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Recruitment, Retention, and Religion in Rebel Groups

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Abstract

Utilizing a principal-agent analysis of participation and incentive compatibility constraints, we develop a formal model of recruitment and retention in a rebel group with and without contestation. The model better accounts for positive utility from fighting, and is therefore useful for understanding recruitment and retention in a wider set of rebel groups, ranging from loot-seeking organizations motivated by private benefits on the one hand, to groups driven by individuals motivated by communal benefits or extreme religious principles on the other. We explore the differences between groups of varying degrees of extremist and non-extremist doctrine, focusing on the mobilization to such groups. The model shows a number of marked advantages for a group to adopt an extremist position.

Paper prepared for the workshop, “Peace, Conflict, and Development”, ESOP, University of Oslo, 24 March 2015. We thank Emily Ann Beaulieu, Jeff Checkel, Luke Condra, Amelia Hoover Green, Ole Magnus Theisen, Monica Toft, and Libby Wood for their valuable comments on an earlier version of this paper. We thank the Norwegian Ministry of Foreign Affairs and the Norwegian Research Council for supporting this research.

Grisly scenes of beheadings or of hundreds shot dead while in prayer at their mosques dominate the headlines today. Extremist Islamic groups threaten the state in Mali, Libya, Nigeria, Egypt in the Sinai, Syria and Iraq, Yemen, Somalia, Afghanistan and Pakistan. Where al Qaeda and its offspring dominated before, Islamic State now is the main rebel actor in Libya, Syria and Iraq. While al Shabab is the main rebel group in Somalia, it is now a major actor in Yemen. The Taliban controls much of Afghanistan and threatens stability in Pakistan. What explains the trend towards ever more extreme groups committed to a policy of extreme violence in the quest of utopian goals?

Some leading studies of civil wars portray rebel groups as analogous to criminal gangs or corporations (e.g. Collier 2000). All belligerents involved in the conflict are assumed to be motivated by private material gains from loot-seeking behavior; rather than communal benefits, ideologies, beliefs, or identity ties. Rebel groups, however, face a set of challenges in recruitment and retention that are not properly accounted for by the conception as *de facto* firms. First, rebel groups are involved in life and death activities. An individual is joining such an organization under the explicit risk of being killed is hard to explain through pecuniary incentives alone (or at least in terms of most soldiers wages alone), making the rationality of recruitment different from that of firms. Second, rebel groups are extra-legal organizations. Therefore, contracts between principals and agents (or leaders and soldiers) within rebel groups cannot be (legally) regulated by the state, meaning that retention is endogenous to the group and often characterized by extreme punishments for breach of contract. Recruitment and retention in rebel groups are therefore not simple transactions in a labor market.

A labor market analogy cannot fully capture the logic of rebellion involving individuals committed to ideological ideas or ethnic kin. Religion serves as a particularly powerful force for motivation. Groups that recruit on the basis of religion, ideology or kinship cannot be well understood wholly on the logic of material maximization or by theories derived from a narrowly defined notion of rationality. Examples abound of highly committed individuals fighting for no apparent or immediate material benefit. People fight for their ideological convictions, in defense of their faith and religious doctrines, for their kin and nation. They even do so when the odds of immediate victory are low and the sanctions for quitting are weak. Indeed, there is ample evidence of people failing to free-ride, and individuals sticking to principled behavior or what they consider morally just behavior. This occurs even in anonymous or one-shot interactions (Benabou & Tirole, 2010), and in

experimental setting even engage in community-spirit behavior in the last game among strangers (Wood 2003: 244). Individual might also join out of other non-pecuniary reasons such as seeking adventure, revenge, or to fulfill sadistic tendencies.

Joining and participating in a rebel group may bring special types of benefits, such as *solidary rewards* (i.e. the positive rewards associated with being part of a group) and *functional rewards* (i.e. the positive utility obtained from participating in an activity *per se*).¹ These elements of rebellion are often mentioned in case studies, but rarely modeled explicitly.

This paper explores the logics of recruitment and retention in various types of rebel groups along a continuum of pecuniary to non-pecuniary incentive structures, preferences and *raison d'être*. The next section introduces our principal-agent model of recruitment and retention in a rebel group without contestation. We then outline how the model changes when contestation is introduced, involving the armed conflict between the rebel group and the state. We also briefly examine competition over recruits between rebel groups. Throughout the paper, particular attention will be paid to conflicts involving religious justifications for fighting, which serve to contrast sharply from material motivations.

Recruitment and Retention in a Rebel Group without Contestation

Recruitment and retention can be studied through at least two different lenses. In the group perspective, what does it take on the rebel group's part to recruit the members they need to the organization, and how does a group maintain its recruits committed and active in service of the group over time? On the other hand, from the perspective of individual (potential) recruits, what does it take for someone to commit to joining a rebel group, and under what conditions will that same individual stay with the group over time? The latter focus on individual calculus has been the most common in formal models in general. Although this individual lens does not capture both perspectives, in this paper we also find it necessary to model the processes from the perspective of individuals. But we acknowledge and factor in to our model the group-based processes that help drive rebel recruitment and retention.

To help clarify the role of recruitment and retention in a rebel group, we first present a simplified case of the rebel group in isolation (not involved in armed combat with the government's army). We start with an agent, *i*, engaged in a variety of military activities *M*.²

¹ Functional rewards might range from the realization of sadistic tendencies in one extreme, to the positive feelings of self-worth and purpose by being involved in "fighting the good fight" on the other hand. Wood (2003) refers to this phenomenon as the "pleasures of agency".

² The model presented in this paper is rooted in principal-agent theory and more generally in theories of the firm (Alchian & Demsetz 1972: 777-95; Holmstrom & Milgrom 1991: 24-52). We also draw on work featuring the

The group's base is centered by its leader or principal. All members of the rebel group (or subordinates) are referred to as agents for the rebellion.³ For the most part, the choices and preferences⁴ of a single agent with respect to the principal (the rebel group leadership) serve as the analytical focus. An agent, a , is given a specific military task, $m \in M$ for each period. We define $s \in S$ as the actions of agents, which may or may not be consistent with M . If the agent chooses to accept the task, he opts for action, s_a , consistent with military task, m_i , and receives in return benefits, $b_a \in [0, b_{max}(m_i)]$, (meaning that benefits can vary anywhere between 0 and $b_{max}(m_i)$, a maximum level of benefits associated with a particular task). All benefits are assumed to be net benefits so that any costs of engaging in rebel activities are included. Benefits in our model can be both pecuniary and non-pecuniary.

An action other than the assigned task, m_i , observed by a leader of the rebel group (the principal), is regarded as a defection. In most circumstances rebel group leadership will establish and engage systems of internal surveillance and reporting of unwanted behavior by rank-and-file. Various organizational features as well as geographical proximity and technologies of communication can facilitate supervision (Gates 2002; Johnston 2008).⁵ In some cases, however, direct surveillance can be superfluous. Certain forms of social network, for example, might facilitate information spreading in the organization and thereby reaching the principal without direct observation. Through social processes, the principal (along with the group as a whole) also can influence the agent to move from compliance with the group, to identification, and finally internalization of the rules of the group. The latter stage, internalization, occurs when "an individual accepts influence because the content of the induced behavior – the ideas and actions of which it is composed – is intrinsically rewarding" (Kelman 1958: 53). The level of direct observation of all activities of the agent by the principal can therefore be relaxed in situations where recruits have been trained (or indoctrinated) to the point of full internalization. Additionally, in some cases, such as in extreme religious cult-like groups, agents may see the principal as representing or incarnating

difficulties of applying theories of the firm to public bureaucracy (Brehm & Gates 1994, 1997) and research on organized crime (Fiorentini & Peltzman 1995), and extend this to research on rebel groups. The model below is derived and modified from Gates (2002), which in turn was modified from Polo (1995: 87-109) and follows in the tradition of works that examine enforcement schemes with repeated discounted games.

