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ORIGINAL PAPER

Pax Monopolista and Crime: The Case of the Emergence of the *Primeiro Comando da Capital* in São Paulo

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Abstract
Introduction *Pax Monopolista* is the idea that the domination of illegal markets by a single powerful criminal organization is conducive to pacification.
Objectives Test the *Pax Monopolista* hypothesis using the case of *Primeiro Comando da Capital* (PCC)—a prison gang turned drug trade organization—in the city of São Paulo.
Methods Difference-in-difference. Using unique data to identify PCC entry in geographically well-delimited but socially fragile areas—namely, *favelas*—we explore variations in the timing of the expansion the PCCacross the city of São Paulo to establish the impact of PCC presence on crime.
Results PCC presence is associated with an 11% reduction in violent crime in the *favelas* that PCC enteredduring the period 2005–2009. No discernible impact on property crime was found.
Conclusions Results are compatible with the main theoretical reasons why the monopolization of criminalactivity may lead to a reduction in crime.

Keywords Drug-related crime · Gang violence · Causal identification

Introduction

> When I was twenty-five, having studied economics for six years, I grasped suddenly that prices are for allocation not fairness. When I was twenty-eight, …, I grasped that prices are only one possible system for allocation (*violence* and queuing are others), but socially the cheapest.[1]

[1] McKloskey (1992).

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To some extent, drug illegality trivially begets crime. After all, the trade is illegal. Nevertheless, it is conceivable that strong dominance by a single criminal gang is conducive to pacification, through two related and yet subtly different channels.

Through the *enforcement mechanism*, a drug trade organization (DTO) may have sufficient interest in and the means of enforcing "justice" in areas that have reduced state capacity.[2] The enforcement of "justice" may be an additional revenue-yielding service, such as in the typical narrative behind Italian mafias (Gambetta 1996). Enforcement may also be an instrument of legitimization among populations in fragile areas. Legitimization helps secure the domination of valuable territory for drug distribution.

Strong competition is often praised by economists as welfare-increasing. In illegal markets, it may have the undesirable side effect of violence. As aptly noted by McKloskey (1992), violence is a system of allocation. Rival DTOs use violence to acquire distribution channels and market shares. A reduction in competition is conducive to pacification, either directly through monopolization, or indirectly through cartelization. (Here, we use the term "cartel" in the standard sense, as an arrangement by which to artificially reduce competition, and not as DTOs are popularly referred to.) This is the *competition channel*. Buchanan (1973) is probably the first author to suggest that monopoly could reduce violence in order to minimize police attention.

Violent crime and well-measured property crime—such as car robberies and theft—dropped dramatically in São Paulo during the 2000s. After increasing more than 100% during the 1990s and reaching almost 50 homicides per 100,000 inhabitants in 1999, in 2013, there were only 10 homicides per 100,000 inhabitants (De Mello and Schneider 2010). Additionally, the rate of car robberies and theft, when properly corrected by fleet size, dropped by more than 50%. A long-held conjecture in explaining the sharp decline in crime and violence during the 2000s is the emergence by the *Primeiro Comando da Capital* (PCC), a prison gang turned drug cartel and criminal group (Feltran 2012; Willis 2015). The reasons behind the reduction in violence are disputed, and the decline predates the PCC (see De Mello and Schneider 2010; Peres et al. 2011). Still, the PCC might have acted as an important contributing factor. We call this the *Pax Monopolista hypothesis*, and it may operate through *enforcement* and *competition mechanisms.*

We evaluate the empirical merit of the *Pax Monopolista* hypothesis by using a unique dataset that combines geo-referenced police report data, as well as information about the timing of PCC entry in *favelas* (i.e., slums). *Favelas* are small, socially fragile, and well-delimited geographical areas; they have limited state capacity, and are fertile terrain for DTOs and more ordinary street gangs. We find that PCC presence in *favelas* is associated with an 8% drop in violent crime. We find PCC entry to have no impact on property crime rates. We provide evidence as to why the PCC presence would have an impact on violence: the evidence suggests that the effect of the PCC on violent crime is mediated by the imposition of tacit collusion among local retailers.

This paper has eight sections, including this introduction. Section 2 outlines the theoretical arguments, and describes in detail the mechanisms behind the *Pax Monopolista* hypothesis. Section 3 relates our paper to the small but growing body of empirical literature on the nexus between illegality and violence. Section 4 provides a brief history of the PCC. Section 5 describes the unique dataset we construct to associate PCC presence with crime, with emphasis on the method by which to determine the moment the PCC is said to be present in a *favela*. Section 6 outlines our empirical strategy, with an extensive discussion of the threats to causal identification and how we address them. Our results are presented in Sect. 7, and in Sect. 8, we interpret these results and providing concluding remarks.

[2] We use the term "DTO" quite loosely, referring both to large and organized drug-oriented groups (such as the PCC or Mexican wholesale distributors) and to small gangs that undertake retail distribution.

Conceptual Framework: The Mechanisms

The competition mechanism concerns whether competition begets violence in illegal markets. In theory, the impact of competition on violence is ambiguous. If markets are not contestable, monopolies can reduce violence, inasmuch as violence is used to acquire market share. A contestable market is a monopolized market with free or low cost of entry. In this case, to keep the monopoly sustainable, the monopolist must charge prices close to the competitive market. If, however, markets are contestable, monopolies may generate more violence. When faced with entry, a monopolistic incumbent may find it optimal to keep prices high, and compete with violence.

For the retail illegal drug market, the relationship between competition and violence is intermediated by the attributes of the distribution channel. Open street drug markets—for example, the case of *favelas* in São Paulo—tend to be criminogenic (Johnson et al. 2000). The imagery of adolescents on a street corner, brandishing weapons, is all too familiar. Because drug dealers tend to carry cash, they are primary robbery targets; thus, they tend to carry weapons, and this is a recipe for violence. Cycles of retaliation produce a culture of violence in resolving disputes. Johnson et al. (2000) argue that the rise and decline of violence in inner-city New York can be traced to changes in street-level drug trade. Manso (2016) describes in detail the cycles of violence among street gangs in São Paulo in the 1990s, which often related to retail drug distribution channels. A scenario with many small gangs is likely to be similar to competitive markets.

There is no consensus that street level drug trade is criminogenic. Paoli (2000) describes the drug market for the final consumer in Frankfurt and Milan with very few references to violence. However, the author mention that "[f]ollowing the growing popularity of cocaine and crack, all the users and dealers whom we interviewed on the open drug scene, additionally point to an increase of violence and aggressiveness".[3] According to Paoli (2000) migrants are the main drug dealers in the retail market on the cities studied in Europe. They are probably organized by country of origin. "The strength of family and ethnic ties, as well as the readiness to employ violence, also constitutes considerable advantages in the illegal marketplace".[4] So, we believe that they are suggesting somehow that this market is (or might be) violent.

Jacques and Wright (2013), based on a case study in Peachville, explore a group of upper class adolescents dealing drugs at the school and affirm that this is not a particular violent market. According to the authors, these sellers worry little about violence. One potential problem is that Jacques and Wright (2013) are considering a sub-market and upper class teenagers probably buy drugs from retail traders not in the wholesale market and the book is silent about this side of the market. There is also a methodological reason why violence is so irrelevant in both Paoli (2000) and Jacques and Wright (2013). Both studies use interviews with users and dealers. There is a natural bias in their sample because unsuccessful dealers will end up killed or in jail.

It is indeed possible that the drug market is not necessarily violent everywhere. However, it is hard to believe that a market with such mark-ups would not be controlled with violence (or, at least the "threat of violence"). So, we suspect that violence will be more the rule than the exception but we have no evidence in this direction. It is important to

[3] Paoli (2000, p. 54).

[4] Paoli (2000, p. 62).

rephrase our main hypothesis here. PCC is substituting actual violence by a credible threat of violence in the event of a war.

All descriptions that we are aware show very decentralized retail drug market. This is the same case in São Paulo. PCC does not monopolize the final consumer market. It monopolizes the security market and the wholesale. When we claim that this is a decentralized market we do not mean necessarily that it is a "one-man-one-firm" operation. The case of Los Angeles shows many small gangs protected by a larger enterprise (Skarbek 2014). They act in a relatively small territory (for instance, in the case of Los Angeles, there is one gang connected to just one street). If a gang charges more than the next street gang, it will almost surely lose market share. This is a situation that leads to perfect competition prices and quantities.

Since there are low barriers to entry the retail market of drugs, sellers must find a way to protect themselves. One way is creating a personal system of defense. In this case, many small defense systems will often have wars. A large provider of security service is much more difficult to confront. PCC is different from Rio de Janeiro's organized crime because they do not verticalize retail. They have a territorial monopoly both on the wholesale and on the supply of security services to illegal workers in general. The territory is São Paulo. This is different also from the Mexican Mafia that has a monopoly on security inside Los Angeles jail system but do not operate on the wholesale market of drugs. A consequence is that the Mexican Mafia must charge a tax on drug sale (Skarbek 2014) while PCC do not need to do so.[5]

Three large gangs split the metropolitan area of Rio de Janeiro with frequent wars among them for increasing their territory. Corrupt policeman supply security service and retaliate if their taxes are not paid. So there are wars with the policeman as well. Non-corrupt policeman involved in drug wars often kill drug dealers. In Los Angeles the monopoly of protection in jail probably reduces wars between gangs but the need to enforce tax payments probably increases homicides given the examples presented in Skarbek (2014). There are probably many market structures in the supply chain of illegal drugs but PCC's business model is probably the less violent one because PCC's business model uses more the price system (instead of violence) to resolve conflicts. This is what we are going to test in this paper. If we are correct, violence should have gone down after PCC entrance.

In the illegal drug markets there are three activities in the supply chain: production, wholesale distribution and sale to the final consumer. The wholesale distribution has actually two activities: the trade between drug producer and wholesale buyer and the distribution to retail sellers. An accessory activity that is crucial to the supply chain as well is security. Comparing the drug market in São Paulo, Rio de Janeiro and Los Angeles, we can notice that the division of labor is relatively different. In São Paulo, PCC has a relative monopsony on the trade with the drug producer and a monopoly in providing security services. In Rio de Janeiro the three gangs have a monopoly inside their territory both in buying the drug directly from the producers and in the retail market. In the case of Los Angeles the Mexican Mafia has a monopoly on security services. The Mexican Mafia end up defining some rules of enforcement as the PCC does in São Paulo. Although it is not possible to compare those cities with the data we are exploring in this paper, neither it is

[5] PCC do charge a fee for other kind of burglars such as bank robbers, shoplifters, etc. The fee is a insurance: if the burglar is convicted, he/she does not have to pay the fee anymore and he/she will be protected in prison.

the paper's goal, our guess is that violence will be lowest in São Paulo, intermediate in Los Angeles and highest in Rio de Janeiro given the market structure in each city.

