

Research Statement

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Research interests

I am a microeconomist working at the intersection of Political Economy and Development. I study how individuals' lives and well-being are shaped by the presence of non-state violence—a common threat across many parts of the developing world—and seek to identify policies to reduce exposure to non-state violence. My work spans three continents (Latin America, Sub-Saharan Africa, and South Asia) and combines innovative data with frontier empirical methods. There are two main strands to my research: a strand focused on non-state violence stemming from criminal organizations such as gangs and cartels; and a strand focused on non-state violence against women and girls.

Non-state actors, human capital, and development

Millions of people currently live under systems of governance created by rebels during civil wars or by criminal organizations such as cartels and gangs (Lessing, 2021; Blattman et al., 2023). However, little is known about the development implications both during and after these groups are in power. Moreover, in several contexts, such as in Central America, Colombia, Peru, Brazil, and South Africa, and particularly in urban areas, non-state armed actors coexist with the formal state, controlling several parts of the territory. At the same time, many of these non-state actors use children as their main source of labor, affecting the incidence of youth violence and the expansion of these groups. While much of the literature has studied the rise of non-state actors due to the absence of the state, little is known about situations with such a duopoly of violence. I use both quasi-experimental and experimental methods to further our understanding of (a) the immediate implications of non-state armed actors on human capital formation and development, (b) the persistence of such effects, and (c) help identify policies to limit the ability of non-state armed actors to grow or spread.

1.1. Recruitment and human capital. Within this line of research, one part of this work examines how non-state actors, such as cartels and gangs, shape human capital investments. In my work focusing on Peruvian coca-growing areas ("**Making A Narco: Exposure to Illegal Labor Markets on Criminal Paths**," *Econometrica*, 2022), I find that exposure to labor markets associated with

drug trafficking during childhood leads to the formation of industry-specific human capital at an early age, putting children on a criminal life path in the cocaine industry. To do so, I exploit geographic variation in coca suitability and time variation in coca prices induced by anti-drug policies in Colombia. Using satellite images of coca fields, household surveys, and administrative data from prison records, I find that when the return to illegal activities increases in areas suitable for coca production, parents significantly increase the use of child labor for coca farming, which increases the children's criminal capital (such as knowledge on how to transform coca into cocaine and of smuggling routes) and the chances of them remaining in the cocaine industry. As a result, children are more likely to be incarcerated for violent and drug-related crimes as adults. In particular, the effects are concentrated among children from coca-suitable regions who experienced high coca prices at the ages 11-14, when child labor in coca production increases the most.

Moreover, I find that policies targeting the incentives surrounding these early investments can mitigate the effects of exposure to illegal labor markets. For example, I show that conditional cash transfers that encourage schooling can reduce child labor in the illegal sector and drug production in coca-suitable areas. These policies can address an underlying cause of future criminality by limiting the formation of criminal capital while also increasing formal human capital.

In two follow-up papers focusing on Central America ("**Spreading Gangs: Exporting US Criminal Capital to El Salvador,**" *American Economic Review*, 2022 and "**US Criminal Deportations and Human Capital in Central America,**" *American Economic Review Papers and Proceedings*, 2019), I provide evidence on how criminal capital moves across space and can be learned at an early age. In El Salvador, I find that children who grew up exposed to US-deported gang leaders are more likely to be recruited and join large gangs such as MS-13 and Barrio 18. I find that affected children are more likely to be incarcerated for gang-related crimes such as extortion when they are adults. In particular, I find that affected children are those who were younger than 15 when these deportees arrived. This result is consistent with the fact that 10–14 is the most common age of initiation into gangs when children are looking for a social structure that gangs can provide and when they are more malleable. Moreover, criminal organizations particularly recruit children as they cannot be legally prosecuted. Consistent with this mechanism, I provide evidence that gang recruitment is mitigated in areas with historically stronger social ties and networks, which are part of the criminal capital brought by US gang deportees. These gang deportees introduced both criminal knowledge and a social structure for Salvadoran children in the 1990s.

In these papers, I also shed light on how deportation policies may have unintended consequences by generating a self-reinforcing cycle of deportations, gang recruitment, and violence between host and home countries. In particular, I find that in areas where US gang deportees arrive, children are more likely to migrate to the US to escape violence and harassment by gangs.

