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Can the Peace be Imported?

by **Jean-Paul Azam**

University of Toulouse (ARQADE and IDEI)

and Institut Universitaire de France.

Abstract: A simple game-theoretic model is presented that explores the conditions under which a foreign power will intervene in a civil war for making peace. It emphasizes the problem raised by the imperfect credibility of the intervener as a protector of the side that lays down its weapons. Cases are analyzed where the foreign power rationally decides to intervene despite a risk of failure. Two extensions of the basic model suggest that a successful intervention is more likely when a second tool is added, like redeployment of the rebel troops for avoiding to leave this side defenseless, or the promise of aid as an incentive to reduce the probability of looting.

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1. Introduction

Thirteen peace agreements were signed by the warlords during the Liberian civil war, and failed to be implemented for six years. Adebajo (2002) explains these repeated failures by “the proliferation of armed factions and the manipulation of ethnic rivalries and plundering of resources by rival warlords” (Adebajo, 2002, p.17). For the rational choice theorist, these explanations fail to provide an adequate answer to the question of why these agreements were signed in the first place, and repeatedly so. The presence of armed factions, of ethnic rivalries, and of alluvial diamonds did not change significantly during that period of six years. These were known to all from the beginning of the Liberian civil war. Moreover, these failures occurred while an international force drawn from various West African states, the ECOMOG, was present in the country. Nigeria was the dominant power in control of ECOMOG, from the beginning, while Ghana also played episodically a significant part. This raises the additional question of why this international force intervened at all, and why did it fail to make any progress towards peace during those six years. An important clue for answering these queries is provided by a remarkable event. In September 1990, one of the rebel warlords, Prince Johnson, captured the incumbent dictator Samuel Doe within the premises of the ECOMOG’s headquarters (Adebajo, 2002). He then videotaped the latter’s torture and murder, and exposed publicly the body for all to see. This event simply revealed to all what most of the actors knew with a high probability: the ECOMOG was not credible as a protector for any of the parties involved. Then, the repeated demands for disarmaments of the rebels, which were included in all the thirteen still-born cease-fires, were probably perceived by all as a request to volunteer for committing suicide.

Then, in September 1996, the peace accord that led eventually to the peaceful July 1997 elections were signed in Abuja (Nigeria), despite the continued presence of armed factions, ethnic rivalries, and alluvial diamonds to be plundered. Two main changes seem to explain why a credible peace became possible. First, the Nigerian government (i.e. General Sani Abacha) had at long last identified the relevant “government” for post-conflict Liberia, namely Charles Taylor. Before that, the Nigerians had clearly chosen to support the loosing

side, thus delaying any credible peace settlement. This choice was probably made for the sake of fairness, as Charles Taylor was clearly the aggressor, and was somehow regarded more as a highway man than as a legitimate political contender. Second, the ECOMOG's forces became credible thanks to the logistical support provided eventually by the USA and the EU, which had declined to get involved at the beginning. The changed attitude of the latter was not necessarily exogenous, and was probably prompted by the emergence of a clear strategy to establish the peace. Nevertheless, this suggests that the warlords were using the repeated cease-fire negotiations as means for gathering information and testing the evolving credibility of the peace-keeping forces. Signing those unsatisfactory cease fires was probably just a polite way of ending the meetings, in order to go back to the warfare business without wasting any more time. This information-gathering process reached a conclusion when all the players had identified an acceptable outcome, while the credibility of the intervention forces had at long last become convincing. It turned out that the peace only lasted for a while, and violence resumed later on, as Charles Taylor became excessively predatory when he was in power, while the peace-keeping forces had shrunk significantly.

Neighboring Sierra Leone offers quite a different picture of the potential effects of a foreign intervention, not to mention Charles Taylor's intervention from neighboring Liberia, which was clearly not aimed at establishing the peace. First of all, ECOMOG chose the right "government" to bet on. Elections were held in February 1996, under international pressure, and brought Ahmed Kabbah to power. Under pressure from the IMF, Kabbah had to cut defense expenditures, despite the pervasive political violence, and was quite predictably toppled by a coup in May 1997 (Adebajo, 2002). Then, the Nigerian troops of the ECOMOG restored their credibility, by flushing out the rebels from Freetown, for restoring Kabbah to power in March 1998. Its credibility was also enhanced by the support provided by Britain, the former colonial power, as well as by the presence of various mercenary firms. After a last and unsuccessful attempt by the rebels to take over the capital city in January 1999, the Lomé agreements were signed in July 1999. They failed to establish the peace, however, as Nigeria withdrew its forces in the wake of the return to civilian rule, under president Obasanjo. Then, fighting resumed, until the UN had replaced ECOMOG as a credible force. This took some

time, as this UN force was initially humiliated by the rebels, in May 2000. Credibility was then repaired by involving more Nigerian soldiers, and some British intervention and continuous support. Disarmament of the rebels at long last occurred in January 2002.

The changing attitude of the Nigerian government, pulling out from the Mano River region after the return to civilian rule in 1999 under former General Obasanjo, raises an interesting issue. Obviously, this external intervention in Liberia and Sierra Leone on behalf of ECOWAS was fairly costly for the Nigerian government, and it is quite plausible that a higher political payoff was expected initially. Then, one possible explanation is that Obasanjo was more sensitive than the previous rulers to the cost of this operation, being democratically under the taxpayers' control, and more realistic about the benefit that Nigeria could reap from it. He did not need to deflect international pressure against his dictatorial rule, as did Abacha. However, a more subtle explanation could be that Obasanjo was feeling more secure than Sani Abacha and the other generals, because of the clear democratic backing acquired through the elections. Then, according to this interpretation, he did not need to keep the potential military trouble makers at bay, like his predecessors did. Hence, according to this view, Sani Abacha would have maneuvered to keep the dangerous generals busy abroad, with some obvious material rewards involving higher pay, easy corruption, and some exciting action to perform. However, this does not explain the gradual rapprochement between Abacha and Charles Taylor that led eventually to the effective cease fire. Hence, a simpler story about Abacha gradually discovering Charles Taylor's credible commitment and material ability not to disarm, whatever the pressure, may well be sufficient. Such a credible commitment was obviously making him the natural post-conflict ruler for Nigeria, as the government of a peaceful country is most of the time keeping the monopoly over the holding of weapons. Once all the actors had acquired this piece of information, then finding an acceptable peace agreement was relatively easy. It was just a matter of finding the right level of investment in peace-keeping for providing enough security to the disarming side. In Liberia and Sierra Leone, as seen above, the support by the USA or Britain was probably pivotal, when it came.

Credibility problems are also at the core of the failed ECOMOG intervention in neighboring Guinea-Bissau. There, the incumbent President Vieira was toppled by his

opponent General Mane under the very nose of the ECOMOG forces (Adebajo, 2002). Then, the latter left the country, because there was only one side left. Hence, the three interventions by ECOMOG in West Africa involved the ousting of the incumbent president, Doe and Vieira, under the intervener's very nose, the former getting killed, while the third intervention involved the restoration of the democratically elected Kabbah to power, after he was ousted by a coup. This is not a highly convincing series, which could enhance the credibility of such a peace-building intervention. More generally, it may legitimately raise some doubts about the value of such an intervention. The present paper focuses on the role played by this type of credibility, concerning the protection of the disarming side.