Actually, violence in illegal markets might have many origins. There might be fights between suppliers and retail sellers on the division of the profits (transactional violence). Inside organized crime there might be internal violence to keep trust and to scale up in the business hierarchy (disciplinary and successional violence, respectively).[6] While the possible dispute between buyers and sellers to the final consumer is probably mitigated in a monopolized wholesale market, internal disputes may be even incremented. In the case analyzed, we do not believe that the "successional violence" will actually happen since the "PCC code"[7] punishes such behavior. The disciplinary violence might have happen although homicides are the last instrument to be used for punishing members of the organization.[8]

Crime has been steady outside of the Favelas during this period (Nery 2016). This observation is potentially contradictory with the possibility that PCC was just moving Favelas' homicides elsewhere. Of course it could be the case that violent crime outside of the Favelas would be going down if it was not for the PCC action outside of the Favelas. So, it is possible that PCC would be increasing crime outside of the Favelas but we do not believe this is very likely. We recognize this possibility but it does not impact our main result. We compare Favelas that were dominated by PCC with Favelas that were not. So, even if PCC was increasing crime outside of the Favelas, it would not affect our estimation.

Rule enforcement also intervenes in the relationship between competition and violence. Interventions that aim to repress the most violent criminals—as drug policy specialist Mark Kleiman proposes—may reduce the level of violence involved in the illegal drug trade.[9] However, law enforcement's repression of incumbents may turn a noncontestable market into a contestable one, possibly increasing violence induced by competition; Dell (2015) illustrates this, using the case of Mexico under President Calderón. Aggressive enforcement may also generate turnover in upper management and open space for power struggles; this, in turn, may increase intra-gang violence (Rios 2013). In addition, tacit collusion among sellers may depend on longer-term personal relationships, and killing or arresting upper managers destroy these relationships.

It is worth mentioning what do we mean by contestable and non-contestable monopolies in this context. A contestable monopoly is one that barriers to entry are relatively low. Excluding violence, the only way it can be maintained is with legal protection (from the government, from a patent, etc.) or using the price system; the monopolist would keep the price very close to perfect competition prices (and quantity) so there is no incentive to enter the market. The way gangs keep the monopoly is using violence. But the threat of violence may be enough to make the monopoly non-contestable. The PCC threat is credible because a new gang would need to first challenge their monopoly in prisons. So it is the threat of the Mexican Mafia but the taxing scheme calls for enforcement that must be violent. For instance, the Mexican Mafia may authorize a gang war in case of no payment (Skarbek 2014). Verticalizing wholesale trade and retail is very contestable specially in a situation with more than one verticalized gang as in Rio de Janeiro.

[6] We would like to thank an anonymous referee for pointing these other channels of violence.

[7] The PCC has a code of conduct (Feltran 2012; Nery 2016).

[8] Once again using the PCC code.

[9] See http://www.governing.com/topics/public-justice-safety/gov-how-game-theory-is-reinventing-crime-fighting.html.

Enforcement interventions also may change the nature of retail and wholesale distribution. One example is forcing retail open drug markets to move indoors, which typically makes them less prone to violence. Beyond theory, empirical evidence suggests that not all illegal markets are equally violent (Reuter 2014). Prostitution and cigarette bootlegging, for example, are less-violent businesses. Finally, not all illegal drugs are equally criminogenic. De Mello (2015) shows that in São Paulo during the 1990s, the emergence of crack cocaine contributed to an increase in violence. PCC decided not to enter the crack cocaine market. This decision may have also contributed towards reducing violence. According to Baumer et al. (1998) crack consumption, has been related to increases in both violent and property crime. If PCC action had spread the use of crack cocaine it might have increased violence.

In summary, the relationship between illegality and violence—which is far from straightforward, theoretically—is mediated by factors such as the mode of distribution, the type of psychoactive drug involved, law enforcement, and the degree of illegality itself (e.g., cigarettes are legal, but their bootlegging is not).

In this context, the PCC case is particularly interesting. The drug retail market in São Paulo has open street market characteristics. Many transactions take place in specific locations within *favelas* (called *bocas de fumo* or *"biqueiras"*). Dominance by a single criminal group could mitigate violence by reducing inter-gang competition. The PCC has two instruments by which it intervenes in the retail business: it dominates both the prison system and wholesale distribution (Lessing 2010). Recently discovered PCC bookkeeping records suggest that the PCC did not directly verticalize into the retail market, and did not prevent competition among retailers (Lessing and Willis 2016). In fact, the PCC's most publicized motto is *paz entre bandidos*, or "peace amongst criminals" (Marques 2009; Willis 2015; Lessing and Willis 2016). It is in the interest of an upstream monopolist to have low margins and low costs in the downstream. Ethnographers interpret the PCC's behavior as being consistent with a regulator of violence (Dias 2009). From an economic perspective, the regulation of violence is entirely compatible with the profit-maximizing behavior of an upstream monopolist.

Schelling (1971) seminal paper discusses the reasons why some illegal markets are monopolized. His approach is targeted to the behavior of the American Mafia but it may be applied to PCC as well. Shelling observes that the business of organized crime is not selling illegal goods but rather extortion. This is exactly the PCC business model. The victim is not the producer of the illegal good but the street level drug dealer.

How is it possible to monopolize the extortion market? Shiller proposes 5 channels to explain such a market behavior. First of all the victims should be poor in protecting themselves otherwise they would not need the protection service. This is exactly the case of a street drug dealer. Second, the victim cannot hide from the monopolist. Although the "biqueiras" are not advertised in the news, it has to be known by users. Third, the victim cannot move away easily. This is very connected to the previous point; once a drug dealer establishes its market, it would need resources to create a new "biqueira" elsewhere. Forth it is possible to monitor victim's activities and earnings and fifth the victim must know that he is treated like other victims.

The forth and fifth arguments do not fit so perfectly into the monopolization of protection in the illegal drug market. It is not easy to monitor street level drug activity and it is also complicated to prove that all dealers are receiving the same treatment. The way PCC solve this problem is monopolizing the wholesale of the drug. Individual dealers are not necessary part of the Organization; they are just forced to buy a fixed amount from PCC. It is known among dealers that each dealer has to buy the same amount from PCC so they know that they are treated equally. Most important this business model makes monitoring

unnecessary and monitoring street level drug dealers is quite complicated. Notice that this is a quite different strategy from the "Mexican Mafia" strategy; since they collect a percentage of the business the Mexican Mafia needed a tax collector and someone might pretend to be a collector (Skarbek 2014).

In summary, PCC's business model is quite different from the Rio de Janeiro's organized crime groups like Comando Vermelho, Terceiro Comando or Amigos dos Amigos (ADA). In Rio de Janeiro, the organized crime is a vertical monopoly that includes buying the drug at the wholesale market and selling it to the final consumer. In this case, all street level drug dealers are part of the organization. If another group manage to enter the territory, it takes the whole operation. Consequently, the return from a "war" is very high. Fighting the retail market, one by one, is much more difficult and yet do not necessarily touch the very group that has the monopoly of protection.

PCC was created inside the prisons. This is not new for the organized crime; the Italian Camorra was created inside the prison on the XVI century.[10] They learn supposedly from the political prisoners that a knit group is very powerful inside the prison: a "hazardous" person cannot mix up with an entire group even if it is as small as 50 people. Offering security services inside the prison probably values a lot for a drug dealer. Challenging the PCC would mean taking over the prisons dominated by the group, i.e. creating a larger group in each prison. This is not an easy task. It is much easier to attack a Favela than a prison. The police works for the PCC and they do not have to pay for them. Well, actually, they do pay a small part of the police corporation, but it is part of the job description of the police to protect the prison. Instead of protecting the criminal from arrests, PCC protects the criminal inside the prison.

It is also important to notice that the PCC does not charge a higher price for the drug. The way they exerted their monopoly power was reducing the quality of the product.[11] So, it is very hard to compete in price. And it is also very difficult to have a credible signal that the competition has a higher quality product (there is no agency rating illegal drugs). Since the street drug dealer must buy a fixed amount from PCC, a secondary market of high quality drugs may have developed but at a low volume like microbreweries complementing the beer market with no impact on the five big producers' profits. This business model is not attractive neither for "civil war" nor for "price war".

PCC is also different from their Rio de Janeiro counterpart because they do not dispute territory directly with the police. And this is not connected just with the fact that the PCC was created inside the prison. All Rio de Janeiro´s currently powerful gangs (Comando Vermelho, Terceiro Comando and Amigos dos Amigos) were also born inside the prison. If a police force strikes a drug hot spot PCC would not engage in a war with the police because their strategy is to protect criminals inside prisons. They evidently have part of the police force on their payroll. But this is not the way PCC works in general. They were able to arrange an agreement at the high level of the State Government killing almost a 100 of policeman close to election when the governor was competing for the presidency (Nery 2016). The power of PCC with the police force is the threat of killing policeman and/or prison rebellions. As long as the threat does not have to be fulfilled, crime goes

[10] Mingardi (2014).

[11] Interviews from the authors with investigators with access to the wiretap recordings. One office reported an operation that apprehended more than 1 kg of supposed cocaine but end up with no evidence of illegality since the proportion of cocaine was so small that it was not possible to prove that the substance was actually illegal.

down compared to an organization that would protect their drug hotspot with guns like in Rio de Janeiro.

In other words, the existence of a monopoly in the drug market might reduce homicides if this market is non-contestable. It might be contestable by rival gangs or by the police itself searching for profits or attempting to destroy the Organization. The business model of PCC makes it more protected from a war with competing gangs, although there was some disputes in the early 2000's. At the same time the Rio de Janeiro´s gangs were too busy fighting between each other lacking resources to attempt to enter such a big market as São Paulo. Gangs outside São Paulo and Rio de Janeiro cannot compete in such big markets and in São Paulo there is still a residual market for high quality drugs that PCC is not disputing. The system actually incentive efficient retail sellers: if a street drug dealer sells more than PCC quote the profits will go for the dealer directly; no need to split it with PCC.

PCC is a very large organization if we consider all its thousands "baptized" members. It is important to notice, however, that a PCC baptized member is rarely involved in the main business of the Organization: security. However, the fact that you are a member of PCC will make your retaliation more powerful even though you may never actually engage in any retaliation activity. A PCC member pays a fixed monthly fee when he/she is not in prison and the payment stops if the criminal gets arrested. It is possible to pay the fee as insurance and never be baptized. This system allows PCC to extract money from burglars, something usually very difficult to do. Burglars in general do not need protection against other burglars. "Pickpockets, burglars, car thieves, embezzlers, people who cheat on their income taxes, shoplifters, muggers and bank robbers usually don't go around killing each other."[12] But they do demand protection in the case of arrest. It is in the benefit of any burglar to be part of PCC (nobody will mix up with a PCC member) and it is good for PCC to have this member not just because of the income extracted but also to increment its potential power inside the prison.

Ethnographers argue that the PCC has the means and reasons to impose pacification in the illegal drug trade, regardless of any profit-maximizing motivation. Their members and families were prime victims of the wave of violence in the 1990 (Willis 2015).

Another reason for imposing peace is direct rent extraction. Empirical evidence on mafia-type organizations show that they exert power by employing a mixture of violence and public-goods provision, with one of those goods being security (Gambetta 1996). Ethnography suggests that the PCC used the strategy of security provision to legitimize its dominance among *favela* dwellers (Willis 2015).

