Appendix Tables & Figures for "Peer Effects and Recidivism: Wartime Connections and Criminality among Colombian Ex-combatants"

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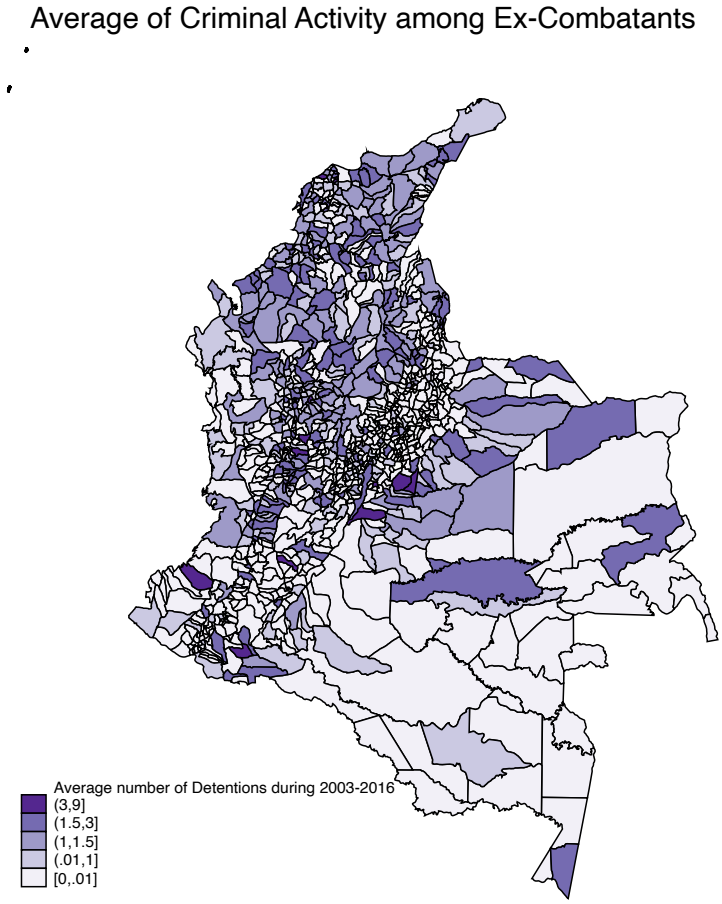
A Descriptive Statistics

In this section, I present descriptive statistics, the geographic distribution of ex-combatants criminal activity, the density of arrests, and the composition of the wartime networks following the parameters explained in the document.

Figure A 1: Ex-combatants' Captures



The map shows the location of the total number of captures from 2003, the moment of demobilization, to 2016 by ex-combatants in the place where they were captured..

Table A 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.
Panel Variables			
Number of arrests	50,162	0.037	0.21
Number of flagrant arrests	50,162	0.024	0.17
Municipal Variables			
Number of illegal gold mines	337	17.852	36.713
Length of oil pipe lines, km	588	0.107	0.333
Annual Variables			
Log global gold price, USD per ounce	4	7.151	0.191
Log global oil price, USD per barrel	4	4.082	0 .440
Ex-combatant Variables			
Age	16,771	37.4	7.45
Children	13,268	1.05	1.25
Socioeconomic stratum	16,403	1.34	0.63
Age joined armed group	16,762	24.24	7.66
Months in armed group	16,771	39.49	33.47
Years of education	16,446	9.189	3.66

