We have a theory!

Abstract

We do many things with imaginary models and useless data.

Introduction

Central puzzle: why do armed groups victimize?

Pull anecdotes from data

Novel contribution:

Civilian Victimization During War

The study of civilian victimization has largely focused on key characteristics of armed groups, such as a group's fighting capability Wood (2010), resource base Azam and Hoeffler (2002*a*) and external support (Idean Salehyan and Wood, 2015). Yet these studies also acknowledge that an armed actor's relationship with civilians is conditional on the conflict landscape at large, wherein the decisions of armed actors are informed by the actions of other armed challengers and the civilian population. As (Wood, 2010, p. 612) explains, "Unraveling these dynamics is particularly important if scholars wish to fully understand the dense web of interactions that guide insurgent's decisions to use violence." Drawing on the intuition that the networked dynamics of armed actors influence violence against civilians, we develop an agent-based model that incorporates insights about how the interdependent nature of multi-party intrastate conflicts influences armed actors' decision to harm civilians.

In this model, a country is composed of territories, filled with two types of actors: civilians and armed actors. Armed actors represent both rebel groups and governments. The main difference between the two groups is that the government controls more territory than non-state actors. Armed actors' primary motivation is to hold territory containing resources that can be mobilized (Kalyvas, 2006). Failing this, actors prefer that territory be held by groups with similar preferences. The other main actors in this model are civilians. Civilians are primarily motivated by their personal safety; their secondary

motivation is ideological. The inclusion of civilian preferences follows research on rebel-civilian relationships which underscore civilian agency in conflict areas Mampilly (2011); Kasfir (2015); Arjona (2017). Ceteris paribus, civilians would prefer that their territory be held by groups with similar political preferences. When political preferences align, even if weakly, all actors experience the benefits of political stability and resource sharing.

In our model, we characterize armed groups using two variables, a measure of their ideal point (x_i) on a one-dimensional preference space, and a measure of how ideological they are (ϕ_i). Groups that are more ideological benefit (suffer) more from having other groups with similar (dissimilar) preferences controlling territory, and thus have less (more) motivation to fight them.[1] Civilians are similarly characterized by their ideal point (η_i), but whereas the ideal points of the armed groups are public, armed groups cannot directly observe the preferences of the civilian population.

In this game, armed actors draw resources from civilian mobilization. This "instrumentalist" perspective follows from research highlighting victimization as a strategic choice shaped by the desire to control resources and territory while influence civilian support and undermining support for opponent groups (Wood, 2014).[2] To extract resources, armed actors try to mobilize support from the civilian population and gain more resources as support increases. Furthermore, when the territory civilians are inhabiting is under attack from another harmed actor, civilians can choose to support the attacking actor in order to increase their likelihood of victory.

Each type of actor in the game has two potential actions they can take. Civilians, as

[1] We treat the government actor as non-ideological, because in most cases a government will not allow a strong challenger to hold territory simply because they have politically congenial views.

[2] A modification of the game would be to allow for groups to have natural resources or foreign support which depends on territorial control but not civilian support) [add literature on different types of resources here]

discussed above, choose whether to support an armed group and which group to support. In addition, civilians can choose to move from one territory to another one in search of a more congenial (or less indiscriminately violent) government, though the cost is high, and civilians are more likely to do so as the conflict drags on. Armed actors can choose to attack other armed actors in order to conquer additional territory, and gain more resources, and they can victimize civilians in territory they control.