Illegality produces violence, given the lack of access to a formal justice system by which to enforce contracts (Goldstein 1985). The PCC has dominated *favelas*, areas known for social fragility and absence of the state. The PCC has a sophisticated system of debt collection, as well as tribunals to intermediate conflicts that range from business to interpersonal (Willis 2015). In Sect. 4, we review qualitative evidence that supports the claim that the PCC was willing and able to "enforce justice" on a large scale.

In summary, there are multiple channels through which PCC domination could reduce violence, by mitigating the negative impacts of competition in illicit markets. Furthermore, the administration of informal justice by a single criminal group could lead to a reduction

[12] Schelling (1971, p. 75).

in crime. The enforcement mechanism has implications for both violent and property crime.

Related Literature

Our work relates to a growing body of quantitative literature that documents the link between illegality and violence through the competition channel. Using Mexican data on violence, drug routes, and elections, Dell (2015) finds that a PAN victory at the local level spurs violence, suggesting that a crackdown policy induces violence.[13] However, PAN's victory is followed by violence only when it wins in a city whose neighboring drug traffic is controlled by a rival firm. Thus, the competition channel has to be operative for crackdowns to induce violence.

Castillo et al. (2014) reach a similar conclusion. They study how temporary negative shocks to cocaine exports from Colombia induce violence in Mexico. A temporary scarcity of cocaine increases rents when demand is inelastic, and rents are competed away through violence, either in a static model or in a tacit collusion model (Green and Porter 1984). Following shocks to the Colombian supply, homicides in Mexico increase in places where there is more than one cartel present in the city, suggesting that the competition mechanism is operative.

Chimeli and Soares (2010) find that the prohibition of mahogany trade in the Brazilian Amazon caused a spike in violence. The authors interpret the study result thus: illegality creates a substitute system of enforcement, which induces violence. Equally plausible is the interpretation that the spike in violence derived from the increased use of violence in market-share acquisition. Arguably, violence as a means of market-share acquisition becomes relatively cheaper after prohibition. Idrobo et al. (2014) find that market-share disputes in illegal mining in Colombia induce violence.

Our study contributes to the growing body of empirical literature on the nexus between illegal markets and violence. We investigate the impact on crime of the PCC's territorial dominance in São Paulo; as such, our empirical setting differs from those of the aforementioned studies. Additionally, while Dell (2015) and Castillo et al. (2014) document the impact of shocks that interact with some measure of the market structure, we study the impact of entry in retail markets by an upstream monopolist. Idrobo et al. (2014) and Chimeli and Soares (2010) both estimate the impact of illegality on crime, a more reduced-form object; in contrast, we estimate the direct impact of the dominance of a DTO on crime.

In addition, the case of the PCC is particularly interesting, as ethnographic evidence suggests that the PCC had an important role as a regulator of the use of violence in mediating conflict, both interpersonal and drug-related (Dias 2009). The PCC case, it has been suggested, involves the informal enforcement of "justice" in places characterized by a lack of state presence; this can be seen as an enforcement mechanism; in this sense, the current

[13] The Partido Acción Nacional (PAN) is one of the three main parties in Mexico. It held the presidential office from 2000 through 2012 (Vicente Fox [2000–2006] and Felipe Calderón [2006–2012]). Dell's (2015) data sample is from the time of Calderón's presidency, when the Mexican government pursued a strategy of direct confrontation with drug cartels.

study relates to the large body of literature on state capacity.[14] Ottoni (2014) shows how the occupation by the state police of the *favelas* in Rio de Janeiro—a strategy called *Unidade de Polícia Pacificadoras* (UPPs)—helped reduce crime in the *favelas*. The success of the UPPs is commonly interpreted as an enforcement story, wherein the state imposed law and order, and the previous DTOs imposed the rule of violence. Equally plausible is the interpretation that police domination reduced turf disputes among DTOs for dominance of Rio de Janeiro's *favelas*.

Finally, the current study relates to the somewhat larger body of literature on prison gangs and their ability to control territory outside the prison system. Lessing (2010) provides a very good summary of the role of prison gangs in out-of-prison crime, in several cities. In this line, Skarbek (2014) provides a very good description of the Mexican Mafia in Los Angeles. Although the author is not interested in measuring the impact of the Mexican Mafia on crime intensity, he shows how the gang control the streets operating from the jail. More important, Skarbek (2014) let us compare two groups that have some similarities since both operate from the prison but with some differences as well. In particular, the way they charge drug dealers for protection is quite different and we argued that it may have consequences about the level of violence induced by each organization.

The *Primeiro Comando da Capital*

The PCC's origin and its source of power stem from its dominance of the prison system. To date, it has not become clear exactly how the PCC came to dominate São Paulo's prison system. Some accounts claim that the PCC emerged as a reaction to the Carandirú Massacre. In October 1992, a prisoner revolt in Carandirú—one of São Paulo's largest prisons—left 111 prisoners dead, after the police stormed in to contain the revolt. The PCC's stated "mission" was to improve prison conditions and promote *paz entre bandidos*.[15] Arguably, the Carandirú massacre started as a feud among prison gangs. Whatever the reasons, prison system ethnography shows that by the early 2000s, the PCC dominated the prison system through a highly hierarchical structure facilitated by cellular telephony (Lessing 2010).

Lessing (2010) argues that prison gangs exert power from inside the prison through the threat of retaliation when criminals go inside, thus outwardly *propagating* their power from within the prison system. Qualitative evidence supports this propagation hypothesis; Lessing (2010), for example, studies several cases of prison gangs that extended their dominance outward.

The PCC case is illustrative. After dominating the prison system, the PCC's power propagation outside the prison system started through their "offer" of a mixture of insurance policy and threat. Criminals would contribute when outside the prison system, to guarantee their protection when they were inside. The increase in incarceration in the 1990s, and a system that features serial recidivism, improved the value and credibility of this PCC strategy. (See the study of De Mello and Schneider [2010], on increased incarceration.) The next step was a move into illegal markets, such as wholesale drug distribution, the

[14] It is beyond our scope to review the large body of literature on state capacity. Besley and Persson (2009) provide an introduction to the topic.

[15] For a short account of the Carandirú events, see http://foreignpolicyblogs.com/2007/10/02/today-in-history-the-carandiru-prison-massacre/.

firearms business, and cargo robbery. All of these developments derived from within the prison system.

The year 2006 is a turning point in PCC history. In May of that year, through an orchestrated series of attacks on public security forces, the PCC consolidated its dominance in the *favelas* of São Paulo. The PCC command called these attacks the *levante* ("the uprising"). The *levante* was a major challenge to the state's monopoly of power. Over 150 violent deaths are directly attributed to the *levante* and subsequent police retaliations. Allegedly, the attacks were motivated by the state prison authority's decision to move some of the PCC commanders to a maximum-security facility. Their timing coincides strongly with the PCC's first appearance in our measure of presence in *favelas*[16]: according to our measures, as of 2009, the PCC was present in 77% of the *favelas* in the city of São Paulo (see Figs. 4, 5).

Favelas are well-delimitated areas. The census cites a formal definition. It is normally characterized by precarious urban dwellings, lack of formal property rights over real estate, the absence of basic public infrastructure (e.g., sewage and garbage collection), and, more generally, a lack of state presence. The relationship with law enforcement is absent or conflictive (Willis 2015). Not surprisingly, *favelas* have always been prime spots for street drug markets in Brazil, as well as a safe haven for drug-dealing gangs.

By the early 2000s, the PCC dominated the wholesale distribution of illegal drugs in the city of São Paulo.[17] From this privileged position, it established exclusive deals with local retail distributors located in the *favelas*, which later became PCC operatives, but retained control rights on the retail business. The PCC's bookkeeping records show a sophisticated, highly hierarchical drug consignation and collection system (Lessing and Willis 2016). The PCC has strong control over the downstream; apparently, it has not imposed single retail distributors at the local level. It has regulated how downstream operatives can compete.

The PCC has its own terminology and procedures (it calls itself the *Partido*, or the Party). It imposed a set of rules (*Proceder*, "how to proceed") to establish *Convívio* (coexistence) and *paz entre bandidos* (Marques 2007, 2009). Evidence also suggests that "justice" (*Julgamento*) was exerted in the *favelas*, especially in regulating disputes among local-level operatives (Feltran 2012; Willis 2015). In particular, killing was prohibited without the explicit authorization of the PCC, which was typically issued from prison (in what is referred to as the *Aval*, or "endorsement").

Data

We built a unique dataset by merging three unique sources of information—namely, (1) the INFOCRIM, geo-referenced crime-report level data from the *Secretaria de Segurança Pública do Estado de São Paulo*, the state law enforcement agency; (2) the *Disque-Denúncia*, a crime hotline from which we extracted geo-referenced anonymous report data; and (3) a dataset of *favelas* in São Paulo, while geo-referencing their borders.

[16] For an anecdotal account of the events, see "Violence in Brazil," *The Economist*, May 17, 2006, available at http://www.economist.com/node/6939676.

[17] There is police and qualitative evidence that the PCC controls the upstream. For example, bookkeeping records show that the PCC has a consignation system with local drug dealers (Lessing and Willis 2016), suggesting that they control the supply of drugs into *favelas*.

The INFOCRIM unit of analysis is the police report. We observe all information included in the report: the exact or estimated place of the crime (latitude and longitude); type of crime[18]; exact or estimated time of occurrence; and the characteristics of the suspect, when applicable (e.g., age and gender). We derived a complete set of INFOCRIM data from January 2005 to October 2009, inclusive.

The *favela* database identifies the geographical borders of all *favelas* in the city of São Paulo. The borders are geo-referenced, and this allows us to determine whether a crime occurred within the *favela*, or close to its boundaries.

To determine whether the PCC had a presence in a given *favela*, we used data from *Disque-Denúncia*, an anonymous crime hotline service used to report crimes to the enforcement authorities. *Disque-Denúncia* contains an open-ended field to capture information in which the caller provides a brief description of the event. We searched for the terms "PCC" and "Partido" in the text of the open-ended field. We consider PCC entry into a *favela* to have occurred when the terms "PCC" and "Partido" appear for the first time, back-to-back, in a call originating from that *favela*. These data run from 2000 through the end of 2010. Of the 1032 *favelas* in the sample, 522 either had no mention of PCC at any time before October 2009, or the PCC had already been mentioned back-to-back prior to February 2005 (the period for which crime data are available). Given the identification strategy (difference-in-differences with *favela* fixed effects), these 522 *favelas* do not contribute to estimations of the main coefficient of interest. Ultimately, we have a sample of 510 *favelas* where the PCC entered between February 2005 and September 2009. "Appendix 1" contains a detailed description of *Disque-Denúncia*.

Figure 1 shows the mentions of "PCC" as per the *Disque-Denúncia* data, in the 510 *favelas* in our sample during the 2005–2009 period. Mentions of "PCC" increased steadily before May 2006, the month of the *levante*. From that point, and in a little less than 2 months, the PCC's presence suddenly jumps, from being in 46% of *favelas* to 74% of them. Subsequently, the presence returns to a steady increase.