An interesting example of credible peace settlement is offered by the experience of Chad in the early 1990s (see Azam and Djimtoingar, 2004, and references therein). Idriss Déby took over at the end of more than twenty years of civil war, of variable intensity, involving at times French and Libyan interventions. He put an end to the "Codo" rebellion in the south, by combining a blood bath in 1993 with a credible offer of power sharing. A National Conference was organized the same year, for venting the demands of the different groups, and establishing some form of dialog. The main point of his strategy was that he took General Kamougué, the leader of the Southerners' rebellion, as President of the National Assembly. This is formerly the second-ranking position in government. With a view to avoid making this position a purely honorific one, Déby did not dismantle the military units composed of southerners, which remained clearly available should Kamougué decide to mobilize them for resuming the fighting. This clearly put a credible cap on the level of taxation or looting of the southerners that Déby was able to perform with impunity in the peaceful regime. The resulting credible restraint played a key role in maintaining peace in that country, despite the new opportunities opened by the beginning of oil revenues in 2003.

The present paper is an attempt at clarifying the role of credibility in peace keeping. More precisely, it provides a theoretical exploration that aims at capturing some stylized facts about foreign intervention in civil wars. One obvious point is that peace would only be achieved if some form of security could be guaranteed to the warring parties, were they to lay down their weapons. This is the key issue, which might be viewed differently by the

government and the rebels. Both sides must be convinced that accepting peace would not reduce their expected welfare, relative to war. Most cease fires are broken because the parties refuse to surrender their weapons, for fear of being exposed defenseless to an attack by the other side. Second, a major fact to be taken on board is that many foreign interventions fail to secure peace, and leave the intervener with a major political loss, if the latter leaves the country in the wake of a failure. This is reminiscent of the failed intervention of the USA in Somalia, for example. This risk of failure is thus a crucial feature to be included in a model aimed at explaining foreign intervention. In the model used below, the risk of such failed interventions is explained by asymmetric information between the local actors and the foreign intervener. Hence, this model is based on rational expectations, and does not invoke any type of excess optimism or biased expectations. For example, it entails that it was possibly rational for the USA to intervene in Somalia, given the available knowledge concerning the local actors that was available at the time.

The model is presented in the next section, and it is used in the subsequent three sections for discussing various equilibria where the foreign intervention may or may not be successful. Section 3 focuses on a restricted definition of peace making, where full disarmament of the rebels is regarded as the objective of the intervention. In the real world, disarmament is obsessively required in all cease fire negotiations. However, it is also the main tumbling block that makes so many of these agreements a hopeless ritual. Section 4 discusses the potential for a less restrictive definition of peace, where the rebel forces are required to redeploy, and disarm only partially, rather than to disarm entirely. This makes peace easier to enforce, even in cases where the foreign power would be discouraged to intervene if full disarmament was the aim of the exercise. Section 5 discusses the potential for aid as an incentive for the government to refrain from predated ex post, and thus to make intervention more probably successful. Section 6 concludes.

2. The Model

The model used here for discussing the issue of foreign intervention aimed at stopping the fighting in a civil war is a variant of Azam and Mesnard (2003). Like the latter, it

emphasizes the commitment capacity of the incumbent government as the crucial factor that determines whether unarmed peace is an equilibrium outcome or not¹. However, in order to customize the model to the case of a post-conflict situation, the credibility at stake is that of the government's promise to refrain from a predatory behavior after the rebels have disarmed. Moreover, the group in power might not necessarily be the "historical government", which ruled the country before the war started. The incumbent government referred to in this model could simply be the recent victor of some important battle, which gave it the control of the capital city, as well as some good prospects of remaining in control should the fighting go on. For example, the Liberian civil war came to an end in 1997, only after the ECOMOG identified correctly Charles Taylor as the relevant "government", while the latter only became president later on, by winning the elections. Before that, the foreign intervention did not provide even the beginning of a peaceful solution, because it had failed to get the casting right. In other words, the "government" is defined here as the side that will not disarm in case of peace. As discussed in the introductory section, it is this commitment that defines the post-conflict ruling side.

What matters for the model presented below, as in the seminal model of Grossman (1991), is that the two contending groups are not treated symmetrically. One of them is due to be in power should the conflict end under the influence of the foreign intervention. What gives this side the key part in the post-conflict situation is the assumed credible commitment not to disarm even in case of peace. This is what "the government" refers to in the following model. Hence, the latter can also be interpreted as a model of a foreign intervention aimed at shortening an ongoing civil war by convincing one side, hereafter called the rebels, to admit defeat and let the other side establish a peaceful government. The latter is defined in the standard way as having the monopoly over the possible use of weapons in peace time. The issue of what makes the government's commitment not to disarm credible is not addressed hereafter. In the case of Liberia, Charles Taylor had acquired a solid reputation of invincibility, by having bounced back several times from awkward positions, recovering easily from any setback that he had to face. He had also managed to mobilize a significant

¹ The classic discussion of how commitment matters for limiting conflict is of course Schelling (1960).

popular support in the zones under his control, as well as sizable financial means. The other side was not in such a good position, with little popular support, uncertain finances, and no obvious unity of purpose or action. This configuration of strength and weaknesses probably played an important part in convincing Sani Abacha that Charles Taylor was the right guy to talk to. Building a convincing theory of how this type of commitment not to disarm is made credible is left for future research.

The Costs and Benefits of Conflict

The assumed technology of conflict, which determines the probability of toppling the government as a function of the relative forces engaged in the fighting by the two sides, is the same as in Azam and Mesnard (2003). However, we start from a situation where the fighting is already on, and we thus assume that the government has engaged a given level of forces F_G , which we assume irreversible, for the sake of simplicity. This value could be determined by a scale effect in the fighting technology, as assumed in Azam and Mesnard (2003). The rebels have engaged a level of forces $F_R = F_G / \mu$, where $\mu > 0$ measures their relative efficiency at fighting. This level of forces gives them a probability $0 < \psi < 1$ to topple the government if the war goes on. In such a case, the rebel group gets the benefit of the remaining government's resources: $y_G - \gamma F_G > 0$. The latter is the difference between the government's initial resources y_G and the cost of running the army γF_G . The parameter γ captures the unit cost of the military. Recent accounts of the cost of running an army in Africa have emphasized the high level of corruption involved, which makes the military socially very costly (e.g. Howe, 2001). Otherwise, if the rebels' bid for power fails, these resources remain in the government's hands. If $\mu > 1$, the rebels are more efficient at fighting than the government's army, and *vice versa*. Then, the focus of the analysis is on the conditions to be fulfilled for the rebels to disarm, i.e. to switch to a level of forces $F_R = 0$, if they are offered a peaceful settlement. If they gave up their weapons unilaterally, not as part of a peace settlement, they would simply lose the war with probability 1, and fall prey to the government's predatory behavior.

