

Wartime Ties and the Social Logic of Crime

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Abstract

When ex-combatants fail to reintegrate into legal, civilian life it can be a source of disorder after civil war. The predominant explanation for ex-combatant criminality focuses on the role of individual-level economic opportunity costs. An alternative sociological logic suggests that the maintenance of ties to former commanders and ex-combatant peers drives criminality among ex-combatants following demobilization. We test these logics using original administrative and survey data collected in Colombia, finding strong evidence of a link between enduring wartime ties and criminality. Additional theoretical and empirical investigation suggests that wartime ties facilitate illegal behavior by enhancing an ex-combatant's criminal capabilities and by transmitting social norms that motivate crime participation. These findings highlight the need for greater attention to the role of social ties among ex-combatants in explaining transitions from wartime to peace and in designing reintegration interventions.

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1 Introduction

Understanding when former combatants reintegrate following civil conflict is of central importance to successful transitions from war to peace. While many ex-combatants reintegrate into civilian life, others struggle to do so, sometimes opting to use their experience and skills as wartime specialists in violence to illicit ends. Indeed, a central concern is that former combatants turn to crime following demobilization, contributing to high levels of illegal activity in post-conflict contexts (Call, 2007). Investigating why some ex-combatants turn to crime is critical not only to facilitating their reintegration but also to ensuring law, order, and stability in post-conflict environments (Collier, 1994; Muggah, 2009).

While political science has traditionally focused on explaining armed conflict and re-militarization (Kalyvas, 2015), there is a growing interest in understanding crime as a source of disorder in general (Calderon et al., 2015; Lessing, 2015) and among ex-combatants in particular (Kaplan and Nussio, 2016).¹ This goal is bedeviled, however, by the existence of multiple leading explanations for why some former fighters turn to criminal activity while others do not. Assessing their relative explanatory power is critical to designing effective reintegration interventions and understanding transitions to peace.

The prevailing explanation for criminal behavior centers on the role of economic opportunity costs. A large literature on the economics of crime, following in the tradition of Becker (1968), posits that individuals engage in criminal behavior when the expected benefits exceed the costs, including the opportunity costs of legal sector employment. Numerous empirical studies suggest that increasing the opportunity costs to crime, for instance by improving legal sector wages and employment, reduces illicit behavior (Dube and Vargas, 2013;

¹Crime differs from re-militarization in that it encompasses any actions deemed illegal by the state rather than just those associated with a return to organized violence. While recent studies have examined the determinants of re-militarization (Themner, 2015; Daly, 2016), crime implies a broader array of activities and thus merits investigation in its own right.

Blattman and Annan, 2015). Indeed, the opportunity cost logic underpins the majority of reintegration interventions in post-conflict countries (Gilligan, Mvukiyehe and Samii, 2013; Tajima, 2010).

An alternate logic roots the decision to engage in crime in social factors. This approach suggests that individuals enter into crime not solely (or principally) for economic reasons but rather because their social environment enables it, for instance by transmitting norms that condone criminal behavior (Akers, 1998; Sutherland, 1947; Warr, 2002) or by serving as a resource that provides criminal knowledge and skills (Sutherland, 1947; Ballester, Calvo-Armengol and Zenou, 2006). While much of this research comes from sociology and criminology and focuses on gang or neighborhood crime, it has important—if rarely examined—insights for understanding ex-combatant behavior. Indeed, there is good reason to believe that enduring wartime ties, specifically ties to former commanders or ex-combatant peers, play a role in the decision to engage in crime following demobilization. While wartime ties might sometimes help to facilitate reintegration (Themner, 2015), others have argued that intact wartime ties and command-and-control structures following demobilization may also pose a threat (Spear, 2002). Importantly, while wartime ties are plausibly an important driver of ex-combatant criminality, they have received less attention than economic factors by academics and policy-makers alike. Moreover, interventions specifically designed to break up or redirect wartime networks have received little attention from reintegration programs, due in part to a lack of evidence for the importance of a social logic of ex-combatant criminality relative to individual opportunity costs.

This paper investigates the role of an individual-economic versus social logic for ex-combatant criminality and provides clear evidence of an association between the endurance of wartime ties and criminal behavior. We do so in the context of Colombia, a country that has experienced one of the longest and bloodiest civil wars in modern history and where crime has been an endemic part of the transition to peace. Colombia is also a highly relevant case because both economic and social factors plausibly play an important role in

post-war criminality, although few studies have examined this. Moreover, the 2016 peace deal between the Colombian government and the Revolutionary Armed Forces of Colombia (FARC) underscores the exigency of investigating the determinants of post-demobilization criminality among former combatants.

A central obstacle to studying illegality in Colombia and elsewhere arises from the challenges of data collection. While administrative data on arrests and convictions exist, these data are often imperfect. Moreover, many of those who resort to crime remain beyond the detection of the criminal justice system. While survey data can be an important complement to administrative data, surveys on criminality also present the challenges of sampling a hard-to-reach population and eliciting honest responses about sensitive behavior.

We overcome these challenges in the following ways. We gained access to confidential administrative data from the Colombian Attorney General's office (the Fiscalía) and supplement it with original survey data from a random sample of 1,158 demobilized combatants. We surveyed not only ex-combatants in their communities but also those in prison. Owing to extensive assistance from Colombian authorities and the timing of our project, our sample is likely the best possible.² We address measurement challenges by using a self-administered survey to elicit honest responses to sensitive questions (Tourangeau and Yan, 2007); the survey also provides nuanced information on criminal activity. Overall, whereas about 11 percent of our ex-combatant population is classified as criminal according to official data, approximately 24 percent of our population should be considered criminal when we combine the administrative and survey data. This suggests that our survey succeeded in eliciting self-reported admissions of criminal activity from a population of ex-combatants that has remained beyond the reach of the Colombian criminal justice system. All in all, we believe that our analysis employs the highest quality data collected to date for studying criminality

²We opted not to use the data from the 2008 survey of ex-combatants conducted by our partner organization and used, for example, in Kaplan and Nussio (2016), because our inquiries raised concerns about the representativeness of the sample.

amongst an ex-combatant population.

Our data enables an observational analysis of the relative explanatory power of economic and social factors. Causal identification therefore relies on a covariate control strategy. The credibility of our approach is based on the very large number of covariates available and robustness checks through sensitivity analysis. The benefit of our approach is that we can compare the relative importance of multiple possible contributing factors that would be difficult to manipulate simultaneously in a field or natural experiment.

Our main results are highly robust and somewhat surprising. Contrary to expectations, we find little evidence of an association between economic opportunity cost and criminal behavior in our data. Instead, we observe that both enduring ties to former commanders and to ex-combatant peers are strongly associated with criminal behavior in general and violent crime in particular. Having established the importance of wartime ties, we further investigate *why* such social relations facilitate criminality. We present a simple theoretical framework that elucidates how strong wartime ties can strengthen both an ex-combatant's abilities and motivations to engage in crime. Additional empirical analysis provides suggestive evidence that wartime ties indeed fulfill both functions.