It is important to bear in mind some caveats when using *Disque-Denúncia* data. First, denouncing can in itself be strategic. A call mentioning "PCC" or "Partido" may be placed to implicate a rival, for example.[19] Second, the propensity to report depends on acquaintance with the service, access to information, and access to telephony, among other factors. Third, the level of trust in the service affects the number of calls, and the types of situations involved. Finally, the media plays a role in spreading information about specific crimes or violent situations, which in turn impacts the number of calls. These caveats threaten identification, inasmuch as they cause the propensity with which "PCC" is mentioned in a *favela* to change systematically over time and with the level of crime therein. We cannot fully dismiss this possibility, and the propensity to mention the PCC will change over time, especially as the PCC becomes better known. (In fact, the jump in the number of mentions of "PCC" during the *levante* suggests this.) However, a more intricate narrative is needed

[18] Thefts/larcenies and robberies are defined in the usual way. (Burglaries are subsumed within both categories, according to the use of force.) The other categories include the following definitions of crime from the police records (our translations): (1) violent crimes include assaults, attempted homicides, attempted rapes, homicides, rapes, random acts of violence, and threats; (2) drug-related crimes include association with/for drug-trafficking, drug-trafficking (sale), manufacturing of drugs, possession of drugs, and use of drugs; and (3) vandalism includes cruelty to animals, damage to property, obscene writing, disturbance of the public order, causing turmoil, and vagrancy.

[19] The police officers we spoke to reported these as false allegations.

to rationalize why the propensity to report *changes* systematically more in *favelas* where crime would eventually drop, likely for more unrelated reasons.

We use victimization survey data to assess the extent to which underreporting could damage our estimation strategy. The data come from two waves of victimization surveys conducted by the *Instituto Futuro Brasil* (2003, 2009). The data identify whether the respondent lives in a "subnormal dwelling" (i.e., a *favela*), and the information allows us to verify whether *favela* dwellers changed their propensity to report over time (both in absolute terms and relative to non-*favela* dwellers).

The Empirical Strategy

The empirical strategy explores variation in crime in *favelas* with or without a PCC presence. We define the dummy variable d_{ft} so as to have the value of 1 if the PCC is in *favela f* on month t, and 0 otherwise. We derive the following (potentially nonlinear) model:

$$y_{ft} = \beta_0 + \beta_1 d_{ft} + \sum_f \theta_f \mathbf{F}_f + \pi t + \mathrm{K}\mathbf{Z}_f \times t + \Gamma \mathbf{X}_{ft} + u_{ft}, \tag{1}$$

where y_{ft} is the number of crimes in *favela f* in month t. $\mathbf{Z}_f$ contains variables at the baseline (2005), which we allow to interact with the time trend $\boldsymbol{t}$.[20] $\mathbf{F}_f$ is a full set of *favela* dummies. $\mathbf{X}_{ft}$ is a vector of time-variant controls that we include in some specifications, to verify robustness; among them are the "other" crime category (i.e., when y is a property crime, we include violent crime in X, and vice versa) and the lagged values of the dependent variable. The inclusion of these controls is not without challenge for identification, as discussed in the identification subsection. u_{ft} is a random shock that contains all time-variant unobserved heterogeneity across *favelas*.

The main object of interest is the parameter β_1, which measures the impact of PCC entry on crime in the *favelas*. In all estimation procedures, we calculate standard errors while accounting for the fact that u_{ft} may correlate within *favelas*.

Identification comes from variation in the timing of PCC entry into *favelas* (i.e., whether crime had *previously* increased (or decreased) in *favelas* where the PCC entered early). The sample consists of *favelas* where the PCC entered between February 2005 and September 2009. All units are "treated," but at different points in time.

We observe crime at a disaggregated level (*favela*) and at a high frequency (monthly). It is important to use local-level data, where there is ethnographic evidence of PCC territorial dominance. Using a high frequency is valuable also because PCC dominance can be established in less than 1 year, and so the use of annual data would mask valuable variations. However, these empirical decisions come at a cost, with specific crime events becoming rare and data becoming noisy.

The rare-occurrence feature of the data leads us to two empirical decisions. First, we resort to aggregation in broad crime categories—namely, violence and property crime

[20] The literature normally uses rates of crime per 100,000 inhabitants. We only have information on population at the favela level at the decennial frequency. Because we include *favela* and year fixed effects, dividing the dependent variable by the population would not change results significantly. In fact, one expects the estimated coefficient to scale down by approximately the mean population across *favelas* in the year 2000. We also estimate the models normalizing crime by population in 2000, and the estimated coefficient on PCC scales by a factor less than the mean size of *favelas* in 2000.

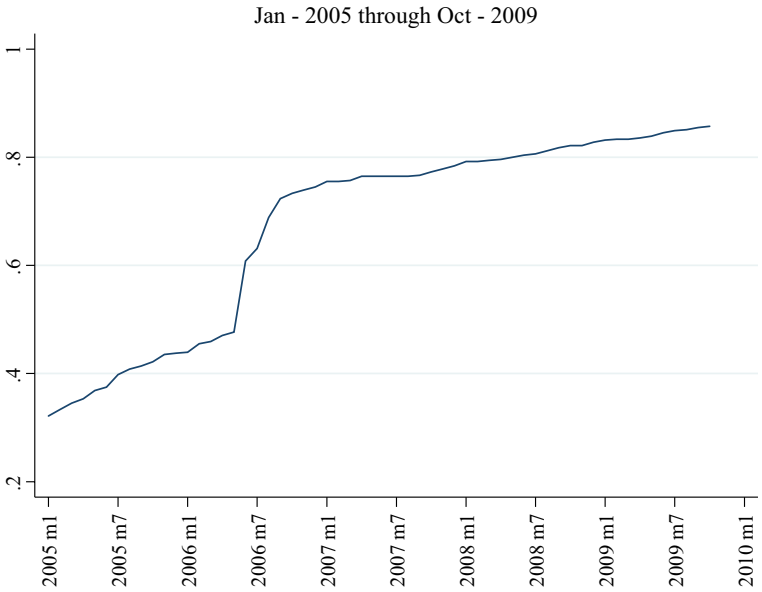

Fig. 1 Proportion of favelas with PCC

indices. Otherwise, the data are too noisy. We do look at specific crime categories to address specific identification concerns, but then we aggregate the data to the annual frequency. For clarity, the main results derive from estimating model (1) by linear least squares. However, at the monthly frequency and at the *favela* level, criminal events have a clear count nature, with inflated zeros (Figs. 2, 3). For robustness, we estimate (1) using specifications for the conditional mean, to account for the count nature (i.e., zero-inflated negative binomial, negative binomial, and Poisson). In all cases, we estimate standard errors while clustering at the *favela* level.

Identification

Because we use only *favelas* in which the PCC entered within the sample period, identification stems from the timing of PCC entry. There are three main challenges to identification: (1) the PCC's endogenous entry decision, (2) the endogenous response by law enforcement, and (3) underreporting induced by PCC entry.

Entry timing is not randomly determined. The PCC may have decided to enter disputed territories, where it would face divided opposition. In this case, the mean reversion of a high level of violence would produce spurious evidence in favor of the *Pax Monopolista* hypothesis—or, it could be that the PCC chose to enter more profitable distribution points, and so profitability may relate to baseline violence.

While it is not obvious how nonrandom entry will bias results, it is conceivable that the timing of PCC entry relates to unobserved time-variant heterogeneity across *favelas*. We have no clear source of exogenous variation on PCC entry timing; however, we do document several facts that support the claim that the potential endogeneity of PCC entry does not pose a serious threat to causal identification.

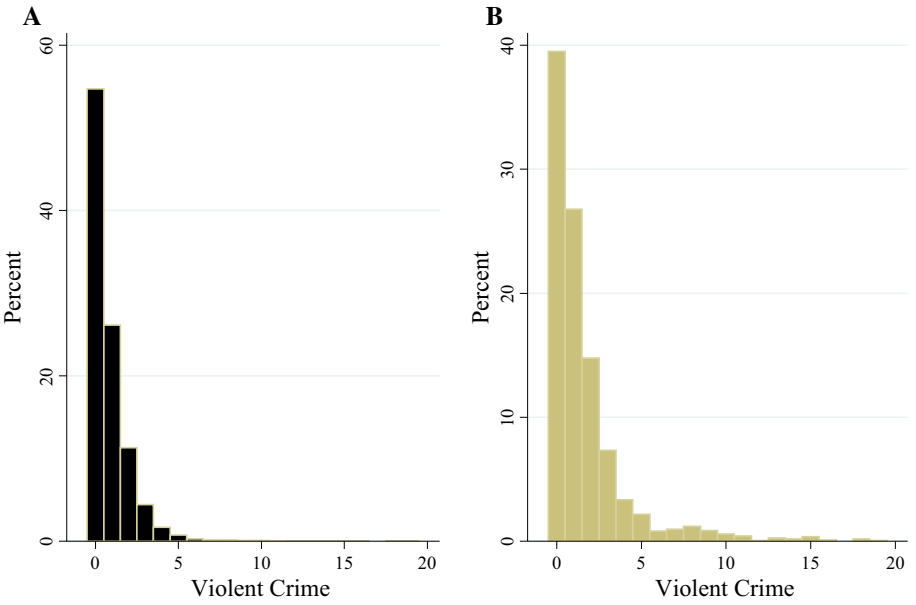

Fig. 2 Histogram of Violent Crime. Panel A unweighted, panel B weighted by total crime in the baseline (2005)

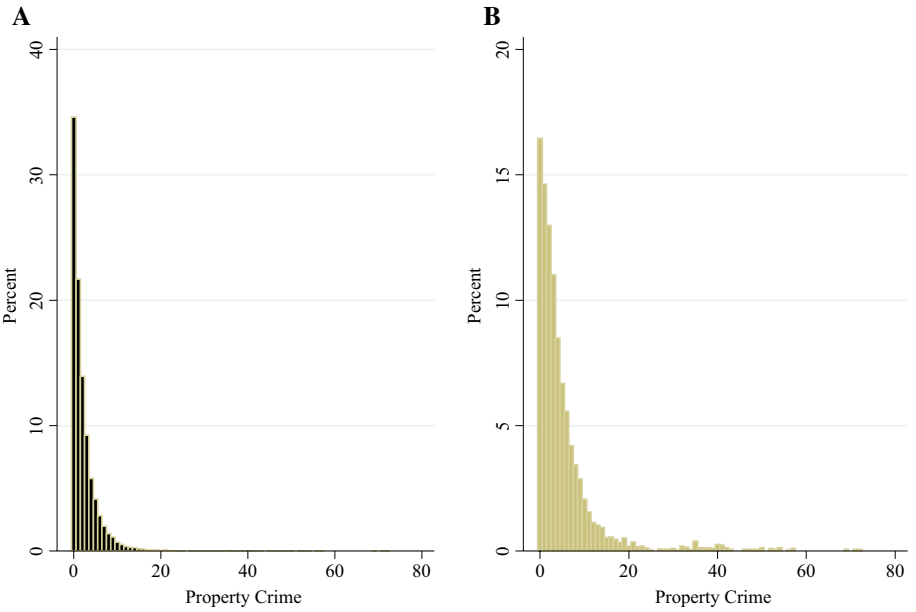

Fig. 3 Histogram of Property Crime. Panel A unweighted, panel B weighted by total crime in the baseline (2005)

In the absence of clear exogenous variation, the literature resorts to studying if and how entry timing is affected by observable variables (e.g., Galiani et al. 2005; Biderman et al. 2010). We estimate a duration model to study the determinants of entry timing, which

informs us of whether entry timing systematically relates to observables. Observables not related to the timing of PCC entry does not guarantee that the timing is systematically related to nonobservables, but if they are related, a red flag is raised.

