doi: 10.1177/0010414013489081. URL http://journals.sagepub.com/doi/10.1177/0010414013489081.

Enrique Desmond Arias. *Drugs & democracy in Rio de Janeiro: trafficking, social networks, & public security*. Univ of North Carolina Press, 2006.

Laia Balcells and Jessica A. Stanton. Violence Against Civilians During Armed Conflict: Moving Beyond the Macro- and Micro-Level Divide. *Annual Review of Political Science*, 24(1):45–69, 2021. doi: 10.1146/annurev-polisci-041719-102229. URL https://doi.org/10.1146/annurev-polisci-041719-102229. _eprint: https://doi.org/10.1146/annurev-polisci-041719-102229.

Regina Bateson. Crime Victimization and Political Participation. *The American Political Science Review*, 106(3):570–587, 2012. ISSN 0003-0554. URL https://www.jstor.org/stable/23275434. Publisher: [American Political Science Association, Cambridge University Press].

Monika Bauhr and Nicholas Charron. Insider or Outsider? Grand Corruption and Electoral Accountability. *Comparative Political Studies*, 51(4):415–446, March 2018. ISSN 0010-4140. doi: 10.1177/0010414017710258. URL https://doi.org/10.1177/0010414017710258. Publisher: SAGE Publications Inc.

Sarah Berens and Mirko Dallendörfer. Apathy or Anger? How Crime Experience Affects Individual Vote Intention in Latin America and the Caribbean. *Political Studies*, 67(4):1010–1033, November 2019. ISSN 0032-3217. doi: 10.1177/0032321718819106. URL https://doi.org/10.1177/0032321718819106. Publisher: SAGE Publications Ltd.

Jóhanna K Birnir and Anita Gohdes. Voting in the Shadow of Violence: Electoral Politics and Conflict in Peru. *Journal of Global Security Studies*, 3(2):181–197, April 2018. ISSN 2057-3170, 2057-3189. doi: 10.1093/jogss/ogy001. URL https://academic.oup.com/jogss/article/3/2/181/4964795.

Christopher Blattman. From Violence to Voting: War and Political Participation in Uganda. *The American Political Science Review*, 103(2):231–247, 2009. URL http://www.jstor.org/stable/27798499.

Anton Blok. *The Mafia of a Sicilian village, 1860-1960: a study of violent peasant entrepreneurs*. HarperCollins Publishers, 1975.

Gabriela Calderón, Gustavo Robles, Alberto Díaz-Cayeros, and Beatriz Magaloni. The beheading of criminal organizations and the dynamics of violence in mexico. *Journal of Conflict Resolution*, 59 (8):1455–1485, 2015.

Sabine C. Carey. The Dynamic Relationship Between Protest and Repression. *Political Research Quarterly*, 59(1):1–11, March 2006. ISSN 1065-9129. doi: 10.1177/106591290605900101. URL https://doi.org/10.1177/106591290605900101. Publisher: SAGE Publications Inc.

Juan Camilo Castillo and Dorothy Kronick. The logic of violence in drug war. *American Political Science Review*, pages 1–14, 2020.

CBC News. Inflated quebec construction contracts got federal tax dollars, Nov 2012. Available: https://www.cbc.ca/news/canada/montreal/inflated-quebec-construction-contracts-got-federal-tax-dollars-1.1277616.

CBC News. Corruption 'more widespread' than thought in quebec's construction industry, Nov 2015. Available: https://www.cbc.ca/news/canada/montreal/charbonneau-corruption-inquiry-findings-released-1.3331577.

Eric C. C. Chang and Yun-han Chu. Corruption and Trust: Exceptionalism in Asian Democracies? *The Journal of Politics*, 68(2):259–271, May 2006. ISSN 0022-3816. doi: 10.1111/j.1468-2508.2006.00404.x. URL https://www.journals.uchicago.edu/doi/full/10.1111/j.1468-2508.2006.00404.x. Publisher: The University of Chicago Press.

Eric C.C. Chang and Nicholas N. Kerr. An Insider-Outsider Theory of Popular Tolerance for Corrupt Politicians: AN INSIDER-OUTSIDER THEORY. *Governance*, 30(1):67–84, January 2017. ISSN 09521895. doi: 10.1111/gove.12193. URL https://onlinelibrary.wiley.com/doi/10.1111/gove.12193.

