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Rebel Primary Commodity Markets, Price Shocks, and Supplier Victimization

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Rebel organizations often benefit from the sale of primary commodities. However, producing these commodities may require labor from noncombatants. Rebels provide security and payment to civilian suppliers, but their ability to do so depends on consistent profits. How, then, do price shocks to labor-intensive primary commodities undermine rebel–supplier relationships? I hypothesize that negative commodity price shocks lead cash-strapped rebels to ensure suppliers' loyalty by substituting coercion for positive incentives. Conversely, states seek to limit rapid increases in rebels' profit while avoiding the reputational costs of civilian victimization. Thus, victimization of rebel suppliers from groups such as pro-government paramilitaries is hypothesized to increase after positive commodity price shocks. I test these hypotheses with a new dataset covering 1999–2007 that combines monthly US STRIDE (System to Retrieve Information from Drug Evidence) data on cocaine price with municipal-level data from the Colombian Centro Nacional de Memoria Histórica about the FARC (Fuerzas Armadas Revolucionarias de Colombia) and paramilitary groups' use of civilian victimization.

Las organizaciones rebeldes suelen beneficiarse de la venta de productos básicos. Sin embargo, la producción de estos productos puede requerir el trabajo de los no combatientes. Los rebeldes proporcionan seguridad y les pagan a los proveedores civiles, pero su capacidad para hacerlo depende de beneficios constantes. Entonces, ¿de qué manera los shocks de los precios de los productos básicos que requieren mucha mano de obra socavan las relaciones entre los rebeldes y sus proveedores? Mi hipótesis es que los shocks negativos de los precios de los productos básicos llevan a los rebeldes con problemas de liquidez a garantizar la lealtad de los proveedores. Para ello, sustituyen la coerción por incentivos positivos. En cambio, los Estados tratan de limitar el rápido aumento de los beneficios de los rebeldes y, al mismo tiempo, evitar los costos de reputación de la victimización de los civiles. Por lo tanto, la hipótesis es que la victimización de los proveedores rebeldes por parte de grupos como los paramilitares progubernamentales aumenta tras los shocks positivos de los precios de los productos básicos. Pongo a prueba estas hipótesis con un nuevo conjunto de datos que abarca el período entre 1999 y 2007, y que combina datos mensuales de STRIDE de Estados Unidos sobre el precio de la cocaína con datos a nivel municipal del Centro Nacional de Memoria Histórica de Colombia sobre el uso de la victimización de civiles por parte de las FARC y los grupos paramilitares.

Les organisations rebelles bénéficient souvent de la vente de produits primaires. Cependant, la production de ces produits primaires peut exiger de la main-d'œuvre des non-combattants. Les rebelles offrent une sécurité et une rémunération aux fournisseurs civils, mais leur capacité à le faire dépend de la constance de leurs profits. De ce fait, comment les chocs des prix des produits primaires exigeant beaucoup de main-d'œuvre sapent-ils les relations entre rebelles et fournisseurs? J'émets l'hypothèse que les chocs négatifs des prix des produits primaires conduisent les rebelles à court d'argent à s'assurer de la loyauté des fournisseurs en remplaçant la coercition par des incitations positives. À l'inverse, les États cherchent à limiter l'augmentation rapide des profits des rebelles tout en évitant les coûts de réputation liés à la victimation des civils. Ainsi, la victimation des fournisseurs rebelles par des groupes tels que les paramilitaires pro-gouvernementaux devrait donc hypothétiquement augmenter suite à des chocs positifs des prix des produits primaires. Je mets ces hypothèses à l'épreuve en m'appuyant sur un nouveau jeu de données qui couvre la période 1999–2007 et allie les données mensuelles du STRIDE (System to Retrieve Information from Drug Evidence, système de récupération d'informations à partir des preuves de drogues) des États-Unis sur le prix de la cocaïne à des données au niveau municipal du Centre national de la mémoire historique colombien qui concernent le recours à la victimation des civils par les FARC et des groupes paramilitaires.

Introduction

"Sendero [Luminoso] acts as an intermediary between the peasant growers and the drug traffickers, winning higher prices for the growers, taking a cut of the profits, and providing protection."

"The campesinos […] are prepared to give up coca cultivation in exchange for the means to make a secure and legitimate living. The traffickers and insurgents terrorize them daily, killing their leaders when discussions on alternative development progress too far."

—U.S. House of Representatives Hearing on Narcotics Control and Human Rights in Peru, 1991

How do unexpected changes in the price of primary commodities affect the rebel groups who sell them? In turn, how do shifts in price affect state tactics against these groups? As the above quote about the Peruvian insurgent group Sendero Luminoso suggests, the commodity's supply chain is central to answering these questions. When rebel groups establish markets for primary commodities, long-term labor is required to produce and sometimes refine, transport, and sell the commodities in question. For Sendero to reap long-term benefits of the coca trade, the group had to ensure that farmers continued to plant coca. If rebels' supply of lucrative resources dries up, the group may face a reduction in military capacity or even group failure.

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Yet, as indicated above, farmers continually re-evaluate their decision to grow coca versus abandoning the illegitimate crop for other economic opportunities. Because fluctuation in commodity prices changes the relative attractiveness of other economic choices, rebels and states should be cognizant of changes as they compete for these farmers' loyalty and productivity. A key policy suggestion in the fight against Sendero was to reduce the price of cocaine in the international market and thus at the "farm gate." These manipulations to coca price were designed to discourage coca farmers from accepting the risk of participating in this lucrative market (Kay 1999). While this strategy influenced suppliers' decisions in the long run, both Sendero and the Peruvian state mixed repressive tactics and positive economic incentives as they sought to influence coca-growing communities' choices (Kay 1999; Taylor 2017). The availability of positive incentives such as additional security or higher economic compensation is limited by violent actors' resources, which suggests Sendero likely used civilian victimization to coerce economic cooperation when profit was limited. Such tactics contributed to a decrease in Sendero's perceived legitimacy and eventual near-demise in the 1990s.

Sendero Luminoso's experience is far from unique. Militant groups as geographically and ideologically diverse as the FARC in Colombia, the Taliban in Afghanistan and Pakistan, and the Mong Tai army in Myanmar became heavily involved in the production and sale of primary commodities. Understanding how rebel groups, states, and rebels' competitors interact with labor in rebels' commodity supply chains is necessary to identify the conditions under which rebels thrive or fail.[1] I argue that exogenous commodity price shocks alter groups' relationships with their suppliers—which in turn changes how states or pro-state forces interact with these suppliers. My findings add important nuance to the study of resources in civil conflict by identifying how suppliers' changing loyalty may drive variation in rebels' profit and fighting capacity. By introducing suppliers as a central actor, I further engage with literature about rebels' social and economic contracts and literature explaining variation in civilian victimization.

Commodity Prices and Intrastate Conflict

It is well established in the intrastate conflict literature that certain rebel groups rely on primary commodities for funding (Arnson and Zartman 2005; Fearon 2005; Fjelde and Nilsson 2012; Wright 2016). Lucrative primary commodities can amplify rebels' capacity to recruit soldiers and supporters (Weinstein 2005; Staniland 2012) and increase their military might relative to the state (Humphreys 2005). However, access to primary commodities does not guarantee that a group will generate sustainable profit. Groups that establish control over the production, transportation, and sale of commodities rely on more steady income than those that intermittently loot. Just as for producers in the licit economy, maintaining profit requires an investment of time and resources. Consistent returns on this investment are not guaranteed—market changes can harm or help rebel producers just as they do producers in the licit economy. But unlike for conventional producers, shifts in commodity value are tied not only to rebels' profit, but also to their fighting success.

