ON THE MICRO-FOUNDATIONS OF CONTRACT VERSUS CONFLICT WITH IMPLICATIONS FOR INTERNATIONAL PEACE-MAKING

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This paper expands the micro-foundations of the traditional greed and grievance non-cooperative model of civil conflict. First, we allow for greed and grievance to be orthogonal, so that they may affect each other rather than being exogenous. Second, we allow for the reaction curves of both parties in non-cooperative games to be substitutes and not inevitably complementary, so a peaceful strategy from a group may be followed by a belligerent upsurge from the other. Third, we also allow for Diaspora transfers to rebel groups, thus generating a trade-off between the gains associated with peace and war among rebels. Fourth, we expand external aid in the form of fungible financing of government transfers 'buying' peace by allowing for mechanisms that induce behavioural change towards peace. These extensions provide a better understanding of conflict persistence, the consequences of competing international aid and sub-optimal sanctions provision ("cheap talk") by the international community.

Keywords: Civil war; social contract; aid for peace.

1. Introduction

As with Tolstoy's unhappy families, each conflict is different in its own way: international wars, revolutionary civil wars, secessionist civil wars, colonial independence conflicts, separatist domestic terrorism, international terrorism, narco-guerrillas, state violence, revolutions and genocide may expectedly have specific causes, levels of belligerence, dynamics and persistence. The economics literature, however, has developed a narrower theoretical standard set-up that analyses civil conflict. For example, in Grossman (1991),

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a government and rebel group maximise their expected utility from states of war and peace. The government party has access to revenues and royalties, but is threatened by the excluded rebel group, which may violently overthrow it. As an extension, the government may use the fiscal system to transfer resources to rebels to "buy" peace and an external third party may contribute resources and/or set incentives for the local parties to commit to peace. Recently, Murshed and Tadjoeddin (2009) argue that the dichotomy between greed (appropriation of rents, see Collier and Hoeffler (1998, 2004)) and grievance (deep-rooted injustices, as expounded by Gurr, 1970 and later by Stewart, 2000) in this standard model to explain the origin of conflict, should shift into a balance in which both co-exist. Some studies reject the inequality-grievance hypothesis (Collier and Hoeffler, 1998, 2004; Fearon and Laitin, 2003); others stress it (Stewart, 2000; Østby, 2008).

But what has not yet been analytically explored is an endogenous relation between greed and grievance. Murshed and Tadjoeddin (2009) argue that either or both greed and grievance may explain the onset of conflict or its duration; neither, however, is sufficient in explaining the ultimate cause of conflict, something which may be attributed to the failure of the mechanisms that peacefully resolve differences (the social contract), see also Addison and Murshed (2001). This is also related to state capacity. Besley and Persson (2008) argue that external wars may promote the development of state capacity on behalf of a common interest externally threatened. Instead, prospects of internal conflict may de-incentivise a government from investing in state capacity. Another recent development, as in Murshed and Verwimp (2008), is the study of the impacts that external third parties, who may regard peace as a global public good, have in ensuring peace commitments between local factions via financial flows (aid, debt relief) and incentive mechanisms (military deployment, sanctions).

This paper expands the standard model of a civil conflict — defined as a breach of a social contract between local groups — in three directions: (i) greed and grievance are no longer orthogonal but instead, may also be endogenous; (ii) the war/peace strategies of each local party are not inevitably complementary but may also be substitutes, that is, groups may adopt opposing strategies; (iii) the external third party is not exclusively made up of well-intended pro-peace brokers but also by diasporas unwilling to support a peace deal that is not credible. We also examine external mediation to change the incentive structure of the belligerents so that their interaction becomes more contractual and non-belligerent. By extending the standard model in this way, we add to traditional results on exogenous greed and grievance. International aid in buying peace may not be effective after all, given that diasporas' transfers may reverse the peace incentives created by international aid. Also, rebels may react belligerently to non-credible "peaceful" actions by the government. Well-intended interventions — Nordic conditionality rather than strategic aid as typically provided by the US, UK or France, for example — may bring about a world-wide public good in the form of peace, but typically at sub-optimal levels, if the costs of achieving peace are too high and/or are borne exclusively by donor taxpayers.

The paper is organised as follows. The next section lays out the theoretical model. Section 3 explores the main findings of the model and its implications for striking a viable peace deal among belligerent factions in the face of external players own interests. Section 4 concludes.