The results of these three papers have several potential policy implications. The formation of criminal capital early in life can explain adult occupational choices and the perpetuation of non-state actors such as criminal organizations. While research on crime prevention has focused on enforcement measures (such as policing and incarceration), little is known about the root causes

that are within the reach of policy. By documenting the potential causes of future criminality at the individual level, the three papers' results can help us understand which policies could potentially limit the expansion of criminal actors and their territorial control. Since individuals join these organizations in their early youth, policies that target incentives at that particular age group can reduce the development of criminal careers and potentially provide a more cost-effective way to reduce the perpetuation of criminal actors than enforcement alone. I also have another work analyzing government interventions in the context of organized crime that targets children of those ages as a way to prevent criminal careers and the expansion of organized crime (I expand on this below in the policy section of the research statement).

1.2. Non-state actors and development. Another part of this line of research focuses on the long-run impact of non-state armed actors on development outcomes at the neighborhood/village level by affecting labor mobility, firms, and trust toward the state. In a paper focusing on El Salvador ("**Gangs, Labor Mobility, and Development**," with Nikita Melnikov and Carlos Schmidt-Padilla, **revise and resubmit at *Econometrica***), using spatial regression discontinuity design combined with census data and our own geocoded survey in gang territories and nearby areas, we find that gangs' territorial control in urban areas can influence development outcomes by restricting individuals' freedom of movement between neighborhoods, affecting their labor market options. These results are particularly relevant in areas where criminal organizations limit individuals' ability to move freely. In many urban neighborhoods in developing countries, non-state actors impose mobility restrictions to maintain territorial control when the state and multiple groups are controlling surrounding areas. This is not only common in El Salvador and Central America but also in cities in South Africa, India, Brazil, Argentina, Chile, Colombia, and to some extent in developed countries such as the US.

As a follow-up paper, we are using cellphone data to analyze the effects of a 2022 crackdown that allowed the state to recover these particular neighborhoods. In particular, the cellphone data will allow us to understand whether restrictions to mobility disappear and whether individuals living in these neighborhoods can then have access to better jobs outside the gang territory. Moreover, we are working with the United Nations High Commissioner for Refugees and the Ministry of Labor to assess the role of subsidies for first employment to young individuals from former gang neighborhoods through a randomized control trial. We are not only interested in analyzing whether having access to a formal job can break criminal paths but also whether first-time exposed firms to workers from gang neighborhoods can change their hiring practices by reducing potential biases toward hiring young individuals from gang areas.

In another paper ("**Market Structure and Extortion: Evidence from 50,000 Extortion Payments**," with Zach Brown, Eduardo Montero, and Carlos Schmidt-Padilla, *Review of Economic Studies*, 2024), we study how the main business of gangs—extortion—affects firms and consumers. Despite being a key revenue source for organized gangs worldwide, there is little work studying the market for extortion and how gangs compete for extortion. Previous work has relied

on self-reported data on whether individuals have paid extortion.

Using administrative data on individual extortion payments to gangs and sales from a leading wholesale distributor of consumer goods and pharmaceuticals in El Salvador, we document evidence on the determinants of extortion payments and the effects of extortion on firms and consumers. First, we find that extortion is higher when the value of products being delivered is higher, consistent with price discrimination. Second, we show how truce deals between gangs, which are equivalent to collusion, result in higher extortion prices that negatively impact consumers. We find that collusion increases extortion rates by 15% to 20%. Much of the increase is passed through to retailers and consumers; retailers experience an increase in delivery fees, leading to an increase in consumer prices. In particular, we find an increase in prices for pharmaceutical drugs and a corresponding increase in hospital visits for chronic illnesses. The results point to an unintended consequence of policies that reduce competition between criminal organizations. While many governments highlight the benefits of promoting truces among criminal organizations to reduce violence, we provide evidence of a trade-off between less violence and how these groups may become entrenched in the neighborhoods they control. This is mainly due to the fact that criminal organizations, as opposed to firms, compete by territory using violence.

In this line of research, I am exploring the long-term implications following the withdrawal of non-state actors to understand whether their impact remains even after they relinquish territorial control, as is common in many insurgent groups in developing countries. In a working paper (**"Rebel Governance and Development: The Persistence Effects of Guerrillas in El Salvador"**) co-authored with Antonella Bandiera, Lelys Dinarte, Juan Miguel Jimenez, and Sandra Rozo, we examine how territorial control during conflict can have long-term effects on development. While the previous literature has mainly focused on the role of violence in conflict to explain patterns in development, we focus on the territorial control by insurgent groups and their ways of governance. This mechanism is particularly important since, in many conflicts, one common strategy of non-state armed groups is to occupy and control territory to generate a support base by imposing their own way of governance and institutions.

