

Wartime Ties and the Social Logic of Crime

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Abstract

Failure of ex-combatants to reintegrate into legal, civilian life 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 strong 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 suggest the need for greater attention to the role of social factors in understanding transitions from wartime to peace and in designing reintegration interventions.

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1 Introduction

During transitions from civil war to peace, criminality often runs rampant (Call, 2007). Ex-combatants, who specialize in violence during wartime, are a principal source of criminality in many post-conflict countries. Getting these former fighters to pursue their interests through legal means rather than through illicit ones is critical not only to their successful reintegration into civilian life but also to ensuring law, order, and stability in post-conflict environments (Collier, 1994; Spear, 2002; Muggah, 2009).

While political science has traditionally focused more on explaining armed conflict and re-militarization (Kalyvas, 2015), there is a growing interest in understanding the determinants and dynamics of crime as a source of disorder in general (Calderon et al., 2015; Lessing, 2015) and among ex-combatants in particular (Themner, 2015; Kaplan and Nussio, 2016).¹ This goal is bedeviled, however, by the fact that there exist 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.

Perhaps the prevailing explanation for criminal behavior centers on the role of individual-level 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; Blattman and Annan, 2015). Indeed, the opportunity cost logic underpins the

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.

majority of reintegration interventions in post-conflict countries (Gilligan, Mvukiyehe and Samii, 2013; Tajima, 2010).

A different logic roots the decision to engage in crime in social factors. This explanation is central to research in sociology and criminology but has received comparatively less attention in political science. Such an 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 social 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; Bayer, Hjalmarsson and Pozen, 2009; Ballester, Calvo-Armengol and Zenou, 2006). There is good reason to believe that certain social ties—especially ties to former commanders and ex-combatant peers—can increase individuals’ criminality even after demobilization through such mechanisms. While some have noted the potential importance of dismantling wartime command-and-control structures (Humphreys and Weinstein, 2007; Spear, 2002), interventions specifically designed to break up or redirect wartime networks have received comparatively less attention from reintegration programs. This could be due, in part, to the fact that there is little evidence of 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 finds evidence that strongly favors the latter. 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. 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, conducting surveys on criminality also presents challenges associated with sampling a hard-to-reach population and eliciting honest responses about sensitive and

incriminating 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. We address measurement challenges by using a self-administered survey to elicit honest responses to sensitive questions (Tourangeau and Yan, 2007). 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.

Our analysis evaluates the relative explanatory power of individual-economic and social factors. We use observational data, and causal identification 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.² The benefit of our approach is that we are able to compare the relative importance of multiple possible contributing factors that would be difficult to manipulate simultaneously in an experiment 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 enduring wartime ties are highly correlated with ex-combatant criminality. Both enduring relations 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

²We also have external validation against an alternative machine-learning approach to estimating effects. The machine learning results are presented in [REDACTED], and yield findings consistent with those presented here.

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 criminal behavior. Additional empirical analysis provides suggestive evidence that wartime ties primarily function as a resource that enhances the criminal capabilities of demobilized combatants.

This paper contributes to research on crime and post-conflict reintegration. First, it calls attention to the importance of considering social factors alongside economic ones. While several political science studies have shown that social networks are a critical factor in recruitment into rebellion in the first place and in the operational effectiveness of armed groups (Wood, 2008; Parkinson, 2013; Staniland, 2012), there has been comparatively less attention to how social factors relate to economic ones and to how wartime ties evolve following demobilization (for exceptions see Themner, 2015; Daly, 2016). The evidence presented here underscores the importance of enduring wartime ties to criminality, shedding light on *why* such ties matter and how their pull might be mitigated. In doing so, this paper highlights the importance of developing and testing policy interventions that directly tackle the thorny issue of armed group ties. Recent studies 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, 2015). Our findings motivate an examination of efficacy of interventions explicitly designed to mitigate the effect of wartime ties on criminality.³

2 Explanations for ex-combatant criminality

The main goal of this paper is to examine the determinants of ex-combatant criminal behavior, conceptualized as any activity deemed illegal by the laws of the state. In what follows

³In [REDACTED] we define possible economic and social interventions retrospectively and use machine learning to estimate their potential impact.

we motivate hypotheses as to how economic welfare and the strength of wartime ties following demobilization relate to criminality. We privilege the importance of these economic and social logics because major research traditions have argued that these 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. Below we discuss several other potential explanations for ex-combatant criminality and how we control for them in order to focus our investigation.