When estimating the main model (1), we allow different time trends according to baseline differences across *favelas*. In particular, our specification will allow for *favelas* to have different time trends according to crime at the 2005 baseline, and several other socioeconomic demographics (i.e., population, density, average household income, percentage of households earning fewer than three minimum wages, and age profile).[21] Crime trends in high and low-violence *favelas* may differ regardless of PCC entry (e.g., mean reversion). The PCC's decision vis-à-vis entry timing may depend on the *favela* size (i.e., population) and social fragility, and crime may have been following different pre-2005 trends, depending on these demographics. Identification concerns should be mitigated by the inclusion of differential time trends, according to the aforementioned variables.

We saturate the model with controls. First, we include the "other" crime category (if y is violent crime, we include property crime, and vice versa). The biggest challenge to identification is that u_{ft} may contain unobserved crime dynamics that relate to the timing of PCC entry. Inasmuch as the observed dynamics of crime are common to both violent and property crime, they are captured by controlling for the "other" crime category.

Second, we include as controls lags on the dependent variable. We do not have a clear theoretical reason as to why crime today would cause crime tomorrow. The goal is to account for a mean reversion in crime; mean reversion may arise because crime—especially violent crime—has cycles. Another reason may be enforcement efforts in hotspots, which occur in response to spikes in crime.[22]

Even if PCC entry were exogenous in the sense of being a random draw, econometric exogeneity—in the sense that u_{ft} is independent of d_{ft}—is not guaranteed. Thus, causal interpretation is still not warranted (Deaton 2010).

Relevant players may react to PCC entry. Police deployment may change after the PCC enters a *favela*, although it is unclear whether police confront or accommodate PCC entry. Feltran (2012) and Willis (2015) suggest that, following intense confrontation during the *levante*, police and the PCC quickly reached a nonaggression equilibrium that would eventually be disturbed in 2012, more than 2 years after our period of analysis. Nevertheless, it is still possible that police increased enforcement in the *favelas* following PCC entry.[23]

We do not observe police deployment at the *favela* level. (One rarely observes police deployment at this level of disaggregation.) We nevertheless provide indirect evidence of enforcement. We estimate the effect of PCC entry on the apprehension of drugs and firearms. These crime categories are particularly sensitive to enforcement efforts. If law enforcement efforts reacted to PCC entry, one would expect PCC entry to be associated with a greater number of drug and firearm apprehensions.

Finally, victims' decisions to report crime may change when the PCC enters. Victims may fear retribution by PCC operatives, and so reporting has less value when the PCC

[21] Data concerning socioeconomic demographics are drawn from the 2000 census.

[22] Identifying dynamic models is not without challenge. Serial correlation in the unobserved term may render the lagged dependent variable endogenous, by construction. We do now dwell on these identification issues, as the inclusion of lagged dependent variables is merely for purposes of determining robustness. Nevertheless, it should be noted that after including three lagged dependent variables, no autocorrelation was left on the error term.

[23] Accounts in the press reinforce the perception that law enforcement efforts were not primarily allocated to confronting the PCC. "Mean Streets, Revisited," *The Economist*, November 17, 2012.

becomes the de facto enforcer of justice. The most plausible narratives suggest that under-reporting as induced by PCC entry will bias estimates in favor of finding a drop in crime due to PCC entry.

We provide evidence that changes in reporting do not drive the results. First, we find qualitatively similar results when we restrict the analysis to better reported crime, such as homicides. Second, we use data from the 2003 and the 2008 victimization surveys, to show that reporting in *favelas* has not dropped over time, in either absolute terms or relative to other areas. We only observe the aggregate of *favelas*, irrespective of PCC presence. However, had the PCC presence induced underreporting, one would see a general reduction in reporting in *favelas*, at least relative to other areas of the city.

Finally, we explore several dimensions of heterogeneity. Exploring heterogeneity sheds light on why the PCC has an impact on crime. Understanding the mechanism is important, as it lends credibility to the interpretation of θ as a meaningful object (Deaton 2010).

Box 1 contains a summary of the identification challenges and the solutions we implement.

Box 1 Identification: problems and solutions

Problem	Description	Solution
Ommitted variable	PCC entry is not random and it may correalate with time-varying characteristics of *favelas*. For example: assume PCC enters where retail drug markets grow faster, presumably because of a faster grow in income. Because growth in income may cause crime, the variable PCC may capture spuriously the effect of income on crime..	Saturate the model including the other crime category as a control for all unobserved factors that affect overall crime (overall = property plus violent crime)
Under-reporting caused by PCC entry	PCC reduces the propensity to report crime either because PCC is enforces the "law" or because of fear of retaliation	Using aggregate victimization data we show that under-reporting has not increased in *favelas*, which would have been the case if PCC entry caused an increase in under-reporting
Law enforcement response	Police deployment, which is unobservable, could react to PCC entry. In this case, an reduction in crime due to increases in law enforcement would be spuriously captured by PCC entry	Use firearms and drug apprehensions as a dependent variable. Firearms and drug apprehensions are highly sensitive to enforcement effort. If police enforcement reacted strongly to PCC entry, firearms and drug apprehensions would pick it up

Problem	Description	Solution
Pre-existing differentital trends	Similar to omitted variables. *Favelas* in which PCC enters first may have different pre-existing trends that relate to crime. For example, PCC may have entered before in more violent *Favelas* and the model would spuriously attribute a drop in crime following PPC's entry that is in fact due to mean reversal	Saturate the model with linear trends interacted with several baseline demographics, such as violence, lagged violence, income, population, % youth, % below minimum wage, etc. This allows for differential pre-existing trends in *favelas*

Results

Summary Statistics

Table 1 contains summary statistics for each violent and property crime. We present averages for the whole sample period (January 2005 through October 2009), and separately for the years 2005 and 2009. Reported violent crime is a rare event, even in *favelas*: less than one is reported per month. This seemingly low number should not deceive the reader: the *favelas* in our sample are violent environments. In fact, during the study period, 5092 assaults, manslaughters, and homicides were reported each year within 100 m of these 510 *favelas*[24]; in comparison, across the whole of the city, 42,000 violent crimes were reported annually. The *favelas* in our sample represent 12% of all violent crime, 8% of the population (data from the 2000 census), and less than 4% of the area of the city of São Paulo (see Figs. 4, 5). The same patterns arise with regards to property crime, homicides, firearms, and drug trafficking. It is important to emphasize that this is not a high level of concentration of crime that is usually over concentrated. The reason is that Favelas are not the only housing option for the poor. There are many areas outside the Favelas that are as poor as Favelas. If we have analyzed the concentration of crime in poor areas the concentration would be much larger.

Reported violent crime in general, and homicides in particular, dropped during the 2005–2009 period. Reported property crime, on the other hand, remained constant. In both cases, the patterns align with the results of victimization surveys. Firearms apprehensions dropped almost to zero, plausibly reflecting law enforcement effort allocations. The number of drug apprehensions increased.

Regression Results: Violent Crime

Table 2 shows the main results for violent crime, with a linear specification with *favela* fixed effects. Column (1) contains the results of the model without *favela* fixed effects. We find that PCC entry is associated with an *increase* in violent crime; this reflects the fact that the PCC entered earlier in more violent places. In column (2), we include a full set of

[24] 12 months × 510 *favelas* × 0.832 = 5091.84.

Table 1 Summary statistics: violent crime

	Mean			SD		
	2005	2009	Whole period	2005	2009	Whole period
Homicides	0.027	0.014	0.017	0.171	0.117	0.134
Total violent crime	0.935	0.821	0.832	1.436	1.317	1.320
Total property crime	2.312	2.510	2.235	3.612	4.012	3.542
Firearms apprehensions	0.048	0.0007	0.011	0.231	0.028	0.112
Drug traffic apprehension	0.122	0.187	0.169	0.446	0.541	0.538

Unit of observation: *Favela* at a month. Property crime = robberies + thefts. Violent crime: murder + manslaughter + assault. There are 29,580 observations for the whole sample, 5100 for 2009 and 6120 for 2005

favela dummies; now, PCC entry is associated with 0.126 fewer reported violent crimes per month, per *favela*. The *favela* fixed effect absorbs 44% of the data variation. The impact is statistically significant at the 1% level, and represents a 13.5% reduction in reported violent crime relative to 2005 levels (see Table 1).

Summary statistics show that violent crime dropped during the period, and that the PCC increasingly entered *favelas*. To avoid capturing spurious time effects, we include a time trend [column (3)]. The impact of the PCC on violent crime is now smaller (−0.083); it is still large in magnitude, but less precise ($p = 0.02$).

Column (1) suggests that the PCC enters more violent *favelas*. Mean reversion or other unobserved policy interventions that target particularly violent *favelas* could be driving these results. We mitigate these concerns by including the interaction of a time trend with the baseline level of crime in 2005. Its inclusion captures pre-PCC entry differential trends in *favelas.* Indeed, crime dropped more in *favelas* that were more violent at the baseline, as expected. Column (4) contains the results. The impact of the PCC is stronger than in column (3), and entry by the PCC is associated with 0.102 fewer reported violent crimes per *favela*, per month ($p < 0.01$).

We include property crime as a control. There is no clear theoretical reason as to why property crime would lead to violent crime. The goal here is to capture unobserved time-variant *favela*-specific shocks to crime (common to property and violent crime).[25] Column (5) contains the results. As expected, there is a strong correlation between property and violent crime. The estimated coefficient on the PCC barely bulges, relative to column (4).

[25] Property crime and violent crime could be jointly determined, then the inclusion of the other crime category as a control will change the interpretation of the main coefficient of interest. There is co-movement in aggregate violent and property crime, but co-movement does not imply that violent and property crime jointly determined *in the sense that one causes the other and vice-versa*. The question of whether property and violent crime are jointly determined is mostly a theoretical consideration. For example, it could be case that PCC assassinates or beats thieves as a punishment for property crime. But then the variable PCC will capture—in a reduced-form way—most of the causation, leaving little to the variable property crime. Furthermore, the ethnographic evidence suggests that violent crime does not respond to property crime because violent repression is not the typical punishment for property crimes: banishment is more common. In this case, including property crime in equation determining violent crime serves the purpose of an additional control, not the purpose of estimating a more structural (i.e., causal) relationship from property crime to violent crime. It is harder to come up with stories to justify that property crime causes violent crime in a structural sense.