³ To distinguish between the principal (the rebel leader) and the agent (the subordinate rebel group member), principals will be represented by feminine pronouns and the agent with male pronouns.

⁴ We could also have talked about "reasons" rather than preferences here, as was done by Wood (2003: 231). The notion of a relative well-ordered and stable preference structure might not best capture the many reasons why individual act the way they do; and we do not believe that all preferences or reasons have to be perfectly structured for our model to apply.

⁵ Geographical proximity can also facilitate recruitment (Gates 2002; Wood 2003).

an omnipresent God, who always keeps the flock under scrutiny. Again, in such cases, the assumed need for direct surveillance and detection of defective action can be relaxed.

For defection, the agent receives a punishment of $p_i \in [0, p_{max}]$, where p_{max} is the maximum penalty. This penalty is normalized such that, $U_a(s_a, b_i, p_{max}) = 0, \forall s_a \in S, \forall b_i \in B_i$. In most of the relevant literature for our discussion, the maximum penalty would be assumed to be death. However, in a range of actual cases of conflict and rebellion, this assumption might not hold. Indeed, we cannot assume that death to the agent is the maximum penalty in cases where we are dealing with combatants whose reasons for fighting are not of this world, such as in the case of radical religious insurgents. In such cases, the agent might choose death over falling from grace or going against the perceived will of a deity. Arguably, death is even the preferred option in cases where the individual believes that constitutes a certain ticket to martyrdom (Toft 2006). In the case of suicide bombers, for instance, their willingness or even wish to die for their cause annihilate the logic of power as resting ultimately in making credible threats to someone's life (Reuter 2006).⁶ However, even in a broader set of circumstances than for religious rebels, death might be an agent's preferred option over loss of honor or moral condemnation and social exclusion or the prospects of spending eternity in hell. We therefore do not make any *a priori* assumption about the nature of the maximum penalty, as it can vary across individuals, contexts, and cultures.

The utility functions of the principal and the agent, $U_i(s_a, b_i, p_i)$ and $U_a(s_a, b_i, p_i)$, are assumed to be continuous and quasi-concave in s_a , b_i , and p_i (action, benefits, and punishment). We also assume a cardinal von Neumann-Morgenstern utility function; and presume risk neutrality for all players. In addition, we assume that $\partial U_i / \partial b_i < 0$ and $\partial U_a / \partial b_i > 0$; this follows in that the organization pays out a mix of pecuniary and non-pecuniary benefits to the agents.⁷ In addition, a principal's utility is assumed to be bounded, such that all benefits paid out for tasks performed are set, whereby: $\forall m_i \in M, \exists b_{max}(m_i): U_i(m_i, b_{max}(m_i), 0)$, which means for all military tasks m_i there exists a maximum level of benefits associated with a task

⁶ For instance, according to Reuter (2006: 3), suicide bombers cancel out and even render meaningless, deterrence, punishment and retaliation by the state.

⁷ There can be cases where the recruits are bringing into the organization material resources (e.g. financing) from activities not associated with the fighting (e.g. not from conflict-related loot). One such example is Al Qaida recruits from Saudi Arabia (Hegghammer 2010). Also in the civil war in El Salvador, which was strongly ideologically driven by Marxist-Leninism (although liberation theology and Bible groups provided initial mobilization), many of the individuals who joined the rebellion also had provided resources for the rebels, such as food and water (Wood 2003). Only at the very last stage of the conflict were there selective material benefits to being part of the insurgent group. One hypothesis is that the type of group in which such resource flows are possible are those where the group provides predominately solidary rewards and command a strong ideological commitment.

and no punishment.⁸ There also exists a reservation level of benefits for the agent, b_{min} : $U_a(m_i, b_{min}, 0) = u^*$. This reservation level is the minimally acceptable level of benefits for the agent; otherwise he will not work for the rebel leader or the cause that this leader espouses (meaning he will not join the group).⁹ This reservation level defines the agent's participation constraint, which, in turn, determines the level of recruitment to the rebel army. The benefits a recruit receives from joining can be both pecuniary and non-pecuniary.

A compatibility constraint defines the level of benefits needed to assure compliance or allegiance within an organization. Such a contract offers to the cooperating agent the following payoff, $V_a(c)$:

$$(1) \quad V_a(c) = \sum \delta^t U_a(m_i, b_i(c), 0),$$

where $\delta^t = 1/(1+r)^t$ δ is the discount factor and r is the discount rate. The higher the total sum of benefits that the organization can provide, the more recruits they are likely to attract.

Hence, groups that can offer non-pecuniary benefits to recruits, both in the form of functional and solidary rewards, *ceteris paribus*, exhibit higher levels of benefits for cooperation, $b_i(c)$.

Through strong identity markers (such as religion) (horizontal) ties between individuals can be seen to be critical for understanding the recruitment process. Indeed, initial recruitment often follows networks of close social relations. One study of recruitment to extreme religious cults and sects, found that strong social ties (between family and close friends) was the most important variable in understanding patterns of recruitment (Stark & Bainbridge 1980).¹⁰ New members to such extreme religious groups most often had a direct or indirect relation to an existing member. For a potential agent or recruit, acting on a salient identity by joining a rebel group might constitute a solidary reward, as acting on the basis of social horizontal ties (between agents) or social networks, can give positive utility by filling a need for belonging. Embedded in a community or pre-existing societal network, a rebel group can therefore recruit more easily, both in terms of time and effort, as the solidary rewards of joining will be

⁸ When it comes to solidary rewards, their absolute value is difficult to measure; meaning that the specific level of benefits in our case must be viewed as a theoretical value.

⁹ As mentioned above, recruitment can be forced at gunpoint. The calculation of the individual in such cases is very different from a situation of volunteer recruitment, and the minimal reward in cases of forced recruitment is being able to, at least in the short run, stay alive.

¹⁰ This also was critical for those who decided to stay in the cult and those who were more likely to leave.

made more visible to potential recruits (Nordås 2010a).¹¹ In fact, religion very often sustains particularly viable and resilient social networks.¹²

Additionally, rebel groups can provide functional rewards. Members can join because they perceive a positive utility from fighting for a just cause. Groups based on strong principles independent of the individual members can be characterized as having more *vertical* ties. These exist between an exogenous principle (ideology, ideal, doctrine, deity) and the members (agents), and bind the agents to the ideal. Sometimes the principle can be interpreted, administered, maintained, or even personified by the principal (i.e. a group's charismatic leader), and thereby reinforce a group's existing hierarchical structures.

Religious rebel groups provide clear examples of recruitment based on functional rewards. Not only can leaders of religious groups inculcate a sense of community through the faith and thereby recruit through mobilizing horizontal ties. They can also appeal to such vertical ties, between potential recruits and the higher principle (e.g. a religious doctrine, obligation, and/or God). For instance, in the case of the civil war in El Salvador, functional rewards (Wood refers to this as “pleasures of agency”) have been highlighted as one of the most important explanations for participation in the 1970s (Wood 2003: 232). Many took part because they valued participation *per se* as the social justice they were fighting for was the realization of the will of God as interpreted by liberation theology. As religious groups often appeal to individuals to contribute based on a promise of salvation, martyrdom, and eternal life (e.g. Hafez 2007; Reuter 2006)¹³; one could argue that the primary loyalty of ordinary individuals in such an organization is vertical, i.e. to this highest-level clergy or God, over loyalties to other members of the organization (horizontal ties). However, the two can – and often do – occur in the same organization, and the solidary and functional dimensions often concurrently matter. Most religious doctrines emphasize both the individual responsibilities to the sacred and the individual responsibility in relation to the community of believers.

¹¹ Recruitment can also be more attuned to meeting the needs of the organization (in terms of human resources, skill sets, and character; by allowing screening of potential recruits, thereby avoiding “bad apples” from joining (Nordås 2010b). Indeed, infiltration can be a big problem for a group.