Figure A 2: Densities of Arrest Rates across Colombian Municipalities

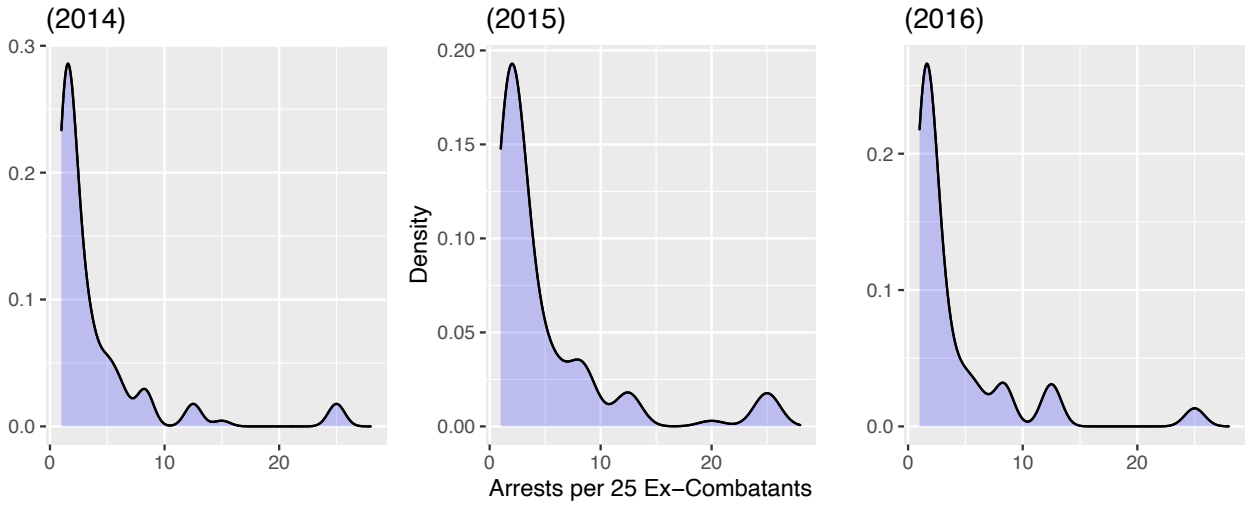
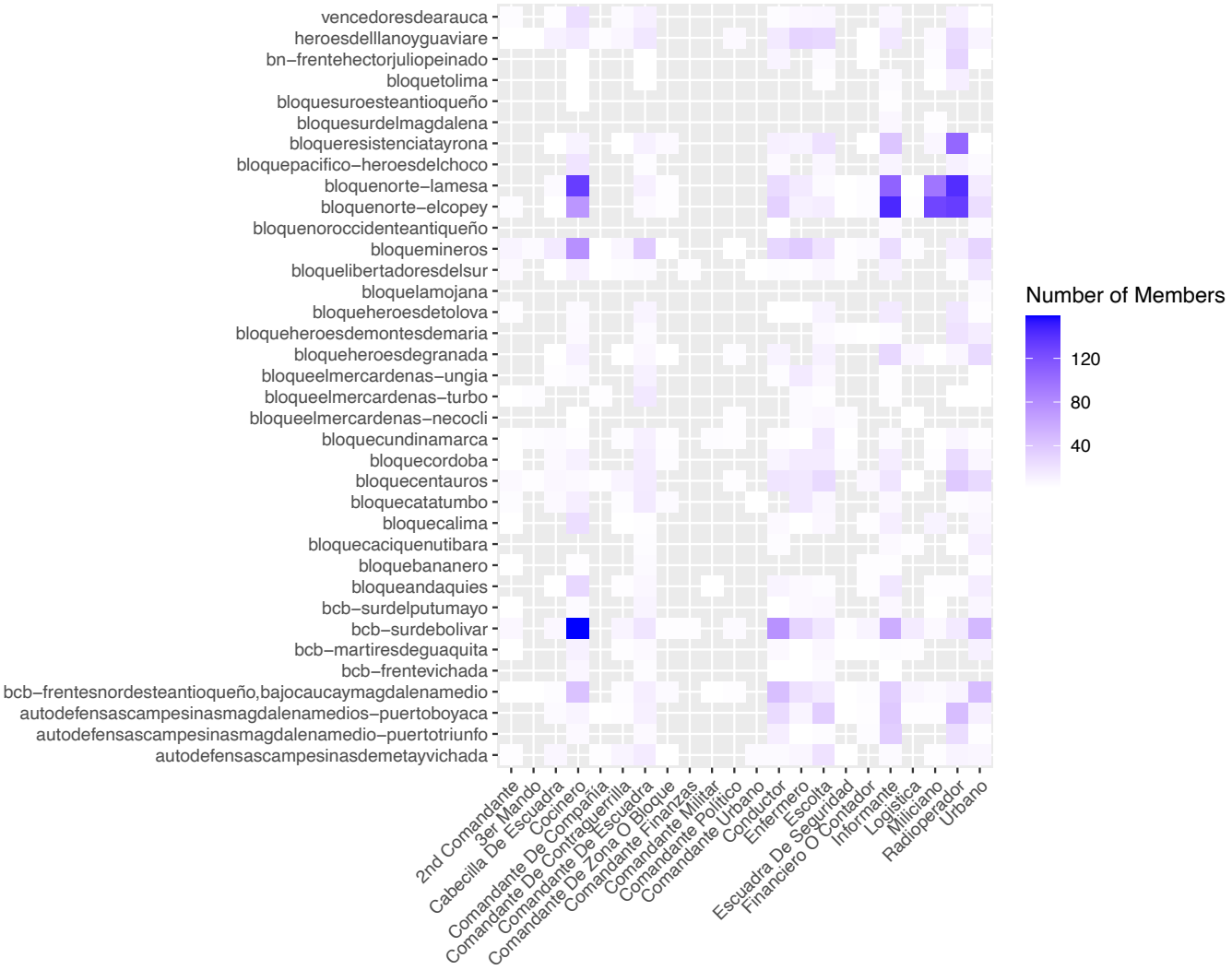


Figure A 3: Units, Ranks (In Spanish), and Number of Members in Wartime Groups



The figure shows the units that composed the AUC and the positions inside the units as self-identified by the former combatants and classified by the ARN. The figure excludes the position "Patrullero" (foot soldier) for visualization purposes, since it encompasses the few large groups of over 1,000 members.

B Main Results with All Captures

The following table presents the main results with all captures, and not only red-handed captures.

Table A 2: Effect of Gold Shock and Effect of Peers' Criminality – All Captures

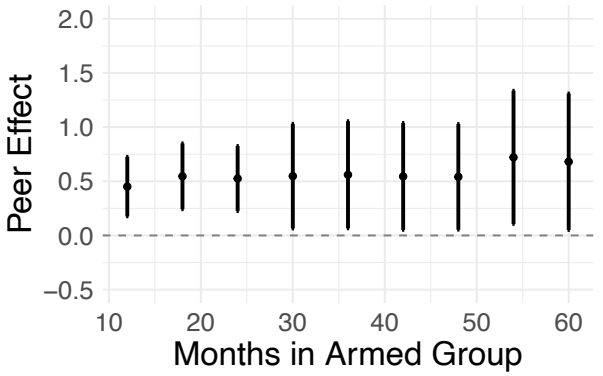
	Captures				
	(1)	(2)	(3)	(4)	(5)
Panel A: Economic shock and average shock for the group					
Economic Shock	0.398***	0.398***	0.327***	0.319**	0.320**
	(0.121)	(0.121)	(0.120)	(0.128)	(0.128)
Average Shock	0.209*	0.209*	0.225**	0.251**	0.247**
	(0.113)	(0.113)	(0.110)	(0.115)	(0.115)
Panel B: Criminal peer effects					
Peer Effect	0.344**	0.344**	0.408**	0.440**	0.436**
	(0.170)	(0.170)	(0.178)	(0.183)	(0.184)
Mean of Outcome	0.0368	0.0368	0.0368	0.0367	0.0367
S.D. of Outcome	0.2071	0.2071	0.2072	0.2071	0.2072
Observations	36,746	36,746	36,340	34,868	34,865
Municipality, Year, and Group FE	✓	✓	✓	✓	✓
Time Trends		✓	✓	✓	✓
Region × Year			✓	✓	✓
Municipality Characteristics TT				✓	✓
Individual Covariates					✓

The dependent variable includes all ex-combatant captures for the 2013-2016 period. Panel A shows the result of estimating Equation 6, where the first row represents the effect of the shock for individual i and the second row represents the average shock for the group g. Panel B shows the estimation using Equation 5. Standard errors in parentheses clustered at the group-wartime level. Municipality characteristics include pre-treatment levels of poverty, population, distance to Bogotá, and kms of paved roads. Individual controls include age, gender (female), and race (indigenous and afro). *** is significant at the 1% level, ** is significant at the 5% level and * is significant at the 10% level. Complete model results in Table A25 of supplementary material.