Existing literature about resources in civil war largely treats the value of rebel-controlled, conflict-driving commodities as constant, implying that once gained, rebels accrue profit until the relevant territory is lost.[2] Further, limited attention has been given to the steps necessary for rebels to sell goods or the additional actors with whom rebels, like businesses, must develop relationships to do so. It is necessary to consider not only how rebel groups convert lucrative natural resources into profit, but also how changes in the market value of these natural resources drive rebels and states' strategic choices.

Studies of primary commodities in civil war have historically employed static values of the commodities in question (Ross 2004; Lujala 2009, 2010; Thies 2010; Sorens 2011; Hinkkainen and Kreutz 2019). Variation in what is considered "lucrative" for rebels is tied to commodity type rather than within-commodity variation over time. For example, certain natural resources—like oil—require a significant initial investment in infrastructure, making them accessible only to more powerful rebel organizations. Once rebels have this access, however, it is assumed that they will continue profiting unless they lose the territory containing said resources. Additionally, the high value of these goods is assumed to monotonically impact rebels' strategy: gaining access leads to positive shifts in fighting capacity while losing access decreases rebels' ability to counter the state. These assumptions mask important variation in both endogenous factors such as rebels' relationships with business partners and exogenous factors such as the international market. Treating primary commodity value as static fails to capture resulting changes in rebel and state strategy that can increase conflict severity and duration.

A smaller body of literature discusses the connection between commodity price shocks and conflict or organized violence, with a focus on how states use primary commodity profit to decrease conflict or to motivate individuals to fight (Brückner and Ciccone 2010; Bazzi and Blattman 2014; Berman and Couttenier 2015). This work is largely centered on state strategy[3] and explores how shifts in prices drive civil war onset and escalation. Such work demonstrates the connection between macro-level economic change and microlevel motivation for conflict participation as a substitute for legal economic participation. Berman et al. (2017) find that conflict incidence increases in mineral-rich areas of Sub-Saharan Africa as a result of mineral price "supercycles." Their work demonstrates that conflicts may escalate due to increasing lootable mineral resources' value and raises questions about strategic interaction between rebels and the state or pro-state forces.

The above literature treats primary commodity wealth as zero-sum: rebels' profit mirrors their home state's loss of profit. This assumption is appropriate when the commodity is part of states' legal economies. Often, though, only nonstate actors can profit, as is the case with narcotics. In other cases, rebels' profit from illicit markets may differ substantially from states' profit in legal markets (Angrist and Kugler 2008; Mejia and Restrepo 2015; Gehring, Langlotz, and Kienberger 2020).[4] Under these circumstances, disaggregation by actor and commodity type is needed to address how shocks alter conflict behavior. Shifts in commodity price may change both states' and rebels' interactions

[1] I refer to violent nonstate actors that counter the government as "rebels" and violent nonstate actors that support the status quo or states' goals as "paramilitaries."

[2] Mejia and Restrepo (2015), Sanchez de la Sierra (2020), and Gehring, Langlotz, and Kienberger (2020) are important exceptions, discussed further below.

[3] Berman and Couttenier (2015) uses both state and substate, geolocated levels of analysis.

[4] States may also indirectly profit from the sale of illegal goods. However, price shocks to these goods will have a greater impact on rebel groups for whom the commodity is central to their funding.

with laborers who produce these commodities. Additional literature suggests that price shocks to goods such as maize can alter patterns of drug crop growth in Mexico and, subsequently, changes in cartel competition and victimization (Dube, Garcia-Ponce, and Thom 2016). Further, negative shocks to coffee prices raised municipal levels of violence in Colombia by decreasing the opportunity costs of participating in a rebellion, while positive shocks to oil encouraged looting and extortion from armed groups. Thus changes to legal and illegal economies should differently affect rebels' relationship with civilians.

Further, the literature lacks a thorough analysis of price shocks to commodities already under rebels' control. Commodities such as opium poppy or coca leaf can influence conflict dynamics through both the opportunity cost mechanism and the rapacity mechanism (Dal Bó and Dal Bó 2011; Dube and Vargas 2013). These resources, like other agricultural products, require the labor of farmers who might choose different employment if their earnings or community dynamics change. Previous work explains resource-based changes in violence during conflict as either unorganized future rebels expressing temporary economic dissatisfaction (opportunity) or rebels acting as "roving bandits" (rapacity) (Olson 1993) and taking limited advantage of commodity booms. Yet, a third possibility is common during civil conflict: rebel groups act as largely stationary, long-term economic actors who—like firms or states—must make choices to maintain the commodity markets they develop in order to ensure group survival. Sanchez de la Sierra (2020) discusses this possibility by exploring the origins of "stationary banditry" and rebel taxation in the DRC, finding that rebels create statelike institutions when they can expect future profit from commodity sales. This finding prompts the importance of exploring variation in civilian/rebel interactions in areas of stationary banditry. Previous research largely classifies civilians as latent rebels or inadvertent victims, rather than considering how changes in commodity value increase or decrease their bargaining power relative to rebels or other competing actors in rebel territory. When civilians partner with rebel groups to build primary commodity markets for mutual profit, changes in price will affect these partnerships for both actors.

When rebels become stationary rather than roving bandits, this changes their relationship with the civilians in the territory they now occupy. A growing literature discusses variation in rebel tactics toward civilians ranging from governance and provision of services (Mampilly 2011; Arjona 2016; Stewart 2018; Sanchez de la Sierra 2020) to repression and victimization (Kalyvas 2006; Wood 2010, 2014). This literature demonstrates that wartime institutions and social contracts between rebels and civilians are common when rebels control territory. Violence against civilians is a strategic but costly tool (Mason 1996; Kalyvas 2006; Viterna 2006) to be used under limited circumstances such as increased contestation in rebel-occupied areas. Such violence is generally used selectively against key civilians or for limited windows of time. Variation in rebel governance and coercion suggests that rebels' relationship with civilians should differ depending on territorial value, competition, community characteristics, and rebels' budget constraints.

Civilians act as more than recipients of carrots or sticks: there is variation in their bargaining power vis à vis armed groups depending on the value of their community to warring groups, their ability to organize, and their exit options for employment or security (Kaplan 2013; Arjona 2016). Yet, little is known about rebel–civilian interaction when rebels have formed both economic and social contracts. Rebels need to maintain the supply of lucrative primary commodities, and doing so requires keeping labor in the territories they occupy sufficiently motivated to continue these goods' production. This implies that in general, suppliers should require some amount of protection and compensation from rebels. When rebel groups are unable to fulfill their portion of this social and economic contract by maintaining positive incentives (such as wages and security), suppliers may abandon rebels' industries—particularly where suppliers are pressured by rebel competitors such as the state or other armed groups. Rebels then resort to temporary, spatially limited coercion of key suppliers due to budget constraints, as losing the long-term economic support of these laborers can be fatal to the group. Phrased differently, rebels may employ selective violence—lethal or nonlethal—against suppliers during temporal windows in which more costly tactics to prompt continued cooperation become too expensive. Such violent coercion can be expected to occur in contested territory where states and other armed groups have the ability to undermine rebels' relationship with suppliers (Arjona 2016), making it more costly for rebels to fulfill social and economic contracts. Rapid increases and decreases in rebels' profit can both affect the group's suppliers differently from other civilians in conflict.

These considerations lead to two important questions: how do rapid, unexpected changes in commodity price change rebels' strategy toward suppliers as they seek to ensure future profit? How, in turn, do commodity price shocks change how states or competitors seek to undermine rebel–supplier relationships?