2. A Model of Social Contract and Civil Conflict

As indicated above, civil conflict is defined as a breach of a social contract between local groups within a standard set up in which government and rebels maximise their expected utility from states of war and peace. The government party has access to revenues and royalties, but is threatened by the excluded rebel group, which may violently overthrow the government. Either strategy (war and peace) has costs for each player, whose strategy is also motivated by greed and grievances. Note that the roles formulated below for the government and the rebels can be reversed. In what follows, we set out the model (related to Addison, Le Billon and Murshed, 2002), starting with the expected utility of the government side (G), which is given by:

2.1. *The government side*

$$G = \pi(a, e)G^P + (1 - \pi)(\cdot)G^C - C(a) \tag{1}$$

Where G^P and G^C denote utilities or pay-offs in peace and conflict respectively, weighted by the probabilities of the two states, peace (π) and war ($1 - \pi$). The pay-offs are endogenous in the sense that the probabilities of the two states depend on a strategic action (a) undertaken by the government, which is defined in a manner such that it increases the chances of peace. The strategic action parameter itself will depend on a number of variables described below.

The net income of the government (Y^G) is defined in Equation (2), and includes *fungible* aid. Note also that the government's income is greater during peacetime. The parameter, a, is the strategic choice variable of the government.

$$
\begin{aligned}
G^P &= Y^G - pF^G - T \\
G^C &= Y^G - cF^G \\
c &> p > 0, \quad c + p = 1 \quad \text{for two states of nature.}
\end{aligned}
\tag{2}
$$

T is the "transfer" made by the government to the rebels in the state of relative peace and depends on government income. This can take a variety of forms including broad-based social and development expenditure extended to the rebels (El Salvador, Colombia), power sharing (as recently as in Kenya), and the inclusion of the otherwise excluded group in government jobs (Rwanda and Burundi) and state contracts. On these points, see Azam (2001). F^G denotes military expenditure, this is clearly greater in wartime than during peace, hence $c > p$. The parameter, a, is the strategic choice variable of the government and determines quantities of F and T chosen. This is described below and depends on the grand objective function of the state. Note that even the peaceful outcome is a state of armed peace, as a minimum credible deterrent is required by the state, and up to now choices between fighting or conflict and peace are not all-or-nothing (0, 1) choices.

The probabilities of the two states are not related to a Tullock type rent-seeking contest (Hirshleifer, 1995, for example).[1] This is because the low-intensity conflict is not a war of

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[1] This is where the chances of winning the prize (winner takes all) is related to the outlays (fighting effort) made by each antagonist relative to the total effort of all contenders.

attrition. The rebels cannot expect to oust the government solely via a military victory and vice versa, which is characteristic of virtually all civil wars at present. Nor does the government have a Weberian monopoly over violence. We are concerned with a continuum of possible states of peace or war. Above all, this is not a contest with only *one* winner, who captures the entire prize but a contest over shares. Furthermore, and more generally, in asymmetric conflicts that we witness nowadays, the fighting technology adopted by each side can be different.

In fact, the strategic actions of the two players are mixed strategies, involving a trade-off between peaceful-belligerent behaviour. This is because one can mitigate one's opponent either by accommodating them peacefully, or by fighting them, or a combination of both (carrot and stick). On the government side, its strategic action, (a), depends on this trade-off between peace and war, specifically on the trade-off between T and F^G.

$$a = -bG^C + (1-b)G^P \tag{3}$$

Here b refers to the relative welfare from war and $1-b$ the relative social utility of peace, the minus sign before conflict is to relate it to social welfare in terms of peace. The parameter b is left *exogenous* at this stage. Simplifying the expression above into:

$$a = -bF^G + (1-b)T \tag{4}$$

The above expression is justified by the fact that conflict involves fighting (negative sign before the first term on the right hand side of Equation (4)), and peace implies transfers to the rebels (a positive sign before the second term on the right-hand side of Equation (4)), and therefore we can substitute these terms into the government's strategic variable which is a proxy for its welfare function. Totally differentiating the expression in (4) we obtain:

$$da = -bdF^G + (1-b)dT \tag{5}$$

A more benevolent and developmental state may prefer making transfers to rebels to fighting them. In that case $b < 1/2$; if $b > 1/2$ fighting is preferred to transfers; in the limit if $b = 0$ then there is only peace, and $b = 1$ implies only war, $b = 1/2$ implies indifference. Observe that, when $b \to 0$, we have a social contract from the government's point of view, and when $b \to 1$, we have war, in the intermediate region we have an *imperfect* social contract. Thus, it is possible for the state to be both benevolent or developmental and repressive at the same time, and various degrees of benevolence (repression) are possible as b declines (rises).

The parameter b may also be regarded as a measure of grievance or war-related greed. Grievance can be viewed as historical mistrust, as in the case of Hutus versus Tutsis in Rwanda and Burundi; greed may be construed as the value of staying in power, and not making concessions to disaffected groups (the excluded) after the discovery of oil as it was the case in Chad or Sudan. Note that we have modelled the simultaneous existence of both greed and grievance, based on our earlier argument that at any point in time, once conflict has progressed, greed and grievance can and do function simultaneously. A similar argument may be made about the rebels.