C Additional Results with Strong and Weak Ties

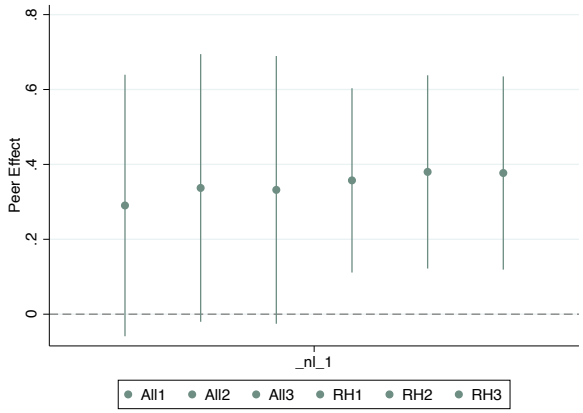
Figure A4 replicates Figure 5 in main text without municipal and individual level controls (group, municipal and time fixed effects included) for comparison with weak ties results (Figure A5).

Figure A 4: Peer Effect of Strong Ties: Years Together in Conflict



Estimation of peer effects considering only groups in which all members were in the armed group between one and five years. Full model results Table A42.

Figure A 5: Peer Effect Weak Ties for All and Rend Handed Captures

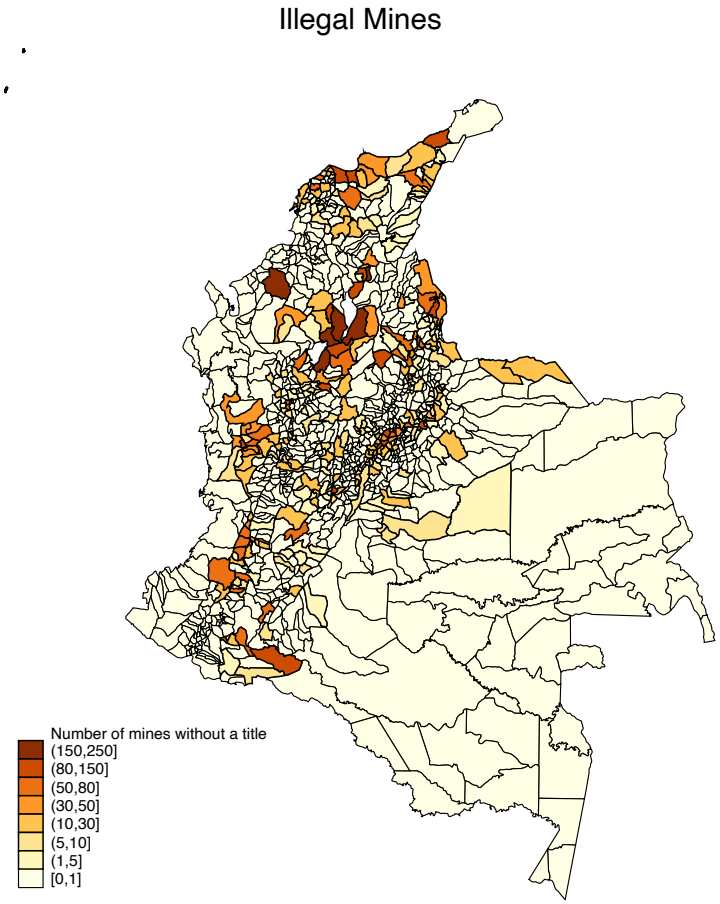


Estimation of peer effects with weak ties (unit in conflict only). Peer effects reflect the estimation of peer effect including different controls for all captures (All) and reda handed captures (RH): (1) includes group, municipal, and time fixed effects, (2) adds Region * time fixed effects and municipality conditions * time fixed effect, and (3) adds individual controls. Complete model results in Table A43 of supplementary material.

D Gold Production Map

The following map shows the geographic distribution of illegal gold production, following the main text's explanation.

Figure A 6: Geographical Distribution of Oil and Illegal Gold Production



E Additional Details of Illegal Mining and Crime in Colombia

Here I expand on the context section concerning the context of illegal gold mining in Colombia. First, I argue that variations in the price of gold are related with violence. Second, I refer to several cases documented by journalists and qualitative studies on this relationship in Colombia.

Illegal mining is a significant source of revenue for poor and marginalized people and has significant effects on development indicators at the local level (Ibáñez and Laverde, 2014; Romero and Saavedra, 2016). Idrobo, Mejía and Tribin (2014) show that variations in the international price of gold caused a statistically significant increase in the homicide rate and the number of victims of massacre in municipalities with illegal gold mines. To complement this analysis, I explore (i) the differences between ex-combatant criminality versus overall criminality; (ii) the effect of the economic shock on national levels of criminality as measured by captures; and (iii) the relationship between general captures and other measures of crime and violence.

E.1 Ex-combatants' Criminality and National Crime Level

Figure A.7 compares ex-combatant's type of crimes with national levels. The graph shows the percentage of each type of crime for the ex-combatant population — as in Figure 1 — and the corresponding national-level percentage for each type of crime. For example, if we consider homicide, the fifth category in the graph, we see that 10% of the captures of ex-combatants in this period were related to that crime, and around 2.5% of captures at the national level were. One of the most important differences between the percentages by type of crime refers to organized crime ('*concierto para delinquir*'): while this crime alone captures 20% of ex-combatant captures, it represents less than 2.5% of the national captures. This is in line with the social logic of crime, in which ex-combatants would be involved in more collective crimes.