France Charbonneau and Renaud Lachance. Rapport final de la commission d'enquête sur l'octroi et la gestion des contrats publics dans l'industrie de la construction (final report of the commission

of inquiry on the awarding and management of public contracts in the construction industry, 2015. https://www.ceic.gouv.qc.ca [Last accessed: 19 December 2021].

Charbonneau Commission. *Charbonneau Commission Report: Volume III—English Translation*. International Centre for Criminal Law Reform and Criminal Justice Policy, Vancouver, Canada, 2015.

Robert Clark, Decio Coviello, Jean-François Gauthier, and Art Shneyerov. Bid rigging and entry deterrence in public procurement: Evidence from an investigation into collusion and corruption in quebec. *The Journal of Law, Economics, and Organization*, 34(3), 2018.

Luke N. Condra and Jacob N. Shapiro. Who Takes the Blame? The Strategic Effects of Collateral Damage. *American Journal of Political Science*, 56(1):167–187, 2012. URL http://www.jstor.org/stable/23075150.

Criminal Intelligence Service Canada. Annual report on organized crime in canada. 2007. https://publications.gc.ca/site/eng/9.507344/publication.html.

Criminal Intelligence Service Canada. Annual report on organized crime in canada. 2020. https://cisc-scrc.gc.ca/media/index-eng.html.

Sarah Zukerman Daly. Voting for Victors: Why Violent Actors Win Postwar Elections. *World Politics*, 71(4):747–805, October 2019. ISSN 0043-8871, 1086-3338. doi: 10.1017/S0043887119000091. URL https://www.cambridge.org/core/journals/world-politics/article/voting-for-victors-why-violent-actors-win-postwar-elections/EFDDE37573BCB07C6E3A7D893CC40476. Publisher: Cambridge University Press.

Paul Dolan and Tessa Peasgood. Estimating the economic and social costs of the fear of crime. *British journal of criminology*, 47(1):121–132, 2007.

Paul Dolan, Graham Loomes, Tessa Peasgood, and Aki Tsuchiya. Estimating the intangible victim costs of violent crime. *British Journal of Criminology*, 45(6):958–976, 2005.

Angélica Durán-Martínez. *The politics of drug violence: Criminals, cops and politicians in Colombia and Mexico*. Oxford University Press, 2017.

Ronald Francisco. After the Massacre: Mobilization in the Wake of Harsh Repression. *Mobilization: An International Quarterly*, 9(2):107–126, June 2004. ISSN 1086-671X. doi: 10.17813/maiq.9.2.559246137656n482. URL https://meridian.allenpress.com/mobilization/article/9/2/107/83091/After-the-Massacre-Mobilization-in-the-Wake-of.

Ronald A. Francisco. The Relationship between Coercion and Protest: An Empirical Evaluation in Three Coercive States. *Journal of Conflict Resolution*, 39(2):263–282, June 1995. ISSN 0022-0027. doi: 10.1177/0022002795039002003. URL https://doi.org/10.1177/0022002795039002003. Publisher: SAGE Publications Inc.

Ronald A. Francisco. Coercion and Protest: An Empirical Test in Two Democratic States. *American Journal of Political Science*, 40(4):1179–1204, 1996. ISSN 0092-5853. doi: 10.2307/2111747. URL https://www.jstor.org/stable/2111747. Publisher: [Midwest Political Science Association, Wiley].

Diego Gambetta. *The Sicilian Mafia: the business of private protection*. Harvard University Press, 1996.

Omar García-Ponce, Lauren E Young, and Thomas Zeitzoff. Anger and support for retribution in Mexico's drug war. *Journal of Peace Research*, page 002234332210751, July 2022. ISSN 0022-3433, 1460-3578. doi: 10.1177/00223433221075191. URL http://journals.sagepub.com/doi/10.1177/00223433221075191.

Marco Giesselmann and Alexander W Schmidt-Catran. Interactions in fixed effects regression models. *Sociological Methods & Research*, 51(3):1100–1127, 2022.

Donna M. Goldstein. *Laughter out of place: race, class, violence, and sexuality in a Rio shantytown*. California series in public anthropology. University of California Press, Berkeley, 2003. ISBN 978-0-520-23596-0 978-0-520-23597-7.

Linda Gyulai. Charbonneau commission timeline. *Montreal Gazette*, November 24 2015. https://www.montrealgazette.com/news/local-news/the-5-ws-of-the-charbonneau-commission.