In Equation (1), C is the cost function of undertaking the action, a, which increases the probability of peace, π, $\pi_a > 0$, but $\pi_{aa} < 0$, implying diminishing returns to this type of

action in terms of its input into the probability of peace, as shown, for example, in the Israeli-Palestinian confrontation. This is costly because of direct political costs of accommodating enemies to some hawkish supporters of the government. Both $C_a > 0$ and $C_{aa} > 0$, as marginal cost is continually increasing. This cost function may also incorporate psychological costs of making peace to historical foes.

2.2. The rebel side

Turning to the rebel or excluded group, its expected utility (R) is given by:

$$R = \pi(a, e)R^P + (1 - \pi)(\cdot)R^C - E(e) \tag{6}$$

where

$$
\begin{aligned}
R^P &= Y^R - pF^R + (1 - \delta)T \\
R^C &= Y^R + B - cF^R + \delta S
\end{aligned}
\tag{7}
$$

In Equations (6) and (7) a number of variables are similar to what has been described above, except that they have a superscript (R) to identify the rebel group. The pay-offs are endogenous in the sense that the probabilities of the two states depend on a strategic action (e) undertaken by the rebels, which as with the government, raises the probability of peace. The strategic action parameter itself will depend on a number of variables described below. The income of the rebel group in the state of war is supplemented by contributions from sympathetic citizens' abroad (S), as in Armenia, Sri Lanka or Eritrea; as well as exports (B) of narcotics (Colombia) and/or natural resources such as alluvial or blood diamonds (Angola, Liberia, Sierra Leone). This is admittedly a simplified characterization of diasporas but it is still a useful addition to challenge the plain assumption of international donors transferring resources to "buy" peace exclusively. Analogously, diasporas may transfer resources to "buy" war, through money, arms trafficking or lobbying for international support. Interestingly, they also bear historical grievances as do the rebels, but they do not benefit from government's transfers aimed at striking peace. We capture the role of diasporas through the parameter, δ, which is a measure of the credibility of the government transfer vis-à-vis the transfer from diasporas abroad who are sympathetic to their compatriots but really want the rebels to fight the government. If $\delta = 1$, then the state's transfers are not credible to expatriate rebels, but the rebels have diasporas' finance (S) to use in a relatively more conflictive state. So, the inverse of δ measures state credibility and legitimacy to its supporters outside the country. Put differently, δ relates the valuation that rebels grant to transfers received, both from the government and diasporas. For the sake of analytical simplicity, we have made transfers (T) from the government occur only in peacetime, and diasporas' finance (S), or the export of narcotics and lootable resources (B) happen only in the state of belligerence. Furthermore, we have made both T and S vary inversely, so the greater the credibility of transfers from the state, the lesser are contributions from sympathetic kinsmen abroad, and this depends on δ. This reflects the fact that during peace, the contributions of sympathetic diasporas are considerably diminished, as is rebel control over the sources of lootable revenues. Note, δ is at this stage exogenous; in a sense it captures state credibility (including legitimacy, the strength of the social contract

etc.), and its inverse captures the legitimacy of diasporas.[2] In principle, with more state legitimacy, the rebels' utility function should increase with peace and decline with conflict, other things being equal.

E is the cost of effort, e, which increases the probability of peace, π. Also, $\pi_e > 0$, but $\pi_{ee} < 0$, $E_e > 0$, and $E_{ee} > 0$. Turning to its determination, adopting a method similar to the government side, with a role for a trade-off between war and peace and the fact that it is implicitly the social welfare function, e can be expressed as:

$$e = -k(F^R + B) + (1 - k)T - k\delta S \qquad (8)$$

where k is the relative weight given to war. The term $(1 - k)$ is the relative benefit of peace. Note that in war time, the rebels have access to some war time booty. Totally differentiating the above:

$$de = -kdF^R - kdB + (1 - k)dT - \delta kdS \qquad (9)$$

If $\delta = 0$, the state is perfectly credible to diasporas, and totally incredible when $\delta = 1$. In practice, it is a measure of diasporas' grievance that affects the valuation of transfers to rebels: the higher that grievance, the higher the valuation by rebels of transfers accruing from diasporas vis-à-vis government transfers should be expected. Note that there are intermediate possibilities. If $k = 1/2$, the rebels are indifferent to war or peace; preferring peace when $k < 1/2$, war if $k > 1/2$; only war if $k = 1$, and only peace when $k = 0$. So k is a measure of grievance of the *domestic* rebels or war-time greed.[3] Note that the peaceful effort of the rebels depends on both the subjective preferences of domestic rebels, as well as the attitudes of sympathetic diasporas. Observe that the closer δ and k are to zero, the more proximate the social contract outcome from the excluded group's (potential rebels) point of view.