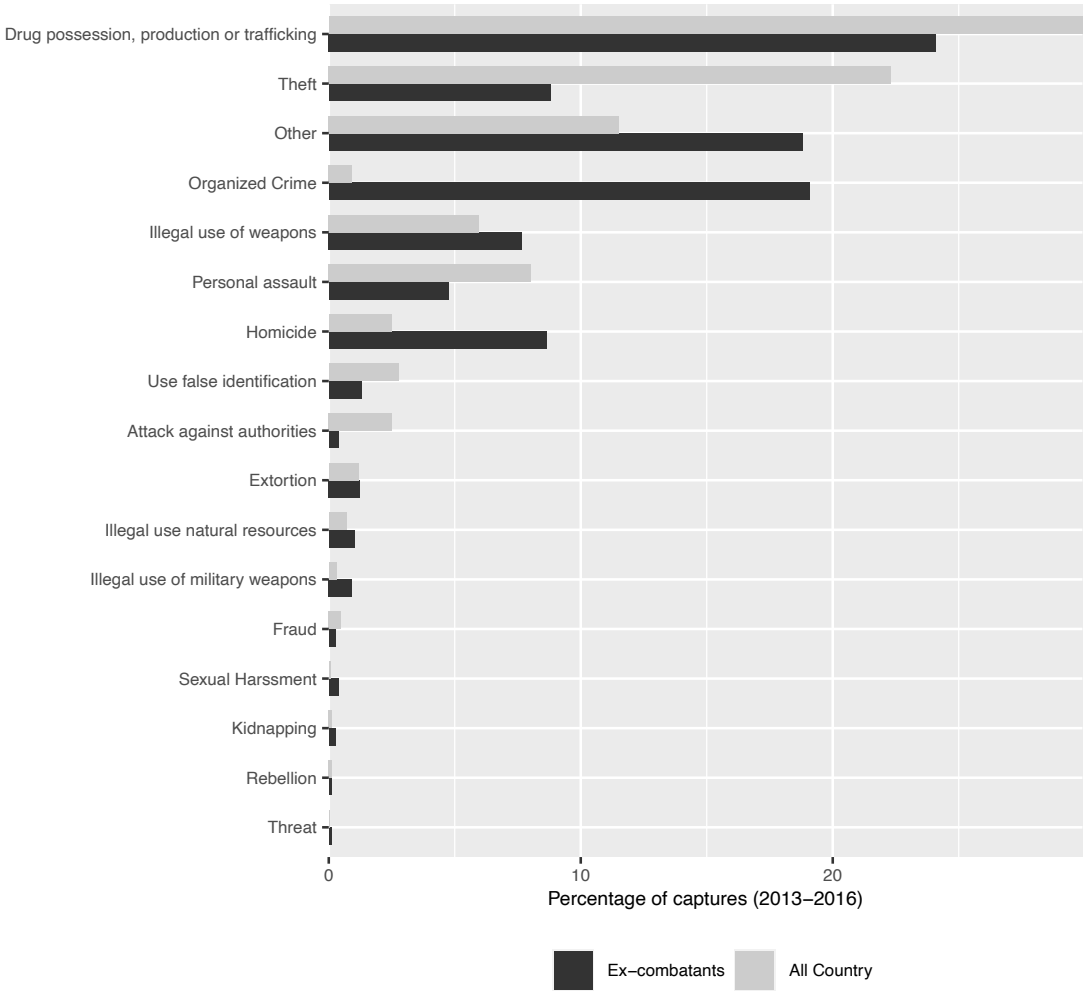
E.2 Economic Shocks and National-Level Captures

To look at the effect of the gold shock on overall levels of criminality and not only that of former paramilitaries, I estimate the following model:

$$y_{jt} = \alpha_j + \gamma_t + X_{jt} + \beta(\text{Gold}_j \times \text{GP}_t) + \epsilon_{jt}], \tag{7}$$

where y_{it} are crime outcomes including captures by the national police and captures of criminal bands (known in Colombia as Bandas Criminales, BACRIM) in municipality j and year t; α_j are municipality fixed effects; γ_t are year fixed effects; and X_{jt} are time-varying municipality controls that include log of population to account for the scale effect, because the dependent variable is measured as the number of captures. $Gold_j$ is the number of illegal gold mines in municipality j before 2013; GP_t is the natural log of the international price of gold in year t. In the equation, β captures the differential effect of the gold price on crime in municipalities producing more gold.

Figure A 7: Ex-combatant Crime and National Crime



Percentage of captures by type of crime for ex-combatants and national levels. Type of captures shown are the one present in both datasets.

In all specifications, I cluster the standard errors at the region level to control for potential correlation over time across municipalities within a region. Table A.3 shows the effect of the gold shock on captures for the 2013—2016 period. The coefficients in columns (1) and (2) show the effect of the gold shock on captures and those in columns (3) and (4) for criminal bands (BACRIM). The gold shock is positively correlated with captures and criminal band captures; though the estimates are of economic significance, they are of small statistical significance. This fairly stringent test provides some evidence that the the gold shock may affect crime and complements the results of Idrobo, Mejía and Tribin (2014), who show that the gold shock was particularly relevant in explaining levels of homicide and attacks in gold-producing areas for a different period.

Table A 3: Economic Shock at the National Level

	(1) National Captures	(2) National Captures	(3) BACRIM Captures	(4) BACRIM Captures
Municipal Gold Shock	4.716**	1.911	0.209**	0.145
	(2.058)	(2.379)	(0.101)	(0.113)
Mean of Outcome	1.9572	1.9572	0.0213	0.0213
S.D. of Outcome	1.9928	1.9928	0.0715	0.0715
Observations	1,164	1,164	603	603
Municipality FE	✓	✓	✓	✓
Year FE		✓		✓
Sample period	2013—2016	2013—2016	2013—2015	2013—2015

Dependent variables in columns 1 and 2 include all national-level captures from 2013 to 2016. Estimation based on Equation 7. Dependent variable in columns 3 and 4 include captures of criminal bands until 2015 (data constrained). Standard errors in parentheses clustered at the municipality level. *** is significant at the 1% level, ** is significant at the 5% level, and * is significant at the 10% level.

E.3 Crime Chain across Municipalities

A key part of the argument is the systematic spread of crime across different locations. To complement the results presented in the main analysis, here I report some activities related to illegal gold mining that involve the participation of multiple actors in different locations. The infromation is based on new articles of captures of members of criminal organizations, many of which were created from former paramilitary units.

The gold value chain has several stages, including the production, stockpiling, buying and selling, and finally marketing (Ortiz-Riomalo and Rettberg, 2018). In each of these stages, the participation of several actors is necessary. In the production phase, for example, the machinery needed for gold extraction uses motor fuel oil that must be acquired and transported to the place of extraction. On many occasions, the input is obtained through local gas stations that request exaggerated amounts of motor fuel oil from other municipalities, for which they have to get approval from the local government. The national police director has stated that the process is complicated because the motor fuel oil is not illegal. What is illegal is the whole process that has to be carried out through intimidation and corruption in different places in order to transport the oil (Rubiano, 2017).