¹² For instance, Durkheim (1912) stressed religion as an essential feature of collective life. Pre-existing organizational networks, institutions, and communication structures can be tapped into by rebel principals for mobilization and recruitment purposes (Smith 1996). This includes networks of sacred sites and ritual spaces, as well as community centers, associations, schools, hospitals, courts, and charities which bring people together at regular intervals, and may become particularly important in times of crises and insecurity (Nordås 2010b).

¹³ They might even outbid each other in terms of the violence they use, and thereby increase their competition for recruits amongst varying groups fighting in the same overall struggle, as Bloom (2004) found in the case of Palestinian insurgents, where “the bombings have become a method of recruitment for militant Islamic organizations” (p. 61).

Indeed, community and ideology may both be important for an individual's decision to join a rebel group.¹⁴ For instance, a religious rebel group might fight for establishing a political order that protects the security well-being of their particular religious community (based on horizontal ties); and at the same time fight for political rule that corresponds with particularly beliefs, such as the implementation of religious laws and obligations, or out of a perceived sacred duty (based on vertical ties) (Nordås 2010a). In the case of jihadists recruited in Saudi Arabia, for instance, the recruits said to have joined “for the umma [the global Muslim community] and the afterlife” (Hegghammer 2010: 60). They justified their recruitment as jihadists by pointing to the suffering of fellow Muslims in other corners of the world, and felt that they were called to a religious duty and divinely ordained to fight jihad as an *individual duty* (Hegghammer 2010). Hence, they can be said to have fought both based on horizontal attachments to the community and vertical obligations to religious doctrines.¹⁵ As such, recruitment into a religious organization can release functional and solidary benefits that are as potent as any pecuniary or monetary incentive. In the case of the civil war in El Salvador, insurgents were influenced by Marxist-Leninist ideology and religious liberation theology. Participation was a function of both the perceived intrinsic value of fighting for social justice – the will of God, as well as for defiance and moral outrage at violence committed against family and neighbors at the hands of state forces (Wood 2003). Again, both the social networks and the moral and ideological ideals might work together to induce recruitment, perhaps in particular when rebel groups have a notable religious element to its *raison d'être* and mobilization rhetoric (Nordås 2010b).

Whether the solidary or functional rewards are the most salient vary greatly between groups and individuals depending on their precursors. As Hegghammer (2010) also points out in the case of jihadists from Saudi Arabia, although monetary (pecuniary) rewards cannot explain recruitment (most were reasonably well off with potential careers ahead), there are other non-ideological motives that can be found, such as the excitement of travel, weapons training, and companionship.¹⁶

What is clear is that the potential factors leading an individual to join are much broader than pecuniary incentive structures and monetary cost-benefit analyses alone. Indeed,

¹⁴ See Nordås (2010a, b) for a discussion of what constitutes a religious rebel group along different dimensions, in terms of their identity, the issues at stake, and their rhetoric.

¹⁵ In the case of such self-reports by jihadists as well as for measuring motivations in general, basing conclusions on statements by recruits is of course not without problems. Such declarations must be questioned for possible post-facto rationalizations and ulterior motives, and one must also keep in mind that motivations are most often complex and composite (Hegghammer 2010).

¹⁶ We return to the issue of companionship in our discussion of rebel *retention*.

money might be subsidiary. The elements that recruiters can play on to induce participation therefore include a wide range of factors. We now elaborate on the participation constraint and how rebel organizations can meet it.

Recruitment – meeting the participation constraint

The participation constraint is essentially a comparison of the utility offered by the rebel group compared to some *ex ante* outside option.¹⁷ Recruitment depends on fulfillment of this constraint. In other words, no one will join an organization unless the organization can offer a greater “payoff” over time.¹⁸ This condition can be satisfied when all outside options offer poor alternatives or when the rebel movement can offer greater rewards through wages from loot-seeking activities or from the intangible rewards that stem from fighting for a religious, ideological or ethnic separatist cause. In the case of religious rebels in particular, however, one could argue that the time horizon (i.e. discounting and time preferences) for payoffs is longer than in other forms of struggles (Toft 2006), and that sacrificing today is of little consequence when paired with the prospect of limitless rewards in an eternal afterlife.¹⁹ For now, however, we can simply define an agent’s outside option as u^* , and the participation constraint is:

$$(2) \quad V_a(c) \geq V_a^* = \frac{u^*}{1 - \delta}$$

For the theory of the firm and almost all principal-agent models for that matter, the choice of whether or not to participate in an organization is voluntary. But in the case of rebel groups this is often not the case. Participation is often forced at gunpoint. This is particularly true among rebel groups that use children as “recruits” (Beber & Blattman 2013; Gates & Reich 2010). Children may offer a higher possibility for rebel groups to meet the so called reservation level of benefits that a recruit demands in order to join, as this level is proposed to be lower for children than adults (Gates 2002; Andvig & Gates 2010). In addition, children

¹⁷ For simplicity, we base this model on individual recruitment, i.e. that individuals have to be recruited by the group one by one, rather than through bloc recruitment or recruitment through family or kinship networks etc. We do, of course, acknowledge that bloc recruitment does happen, although it is not explicitly modeled here.

¹⁸ In the case of religious individuals, the argument can be made that the expected payoff or reward will come in the afterlife, rather than in the person’s lifetime. This may set the rationality of certain religious groups aside from groups primarily driven by other motives and reasons for acting.

¹⁹ Of course, in continuation of the example of a religious rebel group, the individual making the calculation as to whether he should join the organization does not necessarily make a decision between joining and eternal damnation/fall from grace. Contrary, the individual might perceive of other options to fulfil the religious obligation other than through the call to arms from a rebel group. Hence, the perceived ultimatum-like decision might be more relevant to individual agents who have already joined, or who are vested and socialized into the group and made to believe it represents the only way to fulfil the religious duty – and therefore particularly relevant in the retention stage.

might more easily be recruited only on the basis of a promise of future delivery of benefits. For example, in Liberia, children from marginalized economic groups were promised free access to education after the end of the war. This promise was enough to convince some of them to join Charles Taylor's armed forces. In DRC, former child soldiers have also reported that they joined to receive payment or a job after the war (ILO 2003: 30). The prospect of even marginal payment therefore seems to be a strong incentive for children to enlist, particularly in situations when their parents are missing or they have a hard time providing for themselves in terms of basic security and food (Achvarina, et al. 2009). Hence, child soldiers can mean cheap labor for rebels with limited resources.

More generally, however, what does forced participation mean for the participation constraint? For the agent it means a choice of joining the rebel group or being killed. Death, in this case, would bring the discounted payoff stream to zero, meaning that $u^* / 1 - \delta = 0$.²⁰ Thus under forced participation, the participation constraint only requires that $V_a(c) > 0$. This, in turn, implies a reservation benefit level for the agent, b_{min} , such that $U_a(m_i, b_{min}, 0) = u^* = 0$. Examples of forced recruitment by rebel movements abound, (e.g. Mozambique, Sierra Leone, and Uganda). This sets up an interesting situation for a rebel group that requires forced recruits; how does such a group induce compliance when the members never wanted to participate in the first place? By examining the compatibility constraint (what it takes to keep a person in an organization), this question can be answered.

Retention – meeting the compatibility constraint

The compatibility constraint relates directly to issues of enforcement. Rather than assuming that all rebel agents happily follow all orders, it is assumed here that all agents may possess a latent opportunism that leads them to prefer an action other than the military task assigned to them, such that $m_i \neq s'_a$.²¹

Given such an incentive to defect, how does a principal develop an incentive mechanism that induces compliance? Armed rebellion is a life and death situation where noncompliance could have very serious consequences. Enforcement is critical. As seen above, the leader of a rebel group can offer an incentive scheme to a subordinate agent through a benefit stream for compliance and punishment for defection. Included in the benefit stream

²⁰ This presumes that the agent is not taking the afterlife into account.