Economic opportunity cost and crime

It is widely believed that individual material-economic conditions are central to decisions to engage in crime. Such conditions include individuals' employment opportunities and wealth. 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 general 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 being caught. 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).

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, presumably 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 and mining, and interest in mercenary activity by high-risk men (including ex-combatants) in post-conflict Liberia. While there is some evi-

dence 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.

Wartime ties and 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 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) proposes 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

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

predictor of criminal behavior than the number of delinquent friends the individual has” (p. 40).

While sociological studies have focused primarily on the importance of family, neighborhood, and peer ties, the decision to engage in crime is likely even more social in nature for demobilized combatants, who often emerge from past violence with powerful bonds created by wartime experience.⁵ Early sociological theories of crime describe how factors such as the frequency and duration of social interactions, the priority attached to certain social ties, and the intensity of shared experiences create the kinds of connections that facilitate criminal behavior (Sutherland, 1947). While the strength of wartime ties varies, social ties among demobilized combatants from the same fighting units often have these characteristics.⁶ This occurs because wartime networks are often built upon strong and multifaceted pre-war networks. Bonds are 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).

Despite the potential importance of wartime ties to criminality, only a handful of academic studies have examined their relationship to post-conflict criminality or other reintegration outcomes. Humphreys and Weinstein (2007) find little evidence of an association between breaking factional ties and economic, social, or political reintegration. Others, however, have argued that wartime ties—particularly ties to former commanders—play a critical

⁵This study focuses on the effects of strong wartime ties rather than social ties more broadly precisely because these bonds are thought to be so powerful. For more on whether we find evidence that other family and community relations serve as a counter-veiling force to criminality, see Appendix F.

⁶In our analysis we control for factors that account for variation in the strength of wartime networks to minimize potential confounding in our estimation of how the strength of wartime ties following demobilization predicts criminal behavior (see Appendix F).

role in re-militarization. Drawing on qualitative data from Liberia, Themner (2015) claims that ex-combatant networks are more likely to re-mobilize when former mid-level commanders seek to reassert their role as power-brokers mediating the relationship between political leaders and foot soldiers. 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. Also in Colombia, Kaplan and Nussio (2016) find that living in a municipality with criminal gangs is correlated with ex-combatant criminality, although they do not investigate which wartime ties matter and the mechanisms by which such relations facilitate criminal behavior.

Drawing on the existing literature, we test two main hypotheses about the association between wartime ties and ex-combatant criminality. First, we hypothesize that ex-combatants who maintain stronger vertical ties to former commanders will be more likely to engage in criminal behavior. This is consistent with evidence that former commanders have a harder time reintegrating following demobilization (Humphreys and Weinstein, 2007). Moreover, as Themner (2015) and Daly (2016) suggest, there is good reason to believe that former commanders might be ‘first-movers’ into crime.⁷ As ‘first-movers’, former commanders might turn to criminal behavior for a number of different reasons, including economic ones.⁸ Re-

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.

⁸Economic incentives might be even greater for former commanders because they could be relatively worse off economically following demobilization; could obtain greater material rewards from crime due to their rank (Levitt and Venkatesh, 2000); or have made greater career investments in developing violent and criminal skills (Mocan, Billups and Overland, 2005). Of course, former commanders might also have social motivations for turning to crime, for instance to avoid losing the status and power that comes from exercising control over subordinates (Themner, 2015). See Appendix J for an exploratory analysis of how the

ardless of a former commanders' motivation for engaging in crime, this decision will likely have important implications for foot soldiers in their social networks. Commanders who retain strong ties to rank-and-file soldiers invariably maintain positions of authority and influence, which could lower the costs of recruiting foot soldiers. Moreover, much as with recruitment into armed groups (Weinstein, 2007), strong vertical ties can help a commander overcome the information dilemma, helping them to recruit skilled and trustworthy foot soldiers. It is for such reasons that some have argued that breaking command-and-control structures is essential to peace (Spear, 2002). This yields our first social hypothesis:

H2a Ex-combatants with stronger vertical ties to former commanders will be more likely to engage in criminal behavior.⁹

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. 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, ex-combatants with enduring ties to these ex-combatant peers will have greater access to criminal knowledge and skills that facilitate

correlates of criminality vary for former commanders and combatants. We note that our data does not allow us to test the proposition that former commanders move into crime first.