Something similar happens with machinery. According to the investigations of the General Prosecutor's Office and the National Police, the machines used for the exploitation of mines are generally built from parts of used machines that can be obtained in black markets in urban centers including Bogotá and Medellín. For the General Prosecutor, the 'capacity' of the machines to travel across the country without being detected is surprising — "you even get parts for machines that arrive from other countries, like Brazil" (Rubiano, 2017). Again, the process shows how illegal mining requires the participation of various agents in different places.

Finally, and very important, marketing involves purchasing by different suppliers in different parts of the country. The deposits of Antioquia, Córdoba, and Choó (the

northeast of the country: the portion of Map A.6 where illegal mining production is concentrated) have commercial links, evidenced by payments to suppliers in places as far away as indigenous reservations in Guainía (the southwest of the country, non-gold-producing locations) (Semana-Sostenible, 2019).

E.4 Former Paramilitary Criminal Organizations

Many reports indicate that crimes throughout Colombia were carried out by organizations that were formed from units of the AUC. Illegal mining activities took a central role only after the demobilization of the paramilitaries. Before, other activities, such as cocaine trafficking, played a more important role. The report by Fundacion Ideas para la Paz (2017) shows the areas of influence of the criminal organizations recognized by the government as 'Criminal Bands' that have their origins in former AUC subunits. National and local newspapers, as I show below, usually report the capture of members of these organizations. The reports often mention activities in several municipalities and the link to illegal gold mining. For example, different reports document the capture of several members of the criminal organization Clan del Golfo, created from former AUC paramilitary unit Bloque Central, for illegal mining among other crimes, in several municipalities in Córdoba and Antioquia (Canal Monteria, 2019). The case of Montería in Córdoba is particularly important in explaining the results of this paper. Even today, the organization has operations across the country. The activities of members of the Clan del Golfo include organized crime, extortion, drug trafficking, and homicide (Monteia Radio 38, 2020) and the centers of operations are in Antioquia and Cordoba, where the 'Gold Tsar', who had funded illegal groups since 2012, was recently captured (Monteria Radio 38, 2019).

Another report mentions a series of arrests for extortion of members of a group that formed from another AUC unit, the Bloque Norte, in different municipalities of Magdalena (Semana-Region, 2015). The group consolidated in the study period (as of 2013), and operates in different parts of department of Magdalena and La Guajira in the northen part of the country (Caracol Noticias, 2002). According to news reports, their activities include organized crime, homicide, theft, and extortion, mostly of tourist organizations. These forms of criminal organizations and activities continue today in the same region (Diario Magdalena, 2020).

Finally, a group known as Los Puntilleros, who operate mostly in the western part of the country, has its origin in the former AUC unit of Heores del Llano y Guaviare. This group is engaged in a wide range of criminal activities in the area. Their expansion and growth process took place through intensive work to form agreements and alliances in which the organization incorporated former members of the AUC (InSight Crime, 2020). The group of Los Puntilleros actually make up a complex criminal network that have territorial influence in several locations where they control the population and regulate various activities, both illegal and legal (Diario Extra Llano, 2020).

The reports mostly confirm the argument made in this paper that criminal operations in different locations in the country were in many cases directly linked to the main source of revenue for criminal organizations in the period under study, illegal gold mining, and were related to criminal structures that emerged from former units of the AUC.

F Different Samples

To take into account the fact that some groups are very large and may be explaining the peer effect results, I exclude groups with more than 500, 250, and 100 members from the analysis, respectively, and obtain consistent results for the economic and peer effects as shown in table A.4 .

Table A 4: Analysis Excluding Larger Groups

	Red-handed Captures			
	(1)	(2)	(3)	(3)
	> 1,000 Members	> 500 Members	> 250 Members	> 100 Members
Panel A: Economic shock and average shock for the group				
Economic Shock	0.379***	0.244	0.0897	-0.016
	(0.108)	(0.169)	(0.198)	(0.221)
Average Shock	0.262**	0.290*	0.410**	0.432*
	(0.129)	(0.163)	(0.193)	(0.235)
Panel B: Criminal peer effects				
Peer Effect	0.409**	0.543**	0.820**	1.038*
	(0.159)	(0.271)	(0.359)	(0.540)
Mean of Outcome	0.0240	0.0233	0.0224	0.0198
S.D. of Outcome	0.1689	0.1671	0.1648	0.1509
Observations	32,990	21,608	16,309	11,837
Municipality, Year, and Group FE	✓	✓	✓	✓
Time Trends	✓	✓	✓	✓
Region × Year	✓	✓	✓	✓
Municipality Characteristics TT	✓	✓	✓	✓

Panel A shows the result of estimating Equation 6, where the first row represents the effect of the shock for individual i and the second row represents the average shock for the group g. The economic shock is defined as the interaction of the natural logarithm of the international price of gold and illegal gold intensity prior to the study period. Panel B shows the estimation explained in Equation 5, representing the effect of wartime peers' arrests on $i's$ criminality. Standard errors in parentheses clustered at the group-wartime level. Municipality characteristics include pre-treatment levels of poverty, population, distance to Bogotá, and kms of paved roads. Individual controls include age, gender, and race. *** is significant at the 1% level, ** is significant at the 5% level and * is significant at the 10% level. Complete model results in Table A26 of supplementary material.

Additionally, I consider different measures of the treatment. The preferred specification is based on the intensity of illegal gold production in the municipality. To determine whether there are peer effects across all municipalities, we should expect the results to hold for individuals residing in places with low to no production, but with connections in gold-producing municipalities. Table A.5 shows that, with some variations, the results are consistent for individuals residing in municipalities with different levels of gold production. In all cases, crime is positively related with the economic variation for wartime peers.