Peter Hill. *The Japanese Mafia: Yakuza, Law, and the State*. Oxford University Press, 2003.

Brenda Jarillo, Beatriz Magaloni, Edgar Franco, and Gustavo Robles. How the mexican drug war affects kids and schools? evidence on effects and mechanisms. *International journal of educational development*, 51:135–146, 2016.

Rasma Karklins and Roger Petersen. Decision Calculus of Protesters and Regimes: Eastern Europe 1989. *The Journal of Politics*, 55(3):588–614, 1993. ISSN 0022-3816. doi: 10.2307/2131990. URL https://www.jstor.org/stable/2131990. Publisher: [University of Chicago Press, Southern Political Science Association].

Marko Klašnja. Uninformed Voters and Corrupt Politicians. *American Politics Research*, 45(2):256–279, March 2017. ISSN 1532-673X, 1552-3373. doi: 10.1177/1532673X16684574. URL http://journals.sagepub.com/doi/10.1177/1532673X16684574.

Marko Klašnja and Joshua A. Tucker. The economy, corruption, and the vote: Evidence from experiments in Sweden and Moldova. *Electoral Studies*, 32(3):536–543, September 2013. ISSN 02613794. doi: 10.1016/j.electstud.2013.05.007. URL https://linkinghub.elsevier.com/retrieve/pii/S0261379413000553.

Marko Klašnja, Noam Lupu, and Joshua A. Tucker. When Do Voters Sanction Corrupt Politicians? *Journal of Experimental Political Science*, 8(2):161–171, 2021. ISSN 2052-2630, 2052-2649.

doi: 10.1017/XPS.2020.13. URL https://www.cambridge.org/core/product/identifier/S2052263020000135/type/journal_article.

Kendra L Koivu. Illicit partners and political development: How organized crime made the state. *Studies in Comparative International Development*, 53(1):47–66, 2018.

Elizabeth Leeds. Cocaine and Parallel Polities in the Brazilian Urban Periphery: Constraints on Local-Level Democratization. *Latin American Research Review*, 31(3):47–83, 1996. ISSN 0023-8791. URL https://www.jstor.org/stable/2503884. Publisher: Latin American Studies Association.

Benjamin Lessing. Logics of violence in criminal war. *Journal of Conflict Resolution*, 59(8):1486–1516, 2015.

Benjamin Lessing. Conceptualizing Criminal Governance. *Perspectives on Politics*, pages 1–20, 2020.

Margaret Levi. *Of rule and revenue*. Univ of California Press, 1988.

Sandra Ley. Electoral accountability in the midst of criminal violence: Evidence from mexico. *Latin American Politics and Society*, 59(1):3–27, 2017.

Sandra Ley. To Vote or Not to Vote: How Criminal Violence Shapes Electoral Participation. *The Journal of Conflict Resolution*, 62(9):1963–1990, 2018. ISSN 0022-0027. URL https://www.jstor.org/stable/48596882. Publisher: Sage Publications, Inc.

Mark Irving Lichbach. Deterrence or Escalation?: The Puzzle of Aggregate Studies of Repression and Dissent. *Journal of Conflict Resolution*, 31(2):266–297, June 1987. ISSN 0022-0027. doi: 10.1177/0022002787031002003. URL https://doi.org/10.1177/0022002787031002003. Publisher: SAGE Publications Inc.

Susanne Lohmann. The Dynamics of Informational Cascades: The Monday Demonstrations in Leipzig, East Germany, 1989-91. *World Politics*, 47(1):42–101, 1994. ISSN 0043-8871. doi: 10.2307/2950679. URL https://www.jstor.org/stable/2950679. Publisher: Cambridge University Press.

Jason Lyall, Graeme Blair, and Kosuke Imai. Explaining Support for Combatants during Wartime: A Survey Experiment in Afghanistan. *American Political Science Review*, 107(4):679–705, November 2013. ISSN 0003-0554, 1537-5943. doi: 10.1017/S0003055413000403. URL https://www.cambridge.org/core/product/identifier/S0003055413000403/type/journal_article.

Beatriz Magaloni, Edgar Franco-Vivanco, and Vanessa Melo. Killing in the Slums: Social Order, Criminal Governance, and Police Violence in Rio de Janeiro. *American Political Science Review*, 114(2):552–572, 2020.