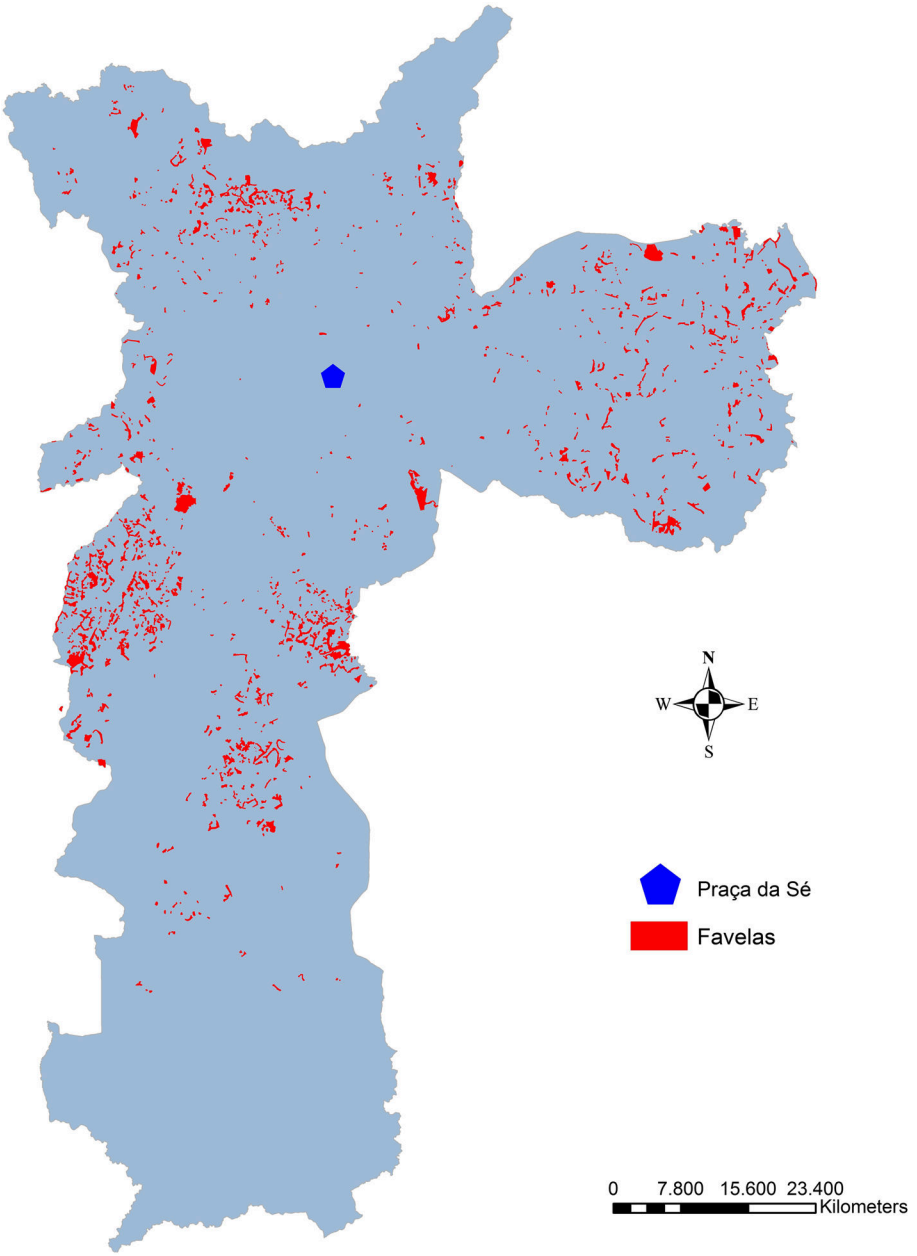

Fig. 4 Favelas in the city of São Paulo

PCC entry is associated with 0.099 fewer reported violent crimes per *favela*, per month. This is our main result for violent crime.

Finally, we perform an exercise that is informative about whether the PCC's inducement of underreporting is the main driving force behind the results. We restrict the dependent

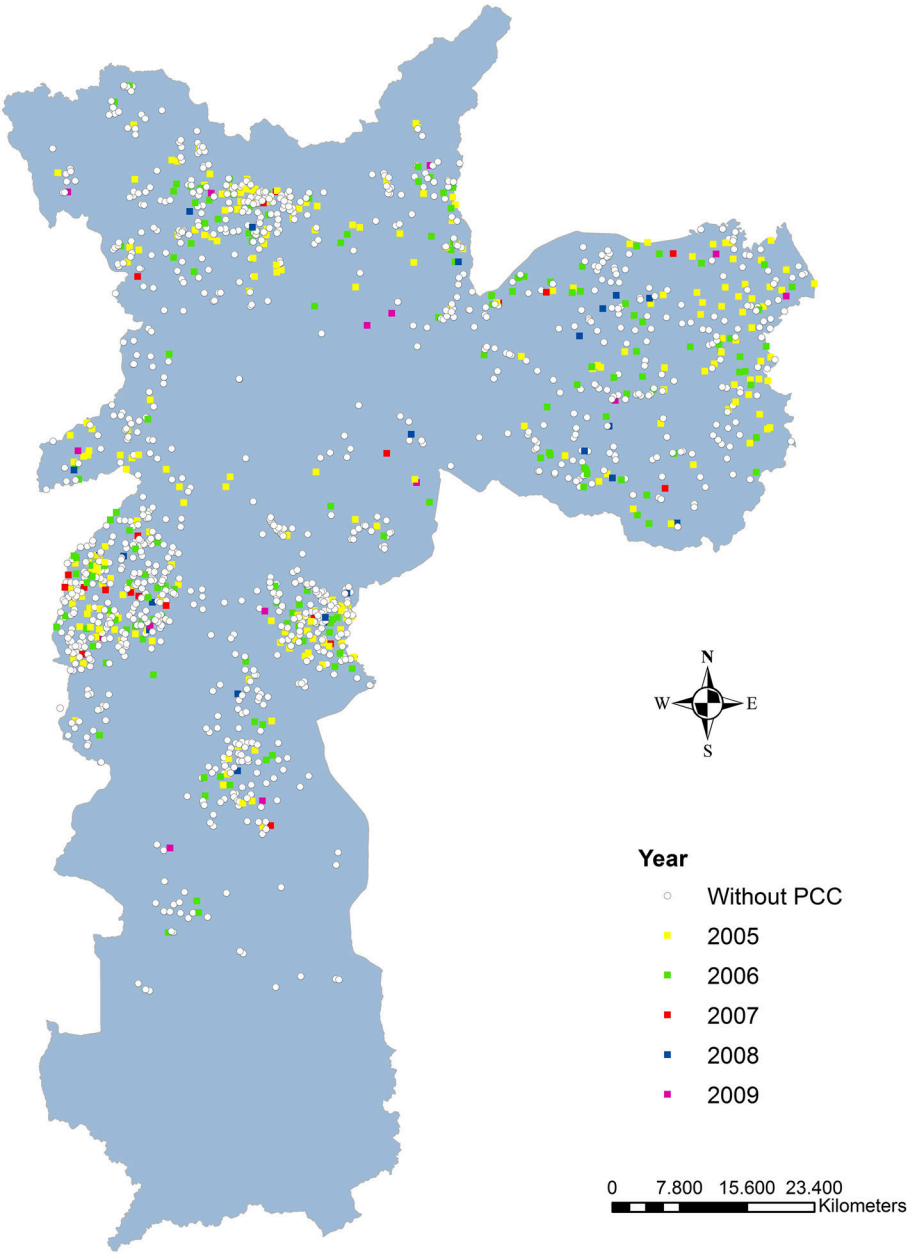

Fig. 5 Dominance of PCC in the favelas of São Paulo (2005–2009)

variable to homicides. At the *favela*–month level, murders are a quite rare event, and thus very noisy, and so we aggregate the data to the year frequency. Column (6) contains the results. We cannot estimate the effect with precision, mostly because the standard error is too large. PCC entry is associated with 0.052 fewer murders per *favela,* per month; this

Table 2 Effect of PCC entry on violent crime

	(1)	(2)	(3)	(4)	(5)	(6)‡
PCC presence	0.131 (2.31)**	−0.126 (4.44)***	−0.083 (2.46)**	−0.102 (3.31)***	−0.099 (3.29)***	−0.071 (1.15)
Baseline violence × trend				−0.005 (2.97)***	−0.005 (3.13)***	−0.001 (−1.45)**
Property crime					0.056 (6.78)***	0.003 (2.77)***
Favela dummies?	No	Yes	Yes	Yes	Yes	Yes
Time trend?	No	No	Yes	Yes	Yes	Yes
R^2	0.002	0.440	0.441	0.445	0.452	
N	29,580	29,580	29,580	29,580	29,580	1295

Modulus of *t*-statistic in parentheses. Violent crime = murder + manslaughter + assault. Baseline violence is the average number of violent crime in 2005. ‡: Only murder, annual observations. Baseline violence is average number of murders in 2005. Unit of analysis is a pair month-*favela* (except in column (6), year-*favela*). Standard errors computed allowing for intra-favela correlation among the error terms

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

represents a 16% reduction in homicides in the *favelas* in our sample (relative to the 2005 level).[26] The magnitude is similar to the PCC's impact on overall violent crime.

Table 3 contains the results of further robustness checks. We saturate the model by including a long list of controls: up to six lags of violent crime, and several baseline demographics interacted with a time trend. To facilitate comparisons, column (1) reproduces the main estimates in Table 2, column (5). As expected, past violent crime seems to "belong" to the model; starting with the fifth lag, however, they are no longer significant. The inclusion of lagged violent crime reduces the size of the estimated impact of PCC entry, although that impact remains statistically significant and large in magnitude. In column (3), we include six lags of violent crime. PCC entry is associated with a 9% decline in violent crime, relative to the 2005 level.

Additionally, the inclusion of a time trend interacted with several socioeconomic demographics (measured in 2000) does not significantly change the estimated impact of PCC entry.

Table 4 presents the estimates of the impact of the PCC; these were derived by using different functional forms for the conditional expectation—namely, zero-inflated negative binomial, negative binomial, and Poisson. We present two specifications for each functional form: one that has the same control as the main linear specification in Table 2 [column (4)], and the most complete model [Table 3, column (6)]. We show the estimated marginal effect of PCC entry. The results are, if anything, slightly stronger than their counterparts in Tables 2 and 3.

Regression Results: Property Crime

Table 5 is analogous to Table 2, but now the dependent variable is the number of property crimes. We derive mixed results. The coefficient on PCC entry is never precisely estimated.

[26] 0.052 is roughly 16% of 0.027 × 12 (see Table 1).