²¹ In some cases, however, the internalization of the goals and ideals of the organization might be so complete as to make the latent preference for defection extremely low to non-existent. Acknowledging this, we still have to model based on a different-from-zero latent defection preference out of practical reasons.

for compliance can be material rewards (pay, food, loot), but also nonmaterial benefits. These can include both private benefits for the individual (security, self-esteem) and solidary benefits related to fighting for a collective, a cause, or a principle. For instance, a rebel organization can provide a sense of community and camaraderie, beliefs in the moral and/or religious good of the organization, and thereby induce compliance with the collective goals and ensure high retention.

What matters here is the degree to which the agent perceives or believes that there is a positive benefit stream flowing from their continued membership and compliance. Rebel organizations often engage in systematic strategies of training and indoctrination to ensure the agents keep up the perception of positive utility from participation. Such strategies can be effective. For instance, experiments within psychological research have shown how reminders/priming and cues can greatly affect subsequent behavior. On such study shows how cues making morality more salient, such as reading the Ten Commandments at the start of an experiment, dramatically increase cooperation and decrease cheating (Mazar, et al. 2008). LeBoeuf et al. (2010) find that emphasizing aspects of subjects' self-concept, such as ethnic identity, can increase subsequent identity salience as measured by subsequent identity-consistent expressions of preferences. "Reminders" prior to battle, such as repeating the value of commitment to the organization, the justness of the cause or the promise of salvation from participation, could therefore be assumed to increase retention and compliance with orders by principals.²²

Punishment can take on a wide variety of forms, ranging from a single period relatively minor reduction in utility to an extremely harsh punishment with permanent ramifications. In most cases, death is considered the most severe punishment available, but as discussed above there are also examples of what is considered maximum punishment varying between individuals, communities, and cultures. For example, in some cultures and contexts, individuals may prefer deaths over other punishments that involve torture, humiliation, loss of honor and integrity, or being ostracized from family or community. Soldiers have preferred to commit suicide when faced with no other option than surrender to captivity by the enemy, even when the army they belong to cannot enforce their self-killing. One of the best known examples is Japanese soldiers during WWII who were trained to believe that a soldier to be

²² This effect is likely to be observed even when there is opportunity to cheat/defect, as there is a self-regulation that prevents defection, which Mazar et al. (2008) attribute to an individual's need to maintain a positive self-concept. However, the influence of any shirking on the self-concept is probably no constant, and will most likely depend on the particular action, symbolic value, context, and plasticity (ibid.).

taken captive was the ultimate disgrace, and preferred to kill themselves to avoid the shame (Axell 2002; Bloom 2007). Therefore, we do not assume a specific *a priori* maximum punishment.

That aside, punishment in rebel groups is often harsh. In some rebel groups for example, the penalty for failing to sound the alarm when a friend deserts is execution (*The Economist* 1999: 22). In such cases, the punishment extends beyond the individual, and members of the defectors family and friends might suffer or be under threat of suffering material, social and/or physical retribution. Punishment can therefore function as a deterrent and signal within the organization. The choice of individual for punishment might also be randomized to increase the terror within the organization and thereby decrease risk of defection. Not only are recruits killed for disobeying orders, they can also suffer excessively brutal public executions by their comrades, who might also be forced at gunpoint to commit the killing.

One story from the ranks of the rebel group the Lord's Resistance Army (LRA) in Uganda is presented in Ehrenreich (1998: 79). This story is from when the girl narrator was just forcibly recruited into the organization along with other children:

One boy tried to escape, but he was caught. They made him eat a mouthful of red pepper, and five people were beating him. His hands were tied, and then they made us, the other new captives, kill him with a stick. I felt sick. I knew this boy from before. We were from the same village. I refused to kill him and they told me they would shoot me. They pointed a gun at me, so I had to do it. The boy was asking me, "Why are you doing this?" I said I had no choice. After we killed him, they made us smear his blood on our arms...

This story shows an example of punishment serving as a signal to deter defection. By showing excessive, public, graphic, and/or highly symbolic punishment early on in a recruit's involvement with the group, this can act as a deterrent and thereby decrease the need for costly punishment down the line. Even the rumors about what punishment awaits those who overstep can keep retention rates from dropping.²³ What matters is both the severity of the punishment that can befall defectors as well as the perceived probability of its manifesting.

²³ Making recruits, in particularly this has been done with child soldiers; commit heinous acts of violence against their community and family to break their bonds with their past life and make defection seem less possible for risk of retaliation or for shame and guilt over the violence committed (Singer, 2006; Gates & Reich, 2009).

In the case of religious zealots, the *perceived probability* of punishment for disobeying or defecting from the cause (and the group that represents the cause) is likely to be infinitely high, if the belief is strong that punishment is ultimately at the hands of God. Hence, punishment might not be perceived as mainly distributed by the principal (rebel leadership) or even in this lifetime. The potential for an extended time horizon whereby punishment is distributed into the afterlife can nevertheless act as a strong deterrent against defection. For individuals who believe strongly, or in other words place extremely high probability on eventual punishment for going against religious dogma, punishment is seen as certain. Rebel leaders who can credibly claim (within the rebel group) to represent the worldly will of a deity can hold the key to a strong deterrent against defection and command extreme loyalty.

One of the central problems to be explored in this paper is that a rebel leader cannot always effectively punish a defecting agent. Punishment is likely to be costly to the agent, such that $\partial U_a / \partial p_i < 0$.²⁴ The critical factor, though, is the probability of punishment, P . We assume that the probability of punishment is a function of the degree to which an agent is socially and ideologically embedded in the organization, $D(a)_i$, that accounts for the social-theological policy (social) distance between the principal and the agent in the organization; the nature of the defection taken by the agent, s'_a ; and a random factor affecting the detection of the defection, θ . An additional assumption is that the probability of punishment decreases with respect to the degree to which an agent is socially, emotionally, ideologically (or in terms of social-theological policy) distant from the social or ideological center of the organization, $D(a)_i$; such that $\partial P_i / \partial D(a)_i < 0$.

We take social embeddedness to be directly related to solidary norms. The degree of solidary norms operating in an organization is directly associated with the degree of social embeddedness. In turn, the degree of social embeddedness within an organization increases the chances of detection of defection as well as the ability of the organization to actually carry out the punishment. In other words, an agent that is well integrated socially within a group will be more likely to be punished for defection than one who is not well connected. When the main *raison d'être* of an organization is a strong ideal of ideological or religious nature, any oversteps by individuals in the organization might be punished severely, and even risk the

²⁴ An exception could potentially be when punishment is not deemed necessary to administer because the participants believe that punishments for any missteps will be eventually and definitely be conducted by God.

organization fracturing, as expected to occur due to a *takfir* ideology in extreme jihadi groups (Lahoud 2010).²⁵

The present value of the utility from defection, $V_a(d)$, can be shown as follows:

$$(3) \quad V_a(d) = U_a(d) + \delta \frac{P_i V'_a(p) + (1-P)U_a(s'_a, 0, 0)}{1 - (1-P)\delta}$$

This equation breaks down as follows. $U_a(d)$ is the utility derived from defection for one period before detection, such that $U_a(d) = U_a(s'_a, b_i, 0)$. Recall that s'_a means that agent a takes an action contrary to m_i . The principal has not yet detected defection, and so there is no punishment for this one period. After detection of defection, a permanent punishment scheme (a GRIM strategy), if successfully applied, P_i , leaves an agent with a discounted utility stream, such that: $V'_a(p) = \sum \delta^t U_a(s'_a, 0, p_i)$. An unsuccessful punishment, $1-P_i$, alternatively leaves the defecting agent with a single period payoff of $U_a(s'_a, 0, 0)$. Note that $\partial V_a(d) / \partial P < 0$, meaning that the utility associated with defection decreases with the principal's ability to punish.