Drug Price Shocks, Bargaining, and Civilian Victimization

To maintain profit from labor-intensive primary commodities such as agricultural products, rebel groups must convince farmers to maintain production of a satisfactory amount of the good in question. Agricultural commodities are not the only labor-intensive resource rebels might control (certain mined commodities, for example, require significant labor (Rigterink 2020)). However, I limit my discussion to rebels' relationships with agricultural laborers to simplify assumptions about bargaining between laborers, rebels, and the state. For example, the Afghan Taliban formed agreements with local poppy growers to ensure production and distribution of poppy for refinement and sale (Peters 2010; Azam 2016) within territories under the group's control. Profit from this trade enabled the group to maintain and expand territorial presence and maintain their agreements with farmers by providing security, services, and governance.

In the case of drug production, suppliers require both payment to farm and increased protection from state or rebel competitors' retribution due to the risk they incur by participating in the illegal economy. Although rebel groups provide a variety of incentives to ensure farmers' participation, coercive tactics can harm rebels' international and local reputation and ability to recruit, and may spark state retribution. Rebels should be expected to use such tactics strategically and sparingly (Kalyvas 2006; Wood 2010, 2014; De la Calle 2017). This implies that when possible—and particularly for communities that provide them with crucial long-term economic support—rebels will on average prefer to positively encourage supplier participation than to risk the reputational costs of prolonged or indiscriminate coercion. Of course, farmers may further weigh ideological

and social ties to rebels when making decisions about economic support (Lichbach 1994; Peterson 2001; Gates 2002). However, suppliers need not support rebels' political goals and often do not (Rodado 2006; Peters 2010). Particularly in contested territories where rebels may be unable to establish such social ties (Arjona 2016), maintaining economic incentives and providing security is of crucial importance to rebels' supply chain.

Steady profit is necessary for rebels to uphold deals with their suppliers. This allows rebels to provide agricultural partners with economic incentives such as wages and to maintain the military might needed to secure, monitor, and defend the arable territory from armed competitors or the state. Unexpected increases in profit, when appropriately budgeted, allow rebels to shore up defenses against the state and to engage in territorial as well as market expansion. But when exogenous drops in price decrease rebels' anticipated profit, they must adjust how they incentivize farmers to ensure production continues. A rapid downturn in the market price of drugs that rebels produce and sell decreases the amount the group can spend. This unexpected gap between anticipated profit and actual profit means that rebels must find other ways to ensure production continues, or risk longer-term economic and military consequences by failing to maintain the commodity markets they have created. Even when rebels face tightened budget constraints due to negative price shocks that decrease their overall capacity, they must reallocate effort toward ensuring farmers' loyalty.

Drug crop production can be a reliable (and, at times, lucrative) farming choice for communities when prices are high (Dube, Garcia-Ponce, and Thom 2016). Negative price shocks, however, can incentivize growers to abandon illicit farming—particularly in contested territory where rebels' security cannot be guaranteed and the risks of producing illegal commodities are amplified. When the value of drug crops decreases, making other options relatively more attractive, rebel groups seek to prevent farmers from abandoning drug crop farming. Rebels, like firms, face budget constraints and must make decisions about how best to spend their income. For example, rebels pay soldiers and procure weapons to secure territory against other armed actors' incursions. This budget line remains relatively consistent and vital to group survival. Temporary, unexpected downturns in illicit commodity value limit rebels' spending capacity. If group security is a top priority, unexpected income limitations can reduce secondary budget items such as rebels' capacity to sufficiently pay suppliers or pay on time. This shortage may lead rebels to break the social and economic contracts they have with the civilians they employ. In at-risk, contested territories where supplier contracts are already tenuous and more costly to uphold (Arjona 2016), rebels may struggle to maintain positive incentives. They must seek alternative short-term solutions to prevent farmers from engaging in other economic endeavors. Under these conditions, rebels can be expected to substitute economic incentives such as payment with increases in victimization in the communities that produce the commodities rebels sell. This logic prompts the paper's first expectation.

Expectation 1: Negative Commodity Price Shocks Increase Rebel Victimization of Rebels' Commodity Suppliers.

In contrast, positive drug price shocks provide additional funding for rebels to expand their territorial presence or military efforts against the state. Short-term profit boosts can lead to long-term shifts in power in rebels' favor (Fearon 1995; Powell 2006) when rebels apply temporary windfalls to territorial expansion or increasing their future economic production. Rebels will maintain or increase the amount of drug crops harvested and sold during positive price shocks to ensure they reap additional economic benefits. Unexpected increases in income may allow rebels to fund territorial and economic expansion by forming contracts with new suppliers. Thus, positive price shocks can multiply rebels' economic power when increased investment amplifies their future profit.

States and competitors, meanwhile, will want to prevent rebels from investing in their future growth, particularly when jumps in commodity price sharply and unexpectedly increase rebels' payout. States will be eager to cut off rebels' access to increasingly lucrative commodity markets by undermining rebels' relationships with suppliers. This may mean decreasing the appeal of economically partnering with rebels or increasing the economic benefit of other activities. More capable states may choose the latter strategy, providing public goods, loans, or other positive incentives to key areas over the course of the conflict, thus making cooperation with rebels in the illegal economy less appealing in comparison (Dube and Vargas 2013; Weintraub 2016). However, these positive incentives require access to civilians in contested territory, which may not always be possible due to threats from rebels. Further, implementing these incentives takes time, infrastructure, and budgeting, making this strategy unlikely to sufficiently counterbalance rapid increases in rebel group funding.[5] Further, states cannot directly compete with rebels over economic access to producers of illicit commodities, as they are limited to legal substitutions. Lacking positive incentives to influence suppliers' decisions, states may increase the costliness of rebel contracts by victimizing supplier communities to deter them from continued cooperation (Mejia and Restrepo 2015). Increased state—or state-sponsored—victimization of farming communities that supply rebels with lucrative drug crops is therefore likely following positive price shocks to the drug in question.

Although employing violence against civilians is costly for both rebel groups and states, states face different consequences for pursuing this strategy. Governments are constrained by constituents' expectations and the international community's standards (Gartner and Regan 1996; Ritter 2014). Given these constraints, states must weigh the prospect of facing wealthier, more powerful rebel groups in the future against the consequences of committing atrocities against civilians. However, states often avoid accountability for violence against civilians by allocating this task to local forces affiliated with the state but not fully under state control. To this end, states often employ pro-government militias or paramilitary groups to commit such violence as a means of disincentivizing suppliers' cooperation with rebels.

Paramilitary activity remains understudied in the literature, although recent work provides an important discussion about how paramilitaries can affect conflict processes—with a particular emphasis on repression and violence against civilians (Mitchell, Carey, and Butler 2014; Colaresi et al. 2015; Jentzch, Kalyvas, and Schubiger 2015). Because paramilitaries operate in areas where rebel groups exercise some control over the territory, these groups often possess useful knowledge about civilians' loyalties (Saab and Taylor 2009; Eck 2015; Staniland 2015). When states are

[5] For example, in Colombia, the government provided agricultural loans and conditional cash transfer programs to encourage coca farmers to abandon coca growth in favor of legal crops. While access to such programs increases the relative appeal of legal farming in the long run, these efforts take time to implement (Parkinson 2013; Dennis 2017), making them a poor rebuttal to rebels' economic expansion into territory as a result of positive price shocks.

anxious to quickly counteract increases in rebels' profit by limiting their access to drug crops, paramilitaries are a valuable tool to dissuade farmers from cooperation with rebels due to their ability to engage in selective victimization (Arjona 2016). During positive price shocks, rebels' wealth may increase more rapidly than standard military or economic efforts can combat. Governments may then encourage or allow paramilitary violence against farming communities to prevent rebels' territorial expansion or consolidation. In such situations, the government is particularly anxious to not only prevent rebels' current economic gains, but also deter additional lucrative relationships with new suppliers. When compared to deployment of conventional military forces, paramilitary violence can be a low-cost option for governments to quickly limit rebels' advances and avoid accountability for coercive behavior (Stanton 2015).