This paper contributes to research on transitions from war to peace, on post-conflict reintegration, and on crime. First, it shows that wartime ties play an important role in ex-combatant criminality even after accounting for economic factors. While several studies have shown that social ties and group cohesion are a critical factor in recruitment into rebellion in the first place, the operational effectiveness of armed groups, and the duration of civil conflict (Wood, 2008; Parkinson, 2013; Staniland, 2012; Findley and Rudloff, 2012), there has been significantly less attention to how wartime ties evolve following demobilization (for exceptions see Themner, 2013, 2015; Daly, 2016). The evidence presented here sheds light not only on whether wartime ties matter for criminality but also why, with important implications for understanding how their pull might be mitigated. In doing so, it calls for shifting the paradigm of reintegration programming to consider not only economic factors but

also social ones, highlighting the importance of developing and testing policy interventions that directly tackle the thorny issue of armed group ties. This is an important avenue for future research to complement recent studies that have used randomized evaluations to provide evidence of the causal effect of select economic and behavioral interventions on criminal behavior in post-conflict countries (Blattman and Annan, 2015; Blattman, Jamison and Sheridan, 2017).³

2 Explanations for ex-combatant criminality

The main goal of this paper is to examine why some ex-combatants engage in crime following demobilization. In what follows we motivate hypotheses as to how economic welfare and the strength of wartime ties following demobilization relate to criminality. We privilege these economic and social logics because major research traditions have argued that they are *the* leading explanations for crime. Moreover, these explanations for crime are potentially actionable by reintegration programs, making them important to understand from a policy perspective.

We begin with the widely held notion that individual material-economic conditions are central to decisions to engage in crime. A large literature on the economics of crime, following in the tradition of Becker (1968), posits that the decision to participate in criminal activity is based on an individualistic calculation of material costs and benefits under uncertainty. In this framework, individuals seek to maximize their personal economic well-being and opt for criminality if the benefits of crime exceed what can be obtained in the legal sector, taking into account what might be lost if they were to get caught and the probability of capture. Unemployment, low legal sector wages, and low levels of human capital can all increase the relative attractiveness of crime on this basis. Numerous studies—mostly from developed countries—have provided support for this story (see Draca and Machin, 2015 for a review).

³Samii, Paler and Daly (2016) defines possible economic and social interventions retrospectively and uses machine learning to estimate their potential impact.

The notion that individuals respond to their economic opportunity costs has also featured centrally in political science research on violence. Dube and Vargas (2013) show that increases in the price of labor intensive agricultural goods reduced conflict in Colombia, attributable to the improvement in income generating opportunities. In a rare experimental test of this argument, Blattman and Annan (2015) find that agricultural training and capital inputs reduced illicit logging, mining, and mercenary activity by high-risk men (including ex-combatants) in Liberia. While there is some evidence that unemployment might actually be associated with lower levels of violence (Berman et al., 2011), there nevertheless remains a prevailing belief that economic opportunity costs matter. As Kalyvas (2015, 1527) notes, whereas the conflict literature points to a large set of motivations for joining rebel groups, “the dominant assumption about criminal groups is that the key motivation for joining is profit.”

The individualistic opportunity cost logic is especially important because it underpins a substantial share of the assistance for reintegration interventions in post-conflict countries (Gilligan, Mvukiyehe and Samii, 2013; Tajima, 2010). Reintegration programs typically offer cash assistance or in-kind material benefits and vocational training, skill development, and employment so as to induce demobilized combatants to take up legal civilian occupations (Bryden and Hanggi, 2005; Muggah, 2009). The first hypothesis is thus:

H1 Better individual economic conditions will be associated with a reduced propensity to engage in crime.

In contrast to the economic opportunity cost story, research in sociology and criminology has long emphasized the relationship between social ties and criminal behavior.⁴ Indeed, numerous studies have documented the importance of social forces in pulling individuals

⁴This approach builds, in part, on the observation that the economic incentives to crime are often small for low-ranking individuals who typically face high risks and small material rewards from their participation in criminal organizations (Levitt and Venkatesh, 2000).

into crime, observing a strong association between criminal behavior and the number of one's peers who are also engaged in crime (see, for instance, Akers, 1998; Warr, 2002). Glaeser, Sacerdote and Scheinkman (1996) propose that variation in crime patterns across time and space implies strong complementarities between individuals in their crime decisions. Overall, as Warr (2002) notes, “[n]o characteristic of individuals known to criminologists is a better predictor of criminal behavior than the number of delinquent friends the individual has” (p. 40).

While sociological studies have primarily examined the importance of family, neighborhood, and peer ties to crime, there is good reason to focus on the role of wartime ties among ex-combatants. Ex-combatants emerge from past violence with powerful bonds reinforced during war by socialization, the decoupling of civilian and military life, the intense experience of exposure to violence, and interaction over long periods of time in a small unit setting (Cohen, 2013; Daly, 2016; Parkinson, 2013; Staniland, 2012; Wood, 2008). Ex-combatants often maintain their factional relationships and continue to identify with their fighting groups long after demobilization. It is for these reasons that we focus our investigation on understanding the relationship between wartime ties and criminality, controlling for the strength of other family and community ties that could either counteract the pull of wartime ties or draw ex-combatants into crime through non-military networks.⁵

Indeed, there is evidence that wartime ties can play an important role in undermining reintegration. Drawing on qualitative data from post-conflict contexts in Sub-Saharan Africa, Themner argues that mid-level commanders play a critical role in re-mobilizing soldiers,

⁵There is variation in the strength of wartime ties following demobilization due to factors such as the unit cohesiveness during conflict, whether ex-combatants demobilized individually or collectively, and geographic clustering following demobilization. Explaining this variation is beyond the scope of this paper but we control for a large number of relevant factors to minimize potential confounding in our estimation of how the strength of wartime ties following demobilization predicts criminal behavior (see Appendix G).

either on behalf of military and political elites (Themner, 2013) or to prevent a decline in status when they were not viewed by elites as relevant ‘brokers’ (Themner, 2015). In the Colombian context, Daly (2016) argues that locally-recruited fighting groups are more likely to remain cohesive following demobilization, enabling them to re-militarize should they face a shift in the regional balance of power caused by the weakening of non-locally recruited groups. While re-militarization and criminality are distinct phenomena, the notion that wartime ties play a central role in re-militarization underscores the importance of investigating their association with crime. Kaplan and Nussio (2016) provide some evidence of this in showing that living in a municipality with criminal gangs is correlated with ex-combatant criminality, although they do not provide a detailed account of how wartime ties facilitate criminal behavior.

Whether wartime ties pull ex-combatants into crime likely depends in large part on their former commanders, especially those at the middle level of the military hierarchy.⁶ Whereas peace accords often give higher-ranking commanders judicial, political, and economic benefits to disarm, mid-ranking commanders rarely get such benefits, which might make it harder for them to reintegrate. Moreover, former mid-level commanders are also well-positioned to play an essential role in running criminal gangs or larger-scale operations following demobilization. Mid-level commanders—more so than high-ranking ones—have both the necessary field experience to run criminal networks and the social ties to recruit lower-ranking ex-combatants. Indeed, mid-level commanders typically remain central figures within their wartime networks, in close contact with lower-ranking soldiers, and in positions of informal authority and influence following demobilization. It is precisely these qualities that make mid-level commanders uniquely suited to recruiting ex-combatants into renewed

⁶While we do not exclude the possibility that higher-ranking commanders pull mid-level commanders into crime, we focus on the role of mid-level commanders for the theoretical reasons elaborated here and because our data primarily captures the strength of relations between rank-and-file ex-combatants and mid-level commanders.

organized violence (Daly, 2014; Themner, 2013), and there is good reason to believe that they could play a similar role with crime.⁷ Former commanders with strong vertical ties to their subordinates are likely especially able to overcome the recruiter’s information dilemma (Weinstein, 2007), identifying ex-combatants that are skilled and trustworthy and effectively employing selective incentives to secure their participation. It is because commanders are considered able to draw ex-combatants into illegality that breaking command-and-control structures is often viewed as essential to peace (Spear, 2002).⁸

This raises the question of why only some former commanders turn to crime following demobilization.⁹ While commanders who themselves integrate following demobilization can help to facilitate transitions to civilian life for their former combatants (Themner, 2015), there is evidence that commanders at all levels of the military hierarchy often struggle to do this (Humphreys and Weinstein, 2007). This may be due to stigma attached to ex-combatant identity and associated discrimination in the legal sector.¹⁰ Moreover, former commanders might face stronger economic or social incentives to engage in crime than rank-and-file ex-combatants because they could be relatively worse off economically following demobilization;

⁷As Warr (2002, 38) notes, there is typically an ‘instigator’ in any criminal group, someone who is more experienced and in a central social position.