The willingness of the rebels to disarm depends on the government's ability to refrain from predation were they to give up the fighting and lay down their weapons. This can be

captured in a simple fashion by the following looting technology. In case of war, the government collects a tribute T from the rebel group with probability 1 if it wins the war and with probability 0 if it is defeated. This parameter may be interpreted either as the resources looted by the army in case of victory, or as the revenue collected by a more orderly form of taxation, depending on the level of organization of the government and its control over its own army. In case of peace, defined here to imply disarmament of the insurgents, the rebel group is in a weak position, being in fact defenseless. Its fate would then depend on the commitment technology available to the government. Let π denote the probability of a predatory behavior by the government. This is clearly a measure of the level of “fear” experienced by the rebel group. Then, in a post-conflict situation where the rebels have given up their weapons, the government is assumed to levy T with probability π , and to refrain from collecting any loot with probability $1 - \pi$.² In other words, the difference between war and peace when the rebels are disarmed is that the probability of looting by the winner falls from 1 in case of war to π in case of peace. The value of this crucial probability is assumed to depend on the behavior of a foreign power, which may intervene with a view to stop the fighting. Hence, the intervener is here modeled as an “agency of restraint” (Collier, 1991). Its behavior is described below, after spelling out the conditions for a disarmed peace situation to be acceptable by both warring parties.

The Participation Constraints of the Two Sides

Let us first analyze the condition under which the rebels will accept to disarm, if they are offered peace in return for disarmament by the foreign intervener. Given the conflict technology sketched above, as well as the looting technology just presented, the rebels will accept to disarm if the following participation constraint holds:

$$y_R - \pi T \geq y_R - F_G / \mu + \psi(y_G - \gamma F_G) - (1 - \psi)T. \quad (1)$$

The term on the left-hand side is the expected value of the rebel group’s net income in case of peace, given the expected value of the tribute that may be collected by the

² A possible alternative interpretation is that π measures the share of the country that the ruler would loot in case of peace. I am indebted to Steve Saideman for this interpretation.

government. The right-hand side is composed of three terms. The first one $y_G - F_G/\mu$ represents their own resources remaining after diverting the forces $F_R = F_G/\mu$ from production for the sake of fighting. The second term $\psi(y_G - \gamma F_G)$ represents the expected value of the take from the government in case of victory, while the last one, $-(1-\psi)T$, measures the expected loss to looting, in case of defeat. Some simple algebra allows to rewrite this participation constraint (1) as:

$$\pi \leq 1 - \psi \frac{y_G + T}{T} + \frac{(1 + \mu \gamma \psi) F_G}{\mu T}. \quad (2)$$

Define π_R as the right-hand side of (2), i.e. the upper bound on π beyond which the rebels will not lay down their weapons. Condition (2) has a simple intuitive interpretation. It means that the rebels will only accept to take a chance at disarming if this reduces significantly the probability of being looted by the government's army. Moreover, the upper limit on this probability depends on the level of the forces already engaged by the government. This affects the relative attraction of war and peace for the rebels via two channels. First, the higher the size of the government's army, the more resources must the rebels divert from production for having a chance of toppling the government by fighting. Conversely, this affects the "peace dividend" that they can get by laying down their weapons, as a larger workforce can then go back to production. Second, the larger the share of the government's resources engaged in the military, the lower the remaining prize to be gained in case of victory. Therefore, the high level of the government's forces works as a deterrent, which might make peace preferable for the potential rebels, even if the probability of being looted when disarmed is quite high. This upper bound on the probability of being looted by the government if the conflict ends also depends on μ , the rebels' relative efficiency at fighting. The lower the latter, the more costly is the continuation of fighting for them, as a larger number of soldiers must then be diverted from production. May be, this parameter allows this model to explain a phenomenon like the impact of Savimbi's death on the peace settlement in Angola. He was probably playing a key part in determining the UNITA's ability

to fight, by his strategic vision. Then, his officers probably recognized his death as a significant downward shift in μ .

The rebel group's participation constraint just described yields the upper limit on the probability of predation by the government that the rebels are prepared to accept if they are to disarm. However, the government is facing an incentive working in the opposite direction: peace must promise at least as much as war does if the latter is to be ended. This is the government's participation constraint. Given the level of F_G , the government would get an expected payoff of $y_G + \pi T - \gamma F_G$ in case of peace, while war promises $(1 - \psi)(y_G + T - \gamma F_G)$. Therefore, the incumbent government will accept a peace accord if the former is larger than the latter, which is the case if:

$$\pi \geq 1 - \psi \frac{y_G + T}{T} + \frac{\psi \gamma F_G}{T} = \pi_G < \pi_R. \quad (3)$$

It is easily checked that the lower bound on π spelt out in (3), denoted π_G , lies entirely below the upper bound on π given by (2). Hence, there exists a non-empty set of values of π that are compatible with a peace accord accepted by the two parties, for any given $F_G > 0$. This range is increasing in F_G as (2) and (3) can be used to find: $\pi_R - \pi_G = F_G / \mu T$. Outside this range, either the government or the rebels will reject the accord, and prefer getting on with the fighting. It is assumed that all the parameters of the model are common knowledge for the two parties involved in the fight, so that no game of deception can be played: given $\{\pi, F_G\}$, each player can figure out whether the latter falls within the range where disarmed peace is acceptable to both parties or outside. Then, the rebels will not disarm unless (2) and (3) hold simultaneously, implying that the government will genuinely stop the fighting and accept the peace agreement also.

Now, the foreign intervener must be introduced in the model, in order to determine (i) under what conditions it will actually intervene, and (ii) how successful this intervention will be. As suggested by Regan (2002.a), a basic criterion for evaluating success is whether the fighting is stopped as a response of this intervention. We take first disarmament of the rebels as the criterion for judging whether fighting is really stopped, as is customary in this

literature. This requires that the intervener manages to influence the probability of predation π in such a way that $\pi \in [\pi_G, \pi_R]$. However, this requirement is hardly distinguishable to the outside observer from the requirement that no looting occurs after disarmament. Hence, we assume below that the intervener will only reap the whole political benefit of the intervention if both criteria are fulfilled: (i) disarmament of the insurgents is achieved, and (ii) looting does not occur. The subsequent section discusses a weaker definition of peace, where redeployment of the rebels' forces is required, instead of disarmament.