Expectation 2: Positive commodity Price Shocks Increase State or State-Sponsored Victimization of Rebels' Commodity Suppliers.

Price shocks in commodities over which states and rebels cannot compete—such as drug crops—present an important opportunity to consider exogenous changes to rebels' sources of funding and power. Because many rebel groups' income and capacity are tied to commodity markets, changes in price affect rebels through an important and yet-unconsidered third actor: the suppliers of the goods rebels sell. When the price of narcotics falls rapidly, farmers in areas of incomplete rebel territorial control may choose to plant other crops or seek employment that will provide higher or steadier income. The additional security risk of growing illegal crops versus legal ones heightens this cost–benefit analysis, which becomes particularly acute as rebels' budgets are constrained by unexpected income cuts. Rebels, however, need to maintain the production of drug crops and will engage in civilian victimization in the short term to coerce farmers' loyalty when positive incentives are prohibitively expensive. Alternatively, when the price of narcotics increases rapidly, states will strive to prevent rebels from accessing these gains by limiting rebels' access to their supply. States cannot compete with rebels for illegal profits and policy changes to increase the relative attractiveness of the legal economy take time and extensive economic investment.

The presence of paramilitaries in contested rebel territories presents an opportunity for states to deter farmers from partnering with rebels while avoiding the repercussions of engaging in human rights violations. Volatility in drug price, then, negatively impacts noncombatant crop suppliers—but disaggregation by actor and type of shock is necessary to understand the strategic component of increased victimization. Where paramilitaries and rebels both seek to influence suppliers' loyalties, these suppliers can expect increased victimization resulting from either positive or negative price shocks. This increase in victimization should extend only to communities on whom the rebels are economically dependent. The Colombian case presents an opportunity to test this relationship between price shocks and victimization of rebels' commodity suppliers by different conflict actors.

Coca Price Shocks and the Colombian Conflict

The Colombian civil war, which concluded with a peace agreement between the primary conflict actors in 2016, is a case in which the presence of drug crops provided economic expansion for rebel groups at the expense of the state. The FARC, or Fuerzas Armadas Revolucionarias de Colombia, was the primary rebel threat over the course of a conflict beginning in 1964. The group funded its military operations through involvement in the production and trafficking of coca crops or refined cocaine. In addition to using conventional military efforts against the leftist group, the Colombian state encouraged the formation and involvement of paramilitaries to combat the FARC's territorial influence (Gutierrez Sanin 2004, 2008; Holmes 2008; Acemoglu, Robinson, and Santos 2013).

The FARC's military expansion mirrored its expansion into the coca trade. The group established relationships with traffickers as well as farmers or *cocaleros* (Jansson 2006; McDermott 2015; Rettberg and Ortiz-Riomalo 2016; Dennis 2017). As the FARC vertically integrated itself into the coca trade, the group increased its access to the coca market and was able to ensure farmers of longer-term access to coca wages as well as security from manual eradication or violence from rebel competitors (Jansson 2006; Mejia and Rico 2010). However, a report from the Universidad de los Andes suggests that farmers were aware that the FARC's ability to pay depended on group strength and territorial presence, which at times led to changes in farmers' planting choices or decisions about to whom they would sell coca crops (Ripoll, Berrio, and Rubiano 2013). While the FARC usually offered the best prices to producers, changes in the amount the FARC earned from the international sale of cocaine further down the supply chain affected how well the group maintained farmers' loyalty without coercive tactics.

In purely economic terms, growing and selling coca leaf is more lucrative than planting other crops or pursuing other local employment opportunities. However, cocaleros also accrue a significant risk of violent retribution from the state and market competitors when they plant an illegal crop (Diaz and Sanchez 2004). Further, many individuals may not wish to participate in the illegal economy when legal opportunities remain viable. In an interview with Colombian newspaper *El Tiempo* in 2006, a coca harvester noted: "We replaced food crops with coca because [the guerillas] forced us … if they had given me another option I would have taken it" (author's translation) (Rodado 2006). And in areas with other economic options such as gold mining, cocaleros' commitment to farming was dependent on the relative price of coca and gold, leading to a reduced supply of coca when gold became more lucrative (McDermott 2015). While farmers and the FARC often engaged in mutually beneficial economic relationships (Diaz and Sanchez 2004), growing coca for the FARC was not always the most attractive option for communities or individuals (Ibanez and Klasen 2017; Dávalos and Dávalos 2019).[6]

Given that possible cocaleros' cost–benefit analyses included wages, security, community loyalty, and other factors, the FARC employed a spectrum of incentives to engage and maintain their economic assistance. This spectrum ranged from positive incentives such as regular wages and consistent security to negative coercion such as violence

[6] Using survey data, Dávalos and Dávalos (2019) and Ibanez and Klasen (2017) demonstrate household-level variation in farmers' willingness to grow or maintain coca, as well as coca cultivation's sensitivity to price changes. As Ibanez and Klasen state, " … observed decreases in coca areas are partly due to changes in the profitability of coca" (Ibanez and Klasen 2017, 1656). However, neither set of authors include the role of armed groups or violence against cocaleros in their analysis, which I argue is an important component of farmers' decision-making that may drive continued planting in certain areas. In general, coca can be an extremely economically attractive option for farmers, making long-term substitution efforts such as those referenced on page 4 difficult and costly to implement. But coca farming is neither universally nor strictly preferred, and fluctuations in price or available security can and do alter farmers' immediate choices.

(lethal and nonlethal).[7] Unigarro Caguasango's (2020) ethnographic work in the coca growing, Amazonian department of Guaviare includes campesinos' first-hand accounts of FARC violence against individuals who flouted the guerillas' economic rules. The group employed violence against growers both "symbolically" to establish norms around coca cultivation and in response to territorial threats from other actors in the region (Unigarro Caguasango 2020, 189). However, the guerillas also established local governance and provided wages. Thus, the incentives the FARC provided varied based on budget constraints and competition from other violent actors.

Paramilitary groups were also present in the Colombian case, complicating the relationship between the FARC and its suppliers. These groups were formed by wealthy landowners to protect their property from appropriation by guerilla groups—often for the reallocation of land into smaller plots for coca farmers (Holmes 2008; Zukerman Daly 2016). The degree of cohesion among the paramilitary groups differed by time period and location, with an umbrella organization known as the AUC or Autodefensas Unidas de Colombia at the forefront in the 1990s and early 2000s. The AUC, as well as smaller, independent militias were often supported by the state due to the common goal of eradicating the FARC and other leftist groups (Acemoglu, Robinson, and Santos 2013; Estancona et al. 2019). The paramilitary groups also forged links with drug cartels to protect shipping routes (Diaz and Sanchez 2004; Jansson 2006), further positioning themselves in military and economic opposition to the FARC.