⁸Humphreys and Weinstein (2007) find little evidence of an association between breaking factional ties and reintegration, however.

⁹The small number of commanders in our sample makes it difficult to investigate this empirically. We nevertheless do so to the best of our abilities in Appendix M, finding tentative evidence that crime among former commanders was higher for those who were paramilitaries; were less trusting of the state; experienced greater personal insecurity; maintained ties to their own higher-level commanders; and were economically better off—perhaps reflecting the importance of having access to resources to recruit.

¹⁰In the context section below, we document a high sense of stigmatization among ex-combatants.

be in a better position to obtain material rewards from crime due to their rank (Levitt and Venkatesh, 2000); have made greater career investments in developing criminal skills (Mocan, Billups and Overland, 2005); or be eager to prevent a loss of status and power (Themner, 2015). All in all, the fact that former mid-level commanders likely face barriers to entering the legal sector, have incentives to engage in crime following demobilization, and have the ability to recruit rank-and-file combatants to join them, yields our first social hypothesis:

H2a Ex-combatants with stronger vertical ties to former commanders will be more likely to engage in criminal behavior.

Yet, command-and-control relationships are likely only part of the social story. Much of the research on criminal behavior in sociology and criminology centers on the importance of peer ties (Winfree, Backstrom and Mays, 1994; Haynie, 2001; Warr, 2002). The sociological literature suggests two main mechanisms by which horizontal ties to ex-combatants could enable criminal behavior, which we introduce here and formalize in Section 6. First, ties to ex-combatant peers could be a resource that increases the net material returns to criminal behavior (Bayer, Hjalmarsson and Pozen, 2009; Ballester, Calvo-Armengol and Zenou, 2006; Sutherland, 1947). In other words, as some rank-and-file soldiers are pulled into crime by commanders, other ex-combatants to whom they are tied will have greater access to criminal knowledge and skills that facilitate their own criminal behavior. They could also have greater access to information that enables them to evade capture. As such, strong social ties to ex-combatant peers involved in crime can enhance the *capabilities* that enable crime.¹¹

Second, strong wartime ties could enhance an ex-combatant's *motivation* to engage in crime through their transmission of social norms. It is widely believed that strong social networks can encourage the spread of social norms in which criminal behavior is viewed as

¹¹It is in theory possible that ties cause ex-combatant criminality or that ex-combatants who want to go into crime intentionally cultivate relationships that will help them. Either story is consistent with the notion that relationships are resources that facilitate criminality.

acceptable (Akers, 1998; Sutherland, 1947; Warr, 2002). As Warr (2002, 65) notes: “groups *create* their own moral climate; they define what is acceptable behavior within their own self-contained social system.” When a group defines criminal behavior as acceptable it awards status to members based on their criminal activity and generates peer pressure that imposes social costs for non-participation. There is good reason to believe that combatant groups—which often aim to foster group cohesion during conflict—are effective at transmitting social norms (Nussio and Oppenheim, 2014).¹² Consequently, ex-combatants might feel compelled to engage in post-conflict criminal activity to maintain their identity and social position even if they privately would prefer not to.

Regardless of whether strong ties to ex-combatant peers enhance the capabilities or motivations to engage in crime, the implication is that they could play an important independent role in enabling or encouraging criminal behavior among ex-combatants:¹³

H2b Ex-combatants with stronger horizontal ties to former combatant peers will be more likely to engage in criminal behavior.

These social hypotheses are important to test because wartime ties do not necessarily have to pull ex-combatants into crime; importantly, they could also help to facilitate reintegration. Whether wartime ties pull ex-combatants towards criminality or reintegration likely depends on the path taken by commanders, which, as discussed above, may depend on the level of stigmatization and the availability of criminal relative to legal sector opportunities. Conditions may be such that commanders broker both service provision and the relationship between government and ex-combatants, helping to deepen stability, as Themner (2015)

¹²This does not imply that *only* fighting groups with more ideological indoctrination during the conflict need be better at transmitting criminal norms, just that groups with strong ties have the ability to transmit norms should they want to.

¹³Importantly, by enhancing the capabilities or motivations to engage in crime, strong horizontal ties can help to explain not only group crime but also individual crime. We include both types of crime in our analysis.

documents. With respect to horizontal ties, the resources and norms mechanisms described above could also contribute to reintegration by transmitting information or skills beneficial to licit employment or norms that reward a return to civilian life. While much of the literature expresses concern about the relationship between wartime ties and illicit behavior, the fact that wartime ties could either facilitate or undermine reintegration highlights the importance of our empirical investigation.

3 Context

We examine criminality with data on paramilitaries and guerrillas who demobilized as of 2012 in Colombia. The contemporary Colombian conflict has its roots in La Violencia, the civil war that raged from 1948-1958 between the Liberal and Conservative Parties. In the 1960s, left-wing guerrilla organizations like the FARC and the National Liberation Army (ELN) emerged. With the introduction of the drug economy to Colombia in the late 1970s and the adoption of kidnapping and extortionary financing tactics, the guerrillas began to pose a serious threat to the military, landowning elite, drug barons and political class. Accordingly, these diverse sectors of society formed regional paramilitary forces. Over the course of the subsequent decades, both the rebels and militias extended their power over nearly the entire country. The conflict has left over 220,000 dead in its wake and displaced 4.7 million (Grupo de Memoria Histórica, 2013).

In 2002, Alvaro Uribe won the Colombian presidency and commenced a process of negotiation with the paramilitary leaders, resulting in peace accords between the government and each of the 37 paramilitary groups and the disarming of their 31,870 combatants between 2003 and 2006. Concurrently, Uribe continued an individual demobilization process whereby paramilitary and guerrilla combatants could desert their armed groups and receive amnesty and reintegration benefits. Between 2003 and the present, 29,238 paramilitaries and guerrillas disarmed under this process, bringing the total number of registered demobilized

combatants in Colombia to over 58,000.¹⁴ Following the historic peace accords signed between the Santos administration and the FARC in November 2016, an additional 7,300 FARC guerrillas have demobilized.¹⁵ The peace agreements have been accompanied by a comprehensive demobilization, disarmament, and reintegration (DDR) program to transition the ex-combatants back into civilian life (Daly, 2016).

Ex-combatant reintegration has had some limitations on its success, however. Estimates from our survey (described below) suggest high levels of perceived stigmatization among ex-combatants. For example, when asked whether they thought they would face negative discrimination in applying for jobs, 68 percent indicated “definitely yes” and 16 percent “probably yes” when reflecting on circumstances a year after their demobilization. In light of this, it is not surprising that a number of ex-combatants have turned to crime, either as individuals or with gangs (Daly, 2016). Since 2005, Colombia’s security landscape has become populated with emerging criminal gangs (bandas criminales emergentes or BACRIM) including re-militarized paramilitaries, narco-trafficking entities, and guerrillas. The BACRIM are deemed the most serious threat to contemporary Colombian security. They are engaged in the targeting of civilians, massacres, rape, extortion, assassinations, kidnappings, displacement, and trafficking (Human Rights Watch, 2010).