3. Outside Intervention for Disarmament

Assume now that a foreign power can intervene in the conflict described above, with a view to stop the fighting and achieve disarmament. To achieve this goal, the intervener invests an amount $I > 0$, endogenously determined, with a view to affect the probability of predation in case of disarmament. This foreign power values peace, and gets a political reward worth V if (i) disarmament of the insurgents is achieved, and (ii) this does not trigger any acts of predation by the government. Moreover, we assume that the information that the intervener has about the ability of the local government to commit to refraining from predation is not as accurate as the one that the local players possess. This assumption of asymmetric information plays a crucial part in producing some possible equilibria where the foreign power intervenes, but is unable to secure disarmament with probability 1, for some parameter values. In other words, the following exercise shows that asymmetric information is probably the root cause that makes foreign intervention a risky business.

Intervention and the Probability of Predation

The simplest model that captures both of these two assumptions that (i) the intervener's investment is liable to reduce the government's probability of predation in case of disarmament, and (ii) there is asymmetric information about the latter, is as follows. Assume that for any given level of the intervener's investment I the probability of predation by the government can only take two values, given by the following functions:

$$\pi_L = \theta_L - \alpha I, \text{ with probability } \nu,$$

and

$$\pi_H = \theta_H - \alpha I, \text{ with probability } 1 - \nu,$$

where:

$$\theta_L < \theta_H.$$

Call the latter parameters the government’s propensity to predate. This is not just related to some personal characteristics of the ruler, but could also depend on some institutional characteristics of the country at war. In particular, this could depend on the checks and balances that would restrain the ability of the government to adopt a predatory behavior in case of peace. Then, the foreign intervention is reducing the government’s probability of predation below its propensity to do so, as $\alpha > 0$. This captures the idea of the foreign intervener as an “agency of restraint”, as mentioned above.

Now, the expected benefit that the intervener gets from its action depends on where about the latter two probabilities fall relative to the disarmament range determined in the previous section. Table 1 gives a description of the possible cases. The intervener only gets a positive expected benefit from the intervention if at least one of the two probabilities just described falls within the relevant range, as described in table 1. Otherwise, the expected benefit is zero. Comparing this to the positive cost I of investing in the intervention, we can conclude that the intervention will not take place in the latter cases.

Table 1: The Expected Benefit of Intervention

	$\pi_H < \pi_G$	$\pi_G \leq \pi_H \leq \pi_R$	$\pi_R < \pi_H$
$\pi_L < \pi_G$	0	$(1 - \nu)(1 - \pi_H)V$	0
$\pi_G \leq \pi_L \leq \pi_R$	Void	$(1 - \nu)\pi_L - (1 - \nu)\pi_H)V$	$\nu(1 - \pi_L)V$
$\pi_R < \pi_L$	Void	Void	0

Intervention with a Risk of Failure

There is no point in working out all the possible cases, and it is more interesting to focus only on some cases for illustrating the mechanics of the model. Let us focus first on the

middle case of the top row of table 1. In this equilibrium, which requires some conditions described below, the intervener reaps the benefit of its investment only if the government happens to be of the H -type, i.e. with a high propensity to predate. Otherwise, the probability of predation is too low for making peace worthwhile for the government. This case can be an equilibrium outcome under the following set of sufficient conditions.

Assume first that $\theta_L < \pi_G < \theta_H < \pi_R$. It is readily checked that this entails that the equilibrium analyzed here, with an intervention that only secures disarmament if the government is of the H -type, can only exist if:

$$I \in \left[0, \frac{\theta_H - \pi_G}{\alpha} \right]. \tag{4}$$

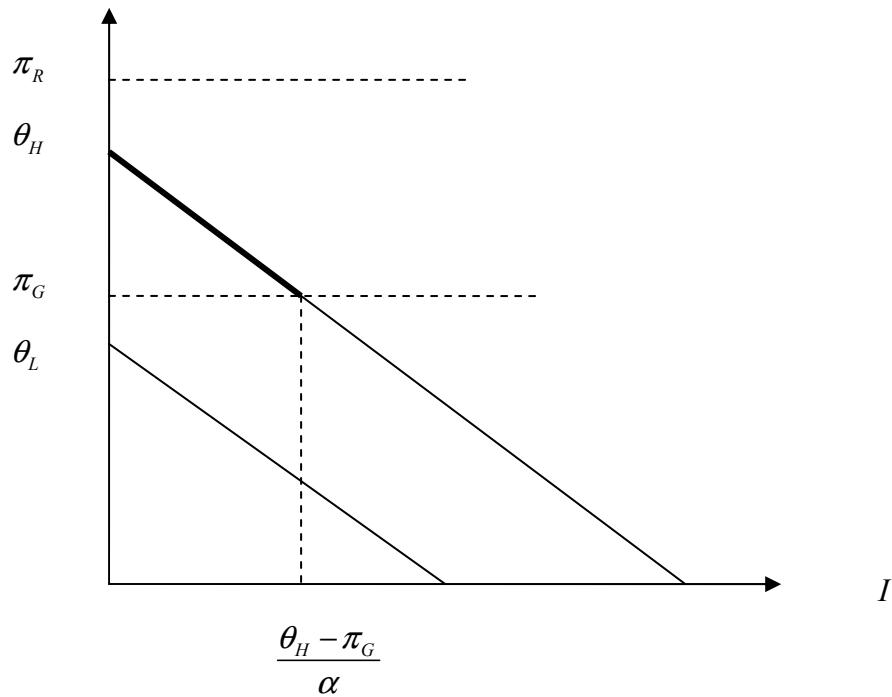


Figure 1: Determination of the H -Type-Only Equilibrium.

Otherwise, π_H would fall outside of the relevant range. Figure 1 illustrates how condition (4) may be derived. If we assume in addition that:

$$\alpha V > \frac{1}{1-\nu}, \tag{5}$$

then I will be chosen at the upper end of the range identified in (4). This is because in this case, the expected profit reaped by the intervener is:

$$(1-\nu)(1-\theta_H + \alpha I)V - I,$$

which is increasing in I , within the relevant range, if (5) holds. Notice that this condition requires that the intervener gets a high value V of the political benefit of intervention, and that the latter is highly effective in exerting restraint on the government's predatory behavior. This condition is also made less stringent if the probability of the government being of the H -type is high enough, making the right-hand side of (5) small enough.

Substituting for equilibrium I in the expression above for the intervener's profit, we find the latter to be:

$$(1-\nu)(1-\pi_G)V - \frac{\theta_H - \pi_G}{\alpha}. \quad (6)$$

This is necessarily positive under (5).

To summarize this exercise, we have found a simple example where the foreign power will intervene, although such action is not certain to achieve disarmament with probability 1. Even when the latter is achieved, the adoption of some predatory action by the government remains possible, with a non zero probability. However, the intervention is made worthwhile ex ante for the foreign power by the fact that the latter is quite efficient at reducing the damage done by the government if the latter happens to be of the worst type, with a high propensity to predate in case of peace. Otherwise, if the government happens to be of a milder type, the probability of predation left after the intervention is too small for compensating it from the expected gains from the war. Hence, the government would then prefer to carry on with the latter. This equilibrium would be chosen only if the latter type was assigned a relatively low probability.