While occupying and controlling territory are two key strategies of rebel groups, little is known about their implications for development and whether any effects persist once these groups relinquish control. In this paper, we find negative, persistent effects on development even though non-state actors no longer control the territory and state governance has been restored. These negative effects are mainly explained by a lack of trust and cooperation with state actors that still persists today. In particular, we find that reliance on non-state governance reinforced norms of distrust of external actors, producing an overdependence on subsistence farming and disengagement from postwar governments. The results do not revert despite an increase in postwar investment in social and infrastructure projects in these areas. Overall, we find that when self-governing institutions are developed as an alternative to the state, they may induce persistent changes in trust toward out-groups such as the state and elites, affecting economic outcomes.

1.3. Policy interventions to prevent recruitment and expansion of criminal organizations. As a follow-up to my research on non-state armed actors and human capital, I have worked with governments in Peru and El Salvador to analyze preventative alternatives to improve security and reduce child recruitment in areas with weak institutions and entrenched criminal organizations. One common approach to reducing violence is through policing and incarceration, which can inadvertently increase the strength of these groups behind bars, escalate violence toward civilians, and harm communities affected by gang activity. Moreover, those who are exposed to the criminal justice system at a young age can potentially face negative impacts in the long term by reinforcing a cycle of criminal activity. At the same time, these measures may fail in the context of developing countries with weak law enforcement and common norms of not reporting violence to authorities. Therefore, in my work, I study alternative policies focusing on prevention.

First, in the context of urban Peru, in the working paper titled **“Can Attitudinal Changes Towards Reporting Curb Violence? An Experimental School Intervention in Peru,”** with Italo Gutierrez, Hugo Nopo, and Oswaldo Molina. This paper analyzes the role of changing attitudes toward reporting violence and gang adherence through an experimental intervention at schools that uses restorative practices and involves 20,000 students. This intervention was done jointly with the Ministry of Education in Peru in 2015 and is part of my agenda to understand how to reduce violence in the early teenage years (11–14) and prevent criminal careers. The results show that changing beliefs and attitudes toward reporting violence at school and using less punitive tools at schools can be effective in reducing extreme forms of violence among adolescents, leading to a reduction in violent crime in schools and surroundings. Moreover, we find that both victims and perpetrators benefited from the intervention and that perpetrators are less likely to be involved in adult crime four years after the intervention. Overall, this paper shows how an intervention to increase the reporting of early violence in a school setting can reduce the incidence of crime by addressing violence within schools without stigmatizing perpetrators to criminal careers. In particular, we provide new evidence that using less punitive practices at school can potentially reduce the school-to-prison pipeline that is also present in developed countries.

Second, in the context of rural Peru in the Valle de los Ríos Apurímac, Ene y Mantaro (VRAEM), in work in progress, I am using a regression discontinuity design to study a program to increase the monetary incentives of children at risk of recruitment (those between 11 and 14 years old) to stay school in rural areas under the control of narco-traffic groups. We are now putting together the administrative data covering millions of citizens.

Third, in the context of El Salvador, where child recruitment is common, I have a working paper (**Breaking the Gang: A Preventive Approach to Reduce Recruitment in Schools**, with Felipe Coy, Eleno Castro, and Carlos Schmidt-Padilla) that study how increasing the cost of recruitment can affect the expansion of criminal organizations and their extortion business. In particular, we exploit the assignment of preventive police patrolling in schools at the time children enter and exit school, which are commonly hours when criminal organizations recruit children. This intervention was carried out by the Ministry of Security and the Ministry of Education in 2015, covering

300 schools. Using individual-level administrative data, we find that treated students experienced a large reduction in gang recruitment (measured by civil informants of El Salvador intelligence), juvenile detentions, and dropouts. Moreover, we find that increasing the cost of recruiting children affects gangs' extortion businesses in the long run, as they have fewer members to monitor the businesses they extort.

Gender violence and human capital

Another part of my research studies how to reduce gender violence and its consequences on the female labor market and physical mobility. Gender-based violence (GBV) is a widespread social problem that affects 30% of women each year worldwide (WHO, 2013). In the particular case of India, the focus of part of my research, GBV is a major epidemic, with over 79% of urban women reporting that they have experienced some form of harassment in public spaces (Madan and Nalla, 2016). However, little is known about how to reduce GBV and the consequences on women's and children's outcomes.

In my work in Peru ("**Gender Violence, Enforcement and Human Capital: Evidence from Women's Justice Centers in Peru**," with Iva Trako, *Journal of Development Economics*, 2024), using a quasi-experiment, we find that increasing the enforcement of violence against women reduces incidences of GBV and consequently improves children's outcomes. We exploit the impact of an innovative form of access to, and representation of, justice: women's justice centers (WJCs). WJCs are specialized state institutions designed to reduce GBV, bringing together police, legal, and medical services in a single office to integrate all steps of the complaint process. They have gained popularity in developing countries recently, yet little is known about their effectiveness.