3. Solving the Model

3.1. *Non-cooperative behaviour*

Conflict (non cooperation) occurs because neither side can cooperate or enter into a social contract due to the presence of historical grievances, low levels of transfers to the rebel group, imperfectly credible transfers to the rebel group or because the returns to peace relative to war are insufficient. In the model, the strategies adopted by the two-sides (a and e) in a Cournot-Nash non cooperative one-shot game are endogenous. This in turn depends on disposable income, transfers and fighting intensities hinging on the nature of the government as well as pure grievances on the rebel side.

Each side will maximise its own utility function with respect to its own choice variable. For the government, it implies maximising utility in Equation (1), with respect to a (holding

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[2] More precisely, δ is exogenous to *current* decisions of both factions and captures in a sense the strength of historical grievance that depends little on what the opposing side is currently doing (either increasing T or F^G, for instance). It is a parameter invariant to increasing well-intended international aid or the establishment of healing truth commissions, or the signing of weak peace agreements.

[3] As in the case of δ, which measures the historical grievance of diasporas, k may be deemed as the historical grievance and/or greediness of the rebels.

the arguments in the a function as given and constant):

$$\frac{\partial G}{\partial a} = \pi_a[G^P(\cdot) - G^C(\cdot)] - C_a = 0 \tag{10}$$

Rebels maximise Equation (4) with respect to e; again holding the arguments in the e function constant):

$$\frac{\partial R}{\partial e} = \pi_e[R^P(\cdot) - R^C(\cdot)] - E_e = 0 \tag{11}$$

Equations (10) and (11) form the basis of the reaction functions for both sides, obtained by totally differentiating them with respect to a and e. Thus:

$$\frac{de}{da/R^G} = \frac{C_{aa} + \pi_{aa}[G^C(\cdot) - G^P(\cdot)]}{\pi_{ae}[G^P(\cdot) - G^C(\cdot)]} \overset{\geq}{\leq} 0 \quad \text{if } \pi_{ae} \overset{\geq}{\leq} 0 \tag{12}$$

and

$$\frac{de}{da/R^R} = \frac{\pi_{ae}[R^P(\cdot) - R^C(\cdot)]}{E_{ee} + \pi_{ee}[R^C(\cdot) - R^P(\cdot)]} \overset{\geq}{\leq} 0 \quad \text{if } \pi_{ae} \overset{\geq}{\leq} 0 \tag{13}$$

Note that $\pi_{ae} = \pi_{ea}$ by symmetry.

The reaction functions are positively sloped if $\pi_{ae} > 0$, implying that the two strategies are complements (Figure 1). This is the standard assumption in the literature on conflict, see for example Hirshleifer (1995). It means that increases in fighting or peaceful efforts by one side are matched in the same direction by the other side. In our model, however, we allow for the possibility that $\pi_{ae} < 0$, the choice variables are strategic substitutes, and the reaction functions could slope downwards (Figure 2). In fact, this is also the result of δ being exogenous to current efforts (being instead entrenched in historical events).

This can only occur because the strategy space is defined in terms of peace. Thus if one side behaves more peacefully, it increases the utility of both parties, and the other side may free-ride on this action by actually reducing their own action. Note that the free-riding does not necessarily lead to a rise in the equilibrium level of conflict, as the side raising its
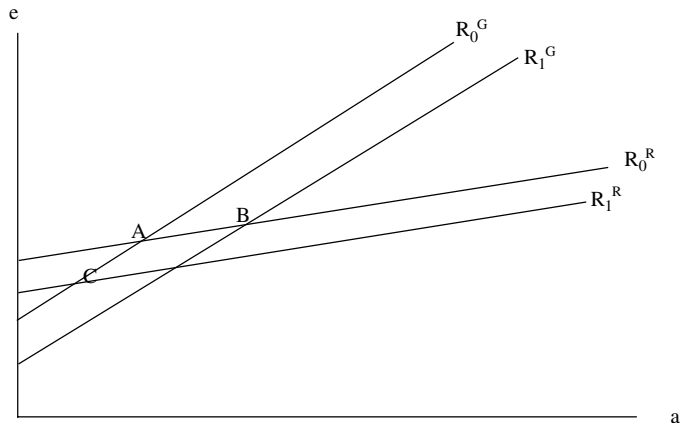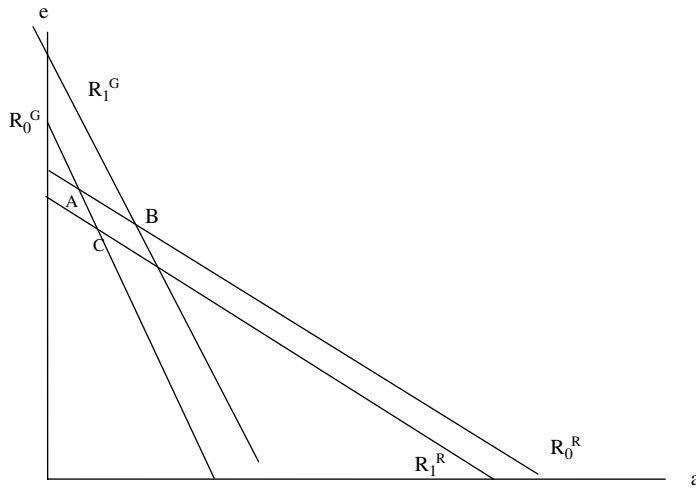