Other Cases of Intervention

From table 1, it can be checked that intervention can also occur in this model while disarmament will only occur if the government is of the L -type, in the middle cell of the right-

hand column, or when disarmament occurs with probability 1, in the middle cell of the table. The analysis of these two cases can be sketched as follows.

A simple instance of the former case occurs if $\pi_R < \theta_L$. Then, the intervener's political profit function is:

$$v(1 - \theta_L + \alpha I)V - I.$$

The foreign power intervenes with a level of investment $I = (\theta_L - \pi_R) / \alpha$, provided $\alpha V < 1/v$. This low investment level entails that disarmament only occurs with probability v , if the government is of the L -type³. Figure 2 illustrates how this equilibrium is found.

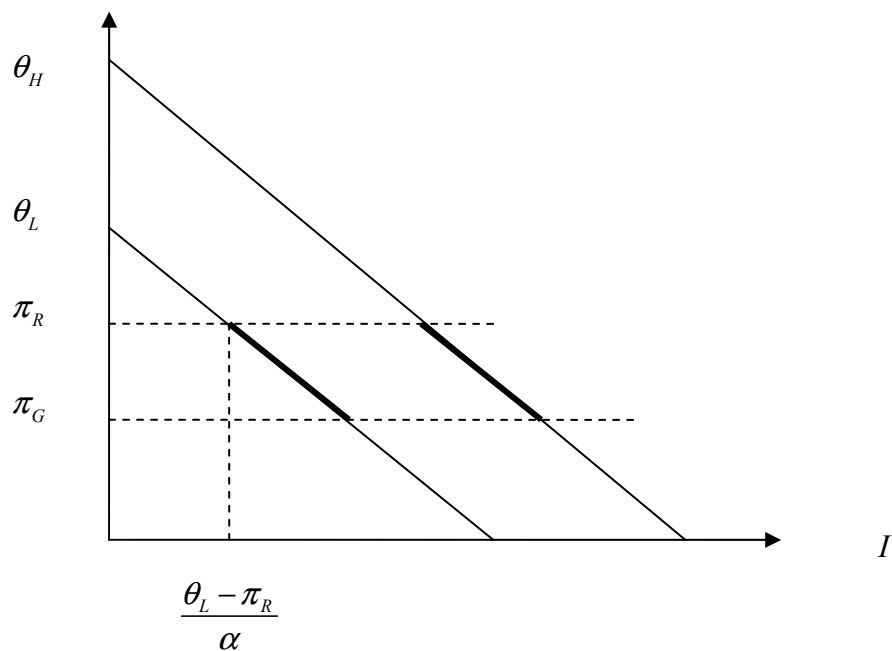


Figure 2: Determination of the L -Type-Only Equilibrium.

What makes such a case worthwhile ex ante for the intervener is that the required investment level is pretty cheap, while the risk of war being continued, if the government happened to be of the H -type, is pretty low. In the latter case, disarmed peace would be

³ It can be checked that the following two conditions: (i) $v \geq 1/2$, and (ii) $\alpha V > \frac{\theta_L - \pi_R}{v(1 - \pi_R)}$, are sufficient for ensuring that the equilibrium described in figure 2 is preferred to the other possible outcomes, where the cease fire is only signed if the government happens to be of the H -type, as in the previous example.

rejected by the rebels, because the probability of predation by the government would be too high in this case. Hence, this is the polar case to the previous one, insofar as there, the peace agreement was rejected by the government, while here it is the rebels that prevent the peace settlement from happening despite the external intervention.

A less risky decision is made by the foreign power when $\pi_G + \theta_H - \theta_L < \pi_R$ and $\pi_G < \theta_L$. Then, it can be checked that the following conditions are sufficient for the outcome depicted at figure 3 to be an equilibrium:

$$\frac{\theta_H - \pi_R}{v(\theta_H - \theta_L) + 1 - \pi_R} \leq \alpha V < \frac{1}{1 - v\Delta}, \text{ where } \Delta = \frac{\theta_H - \theta_L + 1 - \pi_G}{\pi_R - \pi_L},$$

and:

$$v < 1/\Delta.$$

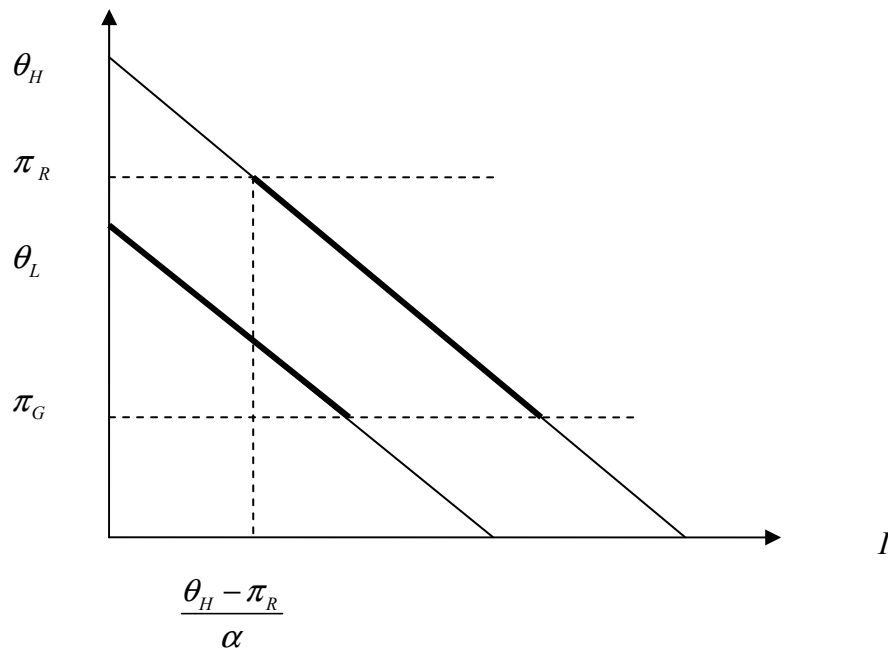


Figure 3: A Certain-Cease-Fire Equilibrium.

Then, the foreign power invests $I = (\theta_H - \pi_R)/\alpha$, and gets disarmament with probability 1 instead. Here, the difference with the previous case is that the rebels are prepared to put up with a higher probability of predation. This could be due for example to a lower value of μ , as can be seen from (2), which would make war more expensive in terms

of resources diverted from production. Their relative weakness at fighting induces them to accept a higher probability of predation in case of disarmed peace. Then, the intervener is prepared to invest the same amount as in the previous case, even if its political reward or its effectiveness at reducing the probability of predation are weaker, simply because it has a higher probability of success.

It would be easy to produce other examples, but the three cases described above are sufficient for illustrating the mechanics of the model. The most important point that emerges from these exercises is that it can be rational for the foreign power to intervene even if it faces the prospect of failing to obtain disarmament with a non-zero probability. Notice in addition that π_G and π_R are both increasing functions of F_G , as seen above with (2) and (3). Hence, the outcome could be made dependent on the intensity of the fighting. One could for example generate equilibria where intervention secures disarmament, when F_G is low, and others where intervention would not occur, for high values of F_G . This comparative static prediction is reminiscent of Regan's empirical results (Regan, 2002.a), which suggest that intervention is more likely when the intensity of the fighting is not too high. Here, the foreign power will not intervene if $\theta_H < \pi_G$, which could be caused by a too high value of F_G .