The paramilitary groups' involvement in the coca trade was more indirect than the FARC's, as they were paid to protect cartels' interests and their investments but they did not seek to control the supply chain in the same way as the rebels (Diaz and Sanchez 2004; CNMH 2012). Disincentivizing farmers from growing coca for the FARC as the FARC moved into new territory allowed the paramilitary groups to maintain state support and/or to earn additional profit by redirecting the FARC's coca wealth to their employers (Unigarro Caguasango 2020). In contested territory where multiple actors fought over the supply of coca, farmers often faced choices about who would best protect their economic and security interests. Due to fluctuations in profit driven by market dynamics, the FARC may have been unable to maintain adequate protection for cocaleros under their umbrella or to pay competitive wages. The paramilitaries may have amplified coercive tactics to deter new farmer–FARC relationships when the FARC's economic and military power rapidly increased. The logic of selective violence suggests that when facing temporally limited budget constraints both groups substituted violent coercion to ensure or prevent the FARC's future access to suppliers and profit.

Both the FARC and the paramilitary groups focused efforts on influencing farmers in contested territory where farmers' cost–benefit analysis of growing coca for the FARC is most frequently re-evaluated. Paramilitaries and the FARC increased their use of massacres against farming communities in particular when competitors threatened their hold on territory (CNMH 2012). This suggests that changes in victimization resulting from price shocks should not be uniform across territorial units. Even if overall FARC capacity and attacks decrease as a result of sudden income limitations, the group can be expected to increase coercion of specific key suppliers to maintain their investments. Conversely, unexpected increases in profit allow the FARC to expand their presence in nonessential territories, which may bring access to new farming communities and expand their control over the coca market. Paramilitary groups face similar budget constraints and must make strategic decisions about where to allocate effort. Positive price shocks allow the FARC to expand into new territory or can make the group a newly attractive employer for farmers in paramilitary-held coca-growing territory.[8] The paramilitaries must then redirect efforts to these areas, limiting their capacity to engage in attacks elsewhere. In short, increases in civilian victimization from either group resulting from cocaine price shocks should be contained to contested, coca-growing municipalities where suppliers' loyalty is both most malleable and most critical for future FARC success.

The Colombian case is an appropriate choice to test how price shocks to an illicit primary commodity might harm an armed group's relationship with their suppliers. Further, due to the presence of state-supported paramilitaries, I am able to assess competing actors' responses to exogenous changes in the rebel–supplier bargaining dynamic. In doing so, I add to previous work on the Colombian case that has examined how shocks to the price of legal, substitute crops (Angrist and Kugler 2008; Dube and Vargas 2013; Wright 2016) such as coffee and oil increase violence and affect local labor markets. I also supplement work that considers cocaine price shocks, but does not consider the strategic interaction between farmers, the FARC, and paramilitary groups (Mejia and Rico 2010; Mejia and Restrepo 2015). To break down the relationship between shocks to cocaine price and victimization of supplier communities, I propose the following hypotheses:

Hypothesis 1: *The FARC's civilian victimization will increase in contested, coca-growing municipalities following negative shocks to cocaine price.*

Hypothesis 2: *Paramilitary groups' civilian victimization will increase in contested, coca-growing municipalities following positive shocks to cocaine price.*

Data and Testing

US Coca Price, FARC, and Paramilitary Civilian Victimization

To test these hypotheses, I bring together three datasets that allow me to track changes in coca price, changes in victimization from the FARC and paramilitary groups, and other municipality-level characteristics. For my primary explanatory variable, I take monthly data about US domestic prices of cocaine. These data were requested from the US Drug Enforcement Administration's STRIDE (System to Retrieve Information from Drug Evidence) database (The Price and Purity of Illicit Drugs: 1981–2007 2008) under Freedom of Information Act (FoIA) guidelines. I then include municipal-level data covering the FARC and paramilitary groups' use of violence against civilians from the "¡Basta ya!" report prepared by the Colombian Centro Nacional de Memoria Histórica (Basta Ya! Memorias de Guerra y Dignidad 2012) and aggregate this event data to monthly

[7] As Carroll (2011) notes, guerillas may pursue coercive actions short of lethal violence toward farmers in an effort to ensure loyalty without fully alienating communities or losing access to crops.

[8] Due to the paramilitary groups' connections to the drug trade, it might be expected that negative price shocks to coca would also affect paramilitary behavior. In the online appendix, I control for this possibility, finding that paramilitary groups do not increase victimization after negative shocks. Plausible explanations for this include their separation from direct market dynamics or their ongoing support from the state.

counts. Finally, I use additional municipal-level measures from Universidad de los Andes' Centro de Estudios sobre el Desarrollo Económico (CEDE 2015) ("Facultad de Economia: Centro de Datos" 2015), after ensuring that municipality names match across the two Colombian datasets.

The STRIDE data record monthly gram amounts, purity, and street-level prices for cocaine seizures in the United States for the years 1981–2017. Prices are reported for several distribution levels (corresponding to the amount of cocaine purchased). Despite that these data reflect the price of drug seizures and undercover purchases and thus can be considered a convenience sample, they are an appropriate measurement of this particular commodity price for several reasons. First, these data have the unique benefit of allowing me to track changes in cocaine's market value on a monthly basis. This better captures the volatile nature of illegal commodity prices than other data sources that measure cocaine's yearly price in global or regional markets (Mejia and Posada 2008; Mejia and Restrepo 2015). Further, as the United States is the primary market for Colombian coca products, changes in US price are most likely to affect the decisions of Colombian producers such as the FARC (ONDCP 2016), rather than capturing prices in a smaller market from which producers could easily exit. [9] Second, although these data reflect information about individual drug enforcement administration seizures, I am able to use these fine-grained data to create an average monthly price per gram in the overall US market. I use only monthly information based on more than 150 observations and take the median of these prices to ensure that unusual seizures do not inappropriately weigh the average. Finally, these data are an appropriate choice given that I am interested in *changes* in price rather than *absolute* price—and prices at the street level provide a sensitive measure of quick changes.

Defining a "shock" presents a significant challenge. There is little agreement over how to define a commodity price shock in the literature—understandably, as the degree and nature of changes substantial enough to affect different markets vary widely. Further, employing methods such as disaggregating price shocks into demand and supply shocks or using global supply and share of GDP (Cashin, Liang, and McDermott 2000; Kilian 2009; Kinda, Mlachila, and Ouedraogo 2016) is not possible for cocaine, given its illegal nature and the difficulties in collecting data. To assess shifts in the amount street-level sellers ask—which leads to downstream changes in armed groups' such as the FARC's profits—I find the change in the average price from month to month. To determine whether or not this change constitutes a "shock," I compare this monthly difference in price to the moving standard deviation, which allows me to account for the influence of long-term growth or decay. I code that a "shock" has occurred when the change in price observed is greater than two times the standard deviation in price that can be expected in a yearly window.[10] This technique allows me to construct a dummy variable for months in which the absolute difference between the current price and the previous price can be considered unusual rather than a typical fluctuation for which long-term budgeting is more likely. I then code if these shocks are positive or negative depending on the direction of the change.

Given the spatial and temporal distance between the FARC and the United States' market, the impact of shocks in price should not be observed in the month in which the shock occurs and may be observed for longer than a month.[11] Given the lack of information about rebel budgeting or the timing of changes in illicit commodity markets, I refrain from making strong assumptions about the time necessary for shocks to alter rebels' behavior. Rather, my primary independent variable is whether or not a negative (positive) price shock has occurred in the last three months. Shocks, as might be expected, are rare: negative shocks have occurred in the last three months for about 9 percent of monthly observations, while for positive shocks this figure is 18 percent.