G Measurement

The discussion about measurement is worth mentioning in light of the main results of the paper. Previous research on criminal peers has predominately relied on respondents' assessments of their own criminal records and their assessments of their peers'

Table A 5: The Effect of the Economic Shock for Different Levels of Gold Production

	Production below Mean (1)	Production below 25 Percentile (2)	No Gold Production (3)
		Red-Handed Captures	
Average Shock	0.339***	0.255**	0.303
	(0.104)	(0.109)	(0.291)
Mean of Outcome	0.0234	0.0231	0.0168
S.D. of Outcome	0.1668	0.1654	0.1332
Observations	26,499	22,765	4,825
Municipality, Year, and Group FE	✓	✓	✓
Time Trends	✓	✓	✓
Region × Year	✓	✓	✓
Municipality Characteristics TT	✓	✓	✓
Individual Covariates	✓	✓	✓

The table shows the impact of the group average gold shock for ex-combatants located in municipalities with low and zero gold mine production. Standard errors in parentheses clustered at the group-wartime level. Municipality characteristics include pre-treatment levels of poverty, population, distance to Bogotá, and kms of paved roads. Individual controls include age, gender, and race. *** is significant at the 1% level, ** is significant at the 5% level, and * is significant at the 10% level. Complete model results in Table A27 of supplementary material.

criminality. However, this approach has been criticized: it is vulnerable to measurement error due to projection by respondents of their own behavior and by limitations in the remembering or observing of the activities of peers, thus increasing the crucial correlation between own and peer criminality (Meldrum, Young and Weerman, 2009).

On the other hand, although I do not have a measure of crime different from the administrative information (that is, panel information for the entire sample of 16,000 ex-combatants), other studies, mainly Daly, Paler and Samii (2020), mention that around 7% of criminals are not reflected in the administrative information (based on a survey of close to 1,000 ex-combatants). In this study, the authors refer to administrative data as 'the most defensible way to operationalize illicit behavior.' Additionally, a reason for introducing fixed effects is that we hope to control for, in some way, people in different types of networks (e.g., large or small) who have different abilities to avoid being captured. In any case, it is possible that if we are missing stronger networks with members who are better at hiding, we are measuring a lower bound effect.

Additionally, following (VanderWeele and Li, 2019, p. 1825), for measurement error to fully explain the effect between the treatment and the error-prone outcome, the magnitude of the error, in this case calculated as the impact of the economic shock on "captures" not through "crime," must be at least as large as the observed association between the treatment and captures, which seems implausible. This situation would occur if, for example, the relationship between the economic shock and the arrests is due to systematic corruption of the police or ratting out by ex-combatants, neither of which has anything to do with criminal activities.

Finally, one may worry that captures reflect law enforcement capacity and the results reflect the contagion of 'law enforcement capacity' instead of contagion of crime. For the peer effect to result from an increase in police activity that is not related to contagion of criminal activity, there should be a reason why individuals who are committing crimes independently and live in different municipalities are more likely to

be captured than other individuals committing crimes. If they have the same level of criminal activity, but that activity is independent from the activity of their peers, this should also be true for other ex-combatants who live in the same municipality (and not only those connected to other criminals). However, we don't observe this: ex-combatants living in municipalities not affected by the shock are more likely to be arrested 'only' when they are connected to other ex-combatants who participated in criminal activities. For example, when we consider the example in figure 4, we see an increase in the value of the outcome for $j's$ actions, not for l's, as a consequence of $i's$ or $k's$ actions.

H The Effect of the Economic Shock on Mobility

The following table present the relationship between the mean economic shock and mobility.

Table A 6: The Effect of the Economic Shock on Mobility

	Moved to gold municipality				
	(1)	(2)	(3)	(4)	(5)
Average Shock	0.0418***	0.0418***	0.0406***	0.0397***	0.0396***
	(0.0101)	(0.0101)	(0.0110)	(0.0116)	(0.0116)
Mean of Outcome	0.0050	0.0050	0.0049	0.0048	0.0048
S.D. of Outcome	0.0703	0.0703	0.0697	0.0694	0.0694
Observations	66,640	66,640	64,821	61,565	61,562
Municipality, Year, and Group FE	✓	✓	✓	✓	✓
Time Trends		✓	✓	✓	✓
Region × Year			✓	✓	✓
Municipality Characteristics TT				✓	✓
Individual Covariates					✓

The table shows the effect of the mean of the gold shock of the group on the mobility of ex-combatants. Standard errors in parentheses clustered at the group-wartime level. Municipality characteristics include pre-treatment levels of poverty, population, distance to Bogotá, and kms of paved roads. Individual controls include age, gender, and race. *** is significant at the 1% level, ** is significant at the 5% level, and * is significant at the 10% level. Complete model results in Table A28 of supplementary material.

I Dyad Analysis

I conduct a dyad analysis, in which instead of considering the group-to-individual $(g-i)$ effect, I rearrange the data to estimate the individual-to-individual $(i-j)$ effect. In particular, I use three sets of ex-combatant fixed effects that vary by year to restrict attention to the economic shock for individuals within the same education, socioeconomic stratum, and region groupings. Instead of looking at the effect of the average criminality of the network, this estimation focuses on the one-to-one relations, enabling me to include additional fixed effects. While the theoretical expectations refer to the group-level effect, these results are important because they clearly show the

link between criminal activity among peers living in different municipalities while controlling for additional individual-level characteristics. In the dyad analysis, individuals i and j are connected if they belonged to the same subunit and had the same rank during the conflict. For reasons of robustness, I exclude dyads with individuals in the same municipality and include i-level fixed effects. In particular, I use three sets of ex-combatant fixed effects that vary by year to restrict attention to the economic shock for individuals within the same education, socioeconomic stratum, and region groupings. I estimate the following OLS regression:

$$Y_{it} = \beta \text{ Wartime peer economic shock}_{jt} + \mu_{ei} + \gamma_{si} + \delta_{ri} + \epsilon_{it}, \tag{8}$$

where *Wartime peer economic shock*$_{jt}$ is the economic change to i's connections and μ_{ei}, γ_{si}, and δ_{ri} are ex-combatant-level socioeconomic stratum, education, and region fixed effects, respectively.