Figure 1. Strategic complements.

Figure 2. Strategic substitutes.

efforts may compensate more than proportionately for the group lowering their action. Recall that we are concerned with relative states of war and peace. Thus the two strategies can become substitutes the closer society is to complete peace, or the lower the state of belligerency. The higher the intensity of war or deeper the grievances, the greater the likelihood of the two strategies being complements (Figure 1), as is conventional in the literature.

3.2. *International aid, diaspora finance, greed and grievance*

Since most bilateral and multilateral aid donors are limited to giving assistance to the state or government, we will confine our attention to aid to the government for the moment (although it is often the case that donors can reach out to rebel groups via intermediaries such as NGOs or their own secret services). Aid to the government augments its income (Y^G). First, in terms of our model, if donors can engineer a situation that makes foreign aid conditional on peace or transfers to the rebel group, the R^G curve rightwards in Figure 1 along the rebel reaction function when the government receives aid in a state of peace only, and there is a rise in T to the rebels; we move from point A to B in Figure 1 with increased peaceful activity by both sides. In terms of Equation (5), this means that donors are dealing with a state that derives greater welfare from transfers to the rebels when its income in Equation (1) rises, rather than trying to emasculate them through military force ($b \to 0$).

In Figure 2, a similar gift causes the government's reaction function to move upwards, along the rebel reaction function, and we move from A to B. The government raises peaceful action, a, but the rebels' have lowered, e, as the strategies are substitutes in this case. They will free-ride on the government, and we cannot be sure that the overall equilibrium levels of peace have risen or fallen. This is a peculiar result that can take place in some specific contexts: a former authoritarian regime accustomed to the use of force then turning into an electoral or pseudo-democracy, with an opposition that deems

democratization efforts a sign of weakness and reacts to these efforts by resorting to force and violence. This may be the case in Kenya's increased violence following recent elections, or violent strife in Haiti around election time. We can also find this substitutability of efforts in terrorist ceasefires. Peace talks resulted in splintered IRA groups that increased the belligerence of the conflict in Northern Ireland. In Spain, truces or "peace talks" are believed to be periods used by ETA terrorists to re-group.

Thus, when aid or international support is given in this situation (with strategic substitutes), policies have to be adopted to influence rebel behaviour as well. Overall, such aid conditionality, which is often desired by Nordic donors, is notoriously difficult to achieve. The recipient may accept aid and then renege on its commitment to work towards peace. As aid is fungible (unconditional) the recipient may transfer all or part of these resources to its military effort. If we examine Equation (5) above, taking a derivative with respect to Y^G, we will notice that transfers to the rebels could rise with an increase in government income for values of $b < 1/2$. Furthermore, unconditional aid to the government may result in an increase in both transfers to the rebels, as well as military efforts to suppress them, if $b = 1/2$ in Equation (5). If the donor, like in the case of the USA's aid to Colombia (or arguably in Iraq, Afghanistan or in the past to South Vietnam), gives mainly military assistance (F^G), then the government may only increase fighting intensity, particularly if $b \rightarrow 1$, in which case both the state and its external supporter prefer military solutions. In terms of Figures 1 and 2, the movements are from point B to A. The upshot of the analysis above is that we can have two types of aid donors, with one category more committed to peaceful solutions to another nation's civil wars relative to others and the latter more interested in seeing its ideological foes defeated. Even the former type of donor is more likely to be constrained in its intervention.

In the case of the rebels receiving increased diasporas finance, S (or ideologically motivated assistance from a superpower during the cold war),[4] reduced credibility of the state's transfers (increases in δ or k, heightened grievances), increases in greed (due to illicit substance or gemstone rents, rise in B) causes its reaction functions to move down along the government's reaction function (see Equations (7) and (9)), and we move from point A to C in both Figures 1 and 2 with more conflict in the case of Figure 1 (less a and e). But in the case of Figure 2, when the strategies are substitutes, the government side's peaceful actions will increase, but the overall effect on war and peace will still be ambiguous.