We find that the opening of a center reduces the incidence of GBV by about 10%, as measured by domestic violence, female deaths due to aggression, and hospitalizations due to mental health. This decrease in women's exposure to violence has intergenerational effects: WJCs substantially increase human capital investments in children, raising enrollment, attendance, and test scores. The evidence suggests that these results are driven by an increase in enforcement for gender violence. After a WJC opens, reporting and prosecutions for gender-specific crimes increases.

While this type of policy may prevent domestic violence cases by increasing the reporting and enforcement against these crimes, it may not be as effective for GBV in public spaces such as street sexual harassment, which is socially tolerated and more frequent. Moreover, there is a high stigma towards reporting these types of crimes by women. Thus, in my work in India, where street sexual harassment is common, I partnered with Hyderabad City Police to understand the role of street police patrolling and social norms around these issues. In a working paper ("**Sexual Harassment and Policing in Public Spaces: Experimental Evidence from Urban India**," with Sofia Amaral, Girija Borker, Nathan Fiala, Nishith Prakash, and Anjani Kumar, *conditionally accepted at the Quarterly Journal of Economics*), we implement a randomized control trial at the hotspot level to evaluate the effects of one of the world's largest street patrol programs targeting sexual harassment on women's victimization and mobility in Hyderabad, India.

This paper has three innovative features. First, since sexual harassment is socially tolerated and frequent in the city, we managed to persuade the Hyderabad police to also randomize the visibility of police officers. This resulted in the creation of designated hotspots: some with no police presence and others served either by visible uniformed police officers or undercover officers. Introducing the visible arm allows us to disentangle if the effects are driven by deterrence or incapacitation effects. Additionally, it enables us to understand whether street harassment can be deterred by observing police targeting these cases in the street and thus changing social norms at these hotspots.

Second, we conduct a novel high-frequency observation exercise where we send enumerators to observe and take notes of all the sexual harassment cases at each hotspot (most previous work uses self-reported data that are subject to stigma, experimenter demand effects, and reporting concerns). Third, through a lab experiment, we can assess police officers attitudes toward these crimes and how they may affect the success of the intervention.

We find that a visible police presence reduces severe forms of sexual harassment (such as forcible touching and intimidation) by 27 percent and thus improves women's mobility. In particular, we find that women are less likely to take preventive measures, such as avoiding a particular street to evade sexual harassment. The effects are mostly driven by deterrence effects (citizens observing the police targeting the severe cases of harassment). To explain the null effects on mild forms of sexual harassment (e.g., catcalling, verbal threats), we exploit heterogeneity in police officers' attitudes toward sexual harassment and design a lab-in-the-field experiment to understand their behavior and biases. We find that police officers have a higher tolerance for mild forms of sexual harassment and are, therefore, less willing to cite perpetrators for it. In line with this result, we find a reduction in mild forms of sexual harassment at treated hotspots only when the assigned police officers have less tolerance surrounding sexual harassment cases and are thus more likely to punish them.

These results highlight that addressing sexual harassment in urban areas through policing is extremely challenging due to the nature of the crime and police officer bias. Thus, for any policing intervention to be effective, the first step should be to address the social norms that govern police officer behavior. Given these important findings, we started working in Bihar, India on an intervention aimed at changing police officers' social norms surrounding gender crimes, using a novel intervention that involved an expressive arts technique. With the same coauthors, we developed a novel curriculum that aims to de-bias male police officers on gender-based crimes. To ensure the curriculum was novel and effective, we collaborated with senior police officers, NGOs, lawyers, and experts on applied theater techniques. In particular, our training is one of the first to rigorously evaluate the use of applied theater and expressive arts tools to change the mindsets of state actors. The activities in the curriculum are designed using a repertoire of participatory theater tools including *Pedagogy for the Oppressed* (Freire, 1996), *Theatre of the Oppressed* (Boal, 2000), *Psychodrama* (Blatner and Blatner, 1988), and other immersive activities that are popularly used by NGOs and activist circles.

This intervention has received support from the Bihar government and has been implemented in 12 districts, making it one of the largest interventions involving police officers that we are aware of. In fact, the chief secretary of Bihar (the administrative head of the state) has directed the Bihar Police Academy, which is responsible for training officers, to implement this curriculum. In addition, we have received requests to implement this curriculum from Telangana Police and Madhya Pradesh Police.