Table A 7: Dyad Analysis: Estimates of Wartime Peers' Economic Shock on Ex-combatant's Criminality

	All Observations		Gold Production below sample mean		>100 Members in Group	
	Captures	Red-Handed	Captures	Red-Handed	Captures	Red-Handed
Wartime Economic Shock	0.0005***	0.0005***	−0.00003	0.0003***	0.002***	0.001***
	(0.0001)	(0.00005)	(0.0001)	(0.0001)	(0.0005)	(0.0004)
Observations	11,974,898	11,974,898	6,563,873	6,563,873	231,825	231,825
Ex-combatant level fixed effects:						
Education	✓	✓	✓	✓	✓	✓
Economic stratum	✓	✓	✓	✓	✓	✓
Region	✓	✓	✓	✓	✓	✓

Robust standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

All specifications are estimated using OLS and include the fixed effects described in Equation 8.

The results are presented in table A.6. Criminality increases with the economic change to wartime peers. The analysis includes several additional robustness checks: columns 1 and 2 show the effect of the economic shock for all observations, including red-handed and non-red-handed captures. Columns 3 and 4 show the results for individuals living in municipalities with levels of gold production that are less than the mean, and columns 5 and 6 show the results for groups of less than 100 members. The coefficients are significant, though considerably smaller than those of the main analysis. This is to be expected, given that the interpretation in the dyad analysis refers to the effect of a single pair, while the interpretation in the group-level analysis refers to the criminality of the entire wartime network.

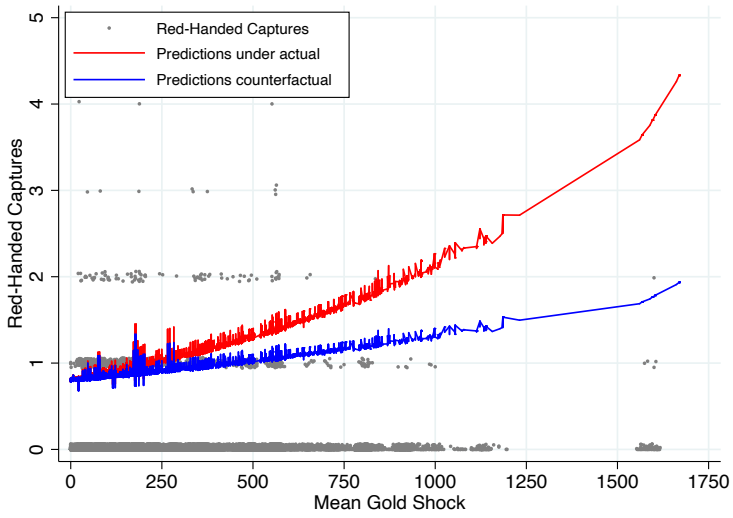
Overall, the dyad analysis results are in line with the results of the group-level analysis. The substantial effects of peers' crimes that go through wartime ties thus suggest that the network of ex-combatants, arguably weaker after the conflict, could affect recidivism, particularly in the presence of illegal markets.

J Counterfactual Experiment

I perform a counterfactual analysis below in which I look at the predicted values of captures estimated in the main analysis, following Equation 6, when we reduce the

peer effect to different values. Specifically, I look at the effect of (1) a gold-price shock under the actual conditions and (2) a gold-price shock with wartime connections randomly reduced by half.

Figure A 8: Predicted Values of Red-handed Captures under Actual and Counterfactual Conditions



[h]

Figure A.8 shows the difference in the predicted values of Equation 6 when we reduce β, the peer effect, by 50%. Model results in Table A44 of supplementary material. The blue line represents the predicted values of captures derived from the main specification. The red line represents counterfactual predictions, that is, the predicted values when we look at the difference between the predictions in Equation 6 and the predictions when we set β to 50%. The difference between the two lines measures the difference that an intervention reducing β by 50% would have on capture rates. Red-handed captures decrease around 12% when we reduce the effect of the peer effect by 50%. This is a notable implication of the present study: the reduction in crime is due to the reduction of peer effects, even when the economic factors are the same under both conditions.

What other strategies exist to reduce criminal connections? Two types of initiatives are promising, the first being economic-oriented activities such as productive projects in which community members and outsiders (ex-combatants) participate together. Such initiatives have recently been implemented for integrating immigrants in Uganda, where the projects involve refugees and community members (examples of such development activities are discussed in Grossman and Zhou (2021)). The Colombian Agency of Reincorporation has in fact implemented similar initiatives. A detailed evaluation of these initiatives is a promising avenue of research. Such studies may complement the evidence on the positive effect of giving money and psychological assistance to vulnerable populations. In this way, the initiatives promoted by the government imply the joint participation of community members that expand the non-criminal networks of ex-combatants (while not negatively affecting other positive networks such as those offering emotional support). Other social-oriented activities refer to initiatives implemented during the reintegration process in which ex-combatants

and community members work together to reduce prejudice (Ugarriza and Nussio, 2017). Another way to help ex-combatants change their network structure is to locate some of the transition sites usually used in peace processes in places far from the main operation centers during the conflict. This enables people, at least for a time, to depend more on the receiving community than on the networks they had during the war.

K Survey on the Social Connections of Former Combatants

In this section I provide additional information about the social connections of former combatants based on an original survey of members of armed organizations in Colombia. I expand on the relevance of social connections of former combatants by showing what connections were more important during the conflict and by explaining what factors are related to criminality.

K.1 Sample

I use administrative data from an original survey along with data from the Colombian Agency of Reintegration and police records. The survey was conducted by various regional teams coordinated by the Universidad Externado de Colombia between July and September of 2019, resulting in a sample of 448 ex-combatants who were contacted by the ACR in municipalities with over 100 ex-combatants registered with the agency. The final sample contains ex-combatants living in 26 different municipalities. It includes 163 self-identified former members of the paramilitary group AUC, 125 former members of the guerrilla group FARC, 37 former members of the guerrilla group ELN, and 9 individuals from other illegal armed groups.[1]

Even with several threats of sampling bias, the sampling procedures still permit the construction of a relatively representative sample compared to other samples of hard-to-reach populations. I compare the aggregate data of the sample with aggregate data of the complete population of ex-combatants in the reintegration program. The sample has a significantly larger amount of former combatants of the FARC in several municipalities, but other covariates are very similar.

During the survey, enumerators started with an informal conversation about connections during the conflict, then asked questions about basic demographics, survey questions about wartime, and some questions about perceptions of crime and reintegration.