Addressing questions about how to prevent violence and criminality is of particular relevance in Colombia at present as FARC combatants begin to reintegrate, and the government engages in peace talks with the ELN rebel armies. Moreover, due to the timeliness of this research for Colombia, we were afforded the rare opportunity to collect data on criminality with significant collaboration from the Colombian Government and international organizations.

¹⁴The ex-guerrillas in our study are those who demobilized voluntarily before the 2017 accord.

¹⁵This figure is current as of March 2017.

4 Empirical Methods

We test our hypotheses using data from an original 2012 survey of 1,158 demobilized combatants representing both right- and left-wing illegal military organizations in Colombia.¹⁶ The survey provides not only our measures of the correlates of criminality and a rich set of controls but also self-reported data on criminal behavior. We use the survey to complement a confidential dataset obtained from the office of the Fiscalía (attorney general) that contains current information on former combatants who had been charged or convicted of criminal activities. While most studies of criminality rely on such official data, it is not uncommon for such data to be flawed and incomplete or for some criminals to have evaded entirely detection by the state. In what follows we describe the procedures taken both to sample systematically a hard-to-reach population and to elicit survey responses about highly sensitive criminal behavior.

The sample

A central challenge in studying criminality includes collecting data on a hard-to-reach population, insofar as those demobilized combatants who are most likely to be criminal also may have disassociated with the reintegration agency or may be in prison. We took several steps to obtain a representative sample of the demobilized population (for more detail, see Appendix A). To construct as complete a sampling frame as possible, we gained access to a database of the entire population of ex-combatants who had surrendered their weapons and demobilized. Our study was conducted in 2012, shortly after the passage of Law 1424 in 2010, which mandated that all ex-combatants participate in the ACR reintegration program in exchange for a suspension of their judicial sentences. This law created robust positive incentives for the previously hidden population of demobilized combatants to become ‘locat-

¹⁶This study was conducted in collaboration with *Fundación Ideas para la Paz* (FIP) and implemented by trained enumerators working for a reputable survey firm. All interviews were conducted face-to-face, except for the self-administered portion described below.

able' to the ACR and thus enter our sampling frame.¹⁷ Our sampling frame was likely the best that one could obtain in Colombia for studying ex-combatants. That said, in our analysis below and Appendix K, we discuss the sensitivity of our main results to the possibility that ex-combatants that were unreachable differ from those included in the sample.

We used this database of all demobilized combatants to construct a list of municipalities in Colombia that had at least 50 ex-combatants and that were accessible to the OAS Peace Mission (MAPP-OEA).¹⁸ We collaborated with the MAPP-OEA because it is an international organization charged with verifying and monitoring the 2005 peace agreement and had a great deal of credibility among ex-combatants. Of the 136 municipalities with 50-or-more ex-combatants, 83 were covered by the MAPP-OEA and from these we sampled 47.¹⁹ We then drew a random sample of these participants, stratifying on former armed group, demobilization year, whether charged with a crime, department of residence, and whether they registered after Law 1424.

We also randomly sampled 268 individuals in prison. To construct this sample, we generated a list of 18 medium and high security prisons that contained at least 25 ex-combatant prisoners and were associated with the selected municipalities. We drew our sample from lists of ex-combatant inmates who were residing in these prisons, excluding those who had been imprisoned for crimes committed before demobilizing. While the prison sample

¹⁷We estimate that 4110 ex-combatants came forward following the passage of Law 1424, while 9,922 ex-combatants (that is, 19 percent of the total that had demobilized) remained non-locatable by the ACR.

¹⁸While this choice makes it more difficult to assess the generalizability of our results to all municipalities, it was done for practical purposes and implies a coverage lost of only 15 percent of the ex-combatant population. Moreover, it does not affect the validity of our estimates since all regressions control for municipality fixed effects.

¹⁹MAPP-OEA operated in areas with the highest density of ex-combatants, which included municipalities that experienced the most crime following demobilization.

increased our likelihood of including criminal ex-combatants in this study, not all individuals in prison are criminals as some who are arrested and charged are later exonerated. Likewise, those who have engaged in criminal behavior do not come exclusively from our prison sample, as some individuals who have been convicted of crimes have since been released. There also remains a population of ‘hidden’ criminals who so far have gone undetected by the criminal justice system.

Measuring criminality

We define as criminal any activity that is deemed illegal by the Colombian penal code.²⁰ In light of concerns about the quality of official data, we combine administrative data with survey data on criminality. Obtaining reliable survey data presented the challenge of eliciting honest responses to highly sensitive questions. Our main measures of criminal activity were therefore obtained through a self-administered survey accompanied by an elaborate confidentiality procedure to protect respondents. Self-administered surveys have proven to elicit higher self-reporting on a range of sensitive behaviors in comparison to enumerated surveys (Tourangeau and Yan, 2007). Using a self-administered survey also enabled us to measure more aspects of illegality more precisely than could easily be accommodated by list experiments and other indirect questioning techniques. For details on the confidentiality procedures surrounding the self-administered survey, see Appendix B.

We employ two versions of the criminality outcome variable, with summary statistics presented in Table 1. First, we construct a binary measure of “proven” illegality by combining the administrative and survey measures, coding as criminal any respondent who is classified as criminal by at least one of the two data sources. A respondent is coded as criminal according to the administrative data if they have been *convicted*, which corresponds to about

²⁰The penal code can be found at https://www.oas.org/dil/esp/Codigo_Penal_Colombia.pdf (last accessed March 20, 2017). Our sample most commonly self-reports crimes such as conspiracy, carrying arms, robbery, assault, and drug trafficking (see Appendix E).

11 percent of our population. We believe this is the most defensible way to operationalize illicit behavior given that a number of those arrested or charged are later exonerated. We determine that a respondent is criminal according to the survey if they self-report having engaged in criminal activity on their own or with a gang or stated the nature of at least one crime committed (see Appendix C for question wordings). As shown in Table 1, according to the survey data, about 20 percent of our population is criminal. Combining the administrative and survey data yields 353 ex-combatants in our sample who are criminal, corresponding to about 24 percent of our population.²¹

Second, we create a composite measure of engagement in violent crime from two survey questions that ask those who have engaged in crime how often their criminal activities involved violence. We code those who have not engaged in any crime following demobilization as zero, those who have engaged in individual and/or gang crime that was never violent as one; and those who engaged in individual and/or gang crime that involved at least some violence as two. About 12 percent of our ex-combatant population, and 47 percent of our criminal ex-combatant population, have taken part in violent crime.

Explanatory variables

The main measures for our explanatory variables come from the enumerated survey, with question wordings and summary statistics available in Appendices C and D, respectively. To ensure that our explanatory variables are measured temporally prior to any criminal activity following demobilization, we continually prompted all respondents to answer the relevant survey questions as they pertained to their lives *one year following demobilization*. We selected this time point because piloting suggested that ex-combatants were readily able to recall their living conditions on the one year anniversary of their demobilization and because official data indicated that former combatants rarely committed crimes within the

²¹See Appendix F for more on the extent to which our survey identified a ‘hidden’ population of ex-combatant criminals.

first year.²² To minimize concerns about recall bias, where possible we limited ourselves to direct questions about objective conditions or highly salient circumstances that piloting suggested were easy for respondents to remember.