Related to this area of research, I have a working paper ("**Reducing Gender-Based Violence in Schools in Mozambique,**" with Sofia Amaral, Aixa Garcia-Ramos, Selim Gulesci, Alejandra Ramos, and Sarita Ore-Quispe) that evaluates an intervention across 350 schools in Mozambique. In partnership with the Ministry of Education, we designed and evaluated an information campaign about gender violence, assessed through a randomized control trial at the school level. Importantly, the intervention was carried out by gender focal points (GFPs) within the school system, who are teachers responsible for addressing gender-related issues. One component of the intervention was to train and empower these gender focal points so that girls could rely on them in cases of violence. To shed light on the mechanisms, a second component consisted of providing information about gender-based violence, and we cross-randomize which gender received this student training component across schools. In particular, by training only girls or boys, we explore whether changes in the proactive behaviors of potential victims (girls) or changes in the behavior of bystanders and/or potential perpetrators (boys) contribute to reducing GBV and improving girls' education.

Our main finding is that improving the capacity of key school personnel to deal with GBV reduces the prevalence of sexual violence perpetrated by teachers and school staff. In particular, we find that a year after the intervention ended, girls in all treated schools were 75% less likely to report having experienced sexual violence by teachers/school staff in the last month. The fact that we observe a reduction in violence by school staff in all treatment arms, independent of student training, sheds light on the importance of training key actors to deter GBV at schools.

In terms of education, we only observed an improvement in girls' enrollment when girls also received the training, highlighting the role of girls' proactive behavior in reporting the perpetrator. These results are consistent with qualitative evidence suggesting that a reduction in gender violence translates into improvements in human capital by potentially punishing perpetrators through victim reporting. In line with this argument, we observe an increase in reporting of victims to GFPs when girls receive the training. We plan to scale up this intervention to the rest of the schools in the area.

In this same line of research, I have also secured funding for a project in Bangladesh (joint with Sofia Amaral, Girija Borker, and Nishith Prakash) to reduce violence while commuting in buses through an RCT that consists of changing the behavior of bus drivers (who are usually the perpetrators or the ones encouraging harassment) through i) an intense training on gender violence consequences and law enforcement, ii) providing monetary incentives to ensure women's safety, and iii) by changing the views of their religious leaders.

Other ongoing work

I have also been examining the impact of non-criminal deportations on firm behavior in El Salvador, the expansion of criminal organizations on sex trafficking and its implications for gender gaps in Chile and Peru, the effects of large refugee inflows on housing markets in Jordanian communities hosting refugees, the role of criminal organizations on democracy and voting behavior, the link between women insurgency and development, and the effects of migration of political opposition on inequality in Venezuela.

Service

Over the past six years, I have strived to ensure that my research is incorporated into both policy and practice. I have advised governments and international agencies on crime, development, and evaluation measures. For example, I have given several presentations on basic econometrics, especially impact evaluation methods and tools to address crime and violence in developing countries for policymakers at several entities in El Salvador (from the Ministry of Security, Ministry of Labor, National Police, the International Migration Office, to United Nations High Commissioner for Refugees), Peru (Ministry of Education and Ministry of Women and Vulnerable Populations), Chile (National Police and Center of Public Policy), India (Hyderabad City Police, Bihar Police), Mozambique (Ministry of Education), Bangladesh (Bangladesh Road Transport Authority). As a result of these dialogues and presentations, I have collaborated with these institutions to design and evaluate public policies in narcotraffic and gang-controlled areas as well as in areas where gender violence is rampant.

With research colleagues, I have also negotiated and signed collaboration and data agreements to use large administrative datasets to guide policy. I have also engaged in discussions and collaborations with international organizations such as USAID, UNICEF, the World Bank, the IMF, and the Inter-American Development Bank on how to address violence in developing countries. Thanks to these collaborations, I have raised over 1 million from international donors to work on my research and inform policy.

At the same time, I co-founded, with professors at the University of Chicago and IPA, a series of monthly webinars to bring novel research on violence and crime in Latin America and the Caribbean. The webinars brought together more than hundreds of policymakers and academics to discuss evidence that can guide policymaking. In addition, to increase the outreach of academic work on violence in developing countries, I have also volunteered and taught short courses for policymakers at several universities in Latin America.

Finally, I have engaged in the usual service activities for Princeton and the profession: reviewing internal and external grant applications, refereeing for over 20 journals, sitting on national or international committees related to my research expertise, participating in MPA admissions, advising junior, senior, and PhD students, and writing background book chapters on crime, de-

velopment and political economy.