⁹Importantly, this hypothesis does not imply that all commanders turn to crime; there is variation in whether former commanders successfully reintegrate following demobilization (see Appendix J). This hypothesis presumes, however, that criminal behavior is common enough among former commanders that maintaining strong ties to them will—on average—pull ex-combatants into crime.

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 criminal behavior.¹⁰

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 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 rely on practices like indoctrination to develop group cohesion during conflict—are effective at transmitting social norms that are favorable to criminality (Nussio and Oppenheim, 2014). Consequently, former 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 strong horizontal ties to ex-combatant peers could play an important independent role in enabling or encouraging criminal behavior among ex-combatants:¹¹

¹⁰It 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.

¹¹Importantly, by enhancing the capabilities or motivations to engage in crime, strong ties to ex-combatant peers can help to explain not only group or gang-related crime but also individual crime. In our analysis we include both crimes committed with a group and crimes attributable to individual initiative.

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

In what follows we test both the economic and social logics of ex-combatant criminality outlined here. We return to developing a more complete theoretical account of the mechanisms by which wartime ties facilitate criminal behavior in Section 6.

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 Revolutionary Armed forces of Colombia (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 58,000.¹² Following the historic peace accords signed between the Santos administration and the FARC in November 2016, an additional 7,300 FARC guerrillas have demobilized.¹³ 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).

Despite this effort, a large 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 guerrilla dissidents. The BACRIM are deemed the most serious threat to contemporary Colombian security.¹⁴ They are engaged in the targeting of civilians, massacres, rape, extortion, assassinations, kidnappings, displacement, and trafficking (Human Rights Watch, 2010).¹⁵

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. We describe our data next.

¹²The former guerrillas in our study are thus those who demobilized voluntarily before the 2017 peace accord.

¹³This figure is current as of March 2017.

¹⁴<http://colombiareports.com/neo-paramilitary-groups-pose-biggest-threat-to-security-and-human-right-in-colombia-un/>.

¹⁵There is an ongoing debate about whether BACRIM are new criminal organizations or whether they are actually re-armed (counter) insurgent organizations (Human Rights Watch, 2010).

4 Empirical Methods

We test our hypotheses using data from an original 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

¹⁶This study was conducted in collaboration with the Colombian think tank, *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. We opted not to use data from a 2008 FIP survey of ex-combatants, and used for instance in Kaplan and Nussio (2016), because our inquiries raised concerns about the representativeness of the sample.

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 ‘locatable’ to the ACR and thus enter our sampling frame.¹⁷ Our sampling frame was thus the best that one could likely obtain in Colombia for studying ex-combatants.

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 has a great deal of legitimacy among ex-combatants. This was essential to reassuring ex-combatants of the credibility of the study and the confidentiality of their responses. 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 (rebel or paramilitary), 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 the prisoner sample, we generated a list of 18 medium and high security prisons associated with the selected municipalities and that contained at least 25 ex-combatant prisoners. We drew our sample of prisoners 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

¹⁷Based on the data to which we had access, we estimate that 4110 ex-combatants identified themselves to the ACR following the passage of Law 1424.

¹⁸Excluding municipalities with fewer than 50 ex-combatants implied a coverage loss of only 15 percent of the ex-combatant population.

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

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

Measuring criminality

We operationalize our measure of criminality as 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 11 percent of our population. We believe this is the most defensible way to operationalize

²⁰The penal code can be found at https://www.oas.org/dil/esp/Codigo_Penal_Colombia.pdf (last accessed March 20, 2017).

illicit behavior in the administrative data given that a number of those arrested or charged are later exonerated.²¹ 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.²² 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.²³

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 (0), those who have engaged in individual and/or gang crime that was never violent as one (1); and those who engaged in individual and/or gang crime that involved at least some violence as two (2). 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 reduce endogeneity and 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

²¹Here we differ from Kaplan and Nussio (2016) who infer criminality from data on arrests.

²²See Appendix C for the exact wording of the main survey questions used in the analysis. The complete survey instruments can be found at [FUTURE DATAVERSE WEBSITE].

²³See Appendix E for more on the extent to which our survey identified a ‘hidden’ population of ex-combatant criminals.