The first hypothesis proposes that those with better economic welfare—and higher opportunity costs—will be less likely to engage in criminal behavior. We measure economic well-being one year following demobilization using measures of employment, education, and inverse covariance-weighted averages of objective and subjective economic welfare indicators.²³ The index of objective well-being combines 12 measures of income, household conditions, and asset ownership, whereas the index of subjective well-being employs three measures about satisfaction with one’s economic situation one year following demobilization.

Our social hypotheses propose that those with stronger vertical ties to commanders and horizontal ties to ex-combatant peers will be more likely to engage in crime. We test these using measures of the extent to which a former combatant maintained active relations with other combatants and commanders one year following demobilization. We create an index of strong vertical ties to former commanders using six survey measures that inquire into regularity of communication, how quickly a former combatant could get a message to his former commander(s), and whether a respondent would lend money to his former commander(s) if asked, which is widely used as a measure of trust or obligation.²⁴ Our index of horizontal

²²Forty-four respondents in our sample admit to having committed crimes within the first year of demobilization. All results are robust to excluding these respondents (see Appendix I).

²³We use inverse covariance weighting—which assumes one latent trait of interest and constructs an optimal weighted average by weighting-up index components that provide more ‘new’ information (Anderson, 2008)—to create all indices in this paper.

²⁴Specifically we ask about ex-combatants’ relations to their immediate superior and to their superior’s superior. Given the organizational structures of the paramilitaries and guerrillas, this means that, for the rank-and-file in our sample, they were asked about relations with mid-level commanders (see Appendix C).

ties to other combatants comprises seven measures that capture the proportion of a respondent's friends who are combatants; the amount of time spent with other combatants; and the likelihood that a respondent would turn to a combatant for help in an emergency.²⁵

Control variables

Our analysis makes use of 123 controls obtained from the enumerated survey to mitigate concerns about omitted variable bias. In selecting control variables, our strategy is to control for all factors that could be confounding in our key economic and social variables of interest as well as other possible explanations for post-war criminality.

Specifically, all analysis (unless otherwise specified) incorporates municipality fixed effects and thus focuses on within-municipality, individual-level variation. This ensures that our analysis is not confounded by features of the local context. This is especially important since one concern might be that fighting units varied in their criminality during the conflict and that *wartime* criminality might be driving our results. Since municipality was highly correlated with criminality during the conflict, including municipality fixed effects allows us to estimate the importance of post-war economic and social factors *within* municipalities that were more or less steeped in criminality. Additionally, in Appendix I we show that our results are robust to other ways of taking into account wartime criminality, namely by controlling for fighting unit (*bloque*) fixed effects and coca production in a fighting group's area of operations.

Our analysis also incorporates a large number of individual-level controls. These include: initial motivations for joining an armed group; conflict experience and fighting group characteristics (duration and intensity of fighting experience and unit hierarchy and cohesion); the nature of demobilization (individual or collective); reintegration program participation; and

²⁵If respondents were reluctant to admit strong ties to former commanders or wartime peers due to social desirability bias we would underestimate the importance of wartime networks to criminal activity.

strength of family and community ties (as a possible counterpart to wartime ties) following demobilization. As our controls are too numerous to discuss in-depth here, we refer readers to Appendices D and G for summary statistics, an extended discussion, and analysis of the association between all controls and crime. To reduce the number of covariates we use in the regressions we again use inverse covariance weighting to combine controls where possible into indices, leaving us with a final set of 25 control indices and 20 individual covariates.

Estimation and inference

We estimate the following regression specification for individual i in municipality j :

$$Y_{ij} = E'_{ij}\delta + T'_{ij}\beta + X'_{ij}\gamma + \mu_j + \epsilon_{ij} \quad (1)$$

where Y_{ij} is one of our crime measures, E'_{ij} is the vector of economic variables, with corresponding coefficients δ , and T'_{ij} is the vector of social ties indices, with corresponding coefficients β . X'_{ij} is the vector of other controls described above. Finally, μ_j denotes the municipality fixed effects and ϵ_{ij} is individual level random error. We fit the model using weighted least squares where the weighting accounts for variation in the probabilities of selection into the sample due to stratification. We use least squares because of its robustness for fixed effects regressions (Beck, 2015). To address a small amount of item-level missingness that nonetheless would have resulted in dropping a substantial number of observations, we perform ten rounds of predictive-mean-matching imputation for missing data. Our standard errors are consistent for sampling variability given our sampling design and account for the fact that our sample was stratified by municipality and clustered by neighborhood groupings within each municipality. We test our hypotheses on the effects of individual economic conditions (as measured by δ) and then the joint effect of vertical ties and horizontal ties (as measured by β) using joint F -tests.

5 Main Results

We now turn to results of estimates corresponding to the specification in equation (1). Table 2 presents our findings using our two main measures of criminality—the binary measure of ‘proven’ criminality (“Crime”) and the violent crime scale (“Violent”)—using estimations with and without the full set of controls. Our first hypothesis tests the logic of economic opportunity costs. Despite the prominence of arguments centered on the opportunity cost of crime, we find no evidence that any of our four measures of economic factors—employment status, objective economic well-being, subjective economic welfare, and education—predict criminal behavior in general or violent crime in particular. The coefficients are close to zero and none of the measures are statistically significant at the 95 percent confidence level. The results from the F-test indicate that they are also not jointly significant, suggesting little support for *H1*.²⁶

We find, however, clear indication of an association between enduring wartime ties and ex-combatant criminality. Ex-combatants who maintained strong ties to former commanders were significantly more likely to engage in crime following demobilization, consistent with *H2a*. The results in column one of Table 2 indicate that a one standard deviation increase in the vertical ties index is associated with a six percentage point greater likelihood of criminal behavior. This result remains statistically significant at the 95 percent confidence level when including the full suite of controls. Similarly, a one standard deviation change in the vertical ties index is associated with a .11 unit change in the violent crime scale (column 3), again with a similar result when we include all controls (column 4).

The data also supports the hypothesis that maintaining strong ties to ex-combatant peers is associated with criminal behavior. There is a significant positive association between maintaining strong ties to former combatant peers and criminality across all four specifications presented in Table 2, suggesting clear evidence for *H2b*. We find further—albeit

²⁶Kaplan and Nussio (2016) also do not find a correlation between economic factors and crime.

suggestive—evidence for this hypothesis when examining the association between criminality and the *share* of an ex-combatant’s social network involved in crime. If strong horizontal ties enhance an ex-combatant’s capabilities or motivations to engage in crime—as discussed in Section 2—then this implies that the likelihood of criminality will be increasing in the share of one’s ex-combatant network engaged in crime, attributable either to the accumulation of criminal knowledge or social pressure within a peer network.²⁷ Figure 1 shows a strong positive association between the proportion of an ex-combatant’s network involved in crime and an ex-combatant’s own criminal propensity.²⁸ While these figures show a simple bivariate correlation, they nonetheless underscore the highly social nature of criminal activity among demobilized combatants.²⁹

While our results so far present little support for the economic opportunity cost hypothesis and strong support for both hypotheses related to the importance of enduring wartime ties, we perform additional analysis to further substantiate these findings. We examine two possible explanations for the pattern of results observed so far: heterogeneous effects by fighting group and possible omitted variable bias. First we examine whether there is more evidence for the importance of economic and social factors when we disaggregate our analysis

²⁷This is consistent with the sociological literature, which has long noted that one of the strongest predictors of criminal behavior is the number or proportion of people in one’s social network engaged in crime (Sutherland, 1947; Winfree, Backstrom and Mays, 1994).