3.3. *Mechanism design*

So far we only considered the weak manipulation of the belligerents' pay-offs by external powers, who may be interested in either ending or perpetuating the conflict, or the struggle by one side or another. To go one step further, we may consider mechanism design or the introduction of innovations to the game and how the exogenous strategic behaviour of belligerents can be endogenised or changed by interested parties outside of the conflict. Neighbouring countries, aid donors and the great powers often interfere in a conflict or

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[4] Such as the Western backed assistance to rebels in the Angolan and Mozambique civil wars who were initially aided via South Africa.

sometimes even mediate between warring factions. We will confine our attention to the more altruistic (or Nordic type) donor who wants to establish peace. We will try to demonstrate why, despite the best of intentions, well-meaning donors cannot commit enough resources to establish peace in distant lands, which if very costly, cannot be justified to their domestic taxpayers.

We begin by looking at a hypothetical situation where a mythical global agency is able to conjure the joint maximisation of both the government's and rebel's welfare. Let us call this social welfare function, *SW*, which is the sum of Equations (1) and (6), the expected utilities of the government and the rebels. Maximisation with respect to *a* and *e* respectively would lead to:

$$\pi_a \lfloor G^P(\cdot) - G^C(\cdot) + R^P(\cdot) - R^C(\cdot) \rfloor = C_a \tag{14}$$

and

$$\pi_e \lfloor G^P(\cdot) - G^C(\cdot) + R^P(\cdot) - R^C(\cdot) \rfloor = E_e \tag{15}$$

In this type of cooperative behaviour, the total social marginal benefits have been equated to social marginal costs, leading to greater (cooperative) levels of peaceful behaviour (*a* and *e*), when compared to the levels in the non-cooperative equilibrium in Equations (10) and (11). This can be argued to be nearer the peaceful social contract, associated with some form of power sharing or legitimate election of the governing party. But, how can this hypothetical case outlined above, be achieved in practice? Consider the following policy innovation or mechanism design in Equations (4) and (8) involving an intervention *M*, which affects behavioural parameters:

$$a = -b(M)F^G + (1 - b(M))T \tag{16}$$

and

$$e = -k(M)(F^R + B) + (1 - k(M))T - \delta k(M)S \tag{17}$$

Where *M* is a carrot-cum-stick package to the government, domestic rebels and diasporas to affect the behavioural parameters in their welfare functions. One can think of *M* as a combination of aid and military sanctions that keep the peace and induce cooperation and power sharing among erstwhile belligerents, as was successfully done in Kosovo and Bosnia. We can also think of *M* as a combination of international isolation or limited recognition with a simultaneous provision of technical cooperation and specific aid relief as in North Korea or Palestine or military support as in Taiwan.

Totally differentiating the above two equations with respect to *M*:

$$\frac{da}{dM} = -b_1 dF^G - b_1 dT > 0 \tag{18}$$

$$b_1 < 0 \quad \text{if } M(t+1) > 0; \quad b_1 > 0 \quad \text{if } M(t+1) < 0$$

$$\frac{de}{dM} = -k_1(dF^R + dB + dT + \delta dS) - \delta_1 k dS \tag{19}$$

$$k_1, \delta_1 < 0 \quad \text{if } M(t+1) > 0; \quad k_1, \delta_1 > 0 \quad \text{if } M(t+1) < 0$$

In other words, the aid-cum-sanctions package (M) will have the desired effect on the behavioural parameters of the belligerents (b, k and δ), and increase equilibrium levels of peaceful effort (a and e) towards a social contract, if M is large enough (a necessary condition which we assume fulfilled), and expected to last into the future at time ($t + 1$). This latter feature captures the *credibility of the commitment* by the donor to building peace and the social contract. Otherwise, it will be perceived as cheap talk, and the signs of the partial derivatives in Equations (18) and (19) acquire opposite signs and belligerents (or spoiler groups) go back to war; see Murshed and Verwimp (2008).

Typically the policies considered above, M, will involve costs to outside powers and agencies, as it is they who initiate them. We now consider the benefits of sanctions to outside sponsors. It also describes situations where the finance and production of the sanction, M, is not carried out by the same party. The separation of finance and enforcement of peace deals is not uncommon. Often the financiers of peace treaties, especially the aid component, are donors, such as Norway and Finland, without a direct security interest in the conflict zone. An organisation like the African Union, through the armed forces of its member states, may actually enforce a peace deal, whereas the funding and logistical support for the operation may be provided by Western donors like the European Union, as practiced in Darfur at the time of writing of this paper. Even UN peacekeeping mandates are carried out by the military forces of member states who are paid for their efforts in this regard. The idea here is that the sponsor or financier of peacekeeping derives some utility from peace in other parts of the world due to security considerations (terrorism, refugee influxes), humanitarian considerations or because promoting peace enhances the sponsor's international prestige. But how much is the external sponsor of the peace willing to pay, and how far are they willing to go in this respect?