The STRIDE data provide information about changes in the profit the FARC can expect to receive, on average, from the coca they produce that is sold in US markets. These shifts affect the group's overall budget and fighting capacity but particularly harm the group's ability to maintain relationships with farmers, who are also affected by market changes. In areas where the group does not have full territorial control, the FARC's ability to maintain deals with their coca suppliers is likely to be compromised by a lack of steady income resulting from negative shocks to cocaine price. I hypothesize that the group's tactics will change to maintain their economic involvement in coca-growing areas. Further, when the FARC can expect increases in coca profits due to positive shocks, I anticipate that paramilitary or militia groups that are active in the same municipality will ramp up victimization of producers in the hopes of dissuading them from growing coca for the FARC.

The dependent variable(s) must capture changes in these two actors' tactics: specifically, when either the FARC or paramilitary groups increase civilian victimization in municipalities in which both groups are present. The Colombian Centro Nacional de Memoria Histórica collected event data for armed group and government actions during the conflict for the years 1981–2012 and is unique in its level of disaggregation by time, location, and actor.[12] Further, the Center is a widely used and cited source of microlevel information about the victims of the conflict (Moya and Carter 2018; Kreutz and Nussio 2019; Jo, Simmons, and Radtke 2020). I rearrange these data to reflect monthly counts of certain actions to match the time unit for changes in US coca price. I separately tally the FARC and all paramilitary groups' (coded as either "Paramilitary Groups" or "Militias" in the data) use of the following tactics: civilian massacres, targeted assassinations,[13] and attacks on the population.[14] In the online appendix, I also include models focusing only on selective assassinations/targeted killings, as targeted attacks against cocaleros are most likely reflected in this tally. The results hold.

The FARC also made use of kidnappings both as a means of coercion and as a substantial form of income (Richani 2013). While the centro nacional de memoria histórica

[9] Below, I discuss concerns about whether changes in the amount of Colombian coca produced due to eradication or other policies are driving shifts in this price.

[10] Coca can be grown year-round in Colombia, mitigating the need for further seasonal controls related to price and supply.

[11] Another way of conceptualizing this is that shocks may hit different parts of the coca supply chain at different times, and how quickly shocks' consequences reach growers and rebels remains unclear.

[12] The CNMH data suffer from common issues plaguing datasets on wartime atrocities. In the online appendix, I detail my efforts to minimize the impact of these issues and consider other data possibilities such as yearly data from centro de recursos para el análisis de conflictos (Restrepo, Spagat and Vargas 2006).

[13] The "¡Basta ya!" data include information about any targeted civilian killings as an assassination.

[14] This broader category of victimization may take the form of terrorism, coercive destruction of civilian property, or civilian victimization during military incursions. The inclusion of these tactics is designed to comprehensively reflect the expectation that these groups increase selective victimization—including victimization short of lethal violence—against coca-growing communities when competition over supply increases or when the FARC expands into new territories.

(CNMH) data do contain information about kidnappings, the FARC pursued this tactic for political clout and economic gain, focusing on wealthier landowners rather than cocaleros in rural communities. As such, I do not include kidnappings in the main measure of civilian victimization as the tactic is unlikely to be representative of farmer coercion. However, in the online appendix, I include the monthly sum of FARC-driven kidnappings as a control for the FARC's ability to supplement decreases in coca income with other profit-generating activities. The results do not change.

This combination of event types captures either actor's use of violent coercive action against civilians in a specific municipality. The FARC's use of coercion against coca farmers should increase when the group's suppliers seek alternatives. When the group's economic strength wavers and it loses the ability to positively incentivize coca farmers by maintaining wages and security, it must resort to coercive action in certain locations. The FARC can be expected to reallocate manpower and effort toward coercive action in coca-growing municipalities, decreasing coercive presence in non-coca areas due to budget constraints. Paramilitary group victimization of cocaleros, in contrast, is expected to increase when local militia groups seek to disincentivize cocaleros' collaboration with the FARC—specifically when the FARC can expect increases in profit following positive price shocks.

Both groups' responses to cocaine price shocks depend on additional territorial characteristics: the FARC's degree of territorial control and whether coca is produced in the municipality. A scope condition of the argument is that the FARC's increases in violent coercion resulting from budget constraints and paramilitaries' responses to FARC expansion should occur in contested areas of incomplete or tentative control—in short, areas where both groups are present. Municipalities with no armed group presence should remain unaffected. Those under FARC control should not see similar increases in coercive violence as the group is better able to limit coca farmers' access to alternatives. To assess changes in the FARC and the militias' use of violence against cocaleros following price shocks in contested territory, I first limit my analysis to municipalities in which both groups' presence is recorded.[15] This information comes from CEDE ("Facultad de Economia: Centro de Datos" 2015) and is collected at the yearly level, meaning that not all municipalities/months in my sample have experienced victimization, but that armed actors have been consistently present and competing for territorial and economic control. This sample selection is in keeping with work about rebels' social contracts (Arjona 2016) and strategic violence in contested areas. As the focus is to explain variation in coercion in contested territory, this limitation is appropriate for theoretical reasons and streamlines model interpretability.[16] My sample covers 13,416 observations of 421 municipalities over the years 1999–2007.[17]

To distinguish the impact of price shocks in coca-growing territory, I incorporate information from CEDE ("Facultad de Economia: Centro de Datos" 2015) about coca growth in each municipality. The CEDE data are reported yearly. As a measure of whether or not the municipality is a coca producer, I create a dummy variable for whether coca crops are observed in the municipality in a given year. By interacting this coca dummy with the shock variable(s), I can assess changes in victimization specifically to coca farming municipalities.[18] Substantively, increased victimization in only these coca-growing municipalities following negative price shocks is evidence for the argument that the FARC reallocates effort to preserve key suppliers' support even as their overall budget is unexpectedly limited. Conversely, if positive price shocks prompt increases in paramilitary victimization only in coca-growing municipalities, this indicates targeted coercion of supplier communities relative to other, non-coca-growing civilians.

The availability of legal options also affects farmers' willingness to grow coca rather than engage in economic alternatives. To capture the extent to which legal economic opportunities are present, I include the natural log of each municipality's GDP per capita. This measure is nearly time invariant in the CEDE data. To maintain the monthly structure in the data and have an assessment of economic opportunity in a municipality, I create a fully time-invariant measure by taking the average GDPPC per municipality over the time frame observed. Next, to account for the FARC's influence on paramilitary actions and vice versa, I include the previous month's count of the opposing actor's victimization events. Because both paramilitary groups and the FARC may change their victimization strategies based on the Colombian army's presence, I also include the previous month's count of army acts of civilian victimization from the "¡Basta ya!" data. The state's local capacity, level of governance, and economic reach might further influence the level of violence against civilians, so I include the municipality's distance from a primary market. Finally, I include population as an exposure term, because a larger number of people in an area may decrease the ratio affected by armed group violence.

A plausible concern for this design is that for the time frame of the analysis, Colombian cocaine constituted the bulk of the supply in US markets. This could indicate that the causal arrow is reversed: the FARC's actions change the price of cocaine by influencing the supply available. To assess if changes in the supply of Colombian cocaine are driving the price per gram in the United States in these data, I run a set of correlation tests. I test the correlation between the number of hectares of coca manually or aerially eradicated in the year prior and the recorded average price for the current year. I also test the relationship between counts of FARC victimization in the year prior and the recorded average price for the current year. I then reverse these tests.[19] For both FARC victimization and coca eradication, I fail to reject the null hypothesis of no relationship between changes in the yearly supply and the US price of cocaine.[20] This indicates that changes in the supply of Colombian cocaine that may be driven by FARC and paramilitary actions do not lead to changes in the US price of cocaine as reflected by the STRIDE data. This is in keeping with the discussion in Mejia and Restrepo (2015) that prices reflect changes in demand or may be driven by changes in cocaine seizures along the supply chain in Central America or Mexico.