The next section shows that the set of parameter values for which the foreign power intervenes is enlarged if we do not insist on a complete disarmament of the rebels, but choose a redeployment strategy instead.

4. Opting for Armed Peace

Part of the difficulty encountered in the previous section comes from the inclusion of a strict disarmament clause in our definition of peace. In fact, there is another solution, whereby the former rebels are required to contribute to their own security in peace time. This is a special case of the so-called "power-sharing" solution. As mentioned in the introduction, this is related to the solution adopted by Idriss Déby in Chad, who did not dismantle the units of the army comprised of soldiers from the defeated southerner side. He took General Kamougué, the former leader of the southerners' army during the civil war as president of the national assembly, which is formally the second-ranking position in government. That way,

Déby was making sure that the Southerners had some means to fight back in case of need, with a clear command structure headed by Kamougué, as a way to convince them of his commitment to leave them in peace. A similar solution was chosen by the Tigrayans when they won the war against the Derg regime in Ethiopia, in 1991. Many of the soldiers and officers of the defeated army were maintained in the military, while the demobilized ones have kept their rank and pension rights, and could be re-mobilized easily. By contrast, a large number of the victorious fighters were simply ordered to go back to their homeland with very little personal advantage (Azam, 1995). The signal was thus sent to the defeated Amhara group that they could trust the victors for not abusing their privileged position, at least not beyond a certain point determined by their remaining ability to fight back. This type of strategy, advocated in particular by Machiavelli in 1513 (Machiavelli, 1961), has been analyzed by Azam (2004) using the tools of modern conflict theory.

The Case of Redeployment of the Rebels' Troops

We can take into account a similar kind of arrangement in a simple extension of the model of the previous section. Assume now that the rebel group is not asked to disarm entirely, but to redeploy instead part of its troops as a defense force D , as a contribution to the deterrence of the government's predatory behavior. Then, D is supposed to be added to I to form the variable that reduces the government's probability of predation. We now have:

$$\pi_L = \theta_L - \alpha(I + D), \text{ with probability } \nu,$$

and

$$\pi_H = \theta_H - \alpha(I + D), \text{ with probability } 1 - \nu.$$

These two expressions show that the contribution demanded from the rebel group to enhance its own security enables the intervener to reach the same level of the probabilities of predation at a lower cost. However, this change increases obviously the cost of peace to the rebel group. The latter's participation constraint must now be written as:

$$y_R - D - \pi T \geq y_R - F_G / \mu + \psi(y_G - \gamma F_G) - (1 - \psi)T.$$

This can be rewritten as:

$$\pi \leq 1 - \psi \frac{y_G + T}{T} + \frac{(1 + \mu \gamma \psi) F_G}{\mu T} - \frac{D}{T}. \quad (7)$$

Define π_D as the right-hand side of (7), i.e. the upper bound on π beyond which the rebels will not stop the fighting, even if they can keep the defense force D . Notice that it is quite naturally lower than the upper bound given in (2), *ceteris paribus*, as the latter increases the cost of peace. However, this may be compensated in equilibrium by the reduction in the probability of predation afforded by the defense force.

By contrast, the lower bound on the probability of predation that the government is prepared to accept in case of peace π_G , given by (3) above, is unaffected by this change in the model.

Comparing (7) to (3) shows that we can write:

$$\pi_D = \pi_G + \frac{F_G - \mu D}{\mu T}. \quad (8)$$

This expression puts an upper bound on the size of the defense force that can be demanded from the rebel group, which has to be lower than the forces engaged in fighting for peace to be possible ($D \leq F_G / \mu$). In this sense, the redeployment of forces analyzed in this section involves also some disarmament, at least in a relative sense.

Now, we want to show that this type of armed peace enlarges the set of parameter values for which the foreign power may choose to intervene for securing peace. In order to prove this point, let us choose as a starting point a case where no intervention is profitable for the foreign power in the absence of a positive D . Assume that $\alpha V < 1$. This condition means that the investment made in peace keeping has a low rate of return in terms of political gain. It either has little impact on the probability of looting in case of peace, or the peace accord has low political value for the foreign power.

Let us now look for an equilibrium where intervention takes place, and is successful in stopping the fighting with probability 1, to see whether this can be achieved in this setting by

using a positive level of D . For this to happen, we want the two probabilities π_L and π_H to fall within the range $[\pi_G, \pi_D]$, while the intervener's profit is non negative. Using (8), this requires that the three following conditions hold:

$$\pi_G + \frac{F_G - \mu D}{\mu T} \geq \theta_H - \alpha(I + D), \quad (9)$$

$$\theta_L - \alpha(I + D) \geq \pi_G, \quad (10)$$

and:

$$(1 - \bar{\theta} + \alpha D)V \geq (1 - \alpha V)I, \quad (11)$$

where:

$$\bar{\theta} = \nu \theta_L + (1 - \nu) \theta_H.$$

Conditions (9) and (10) ensure that the government's probability of predation falls within the relevant range in case of intervention, while (11) ensures that the intervention is worthwhile for the foreign power, being more profitable than staying put⁴. Notice that all these conditions define some straight lines in the $\{I, D\}$ space that can be used to determine the admissible set. Assuming that $\pi_G < \theta_L$, it is easily checked that the set defined by the three constraints (9) through (11) is not empty if:

$$\frac{\theta_L - \pi_G}{\alpha} \leq \frac{(1 - \bar{\theta})V}{1 - \alpha V} \text{ and } \theta_H - \theta_L < \frac{F_G}{\mu T}. \quad (12)$$

These conditions are sufficient, but not necessary. What they imply is that (i) intervention always leaves a positive political profit to the intervener and (ii) constraint (9) lies below (10) in the $\{I, D\}$ space, in the relevant range, thus leaving a non empty set of points between the two.

Then, it is especially easy to compute the equilibrium outcome in the particular case where $\alpha = 1/T$ and:

$$\frac{F_G}{\mu T} < \theta_H - \pi_G.$$

⁴ Whether it is preferable to the low-cost intervention presented below is discussed there.

Under these two simplifying assumptions, the profit-maximizing choice made by the intervener for securing the peace with probability 1 has:

$$I = \frac{\theta_H - \pi_G}{\alpha} - \frac{F_G}{\mu} \quad \text{and} \quad D = \frac{F_G}{\mu} - \frac{\theta_H - \theta_L}{\alpha}. \quad (13)$$

Notice that the latter is positive under condition (12). This proves that under these conditions, substituting the redeployment of the rebel forces to the disarmament objective allows to find a profitable intervention, even if the intervener attaches a fairly small value to the political benefit of success, and has a low influence on the government's probability of predation.