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 first year.²⁴ 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.²⁵ 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. Our index of horizontal ties to other combatants comprises seven measures that capture the proportion of a respondent’s friends who are combatants; the amount of

²⁴Forty-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 G).

²⁵We use inverse covariance weighting to create all indices in this paper. Inverse covariance weighting assumes one latent trait of interest and constructs an optimal weighted average by weighting-up index components that have lower covariance (and thus provide more ‘new’ information) (Anderson, 2008).

time spent with other combatants; and the likelihood that a respondent would turn to a combatant for help in an emergency.²⁶

Control variables

Our analysis makes use of 123 controls obtained from the enumerated survey to mitigate concerns about omitted variable bias driving any observed correlation between our explanatory variables and crime. Our controlled analyses focus on within-municipality, individual-level variation. Thus, all covariate-controlled analyses also incorporate municipality fixed effects. We address concerns about confounding by selecting control variables that may be correlated with either economic or social conditions following demobilization and also with criminal activity, or that may be direct correlates of 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. For summary statistics, a discussion of our choice of controls, and analysis of the association between all controls and crime, see Appendices D and F.

Estimation and inference

Following Lenz and Sahn (2017) we show both simple bivariate relationships and then estimates that incorporate the full control strategy described above. 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 cor-

²⁶If 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.

responding 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 (Royston, 2004). Our standard errors are consistent for sampling variability given our sampling design. They 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*.²⁷

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 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.²⁸ 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.²⁹ While these figures show a simple bivariate

²⁷Kaplan and Nussio (2016) also do not find a correlation between economic factors and crime.

²⁸This 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).

²⁹We measure the share of an ex-combatant’s network involved in crime adapting an approach

correlation, they nonetheless underscore the highly social nature of criminal activity among demobilized combatants.

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 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 (Sanin, 2008), 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

developed by Salganik et al. (2011) designed to estimate the size of sensitive populations. Respondents were asked “How many ex-combatants living in this municipality do you know and also know you?” We then inquired into how many of these ex-combatants had engaged in criminal activity following demobilization. We note that—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.

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

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. It could be the case that there is some 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 H the results of a sensitivity analysis that examines how extreme such confounding 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.

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

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

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 in the population of ex-combatants 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, conditional effects, 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. Our measures have also been validated in our country context—indeed, they are drawn from 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, pp. 73-78; Heckman, 1979). 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 F).

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.

³²See also Appendix G 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.

While we find no evidence of a stronger association between economic factors and criminality 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 I suggests this is not the case, however. We also show in Appendix I 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. All in all, we find little indication in our data that conditioning on relevant variables reveals a relationship between economic opportunity costs and crime.

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. Consistent with this, our data indicates that ex-combatants who participated in the reintegration program were significantly less likely to engage in crime (see Appendix F), 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. Consistent with this, Blattman and Annan (2015) find that increasing the

opportunity cost of illegal work primarily shifts the amount of time allocated to work in the illegal sector but does not impact the decision to enter or exit. 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 light of the robust correlation between wartime ties and criminality, we dig deeper into the potential mechanisms in order to shed light on why 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 the knowledge, skills, and technology necessary to make him a more capable and effective criminal. 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.

In order to investigate these two mechanisms, we develop a simple formal model in Appendix K 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 initial 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). There is, however, a positive association between these variables 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. This is consistent with the notion that strong social ties can pull a network towards crime *or* reintegration depending on the conditions (Themner, 2015). 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

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.

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 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 the extent to which he felt he lost status, respect, or power by demobilizing. The results

³⁴Given high skew, we use the inverse hyperbolic sine transformation, which is defined for zero but can be interpreted like a log-scaled outcome (Burbridge, Magee and Robb, 1988). For summary statistics for all variables used in the mechanism analysis, see Appendix D.

³⁵See Appendices C and D for more details.

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. The coefficients on the interaction between horizontal ties and status-seeking are about zero (columns 5-6). While the coefficients on the interaction are positive when participation in violent crime is the dependent variable, the result is not significant.

Overall, this exploratory analysis suggests tentative support for both the resource and the norms mechanisms and highlights the need for more research. Future research is especially important because the mechanisms theorized here raise important 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 more outside options for ex-combatants to whom they are tied. In contrast, evidence 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 and providing identity and status through other means (Blattman, Jamison and Sheridan, 2015). Future research should aim not only to understand better these mechanisms but also the effectiveness of the policy interventions that they imply.