²⁸We measure the share of an ex-combatant’s network involved in crime adapting an approach developed by Salganik et al. (2011). Unlike for our other independent variables and controls, we did not ask respondents to provide information on the share of an ex-combatant’s network involved in crime one year following demobilization. This association could thus reflect the fact that ex-combatants who engage in crime are more likely to acquire criminal friends.

²⁹Additional results in Appendix H show that ex-combatants that maintained strong vertical *and* horizontal wartime ties were significantly more likely to engage in *violent* crime than those who only maintained relations on one social dimension.

by fighting group.³⁰ There is good reason to believe that the factors associated with criminality vary across Colombia’s two distinct fighting groups: left-wing guerrillas and right-wing paramilitaries. Paramilitaries are widely viewed as more mercenary than guerrillas, which means that an association between economic factors and criminal behavior might be more apparent in this subpopulation. Paramilitaries might also exhibit a stronger relationship between wartime ties and criminality because they demobilized collectively whereas guerrillas (up until the current peace process) primarily demobilized individually.

The results presented in Table 3 reinforce the null economic finding by revealing little evidence of an association between economic opportunity cost and criminality even among former paramilitaries, as exhibited by the small and statistically insignificant coefficients on the interactions of the four economic variables with paramilitary status. We do, however, observe that paramilitaries with strong ties to ex-combatant peers are significantly more likely to engage in criminal activity following demobilization than former guerrillas with similarly strong horizontal ties. This could reflect the fact that, because guerrillas primarily demobilized individually, they lacked a critical mass for engaging in crime even when strong horizontal ties endured.³¹ Interestingly, the results—as indicated by the positive and significant coefficient on the direct measure of vertical ties and the lack of a significant interaction effect—suggest that maintaining strong ties to former commanders is positively associated with criminality for both ex-paramilitaries and ex-guerrillas.

We also test the robustness of our results to the possibility of hidden confounding. One potential concern is that fighting units that were more engaged in wartime crime could be more likely to have stronger ties following demobilization, resulting in a spurious association between strength of wartime ties and criminality. We test this in Appendix I by checking

³⁰We perform additional heterogeneous effects analysis in the next section to examine further the null economic results.

³¹Indeed, our data suggests that 17 percent of former guerrillas—compared to 29 percent of ex-paramilitaries—participated in crime following demobilization.

the robustness of our main results to the inclusion of fighting unit (*bloque*) fixed effects and the presence of coca production in the area in which a fighting group was operating. We obtain almost identical results when controlling for fighting unit and coca cultivation.

Of course, wartime criminality is only one possible variable that could introduce confounding. Generally speaking, there could be some other omitted variable that is negatively correlated with our economic variables and/or positively correlated with our social variables that could produce the pattern of results observed above, even after including all of our controls. We report in Appendix J the results of a sensitivity analysis that examines how extreme confounding by some omitted variable would have to be in order to undermine the main results presented here (Imbens, 2003). The sensitivity analysis shows that a hidden confounder would have to exhibit extremely high correlations—well higher than the correlations exhibited by all other variables included in the analysis—to overturn the null results. With respect to our social findings, there is some indication that the relationship between our index of ties to ex-combatant peers and criminality could be sensitive to confounding but the confounding would have to be rather strong—similar in magnitude to the predictive power of gender or conflict exposure.

Finally, in Appendix K we use a sensitivity analysis to assess the extent to which our inability to sample ex-combatants that remained “hidden” from the reintegration agency might bias our analysis. We show that to overturn our null results on “objective economic welfare” (for example), the effect in the hidden population would have to be negative and, at minimum, thirteen times larger in magnitude than the effect presented in Table 2. We also find, in order to overturn results on the effects of horizontal and vertical ties, the effect in the hidden population would have to be of the opposite sign and about an order of magnitude larger in their strength.

All in all, our data provides clear and robust evidence that social factors—namely ties to former commanders and combatants—are a key driving force of criminality in general

and violent crime in particular.³² These findings raise important additional questions about *why* wartime social ties pull ex-combatants into crime, which we explore after considering the surprising lack of evidence for a relationship between economic factors and criminal behavior.

Why no evidence for economic opportunity costs?

The analysis presented thus far suggests that the null effect on economic factors is not due to heterogeneity by fighting group or to omitted variable bias. We address four additional explanations for the null results, considering whether they could be due to attenuation bias, additional sources of heterogeneity, the effectiveness of the reintegration program, and our measurement of crime.

One possible explanation for the null economic results could be attenuation bias due to classical measurement error. We think this is unlikely because our economic measures are based on information that should be relatively easy for respondents to provide and our measures are based on modules commonly used on Colombia's census. Furthermore, while measuring income and wealth on surveys can produce noisy results, the use of indices helps to remove noise. Another potential source of attenuation bias is the "classic" selection problem, whereby selection on some variable attenuates its predictive power in the selected sample (Achen, 1986, 73-78). This could taint our results if it were the case that Table 2 reported coefficients on respondents' economic conditions *prior* to joining an armed group. Our analysis, however, estimates coefficients on respondents' economic conditions after demobilizing, *controlling* for economic conditions prior to joining (see Appendix G).

A second explanation for the null economic results could be that the relationship between economic welfare and criminality is conditional on the presence of some other factor. While we find no evidence of a stronger association between economic factors and criminality

³²See also Appendix I for evidence that our main results are robust to alternative codings of the dependent variable and to excluding from the analysis ex-combatants who committed crimes within one year of demobilization.

conditional on fighting group, there are other sources of heterogeneity in the ex-combatant population that could moderate the relationship. For instance, it might be that economic insecurity is only linked to criminality when an ex-combatant also has strong wartime ties that enable criminal behavior. Evidence presented in Appendix L suggests this is not the case, however. We also show in Appendix L that there is no evidence that the association between economic factors and criminality is greater for ‘material types’—those who first joined an armed group for economic reasons.

Third, it could be the case that the employment and benefits component of Colombia’s reintegration program succeeded in severing the link between economic insecurity and crime within the first year of demobilization. Indeed, the Colombian reintegration program has witnessed certain successes—reflected in our survey data—with respect to the reincorporation of fighters into civilian life. Participation and receipt of reintegration benefits, at least in initial phases, was near universal, with virtually all respondents indicating that they had received assistance packages in their first year of demobilization. Sixty-seven percent of ex-combatants indicate being satisfied with their economic conditions in the year following their demobilization and 81 percent report having found employment in that time. Only 23 percent reported incomes that would translate to less than \$10 per day (in purchasing power parity terms), indicating economic hardship. Our data indeed indicates that ex-combatants who participated in the reintegration program were significantly less likely to engage in crime (see Appendix G), possibly because of the economic benefits provided by the program.

A final possibility is that economic factors matter less for the decision of whether to engage in crime or not (our focus) and more for how time is *allocated* between legal and illegal sectors. This is not something that we can investigate in our data, however. All in all, in light of the possible explanations for the null economic result elaborated here, we do not argue that economic conditions never matter for criminality. Nor do we interpret our results as a definitive challenge to the economic opportunity cost logic. Nevertheless, our findings clearly show that enduring wartime ties—even when controlling for economic opportunity

costs—play an important role in ex-combatant criminality following demobilization, and understanding why is where we turn our attention next.