All of this essentially boils down to an agent's comparison between the utility associated with defection with a probability of punishment and the utility for cooperation. Formally, an agent will participate and follow orders in the rebel organization if the perceived value of cooperating is equal or greater than the perceived value of defecting, such that:

$$(4) \quad V_a(c) \geq V_a(d).$$

From this setup a proposition regarding the contract offered by a rebel organization facing no competition from the state can be formulated. Such a contract offered to a cooperating agent can be designated as $b^\circ_i(c)$, while the offered punishment for defection is $p^\circ_i(d)$.

Proposition 1. A long-term contract for a given military task, m_i , which satisfies the participation and the incentive compatibility constraints is characterized by $p^\circ_i(d) = p_{max}$ and

$$(5) \quad b^\circ_i(c) : \frac{U_a(m_i, b^\circ_i(c), 0)}{1 - \delta} = \max\left\{ \frac{u^*}{1 - \delta}; U_a(d) + \delta \frac{(1 - P_i)U_a(s'_a, 0, 0)}{1 - \delta(1 - P_i)} \right\},$$

$b^\circ_i(c)$ is decreasing or at least constant with respect to the probability of successfully imposing a punishment, P_i . The offered contracts thus are specified such that, $b^\circ_i(c)(m_i) \in [b_{min}, b_{max}]$.

²⁵Under certain conditions, jihadists might declare "takfir" against their fellow Muslims, labelling them as "unbelievers" and defend shedding their blood.

PROOF: As assumed above, $\partial U_i / \partial b_i < 0$, $\partial U_a / \partial b_i > 0$, $\partial U_i / \partial p_i = 0$, and $\partial U_a / \partial p_i < 0$, constitute the nature of the utility functions. For a given task, the outside option $U_a(s'_a, 0, 0)$ is given, and the incentive compatibility constraint given the harshest punishment, p_{\max} , depends on the benefit stream $b_i(c)$ and on the probability of punishment, P . From the assumption that $\forall m_i \in M, \exists b_{\max}(m_i): U_i(m_i, b_{\max}(m_i), 0)$, the principal does not offer benefits that exceed b_{\max} . In this manner both b_{\min} and b_{\max} are established. QED.²⁶

Ethnically homogenous groups can be argued to have denser social ties than ethnically heterogeneous groups as well as higher interpersonal trust and levels of communication. In general, density of ties between members is assumed critical for the willingness to commit to a conflict cause, or even for any functioning social network to sustain itself (Tilly 1978, 2005). Even without strong enforcers of cohesion, retention might be facilitated by the consequences of breaking intergroup trust – such as losing your social network, friends, comrades, kin, etc. The same logic applies in a religious or ideological space. In this way, as long as ideological or religiously oriented groups can distribute solidary and functional rewards, which rises with greater degrees of religious and ideological homogeneity.²⁷ Given this, it is in the self-interest of any group to inculcate a sense of belonging – of socializing members of the organization into the group.

The relative inconsequentiality of geographical distance can be exemplified in groups characterized by religious zealotry, such as Al Qaida and other jihadi networks. Despite a lack of organizational mechanisms of detection and punishment in place, individuals commit to the goals of the organization and its far-away religious ideologues and take cues for action from them. If the group can develop these beliefs, the group greatly reduces problems of defection and desertion. If we are dealing with a highly committed religious individual, detection of defection will always be perceived as extremely high (you cannot hide from God's watchful eye). This same individual might also discount of punishment/cost in the present and/or this lifetime for benefit in the afterlife. Groups exhibiting narrow ethnic, religious, or ideological distance can increase the share of non-pecuniary benefits allocated to rebel agents, thereby raising the value of b_{\max} , with a lower risk of defection than a similar distribution between

²⁶ See Gates (2002) and Polo (1995) for a similar proof.

²⁷ Of course, if an ethnic group is concentrated in a particular geographic area, the group will only be able to recruit within that range, since the group cannot offer the same non-pecuniary rewards to members of other groups. Ethnic homogeneity may also relate to the ability to punish defection. Homogeneous groups exhibiting little ethnic distance may experience lower probabilities of successful enforcement, due to the social networks. For reasons of simplicity, only geography, in this model, formally relates to the probability to punish defection. Ethnic homogeneity relates only to the maximum benefit allocation for a task through the distribution of non-pecuniary rewards.

pecuniary and non-pecuniary benefits would do to the organizational cohesion of group with less ethnic, ideological or religious distance. Yet even the most ethnically or ideologically homogeneous rebel group depends on a minimum level of resources to stay active. However, although compliance in most cases might depend on a minimal allocation of pecuniary rewards (if not wages, so at least food), the fact remains that non-pecuniary benefits go far in maintaining allegiance; in this case to a rebel army.

Retention in organizations can also be understood as a product of a process of escalating commitments and radicalization. Escalating commitment, according to Benabou and Tirole (2010), is likely to occur when an individual has built up a considerable stock of some asset. The asset can, in principle, be anything, including i.e. social capital or religious beliefs. The individual who has already committed significantly to a group, therefore, is likely to add even more to this investment (by committing more resources, time and effort) – in accordance with literature on self-justification within psychology. Intuitively, Benabou and Tirole argue, “a higher stock raises the stakes on viewing the asset as beneficial to one’s long-run welfare, and the way to reassure oneself of its value is to keep investing” (p. 3). In short, those with higher investments have a higher demand for optimistic beliefs about the returns to their investment, and might be more willing to absorb costs. This could lead to extreme commitment and a process of radicalization.²⁸ When a group is relatively isolated from external cues and alternative opinions than those espoused by the in-group (which can often be the case for rebel organizations), more radical opinions can flourish. In small fighting units, where your life depends on your comrades, such extreme interdependence can produce intense group cohesion.

Another factor, which might play into the observation of surprisingly high cohesion and retention rates in groups consisting of many forced recruits (such as the LRA in Uganda, RUF in Sierra Leone, and the Renamo in Mozambique), is the presence of child soldiers.²⁹ Children are not only easier to recruit in terms of having low reservation levels, but evidence from child psychology and empirical studies demonstrate children’s greater tendency towards altruism and bonding to a group (Harbaugh & Krause 1999). Furthermore, experimental results find that children like adults start out being more generous than one would predict on the basis of pure rational choice models. However, children’s voluntary contributions to

²⁸ In a political context, radicalization (of behavior) means increasing time, money, risk-taking, and violence in support of a political cause/group (McCauley & Moskaleiko 2008).

²⁹ The vast majority of the LRA soldiers are abducted children, and the estimated rate of forced recruits in Renamo has been put at the astonishing figure of 90 percent (Weinstein 2007; Achvarina & Reich 2006).

public goods in these experiments do also not decline with repeated games, and even increase with the number of repetitions, contrary to the findings for adults (ibid.). Group attachment therefore has an increasing effect. From such findings we may speculate that children to have a lower tendency to leave or defect than adults (Andvig & Gates 2009) and thereby higher retention probability.³⁰ Beber & Blattman (2013) in their analysis of data regarding ex- LRA combatants focus on the role of defections in that adolescents are less able to defect than adults.

In many settings the levels of defection not only means that the organization itself may get weaker, it can also directly lead to the strengthening of the enemies of the group. To capture the dynamics of recruitment in an actual civil war setting, we need to account for the rebel group in dyadic interaction and competition with state forces. The next section therefore looks at rebel recruitment and retention in a model with contestation.

Recruitment and Retention in a Rebel Group with Contestation

A rebel group and the state not only compete militarily, but they may also compete for recruits in general and for each other's defectors. The strategic interaction of the state's security or military forces and the rebel group can critically affect the nature of combat as well as their recruitment and retention strategies. We therefore turn to model recruitment and retention in rebel groups with such state-rebel contestation.