In many ways, the sponsor or financier of the sanction can be regarded as the principal, and the implementer of the sanction the agent (either the government or rebels or some UN agency or African Union), in a principal-agent framework of the type considered by Laffont (2005). Let the utility function (V) of the external sponsor (principal) be:

$$V = D(M) - MQ(M) - (1 + \lambda)u,\dots, M' > 0, \quad M'' < 0, \quad \lambda < 1 \qquad (20)$$

Here D represents the benefits from the sanction in deterring the onset of war to the external sponsor; $Q(M)$ is the inverse demand function for sanctions given its price or cost which is paid to the agent, Q; u represents the transfer made to the agent to carry out the task; λ captures the cost of distortionary taxation needed to finance the transfer. There are diminishing returns to the benefits of the sanction, which means that as expenditure is increased, the utility for each additional amount starts to decline.

From the standpoint of the agent (who could directly be the government or some foreign agency such as the African Union), let us postulate a utility function, H:

$$H = u + MQ(M) - (h - x)M - F - f(x),\dots, f' > 0, \quad f'' > 0 \qquad (21)$$

On the right-hand side of Equation (21) we have the transfer to the agent from the principal, u, the revenue from the sanction, $MQ(M)$, F represents a fixed cost of sanctions production, the production of the sanction (M) depends on the qualitative type of the agent,

h and the effort exercised by him (x) and $f(x)$ represents the cost or disutility of effort to the agent.[5] Note that a higher value of h implies a more productive agent,[6] his cost of producing sanctions is correspondingly lower; greater effort, which is costly to the agent, also elicits more output. Since the principal takes into account the agent's objectives, we need to solve for u in Equation (21) and substitute it into Equation (20), obtaining:

$$V = D(M) + \lambda MQ(M) - (1+\lambda)[(h-x)M + F + f(x)] - (1+\lambda)H \qquad (22)$$

We add the utility of the agent, H, to the above function to obtain the grand utilitarian welfare function, $W = V + H$:

$$W = V + H = D(M) + \lambda MQ(M) - (1+\lambda)[(h-x)M + F + f(a)] - \lambda H \qquad (23)$$

Maximising the above with respect to M:

$$D'(M^*) + \lambda[Q'(M^*)Q^* + Q(M^*)] = (1+\lambda)(h-x^*) \qquad (24)$$

In the above, asterisks $(^*)$ indicate optimal values. Equation (24) implies that the world marginal utility of sanctions production is equated to its world marginal cost. From Equation (24), the lower the marginal utility of sanctions to the sponsor $D'(M)$, the more expensive the aid-cum-military sanctions package is in terms of "price", $Q'(M)$; the greater the shadow cost of the distortionary tax, λ, that has to be levied to finance it; and the greater the effort levels (x) needed to produce a unit of sanction, the lower the optimal level of sanction chosen. This relates to the "cheap talk" result above, from Equations (18) and (19). If the optimal level of sanctions and aid produced are low in Equation (24), then the peacekeeping force's sanction is cheap talk or ineffective, as $M(t+1) < 0$ in the future; the sanction and aid will wither away in the future, and this is also expected to happen by the various belligerents to the conflict. This is likely to happen if the conflict is in a distant land, which lowers both the marginal utility of the sanctions-aid package and raises the cost of doing so because of the endemic poverty in the country in question, as well as logistical difficulties. In a sense, this is a reflection of a public good with externalities not captured by donors: the benefits of peace, political stability and the absence of terrorism go to geographical regions or the entire world while the costs are borne by far-away tax payers. The result is a sub-optimal level of sanctions production. One may argue that there is just not enough will in the West to finance security in far away war torn places, in contrast to problems at their back door, say in the former Yugoslavia, which are considerably more menacing. There, benefits from peace-making were more directly "consumed" by Western taxpayers.

4. Conclusions

This paper expands the micro-foundations of conflict generation and persistence within the traditional set up of greed and grievances governing government and rebel relations.

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[5] This effort (x) is different from a and e, when the agent is acting as a sub-contractor to the donor.
[6] If it is the domestic government, a low b type; if the rebels, a low k type; if diasporas, a low δ type.