Low-Cost Intervention with Redeployment

However, this is not necessarily the optimal intervention for the foreign power, which might as well choose to intervene for securing peace only if the government was of the L -type, i.e. with probability ν . This can be achieved very cheaply by the foreign power, by investing even less resources than in (13). Let $I = \varepsilon > 0$ denote the small amount of resources invested by the intervener. Then, peace is secured if the government happens to be of the L -type if:

$$D = \frac{\theta_L - \pi_G - \alpha \varepsilon}{\alpha}.$$

Then, the intervener's profit becomes:

$$\nu(1 - \pi_G)V - \varepsilon,$$

which is positive provided ε is low enough.

This risky intervention may thus be more profitable for the intervener than the previous one, which aimed at success with probability 1. It can be checked easily that the following condition precludes this:

$$(1 - \nu)(1 - \pi_G)\alpha V > \theta_H - \pi_G. \quad (14)$$

This condition can be compared to (6), in the previous section. It is not innocuous if $\alpha V < 1$, as assumed in the present section. It requires that the probability of the government being of the worst type is quite high, while that government has nevertheless a low enough propensity to predate. However, this is just a sufficient condition derived by deleting from the difference in the intervener's profit function in the two outcomes a lot of positive terms. Hence, the sure-cease-fire outcome may be preferred even if (14) does not hold.

Of course, this example only has an illustrative purpose, and the special parameter values chosen to compute it can only be defended on the ground of their simplicity. Nevertheless, it shows that an equilibrium intervention is possible, under some conditions, where the foreign power does not aim at obtaining the rebels' full disarmament, but pursues the more modest goal of securing peace by their partial disarmament combined with some redeployment of their forces. The benefit obtained in such a way is that the constraint imposed by the weak credibility of the government's commitment to refrain from predation can be relaxed to some extent. This enlarges the intervener's opportunity set, and turns peace making into a more tractable endeavor.

In the real world, the difficult part of the peace-making strategy examined in the present section is to maintain a clear distinction between the armed rebels as fighters and the same ones turned into non-fighting deterrence forces. This probably entails a change in their weaponry, and in their location, under the control of the intervener. This might in fact put a lower bound on the useful size of the intervention. The Chadian and Ethiopian examples given at the beginning of this section suggest that this can be achieved. However, in these two examples, the war stopped only when one of the sides had been clearly defeated, so that the redeployment of its troops, rather than a full-blown demobilization, was perceived as a highly significant gesture. Some interesting lessons can also be drawn from the case of Côte d'Ivoire in the wake of the September 2002 mutiny. There, the two sides remained armed, and the resulting violence was very limited. This was largely due to the presence of the French forces, under a UN mandate, later increased by some UN soldiers. The skirmish when the government's forces attacked the French troops in November 2004, killing nine soldiers, suggests that the Ivorian government wanted to test the French resolve. The latter's response,

which destroyed entirely the Ivorian air force, seems to have established their credibility. Afterwards, the occasional eruption of violence between the two sides did not involve regular troops from the southern side, but only armed militias, that the government could pretend not to control. Nevertheless, this example shows that a cease fire between two armed groups seems more fragile than the type of armed peace that followed the defeat of the Chadian *Codos* rebels or the Ethiopian *Derg* government in the two examples cited above.

5. Aid as an Incentive for Peace Keeping

The previous section has shown the potential benefit for the intervener of combining a second instrument with the investment performed in peace-keeping proper, namely sharing the cost of protecting the disarming side against the government's predatory behavior. In that case, the intervener is facing a lower cost of intervention, while the rebels are paying a fraction of the cost of maintaining peace. The present section looks at another potential combination of instruments, whereby the intervener is using another second instrument, namely aid, as an incentive for the government to accept the peace despite a lower prospect of levying a tribute from the former rebels. The foreign power is assumed to offer to the government the following contract: "I will give you a if you refrain from predating on the disarmed rebels". This assumes that the intervener's commitment to withdraw aid in case of the government's infringement is fully credible. This is the usual assumption in the theoretical aid literature, although the threat of withdrawal usually concerns some other promises by the recipient government (see e.g. Azam and Laffont, 2003). However, this assumption has been discussed by Svensson (2003), who shows how the threat of withdrawal of aid can be made credible, by different methods.

The transfer of aid to the government, conditional upon the latter refraining from predation, is affecting directly the latter's incentives. Its participation constraint can now be derived from the following inequality condition:

$$y_G + \pi T - \gamma F_G + a \geq (1 - \psi)(y_G + T - \gamma F_G).$$

The left-hand side of this expression is the government's expected profit in case of peace, including the aid flow. The right-hand side represents its expected profit in case of war, taking due account of the probability ψ of loosing everything. Hence, peace is preferred to war if the former is larger than the latter. A close look at the former shows that aid is affecting the government's profit in case of peace as a substitute to predation. In other words, the intervener is in a position to compensate the government for its restraint, by paying for the foregone tribute⁵.

This participation constraint can be rewritten as:

$$\pi \geq \pi_a = 1 - \psi \frac{y_G + T}{T} + \frac{\psi \gamma F_G}{T} - \frac{a}{T}. \quad (15)$$

This expression can be compared to (3), showing that aid is simply shifting π_G downwards, thus enlarging the admissible set. This makes a cease-fire easier to obtain, as can be seen by working out the conditions for the latter to be reached with probability 1, i.e. where the peace settlement is achieved irrespective of the government's type. Assume again that $\alpha V < 1$, as in the previous section, and that $\theta_L < \pi_R < \theta_H$, as well as $\pi_R < \pi_G + \theta_H - \theta_L$. The analysis performed in section 3 has already shown that this set of assumptions is ruling out the existence of a probability 1 peace accord without aid. By contrast, the following exercise shows that this can be achieved by combining aid with the disarmed rebels' protection.

In this case, where the peace accord is obtained irrespective of the government's type, the intervener's expected profit becomes:

$$(1 - \bar{\theta} + \alpha I)V - (I + a).$$

Hence, the intervener will in fact choose a policy mix $\{I, a\}$ that minimizes $(1 - \alpha V)I + a$ subject to the two constraints:

$$\pi_R \geq \theta_H - \alpha I,$$

⁵ Azam and Saadi-Sedik (2004) provide a more general treatment of the closely related problem of the choice between aid and sanctions for taming an oppressive government.

and

$$\theta_L - \alpha I \geq \pi_a,$$

where π_a is as defined in (15), above.