To model recruitment and retention with contestation we start with two actors, a rebel organization and the government's army engaged in a military contest. This part of our model builds on Polo (1995), Gates (2002), and Buhaug, Gates & Lujala (2009). Moreover, this part of our model follows from a general class of contest success functions first developed by Tullock (1980) and applied to conflict by Hirshleifer (1989, 2000), Skaperdas (1996), and others. As applied to military conflict, the contest success function relates to the relative capabilities of two competing sides of a conflict, such that:

$$6) \quad \pi(K_l - K_g) = \frac{f(K_l)}{f(K_l) + f(K_g)}$$

where $f(K_l)$ and $f(K_g)$, respectively, are non-negative, continuous functions of military capabilities for the rebel group and the government. The probability of military success is expressed as π .

³⁰ However, through group processes and psychological processes endogenous to the individual and group, previously reluctant joiners and forced conscripts may become loyal followers, akin to the Stockholm syndrome.

Military capability, K , depends on an unspecified combination of troop size, military budget, technological sophistication, organizational coherence of the group, etc. To ascertain the differences between religious and ethno-nationalist groups, we focus our analysis on troop size and the characteristics of the recruits. In particular we highlight the role of social-theological policy distance. To understand what we mean by this, consider a Euclidian space of N -dimensions. Like an ideological space, we could map the location of different theological doctrines. Some religious groups are doctrinally similar, such as Presbyterians and Congregationalists (both having Calvinistic Protestant roots), and would be close together in such mapping of theological doctrine. Hindus and Muslims would be far apart in such a space. But it is not theological distance that is important. What is important is the policy related to social-theological doctrine. The religious wars pitting Catholics and Protestants against one another were not fought over religious doctrine for its own sake, but over significant policy differences that had social-theological roots. In such a way, we can model the social-theological policy distance between a religiously based group and other rebel groups or the government with regard to different policy preferences. We can also map the social-theological policy spread of a group, which allows us to compare groups that recruit generally and broadly as opposed to groups that recruit narrowly. Using such a mapping construct, religious extremism is defined as a religion policy (usually violent) positioned far away from all others in this social-theological policy space. A group placed so far out may find it difficult to recruit members. Such a group would have to compensate those willing to join the group with high non-pecuniary benefits (rewards in an afterlife, a feeling of exclusiveness – often associated with intolerance for other beliefs, etc.). (More on this below). There are, however, limits to such benefits as the tenets and requirements of such an extreme faith may lead to group factionalization.³¹

Focusing on the role of social-theological policy distance, the formal characteristics $K_g(\cdot)$ (military capability) is expressed as:

$$7) \quad K_l(x_c; \varepsilon_l, x_l) = a + \ln(\varepsilon_l) - (x_c - x_l)^2 + \eta_l$$

in which the military capability of a rebel group is represented as $K_l(x_c; \varepsilon_l, x_l)$ and η_l is a stochastic element and a is a constant. The central point of the distribution of the population's ideology and religious beliefs within the Euclidean social-theological policy space is

³¹ Another possible trigger of recruitment to terrorist organization could be previous attacks. Through a feedback loop, then, additional recruits will be able to produce more terrorist attacks, and the movement escalates in both activity and size. Clauset and Gleditsch (2011) find that there is such a dynamic for terrorist organizations, and that religiously-motivated organizations go through this acceleration the fastest. However, this dynamic is outside of the scope of the current paper.

designated as x_c . The location of the rebel group in the Euclidean social-theological policy space is designated as x_l . The military effectiveness of the rebel group is ε_g .

By setting the respective capabilities of the two armies against one another, the difference in their capabilities can be compared:

$$\begin{aligned} 8) \quad K_g(x_c; \varepsilon_g, x_g) &= a + \ln(\varepsilon_g) - (x_c - x_g)^2 + \eta_g \\ &= a + \ln(\varepsilon_l) - (x_c - x_l)^2 + \eta_l = K_l(x_c; \varepsilon_l, x_l) \end{aligned}$$

For the rebel group to have an advantage in terms of capability, the following inequality is obtained, $K_l(x_c; \varepsilon_l, x_l) > K_g(x_c; \varepsilon_g, x_g)$. By rearranging the terms, putting the distance and military capability parameters together, the equation can be expressed in terms of the stochastic elements such that $\ln(\varepsilon_l) - (x_c - x_l)^2 - \ln(\varepsilon_g) + (x_c - x_g)^2 > \eta_g - \eta_l$. These stochastic parameters can be used to express the full equation utilizing a subclass of the contest success function, the logit success function (Hirshleifer 1989, 2000). This functional form allows us to emphasize the differences in capabilities between the two armies. The model also accounts for the stochastic nature of combat. The cumulative density function of the difference between the two stochastic elements, $F(\eta_g - \eta_l)$ can be expressed as a logistic function:

$$9) \quad F(\eta_g - \eta_l) = \frac{e^{(\eta_g - \eta_l)}}{1 + e^{(\eta_g - \eta_l)}}$$

The contest success function expressed in this logistic form allows us to directly account for the relative level of extremism of the religiously based group by comparing the distance between x_l , x_g , and x_c . More specifically:

$$10) \quad \pi_l = \frac{\varepsilon_l / \varepsilon_g}{e^{-(2x_c - x_l - x_g)(x_l - x_g)} + \varepsilon_l / \varepsilon_g}$$

Relative distance between the government and rebel group is critical in determining the probability of success in the contest (whether π_l or π_g). If the government and rebel group are indistinguishable in terms of social-theological policy distance, such that $x_l - x_g = 0$, equation 5 simplifies to $\varepsilon_l / (\varepsilon_l + \varepsilon_g)$, since $e^0 = 1$. Religion in such circumstances will play no role in the contest. Simply put, if both the government and the rebels are religiously mixed, particularly if this is a similar mix, then religion would not serve well as a mobilization tool, *ceteris paribus*. A rebel group can obtain an advantage relative to the state by moving distinctly away from the location of the government or other rebel groups. One could conceive of a continuum here, where the rebel groups may be slightly different in their identities and ideologies, or doctrines might be substantively different as one party espouses an extremist doctrine. Under the right circumstances, such extremism (explored immediately below) may

have its advantages. This notion of probability of success obtained through the CSF will play a central role in our analysis.

In an environment of deadly competition an agent's participation and incentive compatibility constraint are modified. The first modification is that an individual's life is at stake when joining and participating in a military organization engaged in combat.³² This implies that the provision of security from the organization can play a critical role for decisions regarding recruitment and retention. For instance, many recruits to the RUF interviewed after demobilization (involving a formal DDR process) have reported that they joined a rebel group out of safety and security concerns. The alternative of staying outside the group would imply an even greater risk to that person's and their family's immediate physical safety and survival, as reported in the case of RUF soldiers in Sierra Leone (Maclure & Denov, 2006). Indeed, many joined out of fear of otherwise being killed.

The second modification regards the role of desertion. Desertion poses a threat to the principals and other agents in a military, paramilitary or rebel organization; and indeed can be a threat to the very survival of the organization. For a small guerrilla army or terrorist band, desertions could spell doom for the group. Desertion poses different forms of threat to a group and raises the risk of those loyal to the group being killed. A deserter may be able to reveal valuable information to the enemy regarding the location of troops, headquarters, leadership of the group, the group's commitment levels, weaknesses or particulars relating to strategy or tactics that would put the group at a serious disadvantage to governmental forces. Less critically, desertion constitutes a loss of manpower. In many organizations also, group size has economies of scale that make the organization more robust. Larger organizations are therefore, *ceteris paribus*, more likely to be able to fill necessary and desirable functions in a recruit's life – not only security, but also friendship networks and services. Desertion might therefore become a negative spiral. When an organization drops below a certain level of membership, it can be seen as less viable by the remaining insiders, which can tip the scale in the direction of convincing additional members to also desert. In certain circumstances, particularly in high-risk contests (such as in highly repressive or capable states with extensive surveillance) and for smaller groups, the loss of just a few men could be catastrophic, leading to a decisive defeat in battle.