7 Conclusion

This paper uses original data to examine how economic and social conditions following demobilization explain criminal behavior among demobilized combatants. While we find little evidence of a link between economic opportunity costs and criminal behavior, there is a clear indication that maintaining strong ties to former commanders and ex-combatant peers plays an important role in criminal behavior in general and violent crime in particular. Additional theoretical and empirical analysis suggests that wartime ties could enhance both

the abilities and motivations to engage in crime.

In highlighting the importance of wartime ties, the results suggest several avenues for future research. This paper calls attention to the need for more analysis of the *structure* of demobilized ex-combatant networks and how they evolve. Such a focus would help to verify whether former commanders indeed enter into crime first; how and why criminal behavior diffuses through a network; and the role that opening wartime networks to non-combatants plays in facilitating or hindering criminal propensities. Future research should also examine the conditions under which social ties to former commanders or ex-combatant peers pull individuals towards crime or towards reintegration into the legal sector. An enduring feature of sociological approaches to criminal behavior is that strong social ties can powerfully direct network members towards *either* pro-social or deviant behavior; more work is needed to shed light on how to direct networks towards reintegration.

To that end, 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 reintegration interventions at former commanders as ‘first-movers’ 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 (Ballester, Calvo-Armengol and Zenou, 2006). Yet, our findings also show potential value in thinking about how to diminish horizontal linkages among ex-combatant peers. However, there are important challenges that come with dismantling conflict networks. For one, there is little empirical evidence for 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. All in all, our results bring to the fore the need for further empirical investigation into ex-combatant criminality in general and its social logic in particular.

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8 Tables and Figures

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)
	Criminal	Criminal
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.

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

Figure 1: Proportion of social networks in crime

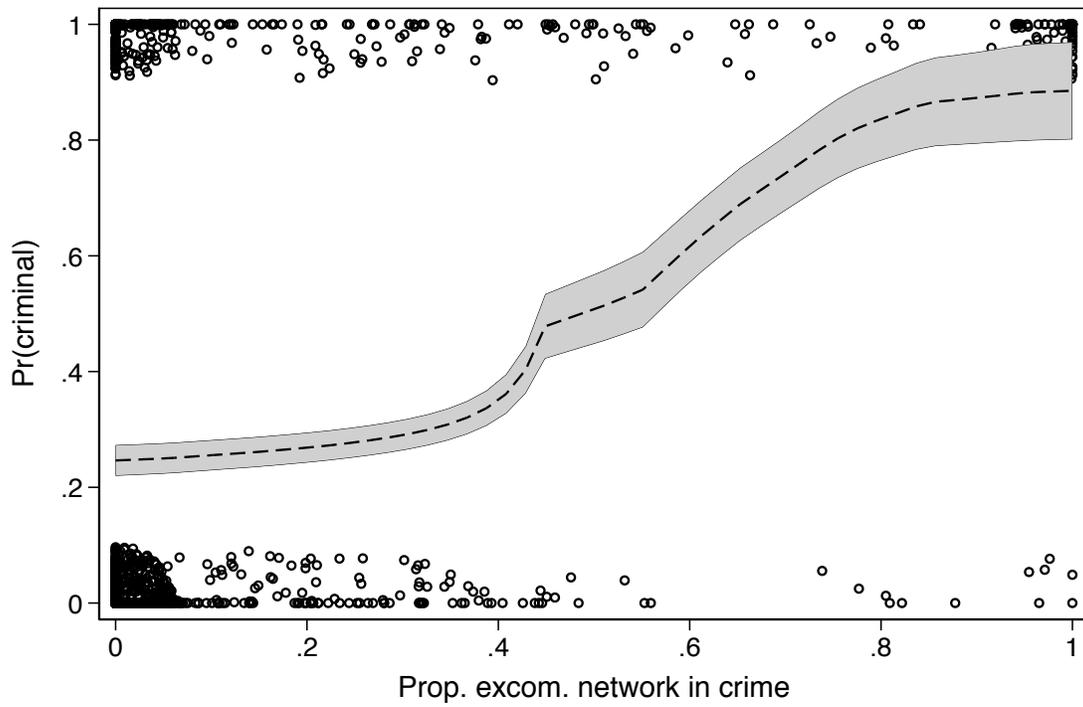


Table 4: Main results on criminality, social ties, and economic conditions

	(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.

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