When an armed actor attacks another territory, each group involved in the territory has a probability of winning based on their share of spatially weighted resources. In particular, we call the local resources of group i in territory L:

$$LR_{i,L} = \sum_{l} \delta^{d_{l,L}}(x_{s,i,l} + cx_{ns,i,l} - kx_{o,i,l}) \tag{1}$$

where δ is the spatial discount factor – how much less useful distant resources are than proximate ones – $d_{l,L}$ is the distance from region l to L, $x_{s,i,l}$ are the number of supporters of group i in territory l, $x_{ns,i,l}$ are non-supporters of i in l, and $x_{o,i,l}$ are the number of opponents of group i in territory l as long as territory l is part of the "battlefield" – the set of territories that are either the source or the target of the battle in question. To calculate resources, we award full credit to areas where armed actors have both control of the territory and civilian support. Armed actors are given partial credit for territories with non-supporters, except in regions where fighting is on-going in which case a group loses resources based on civilians supporting the opposing armed actor in the territory. The nexus of civilian-armed group relations follows previous scholarship on the incentives for civilian abuse which argues that both governments and non-state actors target the population in order to gain support or shift support away from their opponent (Valentino, 2014; Azam and Hoeffler, 2002*b*; Kalyvas, 2006; Wood, 2010).

For each group in the battle, the probability of winning is:

$$P(i \text{ wins in territory L}) = \frac{LR_{i,L}}{\sum_j LR_{j,L}} \tag{2}$$

If the group wins, they take control of the territory, and in any case, civilians die and resources are lost in all territories that are the source or target of an attack.

Armed actors can choose to victimize civilians in territories they control. The likelihood that they will victimize a non-supporter is based on how much information they are able to obtain from their supporters in the population (Lyall, Shiraito and Imai, 2015). Groups are more likely to accurately (selectively) victimize as the number of supporters in the territory increases.[3] In this model selective violence is effective at coercing civilians into giving support, whereas indiscriminate violence (killing ones' own supporters) is counterproductive – when an actor kills a supporter, the range of ideologies that will provide support to the actor shrinks (since the safety provided by supporting the actor is illusory) and when they kill a non-supporter, the range of ideologies grow. [4]

Each actor in the game chooses their behavior based on decision rules that correspond to their priorities. When civilians choose whether or not to support an armed group, they do so fully cognizant of the risk of violence. In particular, if the territory is not the site of a battle, civilian's decision on who to support is based on their expectation of who other civilians will support. This is because if they believe other civilians will support the incumbent power in a region, it becomes more necessary to "go along" with it in order

[3]An exception here is when they have either all supporters, or no supporters. In the first case, the decision rule prohibits them from victimizing. In the second case, there is no risk of unintentionally killing a supporter since there are no supporters to kill.

[4]Fjelde and Hultman (2014) show that that the number of civilians targeted by armed groups (government and non-state alike) is higher in areas populated by the enemy's ethnic constituency.

to avoid the risk of violence. Each other civilian is assumed to support the incumbent with probability based on their inverse ideological distance (so civilians will support a maximally close group all of the time, and never support the maximally distant group). Civilians will then support the group if their ideological distance, modified by the effect of past victimizations, is less than half of the expected number of other supporters of the armed group (so again ceteris paribus, civilians will support a maximally close group regardless of the number of other supporters. If the civilian is half the preference space away, then she will only support the armed group if they are supported by the rest of the population, or if they have a history of very effective victimization). If a territory is the site of a battle, the calculations for civilians change. Now civilians seek to trade off between ideological distance and the chance a group will triumph. In particular, civilians choose to support the group that has the greatest product of inverse ideological distance and expected probability of victory.

[We need to follow this up with plain language or an example/lit]

When civilians decide whether to remain in a territory they are not simply looking for the best armed actor controlling a territory, they are also dislocating and often paying serious material costs. Thus, we model the decision to flee as beginning with a high threshold and becoming more plausible over the course of the conflict. Civilian k will choose to flee a territory controlled by group i for a territory controlled by group j if these territories are contiguous and:

$$|x_i - \eta_k| + v * VH_i < e^{3-t*3/TL}(|x_j - \eta_k| + v * VH_j) \tag{3}$$

here VH_i is the net indiscriminacy of victimziation by group i and v is the penalty for indiscriminately victimizing civilians, and decreases when they victimize a non-supporter. The exponential decay function is such that in the first turn of a game (t) another group

needs to be at least e^3 times better than the incumbent in a civilians territory for the civilian to move, but by the final turn of the game (TL) the group will move to whichever territory has a more congenial incumbent.