³² Risking your life is not limited to military organizations, however. The police or criminal organizations face similar risks, which an effective organization must address otherwise the compatibility constraint will not be met. But the risk of death does differentiate these types of organizations from other governmental or non-governmental organizations.

Through the ages, military organizations have attempted to address the threat of desertion, especially in battle. Even the most modern and powerful armies in the world today reserve their harshest punishment for desertion under fire. Basic training and indoctrination are also oriented towards instilling solidary norms and functional preferences with a basic orientation towards preventing desertion and the breakdown of authority.

An agent can engage in three general types of behavior that we explicitly model. An agent may choose to cooperate, carrying out the tasks delegated by the principal. Alternatively the agent may defect, choosing not to carry out the orders of his commander. In an environment of violent conflict, an agent may also desert. To account for the risk of death we assume that a contract will be specified by the principal such that an agent will be subject to military risk, R , if he deserts, such that $R(g)_i \in [0, R_{max}]$.³³

For an agent who cooperates (following orders) his discounted utility over time under threat of being killed by governmental troops is:

$$(11) \quad V_a(C_i) = \frac{\pi_i U_a(m_i, b(c1)_i, 0) + (1 - \pi_i) V_a^\circ(R_g)}{1 - \delta\pi_i}$$

$V(c_i)_a$ constitutes the participation constraint under competition, which mandates a higher stream of benefits to compensate for the risk of being killed by the other army, all other things being equal.

An agent also has the option of defecting without deserting. To assess the present value of defecting without deserting, several factors come into play: the probability of protection offered by the rebel army, π_i , the probability of punishment for defection, P_i , as well as the benefits associated with these different probabilistic outcomes. If he defects by not performing an assigned task, m , while remaining in the rebel group, then $p(d)_i \in [0, p_{max}]$. Two streams of benefits are also offered: $b(c1)_i$ is paid out to the individual who joins the rebel group initially and is paid out until defection is detected; $b(c2)_g$ is the benefit stream awarded to the individual who deserts from the governmental army and joins the rebel group.³⁴ The equation representing the present value of defecting without deserting, $V_a(d)$, follows:

³³ Indeed, in some conflicts, as in Sierra Leone, surrender was not an option, as deserters from rebel groups were more often than not killed by state forces at first encounter.

³⁴ Shifting sides might not be immediately accepted by the recipient and different forms of signalling might be required for an individual to be trusted by a new group (state/rebel) – for instance committing some severe violent act against former comrades to signal resolve and a break with the past.

$$(12) \quad V_a(d) = \pi_i U_a(s_a^\circ, b_i(c1), 0) + (1 - \pi_i) V_a(R_g) + \frac{\pi_i \left[P V_a(p) + (1 - P) U_a(m, b_i(c2), 0) \right] + (1 - \pi) V_a(R_g)}{\delta [1 - (1 - \pi)(1 - P)\delta]}$$

The decision to desert but to remove oneself entirely from armed conflict, thereby leaving the rebel group and not joining the government's side, results in a payoff that may be obtained by modifying equation (3) above, such that:

$$(13) \quad V_a(dd) = \pi_i U_a(s_a^\circ, b_i(c1), 0) + (1 - \pi_i) V_a(R_g) + \delta \frac{\pi_i V_a(R_i) + (1 - \pi) V_a(R_g)}{1 - (1 - \pi)\delta}$$

In such a situation the deserter would incur benefits from the organization in the first period but in the second period would lose all organizational benefits and costs, but would be put at risk from both the rebel and governmental armies.

An individual could also engage in the most serious form of defection and *desert to join the other side*. Again, modifying equation (3) above, the present value of defection and desertion $V_a(dd)$ (and presuming cooperation within the government's army after deserting) becomes:

$$(14) \quad V_a(d\bar{d}) = \pi_i U_a(s_a^\circ, b_i(c1), 0) + (1 - \pi_i) V_a(R_g) + \delta \frac{\pi_i V_a(R_i) + (1 - \pi) U_a(m, b_g(c2), 0)}{1 - (1 - \pi)\delta}$$

This equation takes into account the initial period of unsanctioned reward for defection and protection offered by being part of the rebel army, represented by π_i . The equation also accounts for the desertion to the government's army, thereby avoiding punishment that would be meted out by rebel organization, while also incorporating the benefits offered by the government's army and their protection, $1 - \pi_i$, as well as the risk of being killed by former comrades in the rebel army, $\pi_i V_a(R_i)$.

The critical value affecting the decision to desert to join the other side occurs when $V(c_i)_a = V(c_g)_a$ when $b(c1)_i = b(c2)_g = b_{max}$. These reflect competing benefit structures, whereby benefits are weighed against the severity of punishments. In an environment of armed combat, agents will choose the group that offers the highest utility.³⁵ In turn, a principal will find it most desirable to hire those agents least likely to defect and desert. This leads to our second proposition:

³⁵ This is a necessary simplification, because geography might matter in some cases, as some individuals might not be in contact with or hear about particular groups due to physical distance and other factors. This makes them less likely to have a real choice between who to support/join (Wood, 2003).

Proposition 2. An agent, a , located in a social network at x_a such that $\pi_i(x_a; \varepsilon_i, \varepsilon_g, x_i, x_g) \geq \pi_i^o$ chooses the rebel organization, i , and does not deviate thereafter, given that the following conditions hold in equilibrium:

- (a): $\pi_i \gg \pi_{min}$;
- (b): $\partial b^o(c1)_i(\pi_i) / \partial \pi_i \leq 0$;
- (c): $b(c2)_i = b_{max}$.

Lemma 2.1: All agents for whom the probability of survival exceeds a minimum level determined by agents' time preferences and beliefs about death, such that $\pi_i > \pi_{min}$, can be induced to join a rebel group through the offer of benefits above the agent's reservation level.

PROOF: Start with an agent's initial decision to affiliate with a rebel group such that:

$$(15) \quad \frac{\pi_i U_a(m_i, b(c1)_i, 0)}{1 - \delta \pi_i} \geq \frac{(1 - \pi_i) U_a(m_i, b(c1)_g, 0)}{1 - \delta(1 - \pi_i)}$$

By assumption, the marginal utility of benefits depends on the probability of survival given protection from the group, π_i , since death in the battlefield will terminate the benefit stream (or at least for those not focused on an afterlife). The probability of survival is a lower threshold. Of course the chances of victory go hand-in-hand with the chances of survival and a winning team will find it easier to keep its members and attract new ones. Thus, when $b(c1)_i = b(c1)_g$, the marginal utility of benefits of the rebel group will be greater than for the rebels if $\pi_i > \pi_{min}$ and the marginal utility of benefits will be greater for the government if $\pi_g > \pi_{min}$. A simultaneous competition (imperfect information) in benefit allocations between the rebel group and the government means that in equilibrium, the rebel group with $\pi_i > \pi_{min}$ can pay lower "wages" than the government which is competing for the same agents.

Lemma 2.2: A rebel group will only recruit those agents for which π_i is high enough to guarantee that the benefits allocated to agents is high enough to ensure no desertion.

PROOF: The relevant incentive compatibility constraint (excluding aspects of military risk associated with each side's relative probabilities of success) is: $V(c1)_a \geq V(dd1)_a$ or:

$$(16) \quad \frac{\pi_i U_a(m_i, b(c1)_i, 0)}{1 - \delta \pi_i} \geq U_a(s^o_a, b(c1)_i, 0) + \delta \frac{(1 - \pi_i) U_a(m_i, b(c2)_g, 0)}{1 - \delta(1 - \pi_i)}$$

The rebel principal, i , can affect $V(c1)_a$ by increasing $b(c1)_i$, alternatively the government can increase $b(c2)_g$ high enough to induce the agent to defect. Again we see the emergence of a game played simultaneously by the two principals where benefits are

increased to induce an agent's loyalty or defection with respect to the rebel group and the government. Suppose that the rebel group has offered the maximum set of benefits, $b_{i \max}$, while the government's $b(c2)_g$ is below $b_{g \max}$. In such a situation the government can offer a higher set of benefits which in turn induces the agent to defect from the rebel group to the government, since the rebel group cannot respond since it is already paying out at its maximum. The rebel group never makes an offer to such an agent whose loyalty would be so tenuous. Thus, it is only worthwhile for a rebel group to recruit only those agents for which the rebel group has guaranteed a sufficiently high probability of group survival so as to meet the reservation level of benefits and the compatibility constraint so as to assure against defection.³⁶

Alternatively, a group can compensate in different ways. By developing an ideological focus a group can shift its benefit stream from pecuniary to non-pecuniary benefits (in terms of functional preferences and solidary norms). As noted above, ethnic based groups are inherently less likely to experience problems with defection.