Table 3 Violent crime (robustness 1, controlling for differential trends and saturating the model)

	(1)	(2)	(3)	(4)	(5)	(6)
PCC presence	−0.099 (3.29)***	−0.094 (3.33)***	−0.082 (2.97)***	−0.082 (2.96)***	−0.081 (2.95)***	−0.083 (3.02)***
Baseline violence × trend	−0.005 (3.13)***	−0.005 (3.21)***	−0.004 (3.57)***	−0.005 (4.47)***	−0.005 (4.50)***	−0.004 (4.28)***
Property crime	0.056 (6.78)***	0.054 (6.78)***	0.054 (6.88)***	0.054 (6.90)***	0.054 (6.89)***	0.054 (6.85)***
1st lag of violence crime		0.083 (5.48)***	0.069 (5.41)***	0.069 (5.35)***	0.069 (5.34)***	0.069 (5.34)***
2nd lag of violent crime			0.039 (3.39)***	0.038 (3.34)***	0.038 (3.34)***	0.038 (3.33)***
3rd lag of violent crime			0.026 (2.47)**	0.026 (2.40)**	0.026 (2.40)**	0.026 (2.40)**
4th lag of violence crime			0.040 (4.31)***	0.040 (4.20)***	0.040 (4.21)***	0.040 (4.21)***
5th lag of violent crime			0.007 (0.78)	0.006 (0.72)	0.006 (0.71)	0.006 (0.71)
6th lag of violent crime			0.006 (0.65)	0.005 (0.57)	0.005 (0.58)	0.005 (0.57)
Population × trend				0.003 (1.37)	0.003 (1.28)	0.002 (1.05)
Density × trend				−0.001 (1.06)	−0.002 (1.24)	−0.001 (1.21)
Income × trend					−0.017 (1.25)	−0.001 (0.85)
% Less minimum wage × Trend					0.005 (0.15)	0.001 (0.03)
Share young × trend						0.026 (0.91)
Share children × trend						0.018 (0.89)
Share adult × trend						0.030 (0.88)
Favela dummies?	Yes	Yes	Yes	Yes	Yes	Yes
Time trend?	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.452	0.457	0.464	0.464	0.466	0.467
N	29,580	29,070	26,520	26,520	26,520	26,520

Modulus of *t*-statisitc in parentheses. Violent crime = murder + manslaughter + assault. Baseline violence is the average number of violent crimes in 2005. All other baseline demographics from the 2000 census. Unit of analysis is a pair month-*favela*. Population in 1000s. Density in 1000 per squared Km. Income = average income of heads of household in 10,000 Reais per month. Percentage of Households earning less than 3 minimum wages. Standard errors computed allowing for intra-*favela* correlation among the error terms

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

Table 4 Robustness checks (violent crime)

Marginal effects	(1) Zero Inflated negative binomial‡	(2) Zero Inflated negative binomial‡	(3) Negative binomial	(4) Negative binomial	(5) Poisson	(6) Poisson
PCC presence	−0.104 (3.29)***	−0.094 (3.23)***	−0.123 (3.34)***	−0.092 (3.20)***	−0.105 (3.22)***	−0.096 (3.29)***
N	29,580	26,520	29,580	26,520	29,580	26,520

Modulus of *t*-statisitc in parentheses. All models include *Favela* dummies, a linear trend and baseline violent crime interacted with a linear time tend. Columns (2), (4) and (6) include the same baseline covariates interacted with a linear time trend as in Table 5, column (7). ‡: Zero-inflated negative binomial. Logit model for zeros: regressor is all baseline crime (2005). Violent crime = murder + manslaughter + assault. Standard errors computed allowing for intra-*favela* correlation among the error terms

*$p<0.1$; **$p<0.05$; ***$p<0.01$

Table 5 Property crime

Marginal effects	(1)	(2)	(3)	(4)	(5)
PCC presence	0.319 (1.61)	0.032 (0.04)	−0.062 (0.58)	−0.068 (0.63)	−0.049 (0.46)
Baseline property crime × trend				−0.015 (0.76)	−0.014 (0.70)
Violent crime					0.214 (5.74)
Favela dummies?	No	Yes	Yes	Yes	Yes
Time trend?	No	No	Yes	Yes	Yes
R^2	0.002	0.685	0.685	0.685	0.689
N	29,580	29,580	29,580	29,580	29,580

Modulus of *t*-statisitc in parentheses. Property crime = robbery + theft (all categories). Standard errors computed allowing for intra-*favela* correlation among the error terms

*$p<0.1$; **$p<0.05$; ***$p<0.01$

Table 6 Hazard model to explain PCC entry

Failure variable is the PCC presence		(1)	(2)
Time invariant	Violent Crime in the Baseline (2005)	0.941 (−0.65)	
	Property Crime in the Baseline (2005)		1.207 (1.61)
No subjects		510	510
No failures		437	437
Time at risk		28,444	28,444
N		10,084	10,084

Cox Proportional Hazards model. Hazard rates reported. Numbers Modulus of the *t*-statistic in parenthesis. Standard Errors corrected for within-*favela* correlation in the error terms

*$p<0.1$; **$p<0.05$; ***$p<0.01$

The failure to reject stems not from large estimated standard errors. All models with *favela* fixed effects [columns (2)–(4)] deliver small estimated coefficients. Overall, we find PCC entry to have no impact on property crime.[27]

Endogeneity of PCC Entry

We investigate whether the timing of PCC entry systematically relates to violence.[28] If the timing of PCC entry relates to observed covariates, it would indicate that PCC entry relates to nonobservables. We estimate a Cox-proportional hazard model. The failure is PCC entry.

Before proceeding to the results, consider the geographical distribution of the *favelas* in our sample. Figure 5 depicts PCC entry in *favelas* over time. There is no clear spatial pattern in entry timing, suggesting a certain geographical randomness in the process of PCC dominance. Incidentally, there are no clear geographical differences between *favelas* with and without PCC dominance.

Table 6 contains the results. A coefficient greater than 1 indicates that an increase in the variable increases the odds of PCC entry by the same percentage amount as that seen at any given point in time. To help interpreting the results, we split *favelas* in four groups: high and low violent crime, and high and low property crime, both in the baseline (2005). High and low are defined as above and below the median. In column (1), we estimate the model for violent crime. At any given month PCC is not more likely to enter a *favela* that was more violent in the baseline. In column (2) we substitute property for violent crime. PCC does enter *favelas* with more property crime in the 2005. At any given month PCC is 20% more likely to enter a *favela* that had more property crime in 2005 (but coefficient is not precisely estimated). In summary, if anything only property crime seems to explain PCC entry, which is reassuring given that we only find an impact of PCC on violent crime.

Changes in Reporting Following PCC Entry

If PCC presence did induce underreporting, one would expect the rate of reporting to drop in *favelas* in general, at least relative to the rest of the city. Table 7 shows the rates of reporting of property crime and assaults in citywide victimization. We use data from two victimization surveys (i.e., 2003 and 2008). In January 2005, the PCC was present in a more than 35% of *favelas*, according to our measure. By September 2009, the PCC was present in 84% of the *favelas*. Table 7 contains the results.

Conditional on being victimized, reported assaults increased in *favelas*, both in absolute terms and relative to the rest of the city. Assault is an important category of the violent crime index, and one of the most underreported categories in general.[29] Property crime has

[27] For conciseness, we do not present the equivalent of Tables 3 and 4 for property crime (including lagged property crime, further interactions of the time trend with socioeconomic demographics in 2000, and different functional forms for the conditional mean). The impact of PCC is never different from zero, statistically or in practice. The results are available from the authors, upon request.

[28] The procedure is standard in the applied literature (see Biderman et al. 2010; Galiani et al. 2005).

[29] See De Mello and Schneider (2010). Underreporting is more relevant for certain crime categories, including assault, larceny/theft, and robbery.

the opposite pattern: reporting drops both in absolute terms and relative to the rest of the city.

In summary, victimization data suggest it is unlikely that changes in reporting produce the results vis-à-vis violent crime. Victimization data also suggest that underreporting biases results toward the interpretation that PCC presence reduces property crime.

Endogeneity of Police Enforcement

We investigate the impact of PCC entry on drug and firearm apprehensions, both of which are sensitive to police enforcement efforts. If official authorities reacted to PCC entry in *favelas* by intensifying police enforcement, we should observe an increase in firearm and drug apprehensions.

Drug and firearm apprehensions are rare. As we did for homicides, we aggregate to the annual frequency and estimate a Probit model.[30]

Table 8 contains the results. In column (1), the dependent variable is firearm apprehensions. The PCC has a *negative* impact on firearm apprehensions. It is not very precisely estimated ($p = 0.097$), but the magnitude is far from negligible (-0.119). In column (2), the dependent variable is drug apprehensions (use and trafficking). The coefficient is zero (both in magnitude and statistically). In column (3), the dependent variable is the sum of drug and firearm apprehensions. Again, PCC entry does not relate to these felonies.

If we assume that PCC presence increases drug activity (a natural assumption), then the results suggest a reduction in police enforcement effort; this aligns with the qualitative evidence (Willis 2015). Underreporting could be increasing due to *reduced* law enforcement following PCC entry; this would align with the ethnographic evidence. However, as Table 7 shows, the reporting of violent crime in *favelas* increased during the sample period; therefore, the endogeneity of enforcement response, if anything, would bias results towards zero (in the case of violent crime).

When Does the PCC Have an Impact? Exploring Heterogeneities

Exploring the heterogeneity of the results is important, for two reasons. First, it lends credibility to the results. Theory informs us not only of the possibility that PCC presence can reduce violence, but also when it should most reduce it.[31]

Table 9 shows the heterogeneities based on several dimensions.[32] We split the sample into *favelas* below the median value of violent crime [column (1)] and those above the median [column (2)], according to the baseline value of the variables. The PCC has a

[30] The results—which are available from the authors upon request—are similar at the monthly frequency.

[31] For conciseness, we present only the results for violent crime. The impact of the PCC on property crime is once again less discernible.

[32] The PCC, as before, does not have a robust effect on property crime, even in more crime-ridden *favelas*. (The estimated coefficient is not robust to the introduction of year dummies.) For brevity, we omit these estimates, but they are available from the authors upon request.

Table 7 Reporting rates from victimization surveys. *Source*: Victimization Surveys 2003 and 2008, Centro de Politicas Publicas, Instituto Futuro Brasil

	2003 (%)	2008 (%)
Assault		
In *favelas*	38.46	53.85
Outside *favelas*	39.13	42.86
Property crime		
In *favelas*	48.86	31.58
Outside *favelas*	51.19	44.88

Table 8 Impact of PCC presence on drug and firearms apprehensions

Probit marginal effects	(1) Firearms	(2) Drugs	(3) Vice
PCC presence	−0.119	0.007	0.002
	(1.76)*	(0.94)	(0.04)
N	1015	1730	1775

Modulus of *t*-statistic in parentheses. Vice = firearms + drugs (traffic and possession) apprehensions. All specifications include *favela* dummies, a linear time trend, property crime and baseline violations (firearms, traffic or the sum) interacted with a linear time trend. Unit of analysis is a pair year-*favela*. All estimates of standard errors take into account the possibility of within-*favela* correlation among error terms. Number of observations drop in some specifications because favela dummies predict 0 perfectly for some favelas

stronger impact in *favelas* that are more violent, have a poorer and less-educated population, and have a more fragile infrastructure (measured by the percentage of households with sewage services).[33] In summary, PCC entry has a greater impact in more socially fragile *favelas*.

Discussion and Policy Implications

The case of PCC provides additional evidence that competition amongst drug suppliers is criminogenic, because violence is a competitive device in illegal markets. Our results are in line with the small but growing body of literature that has documented the violence induced by illegality.