When armed actors choose to victimize civilians, their decision is influenced by the likelihood that this victimization will be successful. We define this probability[5] as:

$$P(\text{selective victimization}) = 1 - \epsilon \frac{||\text{nonsupporters}|| + 1}{||\text{civilians}||} \tag{4}$$

where ϵ is the baseline rate of error in the case where all but one civilian supports the armed actor. The decision rule for whether to commit victimization depends in part on the risk of battle in the region. If no armed actor in a neighboring region would prefer attacking the region at hand, then the armed actor chooses to victimize in order to maximize resources extracted. Thus, they victimize if the expected increase in supporters from victimizing outweighs the benefit of having a non-supporter still providing some resources. On the other hand, if there is a risk of battle in the next period, the same calculus instead applies to how in expectation victimization will effect the probability of victory in a potential battle.

Finally, when it comes to the decision to attack a territory, armed actors compare the expected probability of victory, the resources gained, and the costs to the status quo. The status quo includes positive utility that ideological groups might obtain from having ideologically proximate groups still in control of a territory. The cost of conflict is that civilians will be killed in both the attacking and target territory regardless, and that will reduce a groups stock of resources.

A given round of this game will proceed as follows:

[5]Except in the edgecase where there are no supporters or no nonsupporters.

1. Armed actors choose which territories to invade.
2. Civilians choose whether to support armed actors.
3. Battles take place and winners are determined.
4. Armed actors choose in which territories to victimize.
5. Civilians choose whether to flee, and if so, to where.

The game will continue until one of three end conditions are met: a) the government controls all the territories, b) the government controls no territories, c) the game reaches the predetermined turn limit and ends in a stalemate.

Empirical setup

Empirical Results

Discussion

Arjona, Ana. 2017. "Civilian Cooperation and Non-Cooperation with Non-State Armed Groups: The Centrality of Obedience and Resistance." *Small Wars & Insurgencies* 28(4-5):755–778.

Azam, Jean-Paul and Anke Hoeffler. 2002*a*. "Violence against civilians in civil wars: looting or terror?" *Journal of Peace Research* 39(4):461–485.

Azam, Jean-Paul and Anke Hoeffler. 2002*b*. "Violence against civilians in civil wars: looting or terror?" *Journal of Peace Research* 39(4):461–485.

Fjelde, Hanne and Lisa Hultman. 2014. "Weakening the enemy: A disaggregated study of violence against civilians in Africa." *Journal of Conflict Resolution* 58(7):1230–1257.

Idean Salehyan, David Siroky and Reed M. Wood. 2015. "External rebel sponsorship and civilian abuse: A principal-agent analysis of wartime atrocities." *International Organization* 68(3):633–661.

Kalyvas, Stathis. 2006. *The Logic of Violence in Civil War*. New York: Cambridge University Press.

Kasfir, Nelson. 2015. "Rebel governance–constructing a field of inquiry: definitions, scope, patterns, order, causes." *Rebel governance in civil war* pp. 21–46.

Lyall, Jason, Yuki Shiraito and Kosuke Imai. 2015. "Coethnic bias and wartime informing." *The Journal of Politics* 77(3):833–848.

Mampilly, Zachariah Cherian. 2011. *Rebel rulers: Insurgent governance and civilian life during war*. Cornell University Press.

Valentino, Benjamin A. 2014. "Why we kill: The political science of political violence against civilians." *Annual Review of Political Science* 17:89–103.

Wood, Reed M. 2010. "Rebel capability and strategic violence against civilians." *Journal of Peace Research* 47(5):601–614.

Wood, Reed M. 2014. "From loss to looting? Battlefield costs and rebel incentives for violence." *International Organization* 68(4):979–999.