Consider π_i° such that $V(c_i)_a = V(c_g)_a$ and such that $b(c1)_i = b(c2)_g = b_{\max}$. For $\pi_i \geq \pi_i^\circ$ the incentive compatibility constraint is satisfied for lower levels of benefits, $b(c1)_i$ while $b(c2)_g = b_{\max}$ as stated above in Proposition 2: (b): $\partial b(c1)_i(\pi_i) / \partial \pi_i \leq 0$ and (c): $b(c2)_i = b_{\max}$. Finally, if $b(c1)_i = b(c2)_g = b_{\max}$, then for $\pi_i = \pi_{\min}$, the incentive compatibility condition $V(c_i)_a(\pi_i^\circ) \geq V(c_g)_a(\pi_i^\circ)$ becomes:

$$(17) \quad U_a(m, b_{\max}, 0) \frac{1 - \delta}{2 - \delta} \geq U_a(s_a^\circ, b_{\max a}, 0),$$

which is never satisfied. Thus, (a) $\pi_i \gg \pi_{\min}$. QED.

The implication of Proposition 2 is that while a slight military advantage can attract an agent initially, the incentive compatibility constraint requires a much stronger advantage if the principal is to deter desertion (as opposed to deterring defection). In addition to an adequate benefit stream (of either pecuniary or non-pecuniary rewards), an organization can offer a better chance of survival (in comparison to not being affiliated with any military organization or with being affiliated with the government). This proposition also demonstrates the important role retention (meeting the compatibility constraint) has for an organization that is engaged in deadly competition with the state. Recruitment is important, but without retention the organization will not survive.

³⁶ By implication it is not given that the rebel group will seek unlimited recruitment in terms of troop size. Both ideological and strategic reasons might lead to a preference for a smaller but more highly committed group.

Proposition 2 underscores the importance of the distance between the principal and the agent in a social-theological policy space. Our second proposition follows.

Proposition 3: *There exists a minimum distance, D_{min} , between the state and the rebel group under which no agent, a , located in $[0, 1]$ will join the rebel group, l . For $D > D_{min}$, the subsets of agents that join either army are unconnected.*

PROOF (Also see Gates, 2002): Start with the extreme where $D=0$, such that $x_l = x_g$. In such a situation, $\pi_l = \varepsilon_l / (\varepsilon_l + \varepsilon_g)$ for $x \in [0, 1]$, given equation 5 (which in this case is the same as equation 1). As D increases, π_l will decrease. There thus exists a minimum distance, D_{min} , such that $\max(x_a) \pi_l = \pi_l^\circ$. For $D > D_{min}$, the incentive compatibility constraint holds for two groups of agents, $\pi_l > \pi_l^\circ$ and $\pi_l < 1 - \pi_l^\circ$. Since π_l decreases with the distance of the agent from the principal (x_a), the two subsets of agents will array themselves with respect to D , the distance between the two principals, and are not connected. For $D \leq D_{min}$, the incentive compatibility constraint does not hold. QED

The implication of this proposition is that with regard to military conflict between the governmental and the rebel armies, the function, π_l (the probability of the rebel army's military success), is very flat as the two organizations are located close to one another. Indeed, when a rebel group and the government are located close to one another, military advantage becomes a ratio of military effectiveness, and recruitment will be difficult. The problem does not stem from military conflict but from the potential for defection being too great to prevent the initial recruitment of members.

This gives an incentive to a religiously based rebel group to distinguish itself from the government, creating social-theological policy distance (i.e. becoming more extreme). A rebel group must assure that the incentive compatibility constraint is high enough to limit desertion. By increasing $b(cI)_l$ through the allocation of non-pecuniary rewards (through religious extremist), the rebel principal, l , can affect $V(cI)_a$. As long as $V(cI)_a \geq V(ddI)_a$, such that the present value for an agent of cooperating is greater than the present value of defection and desertion. The more a rebel leader can appeal to the provision of non-pecuniary rewards the better she is able to recruit and maintain the allegiance of her rebel soldiers.

Rebel groups do not always compete with only the government. They also can compete with rival rebellions or even renegade factions of their own movement. The reasoning that applies to the competition between a rebel group and the government also applies to the competition between two rebel armies, which leads us to our third proposition.

Proposition 4. *There exists a critical distance $D\#$ between a rebel group and a rival rebel group that precludes the rival group's ability to recruit. Only if the rival group is located with sufficient distance, $D > D\#$, can this rival rebel group arise.*

PROOF (Also see Gates 2002): Substitute $D\#$ for D_{\min} and refer to the proof for Proposition 2. QED.

The primary implication of proposition 4 is that the survival of two rival rebel groups does not result from deadly armed conflict, but from the ability to recruit adherents and retain their allegiance. If a group already occupies a social-theological policy space in a society, it behooves another group to position itself far enough away to distinguish itself from the other group.³⁷ An example of this is evident in Syria where the al Qaeda linked group, al Nusra Front has effectively been defeated by IS. Though allied at the beginning of the conflict in Syria, the groups began fighting one another in 2014. The moderate Syrian opposition organized as the Syrian National Council/Army offers little in terms of military resistance to the Syrian government or to IS. Again, there is an incentive for extremism.

SPELL OUT ADVANTAGES OF EXTREMISM

Concluding remarks

In this paper, we model recruitment and retention in rebel groups. We see these as separate processes and argue that they can be driven by both pecuniary and non-pecuniary incentives. This sets our line of reasoning apart from thin rational-actor models that have a tendency to over-emphasize material rewards as drivers of war. Second, this model also is better able to account for endogenous processes to rebel groups that may make the recruitment stage and the retention process distinct.

Recruitment and retention constitute fundamental requirements for any organization. From a little league soccer team to a labor union, to be viable a group must have members. The group needs to get people to join and to continue participating in the group. For violent organizations, failing to retain members of the group could be fatal. Clearly, a rebel group engaged in violent conflict with a government must face the same challenges. Yet, few studies have attempted to systematically study how rebel organizations maintain the allegiance of those that are recruited? Most studies feature only the process of recruitment. Understanding the mechanisms driving the processes of both recruitment and retention is critical to

³⁷ See Berman (2003) using a different model comes to a similar conclusion.

understanding how wars are sustained and how they end. While all rebel groups require securing a minimum level of recruitment, keeping recruits committed to the organization is equally much a matter of life and death to the group and its leadership.

Future research should also apply the model to more systematic tests. Rebel groups operate by widely varying organizational structures, from hierarchical top-down and bureaucratically advanced organizations to loosely knit networks of fighting units. Furthermore, motives and incentives that drive organizations and individual rebels can vary between having highly ideologically justified and explicit *raison d'être*, in contrast to opportunist insurgents motivated by loot-seeking and personal gains through resource extraction. We argue that this variation matters for the processes and strategies of recruitment, and retention. It can therefore matter for the entire conflict process, including processes of fractionalization, negotiation, as well as prospects for peace (Nordås 2010a). Despite the argued significance of variations on these dimensions, however, no systematic and/or detailed data currently exist. It should therefore be a priority in future research to establish better comparative data on these issues and with sufficient nuance to be able to test the theoretical propositions developed in the current model.

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