The dependent variables for each of the following models are counts of coercive actions from the FARC and paramilitary groups. I use Poisson regression for my

[15] The CEDE data include both a FARC and an AUC dummy. While the AUC may not capture all militias engaging in civilian victimization, this umbrella organization constitutes the bulk of pro-government militias during this time period.

[16] Nonetheless, models including all municipalities are also included in the online appendix.

[17] The CEDE data collection for some variables begins in 1999, which limits the analysis.

[18] In the online appendix, I also include models using hectares of coca rather than the coca dummy.

[19] Information about eradication, which would directly limit the supply of coca, is not available at the monthly level and thus yearly correlation is used.

[20] These results are reported in table A7 in the online appendix.

analysis.[21,22] Because there may be additional temporal factors that influence changes in victimization, I also include a model with year fixed effects.[23]

I report the regression results in tables 1 and 2. Specifically, I report incidence rate ratios, which can be interpreted similarly to hazard ratios. A value less than 1 indicates that increases in the independent variable correspond to decreases in the rate of victimization (counts of coercive action). In contrast, incidence rate ratios greater than 1 suggest that increases in the predictor correspond to increases in either groups' coercive actions. In each table, I report a basic model of the primary predictors of interest (Model 1), an expanded model with other independent variables (Model 2), and a full model with year fixed effects (Model 3). Table 1 examines the relationship between negative price shocks and FARC victimization, while table 2 does so with paramilitary coercive acts and positive price shocks. In both tables, incidence rate ratios for which the relationship between the independent and dependent variables is statistically significant at the conventional $p < 0.05$ level are reported in bold font. Both hypotheses find support. Interestingly, and as expected, the effect of price shocks on either groups' coercive tactics differs in coca-growing versus non-coca-growing municipalities, indicating that both actors are engaging in targeted victimization of supplier communities.[24]

The FARC engages in statistically significantly higher rates of civilian victimization following a negative price shock—but only in coca-growing municipalities. Substantively, coca-growing municipalities can expect the rate of coercive actions against civilians to more than double when negative price shocks occur. In contrast, negative price shocks decrease FARC victimization in non-coca growing municipalities. As hypothesized, this conditional effect is due to unexpected budget constraints that lead the FARC to concentrate their efforts on maintaining their future coca supply and profit. These results provide evidence for the argument that the FARC engages in targeted victimization of cocaleros communities only when and where necessary, as this form of coercive bargaining can have negative long-term consequences when used consistently. Unexpected reductions in the FARC's profit force emergency reallocation of manpower and violent effort to maintain the group's prominent role in the coca market.

Victimization from paramilitary groups mirrors that of the FARC. A positive price shock leads to a decrease in overall paramilitary victimization, likely as the FARC allocates increased profit toward protecting contested territories. As hypothesized, however, this story differs in coca-growing municipalities where unexpected increases in commodity price lead to higher amounts of civilian victimization from paramilitary groups. When the price of cocaine jumps, paramilitaries anticipate the FARC's ability to attract and pay additional coca farmers—thus multiplying the FARC's future cocaine profits—and seek to deter these latent suppliers from engaging with the FARC.

Brief consideration of the additional independent variables is merited. Interestingly, while the previous month's paramilitary victimization does not predict a municipality's FARC response, increases in the FARC's victimization of civilians correspond to increased rates of paramilitary victimization. Coercive action from the Colombian army, which is rare in the "¡Basta ya!" data, does not predict either actor's use of violence against civilians. Municipalities with higher GDPPC may experience less victimization from either armed groups as the result of government investment or reduced access for rebels, but this is not a statistically significant predictor. Finally, the remoteness of municipalities, operationalized by the distance to a primary market, is a predictor of increases in FARC violence but does not influence paramilitary coercion.

To further illustrate the relationship between price shocks and coercive action against civilians in coca-growing areas, I plot the distribution of predicted counts of victimization events from each model. These predictions are simulated while holding the other independent variables at the median value and altering whether or not a (negative/positive) price shock has occurred and if coca crops are present. These predicted counts can be found in figures 1 and 2, with table 3 providing the average predicted changes in victimization following a price shock. When considering these predicted counts, it is important to note that the median observed value for both FARC and paramilitary victimization is 0. This provides necessary context for the very low predicted values and the importance of even small changes to predicted victimization events.[25] In both cases, price shocks increase the average predicted counts of victimization events in coca-growing municipalities even as the predicted counts in other municipalities do not increase.

These results provide evidence that negative commodity price shocks—which unexpectedly limited the FARC's anticipated income—increased their use of coercive violence against coca-growing communities. In contrast, positive price shocks to coca increased rebels' territorial competitors' use of victimization against plausible FARC suppliers. When decreases in price lead to unexpected budget limitations, rebels turn to short-term coercive solutions to raise suppliers' costs of abandoning production for other opportunities. This action is specifically directed at communities in which suppliers are present and is not consistent across civilians in general. Rebel competitors such as paramilitary groups, in turn, increase victimization following sharp increases in rebel-controlled commodity value that can allow rebels to expand their economic presence by offering more enticing incentives. In doing so, paramilitary groups make an effort to limit supplier recruitment from commodity-producing areas and truncate rebels' access to increasing profits. These findings demonstrate that volatility in the price of commodities rebels produce and sell harms civilians in economically contested territory regardless of the direction of the price shock.

Conclusion

This paper demonstrates how exogenous changes in rebels' anticipated profit due to commodity price shocks can change their behavior toward key civilians—specifically,

[21] Models replicating these findings with negative binomial regression are included in the online appendix.

[22] Victimization, thankfully, is a rare outcome. In the online appendix, I also include zero-inflated regressions. Results are consistent.

[23] One-way, year fixed effects are included in Model 3 to best assess changes in victimization across municipalities given variation in coca presence. Kropko and Kubinec (2020) as well as Imai and Kim (2021) discuss challenges of interpretability and identification in two-way fixed effects models and advocate for this strategy. In the online appendix, I include models with year and departmental fixed effects to adjust for temporal and spatial confounders.

[24] To ensure that changes are not due to overall volatility in price but rather are associated with price shocks in the hypothesized direction, I include models with both directions of price shocks in the online appendix.

[25] The predictions for paramilitary victimization are consistently higher than those of the FARC, which is substantively appropriate as paramilitary groups engaged in more violence against civilians.

Table 1. FARC victimization and negative cocaine price shocks

	Model 1	*Model 2*	*Model 3*
Predictors	Basic model *Incidence rate ratio* *(Confidence interval)*	Full model *Incidence rate ratio* *(Confidence interval)*	With year fixed effects *Incidence rate ratio* *(Confidence interval)*
Negative Price Shock	**0.48**	**0.42**	**0.45**
	(0.29–0.78)	(0.26–0.70)	(0.27–0.76)
Dummy, Coca Crops	1.15	1.14	**1.47**
	(0.99–1.32)	(0.98–1.33)	(1.26–1.73)
Negative Price Shock × Coca Crops	**1.92**	**2.61**	**2.01**
	(1.01–3.65)	(1.37–4.96)	(1.05–3.83)
Paramilitary Victimization$_{(t-1)}$		1.03	1.01
		(0.99–1.07)	(0.96–1.06)
Army Victimization$_{(t-1)}$		0.87	0.96
		(0.51–1.49)	(0.57–1.61)
Ln(GDPPC)		0.9	0.92
		(0.82–0.99)	(0.84–1.02)
Distance to main market		**8.83**	**9.72**
		(4.75–16.41)	(4.81–19.66)
Observations	13,416	13,416	13,416

p < .05.