Brian G. Martin. *The Green Gang in Shanghai, 1920-1937: the Rise of Du Yuesheng*. dissertation, Australian National University, 1991.

Stephen D. Morris and Joseph L. Klesner. Corruption and Trust: Theoretical Considerations and Evidence From Mexico. *Comparative Political Studies*, 43(10):1258–1285, October 2010. ISSN 0010-4140. doi: 10.1177/0010414010369072. URL https://doi.org/10.1177/0010414010369072. Publisher: SAGE Publications Inc.

OECD. *Glossary of Industrial Organisation Economics and Competition Law, Compiled by R. S. Khemani and D. M. Shapiro, Commissioned by Directorate for Financial, Fiscal and Enterprise Affairs*, 1993. https://www.oecd.org/regreform/sectors/2376087.pdf.

Mancur Olson. Dictatorship, democracy, and development. *American politcal science review*, 87(3): 567–576, 1993.

Javier Osorio. The contagion of drug violence: spatiotemporal dynamics of the mexican war on drugs. *Journal of Conflict Resolution*, 59(8):1403–1432, 2015.

Nara Pavão. Corruption as the Only Option: The Limits to Electoral Accountability. *The Journal of Politics*, 80(3):996–1010, July 2018. ISSN 0022-3816, 1468-2508. doi: 10.1086/697954. URL https://www.journals.uchicago.edu/doi/10.1086/697954.

Anna O Pechenkina, Andrew W Bausch, and Kiron K Skinner. How do civilians attribute blame for state indiscriminate violence? *Journal of Peace Research*, 56(4):545–558, July 2019. ISSN 0022-3433. doi: 10.1177/0022343319829798. URL https://doi.org/10.1177/0022343319829798. Publisher: SAGE Publications Ltd.

Carlos Pereira and Marcus André Melo. Reelecting Corrupt Incumbents in Exchange for Public Goods: Rouba mas faz in Brazil. *Latin American Research Review*, 50(4):88–115, 2015. ISSN 1542-4278. doi: 10.1353/lar.2015.0054. URL https://muse.jhu.edu/content/crossref/journals/latin_american_research_review/v050/50.4.pereira.html.

Brian J Phillips. How does leadership decapitation affect violence? the case of drug trafficking organizations in mexico. *The Journal of Politics*, 77(2):324–336, 2015.

Jonson Nathaniel Porteux. *Police, Paramilitaries, Nationalists and Gangsters: The Processes of State Building in Korea.* Dissertation, University of Michigan, 2013.

Gustavo Robles, Gabriela Calderón, and Beatriz Magaloni. The economic consequences of drug trafficking violence in mexico. *Poverty and Governance Series Working Paper, Stanford University*, 2013.

Stergios Skaperdas. The political economy of organized crime: providing protection when the state does not. *Economics of Governance*, 2(3):173–202, 2001.

Richard Snyder and Angelica Duran-Martinez. Does illegality breed violence? drug trafficking and state-sponsored protection rackets. *Crime, law and social change*, 52(3):253–273, 2009.

Charles Tilly. War making and state making as organized crime. In Peter Evans, Dietrich Rueschemeyer, and Theda Skocpol, editors, *Bringing the state back in*. Cambridge University Press, 1985.

Guillermo Trejo and Sandra Ley. High-profile criminal violence: Why drug cartels murder government officials and party candidates in mexico. *British Journal of Political Science*, 51(1):203–229, 2021.

Federico Varese. *Mafias on the move: How organized crime conquers new territories*. Princeton University Press, 2011.

Rebecca Weitz-Shapiro and Matthew S. Winters. Can citizens discern? Information credibility, political sophistication, and the punishment of corruption in Brazil. *Journal of Politics*, 79(1): 60–74, 2017.

Matthew S Winters and Rebecca Weitz-Shapiro. Lacking Information or Condoning Corruption: When Do Voters Support Corrupt Politicians? 2013.

Elizabeth J. Zechmeister and Daniel Zizumbo-Colunga. The Varying Political Toll of Concerns About Corruption in Good Versus Bad Economic Times. *Comparative Political Studies*, 46(10): 1190–1218, October 2013. ISSN 0010-4140, 1552-3829. doi: 10.1177/0010414012472468. URL http://journals.sagepub.com/doi/10.1177/0010414012472468.