6 Towards a Social Logic of Crime

In our theoretical analysis, we discussed how wartime ties could operate to facilitate either crime or legal sector integration, but that stigma and the potential returns to crime could tilt commanders and their well-connected followers toward criminality. We now dig deeper into the mechanisms that can explain how wartime ties facilitate criminal behavior. As discussed in Section 2, the literature suggests that wartime ties could serve as a resource, providing an ex-combatant with access to criminal knowledge, skills, and technology. Wartime ties could also motivate an ex-combatant to participate in criminal activity by transmitting pro-crime social norms, bestowing social rewards on those who engage in crime and social costs (like peer pressure) on those who do not. Conceptualizing distinct *resources* and *norms* mechanisms helps to reveal not only how wartime ties might facilitate criminality but also the types of interventions that might counteract their pull.

To investigate these two mechanisms, we develop a simple formal model in Appendix N that provides intuitions to guide further empirical analysis. Following on the discussion in Section 2 and our main results, we begin by assuming that a higher ranking ex-combatant (a “commander”) aims to recruit a lower-ranking ex-combatant (a “recruit”) into crime. Also consistent with our predictions and results, a recruit can be characterized by the strength of his horizontal ties to other ex-combatants. We focus on considering how these ties to other ex-combatant peers affect the commander’s wage offer and the recruit’s subsequent decision to engage in crime.

One implication of the resources mechanism is that ex-combatants with strong horizontal relations should have more knowledge and expertise, making them more likely to evade capture for a given level of effort. We find evidence for this when we compare the correlates of criminality in the administrative versus the survey data as shown in Table 4. Indeed,

Table 4 shows no association between horizontal ties and criminality when analyzing the administrative data alone (columns 1-2) but there is a positive association in the survey data (columns 3-4). One interpretation of these results is that criminal ex-combatants with strong horizontal ties are more capable of evading detection by the state and therefore less likely to appear in the administrative data.³³

We can explore the resources mechanism further by considering its implications for outside employment options in the legal sector. Importantly, horizontal ties, insofar as they confer knowledge and skills, do not necessarily have to draw ex-combatants into crime. In serving as a resource, such ties could also help an ex-combatant find and succeed at legal sector employment. If wartime ties primarily have a capacity-enhancing effect, then a criminal commander would have to offer a well-connected recruit a higher wage to pull him into crime. Criminal wage offers that increase with the strength of horizontal ties thus suggest that wartime networks function as a resource. In contrast, if horizontal ties operate through a *norms* mechanism—strengthening the motivation to participate in crime by transmitting norms and conferring social rewards for engaging in crime (or social costs for not)—the stronger an ex-combatant’s social ties, the *lower* the commander’s criminal wage offer would have to be.

To test this proposition, we use data from the self-administered survey to calculate the mean criminal wage offer an ex-combatant received.³⁴ Overall, the results presented in Table 5 are more consistent with the notion that horizontal wartime ties enhance criminal abilities rather than motivations. We observe a positive association between horizontal ties and wage offers in the regression without controls (column one). While this association is not significant when controls are incorporated (column two), the coefficient is still positive and

³³While there could be other explanations for the difference between the survey and administrative data we do not have a way of adjudicating these. We therefore treat this evidence as suggestive.

³⁴For summary statistics for all variables used in the mechanism analysis, see Appendix D.

rather large, suggesting that the resources mechanism dominates the norms mechanism.

We can also examine the norms mechanism more directly. This mechanism suggests that strong horizontal ties facilitate criminality by transmitting the norm that criminal behavior is socially acceptable and not deviant. A positive association between the strength of horizontal ties and acceptance of criminal behavior would suggest that such a mechanism were operative. We examine this by constructing a ‘sympathy towards crime’ index using eight measures from the survey that capture support for criminal activity under different conditions.³⁵ As can be seen in Table 5, there is a strong positive association between horizontal ties and acceptance of criminal norms (column 3) but this association becomes weak in the regression with controls (column 4).

Finally, if horizontal ties motivate criminal behavior by awarding social status for criminal participation, the relationship between such ties and criminality should be stronger for those individuals with the strongest need for social reward (or who are most averse to the social costs of non-participation). We operationalize the desire for social reward using a question from the survey that captures the extent to which an ex-combatant is status-seeking, proxied by whether he felt he lost status, respect, or power by demobilizing. The results presented in columns 5-8 of Table 5 provide little evidence that the association between horizontal ties and criminality is stronger for those individuals who are more status-seeking.

Overall, this exploratory analysis suggests tentative support for both the resource and the norms mechanisms and, ultimately, highlights the need for more research. Future research is especially important because the mechanisms theorized here raise questions about what reintegration interventions might be most effective at mitigating the pull of horizontal ex-combatant ties into crime. One policy implication of the resources mechanism is that reintegration interventions should identify ex-combatants who are central in their networks and provide them with the resources to succeed in the legal sector so that they can create legal employment options for ex-combatants to whom they are tied. In contrast, evidence

³⁵See Appendices C and D for more details.

for the norms mechanism would motivate a greater emphasis on strategies like cognitive behavioral therapy, which seeks to keep individuals out of crime by redefining norms of acceptable social behavior (Blattman, Jamison and Sheridan, 2017). Future research should aim to understand better these mechanisms and the effectiveness of the policy interventions that they imply.

7 Conclusion

This paper examines how economic and social conditions following demobilization explain criminal behavior among demobilized combatants. We find strong evidence that, in the Colombia context, maintaining ties to former commanders and ex-combatant peers plays an important role in criminal behavior in general and violent crime in particular. Further analysis suggests that wartime ties could enhance both the abilities and motivations to engage in crime.

An important question pertains to the extent to which the results presented here generalize to other contexts. There may be contexts in which economic factors play a greater role in explaining criminality, for instance in countries where reintegration programs have been less successful at improving the material conditions of demobilized combatants. Alternatively, while we find a strong association between wartime ties and criminality in Colombia, other countries might be more successful and neutralizing or re-purposing wartime ties for legal ends. For example, in Peru, the *Rondas Campesinas* became civil society associations whereas the Free Aceh Movement in Indonesia resurrected itself as a victorious political party. Future research should do more to examine when wartime ties pull ex-combatants towards crime *or* towards integration into civilian life. Additional research is also needed on the *structure* of ex-combatant networks and how they evolve following demobilization.

In finding an association between wartime ties and crime, this paper calls for designing and testing reintegration interventions that explicitly aim to diminish the pull of wartime ties into crime. It remains an open question whether it is more effective to target reinte-

tion interventions at former commanders or at rank-and-file soldiers as the pool of potential recruits. On one hand, identifying the key criminals in a network and removing them from positions of power could be crucial to reducing crime. Yet, our findings also show potential value in thinking about how to diminish horizontal linkages among ex-combatant peers. There are nevertheless important challenges that come with dismantling conflict networks. For one, there is little empirical evidence of what works, especially in post-conflict contexts. Interventions could also have adverse effects such as re-militarization if breaking up conflict networks alters the balance of power and information asymmetries among demobilized fighting groups (Daly, 2016). Thus, another avenue would be to try to steer central actors in ex-combatant networks into the legal sector to see if they pull their networks with them. Our results imply that there would be great value in further empirical investigation into ex-combatant criminality and its social logic.