We find that PCC entry into *favelas* reduces violent crime, but has no impact on property crime. This result is compatible with the main theoretical reasons why the monopolization

[33] We estimated heterogeneous effects for many other dimensions. The conclusions always remain the same: the PCC has an effect in more fragile *favelas*. We chose to report these four dimensions, because they seem natural. In the case of sewage services, the decision was based on variability amongst *favelas* at the 2000 baseline. In particular, other dimensions (e.g., water availability) do not present much variance across *favelas* (i.e., most have it). As expected, correlation among the four variables is high, but they are far from perfectly related. Thus, each heterogeneity exercise is informative above and beyond the three others.

Table 9 Heterogeneities according to baseline

Effect of PCC presence on violent crime	(1) Below median	(2) Above median
Violence	−0.026	−0.201
	(1.19)	(3.21)***
% Less 3 minimum wages	−0.027	−0.180
	(0.89)	(3.30)***
Schooling	−0.173	−0.030
	(3.33)***	(0.90)
% Without sewage	−0.114	−0.085
	(3.19)***	(1.72)*
N	14,790	14,790

Modulus of t-statisitc in parentheses. Sub-samples according to baseline: violence (median = 8 per favela in 2005); percentage of head of household earning less that minimum wages (median = 57.12); Schooling (average number of year of education of the head of household, median = 5.60); access to sewage (percentage of households with access to sewage, median = 12.86). All baseline in year 2000 (census year) except for violence (year 2005). Violent crime = murder + manslaughter + assault. Standard errors computed allowing for intra-favela correlation among the error term

of criminal activity would lead to a reduction in crime (the competition and enforcement mechanisms).

Ethnographic and bookkeeping evidence suggests that the PCC had monopolized the wholesale distribution of drugs even before their presence in *favelas* became news. The PCC did not interfere with local retailing operational decisions, i.e. pricing—except for the use of violence as a competitive device, which PCC disciplined from the very beginning (Willis 2015; Lessing and Willis 2016). The PCC used its monopoly position in the wholesale market and its dominance in the prison system to impose pacification on the retail market (Marques 2009).

A profit-maximizing upstream monopolist finds it optimal to reduce the cost of retailing operations, which is what pacification entails. For an upstream monopolist, it is better that downstream retailers compete in terms of price, and not in violence. Competition through prices reduces downstream margins, which is good for the upstream. Competition through violence increases downstream costs, may reduce demand and, therefore, is likely to hurt the upstream margins. Violence increases the risk of drug dealing at the downstream level. So it may shift supply upward and demand downward (it is riskier to both buyer and seller[34]). The result is certainly lower quantities but ambiguous for price.[35] For the upstream seller in the illegal drug market there is nothing to gain from violence in the downstream.

As expected, the impact of the PCC on violent crime stems from the most violence-ridden *favelas*. In fact, the effect of PCC entry comes from more socially fragile *favelas*. The enforcement mechanism predicts that a strong monopolist criminal group has more ability to regulate violence exactly where state capacity is more limited.

[34] See, inter alia, Reuter and Kleiman (1986) for an explanation of the role of risk in mass drug (marijuana and cocaine) pricing. The analysis also hi.

[35] We would like to thank an anonymous referee for this wise observation.

It is worth mentioning that socially fragile *favelas* are especially vulnerable to gang and retail drug traffic turf wars. It is not surprising, then, that the PCC's regulation of violence has a stronger impact precisely in the most vulnerable *favelas*. If we combine the heterogeneity of the impact with the result that we did not note any impact on property crime, it is possible to suggest that PCC is not working as a provider of enforcement in general, indirectly regulating all crimes inside the favela; it is rather regulating just the crimes that affect its business.

Finally, the case of PCC provides additional evidence that competition amongst drug suppliers is criminogenic, because violence is a competitive device in illegal markets. The results presented in this paper are in line with the small but growing body of literature that has documented the violence induced by illegality. There is no way, however, that we could generalize the finding to all illegal drug markets. There might be some markets that are not crimogenic at all. Evidently it is quite difficult to know if the market itself is not crimogenic or if it is not crimogenic because there is a credible Drug Trade Organizations (DTO) making it "clean" for drug dealing. However, the finding that the impact of PCC is higher in high crime communities, suggest that the monopoly will have more impact in markets that are originally more violent.

Drawing policy prescriptions is far from straightforward, but there are two main lessons, one for police enforcement and another for drug policy.

It is difficult for the government to take an "active" public policy in an illegal market without getting "dirty hands". However, Buchanan´s (1973) proposal of a "Passive Acquiescence in the Syndication of Crime" (note 1; p. 129) is also debatable. This paper does confirm and qualify some of Buchanan´s conjectures so we believe that this is a good departure point to get a deeper policy perspective on our findings.

Buchanan´s main idea is relatively straightforward (after he thought about that, of course): monopolies produce less than perfect competition. Consequently, monopolies in general reduce welfare. However, if we consider that illegal products are a "bad" instead of a "good", we want to minimize its production and, consequently, a monopoly would enhance social welfare instead of reducing it. PCC dominance of wholesale and retail markets did help reduce violent crime.

Within the prohibition framework, law enforcement authorities face a difficult trade-off. On the one hand, monopolization of the wholesale drug market and security in prisons, may lead to a reduction in violent crime. *Mutatis mutandis*, violence explodes in periods of dispute. The official death toll of the Mexican Drug War was from 2006 through 2012 is at least 60,000. Anecdotal evidence suggests that the death toll of the Mexican Drug War is as much a consequence of confrontations between law enforcement and DTOs as of the disruption of the equilibrium among DTOs caused by the confrontation itself (Rios 2013; Calderón et al. 2015).

Fostering DTO "national champions" may serve the immediate purpose of reducing crime by transferring part of the enforcement to a "self-regulation" scheme ran by the DTO. The cost of such strategy is fostering a powerful "state" within the state framework, with all its detrimental consequences. One obvious consequence is the increased ability of the "national champion" to undermine state capacity and legitimacy, both through corruption and through confrontation. PCC attacks on state forces in 2006 and 2012 illustrate the risk involved when a criminal group becomes sufficiently strong. The intricate relationship between DTOs and the Mexican government is yet another illustration (Shirk and Wallman 2015).

All in all, the *Pax Monopolista* phenomenon is both a challenge and an opportunity for law enforcement. It is hard to argue that law enforcement should explicitly foster

monopolies in illegal markets. The war in Mexico suggests that law enforcement should not actively encourage competition. The PCC "*levantes*" in 2006 and 2012 suggest that Buchanan's "Passive Acquiescence in the Syndication of Crime" (adopted by the state government of São Paulo) is also very risky.

For drug policy the results speak in favor of the legalization of the drug trade. On the one hand, the fact that monopolization leads to pacification suggests that violence-induced by competition arises because of illegality. On the other hand, pacification due to the enforcement mechanism suggests that the illegality of the drug trade, and the rents associated with illegality, could empower DTOs to the point that it substitutes the state in basic functions, such as the administration of rules of enforcement.

The Weberian concept of State is exactly the "community that (successfully) claims the monopoly of the legitimate use of physical force within a given territory" (Weber 1919). It is consequently very risky to give up on this monopoly.[36] It is indeed worse since the State is giving away its monopoly on violence just in some territories. The most fragile population does not have access to the universal justice being subjected to a private norm. It is very likely that the favela is better off after PCC entrance: they use to have no rules beforehand. But the principle behind this is very debatable.

The only reason why PCC is providing security is because they can extract rent from the drug market. If there is no rent to be extracted, they would not supply the service. So, we do not quite agree with Backhaus (1979) that "some active public policy might be effective in isolating the positive welfare implications of the monopolization of crime from their negative one" (p. 630). It is evident that the State is not able to provide security everywhere but it can guarantee security to most legal business. Once again we are back to our main point: if drugs were legalized, the State would naturally get back the monopoly of securing this business.

Evidently security services will be offered privately when the State is not fulfilling its role. Legalizing drugs will not automatically imply in supplying security in underserved areas of the city. Black (1983) explains the role of crime as a social control. "It is commonly believed that self-help was largely displaced by law in the Western world during the Middle Ages, and that it has survived primarily in the traditional -especially stateless-societies studied by anthropologists." (p. 34). Weisburd (1988) shows social control in action at the Israeli-controlled west bank region. When property rights are not clearly defined there will be opportunities for rent seeking and the community itself or a gang will complete the "missing market". If we consider the magnitude of the impact (around 10% or less) it is clear that this is just one mechanism of violent crimes in poor areas.

To the best of our knowledge there is no example of a successful policy against mass consumption drugs—i.e. cocaine and marijuana. There are successful cases with heroin for instance (see, inter alia, Paoli 2000 for the case of Europe). We are certainly not the first to propose legalization of cocaine and marijuana as the best public policy to reduce violence in these markets. However, the reason we propose to explain why legalizing would be a sound policy is slightly different from the usual argument. We believe that legalizing mass-consumption drugs is a sound policy because it would allow the government to get back the monopoly of violence in fragile territories that would not be the target of DTOs anymore.[37]

[36] See for instance, Acemoglu et al. (2013).

[37] A new model of prison management is evidently needed but this is out of the scope of this paper.

The PCC model monopolizing also the upstream sales seems to be very effective in reducing violent crimes. Consequently, the regulation of this newly legalized market should take this into account. The government can have a monopoly power over sales in a very simple way: taxing sales. If drugs are indeed "bads", taxing them would improve social welfare. The results suggest indirectly that it would be probably more effective to tax the upstream than retail sales that is already competitive. This will certainly not solve the problem of violence in fragile communities but it will probably reduce it. However, if the government cannot exercise its monopoly over violence in some territories, there will always be more violence in such areas than anywhere else in the city.

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Appendix 1: *Disque-Denúncia*

Disque-Denúncia is run by a nongovernmental organization called the *Instituto São Paulo contra a Violência* (São Paulo Against Crime Institute), through an agreement with a state-level enforcement agency (i.e., the *Secretaria de Segurança Pública*). The *Instituto São Paulo contra a Violência* was established in 1997 with the support of the Brazil's largest media group, and that of other important private sector partners (Globo Television Channel and various entities that comprised private federations, foundations, associations, financial institutions, corporations, etc.). It is responsible for running the call center infrastructure. The phone operators receive special training in dealing with public safety and human rights issues normally denounced by the population, such as drug trafficking, gambling, and domestic violence. Following a script, the attendants receive calls and record all information using proprietary software developed for the service. Once registered, the information is sent through the software system to the Criminal Analysis Centre (CAC) of both the judiciary and the police forces, which are located in the same building as the call center. After verifying that the reported event is under their jurisdiction, police analysts classify the crime situation and send the information to their peers at local police stations, according to the reported address. Local police stations must follow up on any action taken, within 30–90 days; this is done by using the same proprietary software. Users can call the service back to follow up on a report. In order to maintain anonymity, the user is asked to recite an alphanumeric code that had been provided during the first call, which had been issued specifically for follow-up purposes. The hotline operates 24/7, and it covers all the cities in the State of São Paulo. Being considered a "public utility service," there are no costs associated with using this line, and incoming calls can be made using either landlines or cell phones. The number "181" is assigned by the Agência Nacional de Telecomunicações (ANATEL, the National Telecommunications Agency) for all Brazilian hotlines of this nature, which operate differently in each state.

Disque-Denúncia data contain the supposed location of each reported event, the supposed date and time of that event, and the physical characteristics of both the suspects and victims.

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