K.1.1 Ethical Considerations

This survey adheres to the APSA's Principles and Guidance on Human Subject Research. The survey was reviewed and approved by the New York University IRB under certificate number IRB-FY2018-2047. The survey was also approved by the ARN Office of the Colombian Government.

[1] The group of origin, as many other variables, came directly from the ACR and I currently don't have all the administrative information on all of the respondents.

Participation in the research was completely voluntary. Before subjects participated in the survey, a local facilitator read a consent statement to them in Spanish. We asked subjects to give their consent verbally. We used a standard consent form recommended by the IRB at New York University.

No deception was involved in this study.

We did not anticipate any risks of harm beyond those encountered in everyday life and indeed none occurred.

At no point were subjects' names asked. Enumerators identified subjects only with a random code.

The ethics board at NYU approved the study. The ARN, from the Colombian Government, also approved the study. Other country experts also stated that the study complied with norms and laws in Colombia.

Participants were not pay to participate in the activity.

Participant pool was diverse: participants came from different municipalities of the country where a local ARN office was present.

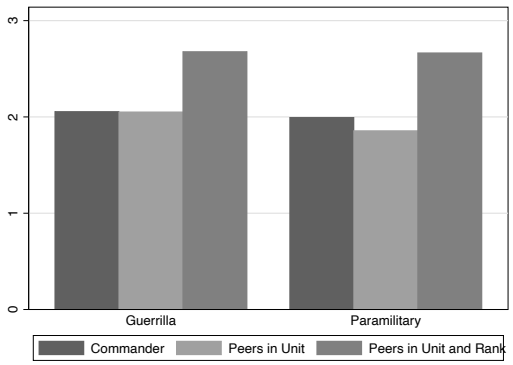
None of the groups were vulnerable or marginalized. The ex-combatants in the study were all participants in the legal ex-combatant reintegration program.

K.2 Ex-combatants' Social Connections

The survey contains questions about the intensity of the interaction with other combatants during and after the conflict. Figure A.9 shows the extent to which individuals shared their time with members of their same subunit and rank, members of the same subunit but not the same rank and commanders of their unit, both before and after the conflict. Based on the conversations and the survey, combatants spent more time with members of their same unit and their same rank, than with commanders or members of other positions. This is true for the members of all armed groups.

More than 70% of respondents said they spent a lot of time with members of the same unit and same rank during the conflict. This finding provides some support for the selection of this type of link, given that it is the most extensive connection for ex-combatants.

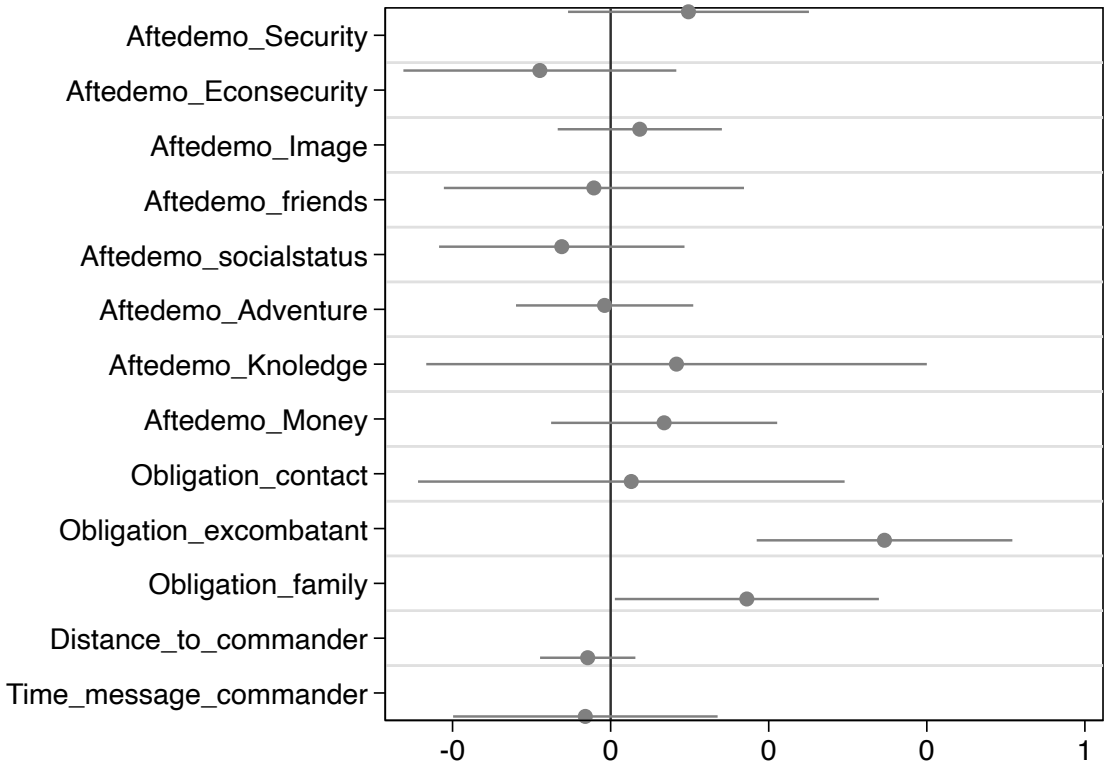
Figure A 9: Connections during the Conflict



Note: Time spent with other combatants in a 0 ("Never") to 4 ("A lot") scale.

Finally, to complement the conjecture that connections to former peers are relevant only for a specific set of ex-combatants, I regress a set of variables related to perception of the post-conflict period (after demobilization feelings of security and economic conditions; feeling of obligation towards family and former combatant) and a measure of crime acceptance based on the answers to a list experiment (to avoid directly asking about crime acceptance). The results, presented in Figure A.10, are for the paramilitary-only sample. We see a positive and significant relationship in the coefficient of 'feeling obligations toward and being an ex-combatant.'

Figure A 10: Crime Acceptance during Post-conflict



Note: Each coefficient is the result of a regression of the crime acceptance on the corresponding variable, including location and enumerator fixed effects with robust standard errors. Complete model results in Table A45 of supplementary material.