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8 Tables and Figures

Figure 1: Proportion of social networks in crime

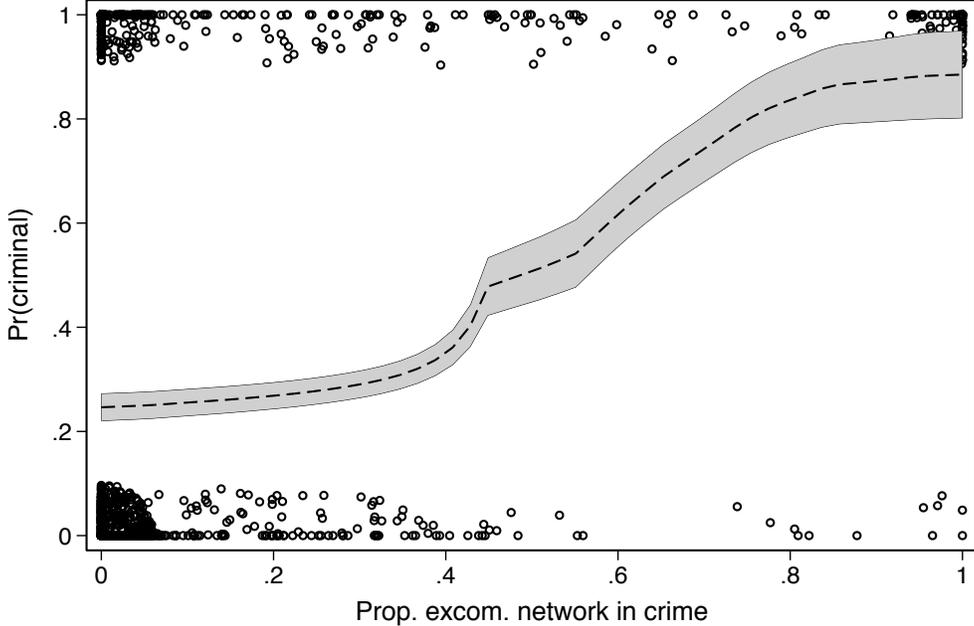


Table 1: Summary Statistics for DVs

	Mean	SD	Min	Max	Count
Panel A: 'Proven' criminality					
Convicted (admin. data)	0.11	0.31	0	1	1158
Criminal (surv. data)	0.20	0.40	0	1	1158
As an individual	0.10	0.30	0	1	1158
With a gang	0.05	0.21	0	1	1158
Reported type of crime(s)	0.20	0.40	0	1	1158
Proven criminality (survey + admin)	0.24	0.43	0	1	1158
Panel B: Committed violent crime					
Violent crime (combines two measures below)	0.31	0.63	0	2	1158
Violent crime as an individual	0.25	0.56	0	2	1158
Violent crime with a gang	0.20	0.52	0	2	1158

Summary statistics are weighted to the population.

Table 2: Main results on criminality, social ties, and economic conditions

	(1)	(2)	(3)	(4)
	Criminal	Criminal	Violent	Violent
Employed	0.01 (0.04)	-0.00 (0.04)	-0.05 (0.06)	-0.06 (0.06)
Econ welfare obj. (index)	0.02 (0.02)	0.02 (0.02)	0.03 (0.03)	0.04 (0.03)
Econ welfare subj. (index)	0.03 (0.02)	-0.00 (0.02)	0.05 (0.03)	0.01 (0.03)
Education	0.02 (0.01)	0.02 (0.02)	0.00 (0.02)	0.00 (0.03)
Vert. ties	0.06*** (0.02)	0.05* (0.02)	0.11*** (0.03)	0.08** (0.03)
Horiz. ties	0.07*** (0.02)	0.05* (0.02)	0.16*** (0.04)	0.15*** (0.04)
Observations	1158	1158	1158	1158
Econ_F_test_p	0.05	0.58	0.25	0.50
Social_ties_F_test_p	0.00	0.00	0.00	0.00
Clusters	570	570	570	570
Covariates	No	Yes	No	Yes

Standard errors in parentheses

Weighted least squares with municipality FE and indiv. controls.

Standard errors account for clustering by survey sampling blocks.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: Social and economic conditions interacted with paramilitary status

	(1)	(2)
Employed	0.00 (0.05)	0.02 (0.05)
Econ welfare obj. (index)	0.03 (0.02)	0.03 (0.03)
Econ welfare subj. (index)	0.01 (0.02)	-0.01 (0.02)
Education	0.02 (0.02)	0.01 (0.02)
Vert. ties	0.09* (0.04)	0.07* (0.04)
Horiz. ties	-0.00 (0.02)	-0.01 (0.03)
Emp X paramil.	-0.00 (0.07)	-0.04 (0.07)
Econ. obj. X paramil.	-0.01 (0.03)	-0.01 (0.03)
Econ. subj. X paramil.	0.04 (0.03)	0.03 (0.03)
Educ. X paramil.	0.00 (0.02)	0.01 (0.02)
Vert. ties X paramil.	-0.04 (0.04)	-0.03 (0.04)
Horiz. ties X paramil.	0.10** (0.03)	0.09** (0.03)
Paramilitary (vs. guerilla)	0.07 (0.08)	0.05 (0.11)
Observations	1158	1158
Econ_F_test_p	0.17	0.71
Social_ties_F_test_p	0.00	0.00
Clusters	570	570
Covariates	No	Yes

Standard errors in parentheses. Weighted least squares with municipality FE and indiv. controls. Standard errors account for clustering by survey sampling blocks.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: Main results on criminality, social ties, and economic conditions

	(1)	(2)	(3)	(4)
	Criminal (admin.)	Criminal (admin.)	Criminal (surv.)	Criminal (surv.)
Employed	0.01 (0.03)	0.01 (0.03)	-0.00 (0.04)	-0.01 (0.03)
Econ welfare obj. (index)	0.01 (0.01)	-0.00 (0.01)	0.03* (0.02)	0.04* (0.02)
Econ welfare subj. (index)	0.01 (0.01)	-0.00 (0.01)	0.02 (0.02)	0.00 (0.02)
Education	0.02 (0.01)	-0.00 (0.01)	0.01 (0.01)	0.02 (0.02)
Vert. ties	0.04* (0.02)	0.04* (0.02)	0.06*** (0.02)	0.04* (0.02)
Horiz. ties	0.02 (0.01)	0.02 (0.01)	0.07*** (0.02)	0.06* (0.02)
Observations	1158	1158	1158	1158
Econ_F_test_p	0.24	0.99	0.06	0.06
Social_ties_F_test_p	0.00	0.02	0.00	0.00
Clusters	570	570	570	570
Covariates	No	Yes	No	Yes

Standard errors in parentheses

Weighted least squares with municipality FE and indiv. controls.

Standard errors account for clustering by survey sampling blocks.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: Results on horizontal ties mechanisms

	Resources		Norms					
	(1) Log wages	(2) Log wages	(3) Sympathetic	(4) Sympathetic	(5) Criminal	(6) Criminal	(7) Violent	(8) Violent
Vert. ties	0.52* (0.20)	0.41* (0.18)	0.11 (0.06)	0.04 (0.06)	0.06** (0.02)	0.05* (0.02)	0.10** (0.03)	0.07* (0.03)
Horiz. ties	0.73*** (0.15)	0.19 (0.15)	0.18** (0.06)	0.07 (0.05)	0.06* (0.02)	0.05* (0.03)	0.13** (0.04)	0.13** (0.05)
Horiz. ties X status					0.00 (0.05)	-0.01 (0.04)	0.11 (0.08)	0.11 (0.08)
Status-seeking					0.13* (0.06)	0.08 (0.06)	0.17 (0.09)	0.10 (0.09)
Observations	1158	1158	1158	1158	1158	1158	1158	1158
Clusters	570	570	570	570	570	570	570	570
Covariates	No	Yes	No	Yes	No	Yes	No	Yes

Standard errors in parentheses

Weighted least squares with municipality FE and indiv. controls.

Standard errors account for clustering by survey sampling blocks.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$