Because both I and a are costly to the intervener, the latter will choose its policy mix $\{I, a\}$ so that both constraints are binding. It follows immediately that:

$$I^* = \frac{\theta_H - \pi_R}{\alpha} \text{ and } \pi_a^* = \pi_R - (\theta_H - \theta_L).$$

This is achieved by granting the following amount of aid:

$$a^* = (1 - \pi_a^*)T - \psi(y_G + T - \gamma F_G).$$

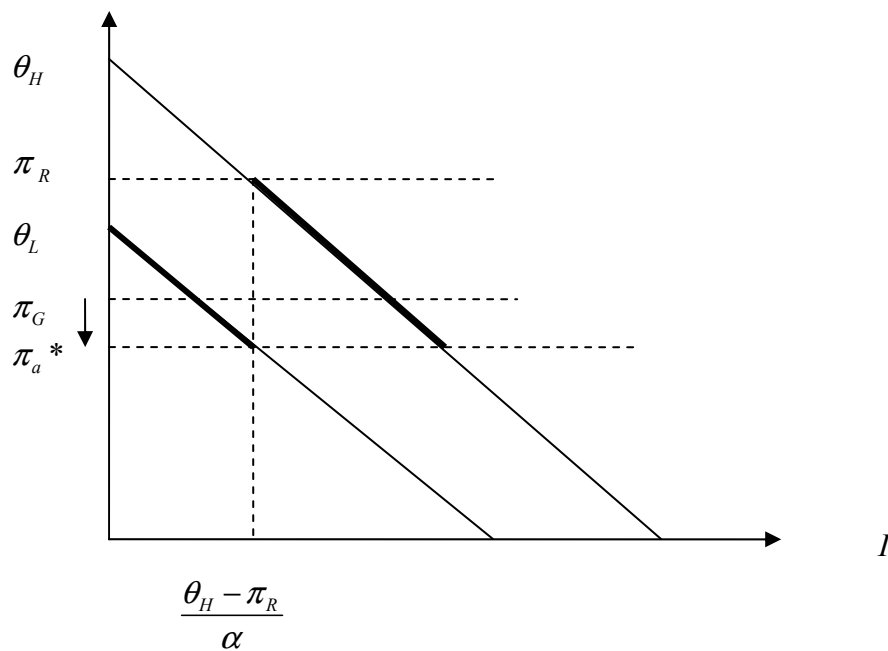


Figure 4: A Certain-Cease-Fire Equilibrium with Aid.

Figure 4 illustrates this equilibrium, using a similar framework to that used in section 3. Therefore, given some assumed conditions that rule out the achievement of a certain cease fire using the rebels’ protection only, as in section 3, this section has shown that combining aid with the latter is liable to make such an equilibrium outcome possible. Hence, this exercise can also be viewed as a contribution to the theory of aid. It shows that the latter’s potential contributions should not be restricted to the pursuit of the first of the Millennium

Development Goals (MDGs), namely reducing poverty, as a widespread view would see it. In fact, it is also a potent tool for achieving the second MDG, namely reducing the incidence of war. This possibility is unfortunately ignored by the so-called “aid-ineffectiveness” literature, which restricts its attention to the impact of aid on growth and poverty alleviation. A more subtle view of the impact of aid is supported by the present exercise.

6. Conclusion

This short paper has emphasized the problem of commitment failure as an obstacle to the conclusion of a peace settlement in a civil war. A simple model has been presented, where the outcome is largely driven by the probability of the government adopting a predatory behavior in case of peace, in response to the rebels disarming. Fighting might go on in this model either because this probability is too high, in which case the rebels do not want to take the risk of peace, or because it is too small. In the latter case, it is the government who rejects the peace settlement, which then promises a lower expected payoff than war. The role of the foreign intervention in this model is to change that probability, by investing some resources with a view to exert some restraint on the government ability or willingness to indulge in predation on the former rebel group in case of peace. However, the intervener cannot go too far in building this mechanism of restraint, as this might destroy the government’s incentive to accept the peace settlement, beyond a certain point. Extending the model by adding aid to the intervener’s toolkit shows how the latter constraint can be relaxed further.

The model assumes that the two local players, the government and the rebels, have a perfect knowledge of all the parameters of the model, while the potential intervener’s position is made weaker by asymmetric information. The latter explains why this foreign power may intervene in some cases while its probability of success is less than 1. Two simple examples of the latter case have been discussed. In the first one, the intervention succeeds in preventing a government with a high propensity to predate from doing so, but it fails to convince a more moderate government of accepting the peace accord. The reason for that partial failure is due to the fact that the more moderate government sees its predation prospect reduced too drastically in case of peace, making war more attractive. In the second of these examples, the

peace settlement might be rejected by the rebels instead, if the government happens to have a high propensity to predate. In this case, the foreign intervention succeeds in convincing a government with a low propensity to predate to settle for peace, but the investment done for buying this agreement is too low for reducing enough the damage threatened implicitly by a government with a higher propensity to predate. Then, the rebels prefer going on with the fighting, which gives them a better expected payoff.

A final example has been analyzed with the simple model, where the intervention is fully successful. Disarmament of the rebels is obtained in this case with probability one. This case was shown to be liable to occur in particular when the rebels are not highly efficient at fighting. Then, even if the probability of the government adopting a predatory behavior in case of peace is quite high, the expected damage may remain lower than the cost of the continuation of the war.

The subsequent section has shown that disarmament, strictly speaking, is probably an unnecessarily restrictive goal to pursue with a peace-making intervention in a civil war, using a simple extension of the previous model. Some room for maneuver can be usefully gained by aiming at redeployment of the rebel forces instead, turning some of the fighters into a non-fighting deterrence force. The benefit so acquired is that this may reduce the government's probability of predation, thus making a peace accord easier to accept by the two parties, while it reduces the cost of intervention. A second extension was also presented, showing how aid can profitably be brought in to bear on the outcome, making a peace settlement easier to obtain. The promise of aid, conditional upon the government restraining from predation, enlarges the set of acceptable outcomes for the government, thus making peace easier to establish. These two extensions are in fact simple applications of the so-called "Tinbergen's Principle", which can be expressed roughly as follows: "you need at least as many stones as there are birds that you want to kill". One of the present model's contributions is precisely to show that that there are at least two participation constraints to fulfill for getting a peace accord, so that you need at least two instruments in most cases.

This model is certainly highly stylized, and many relevant features of the real world have been left out. In particular, the game takes place here in one shot, while some additional

problems are raised in the real world by the repetition of broken cease fires, and fake settlements. Reputation effects are bound to be relevant in such cases, which the present model is unable to address. However, the latter sheds some interesting light on the issue of credibility and commitment, which is potentially one of the central effects of foreign intervention in civil war. It shows that fine tuning should be the rule, rather than an all-or-nothing approach. Realism should command to leave some room for maneuver in a post-conflict situation, for both the government and the potential rebels to have a stake in the end of the fighting. The model also explains why the foreign power may rationally intervene, while its action turns out to be a failure *ex post*. This is done under the rational expectations assumption, and does not require any *ad hoc* reference to irrationality or underestimation of the risks involved. This suggests that a dynamic version of the model could shed some light on the issue raised by Regan (2000.b), suggesting that some interventions end up lengthening the duration of an ongoing conflict, rather than helping to put an end to it. This suggests another guidepost that an extension of the model to a repeated-game framework should take into account.

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