Table 2. Paramilitary victimization and positive cocaine price shocks

	Model 1	*Model 2*	*Model 3*
Predictors	Basic model *Incidence rate ratio* *(Confidence interval)*	Full model *Incidence rate ratio* *(Confidence interval)*	With year fixed effects *Incidence rate ratio* *(Confidence interval)*
Positive Price Shock	**0.72**	**0.72**	**0.78**
	(0.60–0.87)	(0.60–0.87)	(0.65–0.94)
Dummy, Coca Crops	**1.68**	**1.65**	**2.16**
	(1.51–1.88)	(1.47–1.86)	(1.91–2.45)
Positive Price Shock × Coca Crops	**1.53**	**1.55**	**1.28**
	(1.19–1.97)	(1.20–1.99)	(0.99–1.65)
FARC Victimization$_{(t-1)}$		**1.20**	**1.17**
		(1.16–1.25)	(1.12–1.22)
Army Victimization$_{(t-1)}$		1.15	1.34
		(0.84–1.56)	(1.00–1.81)
Ln(GDPPC)		0.94	0.99
		(0.87–1.02)	(0.92–1.07)
Distance to main market		0.64	0.59
		(0.37–1.10)	(0.34–1.04)
Observations	13,416	13,416	13,416

p < .05.

their suppliers. It further considers how these price shocks alter state or state-supported actors' efforts to discourage communities from contracting with rebels, thus depriving rebels of future economic gain. The findings contribute to our understanding of commodity-based civil wars, civilian victimization in intrastate conflict, and rebel governance. Previous work has considered how price shocks to legal commodities impact civil war via changes to state capacity and labor markets. Here, I add the important complication of looking at the strategic interaction between rebel groups, suppliers, and rebel competitors when there is volatility in the price of illegal commodities that only rebels can access. To do so, I employ an unprecedented level of disaggregation to analyze the relationship between monthly US cocaine price and FARC and paramilitary group violence in Colombian municipalities.

I find support for the argument that negative and positive price shocks can both increase victimization of certain

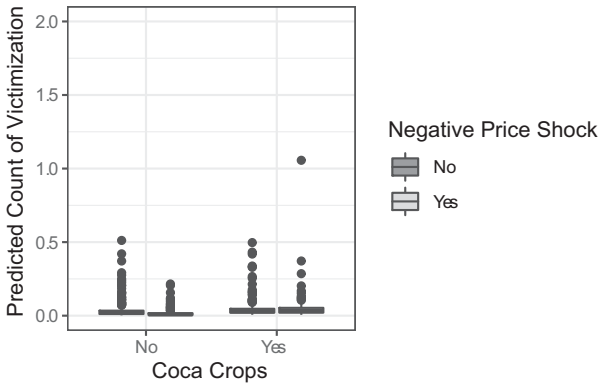

Figure 1. Predicted FARC victimization: coca growing versus non-coca municipalities.

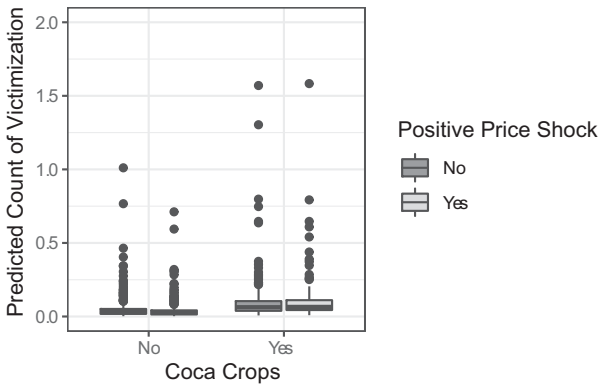

Figure 2. Predicted paramilitary victimization: coca growing versus non-coca municipalities.

Table 3. Average predicted change in counts of victimization

	Paramilitaries	*FARC*
Coca, Negative Shock	N/A	0.0021
No Coca, Negative Shock	N/A	−0.0171
Coca, Positive Shock	0.0041	N/A
No Coca, Positive Shock	−0.0151	N/A

noncombatants—namely, coca farmers. By focusing on contested territories with and without coca crops, I assess how sharp fluctuations in the group's profit change the FARC and paramilitary groups' interactions with coca-supplying communities versus civilians elsewhere. I demonstrate that the FARC increases selective victimization to supplier communities following a negative price shock. After unexpected decreases in commodity profitability, suppliers might be incentivized to seize other, comparatively more attractive economic opportunities. Simultaneously, these new budget constraints prevent the FARC from increasing positive incentives such as wages. Instead, the group turns to coercive tactics to maintain access to their future coca supply. However, this effect is limited to coca-producing municipalities—in contrast, negative price shocks decrease the FARC's victimization in municipalities that do not produce coca. This finding furthers our understanding of rebels' strategic use of civilian victimization, highlighting how budget constraints can alter patterns of violence against rebels' economic supporters.

Further, I find that positive price shocks to cocaine also increase victimization of FARC suppliers from another actor: paramilitary groups resorting to coercion. These groups increase supplier victimization following rapid increases in the FARC's profit that may solidify the rebels' relationship with coca farmers or allow the FARC to expand territorial access to new coca-growing areas. Regardless of their direction, exogenous price shocks to rebel-controlled commodities alter rebels' source of power and create uncertainty about their long-term capacity. Tragically, the civilian suppliers that rebels require to maintain the profitability of these commodities are caught in the middle of these volatile power shifts.

Investing in primary commodities can increase rebel groups' wealth and afford them the opportunity to advance in their fight against the state. However, this paper proposes and tests a mechanism through which external, unanticipated changes to rebels' profit resulting from price shocks to these primary commodities can undermine rebels' long-term goals. Rebels that invest in primary commodity production, transportation, and sales must apply some of their profit toward paying suppliers or other parts of their supply chain. while also paying soldiers and maintaining security against the state. When rebels' income changes due to unexpected price shocks, however, these groups are forced to make budget cuts. Rebel groups cannot risk defeat by cutting back on securing their assets against the state, but they can make changes to how they incentivize their suppliers. However, even the temporary use of violence or repression against civilians—especially those on whom the group is economically dependent—can harm the reputation of these groups. Consequences such as an inability to attract additional supporters and a decrease in their legitimacy as political actors can push these groups further into criminality and away from accomplishing their original political goals. This cycle is exacerbated by the presence of state-supported or competing armed actors who further victimize rebels' key suppliers. Thus, the dynamic described here has important macro-level implications for civil war severity and outcome.

In addition to these local or conflict-level implications, this paper prompts reconsideration of policies that lead to the expansion or contraction of international markets for rebel-controlled commodities. For example, the war on drugs in the United States may limit the street-level supply of illegal narcotics, but through the mechanism of price shocks these policies also spark civilian victimization in supplier countries and fail to limit long-term supply. Further, foreign policies in diverse conflict environments (such as the US role in Afghanistan) that advise agricultural replacement and/or eradication without increased security provisions and community protection may inadvertently victimize farming communities. This, in turn, may strengthen insurgents' long-term battlefield prospects.

This paper finds that when commodity price shocks change rebels' anticipated profit, both rebels and the states combating them violently target the actors responsible for rebels' continued economic gain: the commodity suppliers. To guard against these effects, states and other actors wishing to protect noncombatants should consider longer-term efforts to safely develop regions in which these lucrative commodities can be found. Providing alternative economic opportunities and encouraging community security will decrease the benefits laborers reap from partnering with rebel groups. This may, in turn, prevent rebel groups from building the commodity markets that make them such formidable, persistently violent foes.

Supplementary Information

Supplementary information is available at the *International Studies Quarterly* data archive.

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