First, we allow for substitutive (in addition to complementary) reactions by each party in a non-cooperative Cournot-Nash game. As a result, rebels may respond to pro-peace moves from a government by increasing belligerence. This may explain protracted conflicts even when peace-making is attempted periodically. Second, we also allow for diasporas' transfers to rebel groups. Diasporas are subject to similar historical grievances as domestic rebel groups but they do not benefit from government's peace transfers. Interestingly, those transfers now introduce a trade-off in the gains associated with peace and war faced by rebels. This may also explain why conflicts may persist over time even when resources are mobilised to compensate for domestic rebels' grievances. Third, we further characterise international interventions into two types: direct (and often fungible) resources to governments to buy peace in the form of money, development assistance, power sharing or inclusion measures; as well as mechanisms that induce behavioural change towards peace, such as conditional aid, sanctions, military peace-keeping. These mechanisms may be altruistic as those from Nordic states or more strategic as support by the USA, for instance. Within a principal-agent set up, we explore several reasons why such mechanisms may be ineffective in practice and how sanctions, military deployment, political or technical cooperation act as public goods with externalities in the form of world-wide benefits with costs borne specifically by Western taxpayers.

These extensions have two important implications for conflict resolution. First and foremost, although transfers from governments to rebels may resolve or mitigate the issue of greed, grievance may still persist if efforts to increase viability, credibility, and enforceability are not in place. The lesson for the international community is that pouring resources, aid or debt-relief and ensuring their distribution to rebels may not work on its own in altering strategic behaviour. Other things must occur for civil conflicts to cease. Governments may also opt out from traditionally repressive policies and adopt a more developmental approach. Rebels — and diasporas — need to make concessions. Second, conflict resolution must be aligned with the donor's interests, otherwise external aid will not be sufficient or effective. Donor's interest also explains the form of aid selected to assist other countries immersed in conflict. Pakistan's military governments have been aided by the USA in the 1950s (cold war anti-Soviet military pacts), 1980s (Afghanistan) and now (post 9–11) in spite of mainly choosing repression against its population instead of development, sowing the seeds of future conflict. In contrast, in ex-conflict zones such as the Balkans, aid per-capita is very high and those regions are policed by high quality, well-motivated and adequately mandated Western and NATO forces. At the same time, lip-service is paid to the need to end civil wars in Africa, and weak and ineffectual forces are despatched there from inside and outside the continent, usually under the aegis of virtually impotent Security Council sanctioned UN mandates. Underlying the lack of a willingness by international donors to pay is the fact that peace, stability and progress are global public goods whose costs are borne only by donors' taxpayers. The externalities of the global peace public good result in a sub-optimal provision of peace-making efforts by the international community, with provision concentrated where global benefits are perceived to accrue more readily to Western taxpayers.

References

Addison, Tony, Philippe Le Billon, and S. Mansoob Murshed. 2002. "Conflict in Africa. The Cost of Peaceful Behaviour." *Journal of African Economies*, 11(3): 365–86.

Addison, Tony, and S. Mansoob Murshed. 2001. "From Conflict to Reconstruction: Reviving the Social Contract." UNU/WIDER Discussion Paper 2001–48.

Azam, Jean-Paul. 2001. "The Redistributive State and Conflicts in Africa." *Journal of Peace Research*, 38(4): 429–44.

Besley, Timothy, and Torsten Persson. 2008. "War and State Capacity." *Journal of the European Economic Association*, 6(2–3): 522–30.

Collier, Paul, and Anke Hoeffler. 2004. "Greed and Grievance in Civil War." *Oxford Economic Papers*, 56(4): 563–95.

Collier, Paul, and Anke Hoeffler. 1998. "On Economic Causes of Civil War." *Oxford Economic Papers*, 56: 563–73.

Fearon, James, and David Laitin. 2003. "Ethnicity, Insurgency and Civil War." *American Political Science Review*, 97: 75–90.

Grossman, Herschell I. 1991. "A General Equilibrium Model of Insurrections." *American Economic Review*, 81(4): 912–21.

Gurr, Ted Robert. 1970. *Why Men Rebel*. Princeton: Princeton University Press.

Hirshleifer, Jack. 1995. "Anarchy and its Breakdown." *Journal of Political Economy*, 103(1): 26–52.

Laffont, Jean-Jacques. 2005. *Regulation and Development*. Cambridge: Cambridge University Press.

Murshed, S. Mansoob, and Mohammad Z. Tadjoeddin. 2009. "Revisiting the Greed and Grievance Explanations for Violent Conflict." *Journal of International Development*, 21(1): 87–111.

Murshed, S. Mansoob, and Philippe Verwimp. 2008. "Enforcing Peace Agreements Through Commitment Technologies." UNU-WIDER Research Paper 2008–45.

Østby, Gudrun. 2008. "Polarization, Horizontal Inequalities and Civil Conflict." *Journal of Peace Research*, 45(2): 143–162.

Stewart, Frances. 2000. "Crisis Prevention: Tackling Horizontal Inequalities." *Oxford Development Studies*, 28(3): 245–262.