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**A MICRO LEVEL ANALYSIS
OF VIOLENT CONFLICT**

The Micro-foundations of Social Contracts, Civil Conflicts and International Peace-Making

**MICROCON Research Working Paper 8
Jose Cuesta and S. Mansoob Murshed
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For further information, please contact:

MICROCON: A Micro Level Analysis of Violent Conflict, Institute of Development Studies at the University of Sussex, Brighton BN1 9RE

Tel: +44 (0)1273 872891

Email: info@microconflict.eu

Web: www.microconflict.eu



SIXTH FRAMEWORK PROGRAMME



**The Micro-foundations of Social Contracts, Civil Conflicts and
International Peace-Making**

Jose Cuesta¹ and Syed Mansoob Murshed²
MICROCON Research Working Paper 8
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Abstract This paper explores the micro-foundations of conflict generation and persistence within the traditional greed and grievance non-cooperative set up between a government and a rebel group. We expand the traditional model in various ways. First, 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. Second, we also allow for diasporas' transfers to rebel groups, thus generating a trade-off between the gains associated with peace and war among rebels. Third, 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 in a cooperative model of principal-agent well-intended (Nordic-like) donors. These extensions provide a better understanding of conflict persistence, the consequences of competing international aid and why sub-optimal sanctions provision ('cheap talk') by the international community are frequent.

JEL Codes: C78, D72, D74, D83

Keywords: Civil war, Social Contract, Aid for Peace

¹ Inter-American Development Bank, Washington D.C.

² The Birmingham Business School, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK. Institute of Social Studies (ISS), PO Box 29776, 2502 LT, The Hague, The Netherlands, Centre for the Study of Civil War (CSCW), PRIO, Oslo, Norway. Email: murshed@iss.nl

1. Introduction

As with Tolstoy's unhappy families, each conflict is different in its own way: international wars, 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. Increasingly, however, the literature has recently argued in favour of more intertwined conflicts. Kaldor (2001) suggests that globalization leads to new internal wars that blend political and criminal motives.³ Murshed and Tadjoeeddin (2008) argue that the 'traditional' dichotomy between greed (appropriation of rents) and grievance (deep-rooted historical injustices) to explain the origin of conflict (Collier and Hoeffler 1998, 2004) should shift into a balance in which both co-exist. Yet it has not been analytically explored an endogenous relation between greed and grievance. Another recent development, as in Murshed and Verwimp (2006), is the study of the impacts that external third parties have in ensuring peace commitments between local factions via financial flows (aid, debt relief) and incentive mechanisms (military deployment, sanctions).

This paper builds upon the recent developments of the theoretical literature that explores the micro foundations of civil conflict. We investigate further possible interrelations among those factors that determine the generation and cessation of civil conflict. The paper defines civil conflict as a breach of a social contract between local groups. In fact, contemporary civil wars are more often related to the *breakdown* of explicit or implicit arrangements to share power, resources or revenues, rather than

³ Colombia exemplifies an intimate relation of terrorism, narco-traffic, crime and internal conflict (Collier 2000, Azam 2002), what Gutierrez-Sanin (2006; 139) calls 'the epitome of a greedy new war'.

the *absence* of an agreement to share resources or rents. We explore the reasons for a civil conflict to take place, sustain and cease over time starting from a standard set up in which government and rebels maximize 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. Players engage in a Cournot-Nash non-cooperative one-shot game. 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. We expand this standard model of a civil conflict in three directions: (i) greed and grievance are no longer orthogonal but rather endogenous; (ii) we focus on limited warfare, the war/peace strategies of each local party are not inevitably complementary (Hirshleifer 1995) but may also be substitutive, that is, groups may adopt opposing strategies; (iii) the external third party is not exclusively made up by well-intended pro-peace brokers but also 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 model in this way, we add to traditional results on exogenous greed and grievance. Now the outcome of international aid buying peace may be limited and is not always pro-peace, given that diasporas’ transfers may compete with international aid and 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 US, UK or France, for example– may bring

about a world-wide public good in the form of peace, but, however, produce sub-optimal levels of behavioural change if the costs of achieving peace are too high and/or are borne by donors' taxpayers.

The paper is organized as follows. The next section reviews the literature on the causes of civil conflict around the notion of social contract. Section 3 lays out the theoretical model. Section 4 explores the main findings of the model, and implications to strike a viable peace deal among belligerent factions in the face of external players. Section 5 concludes.

2. Literature Review

Conflicts have been widely analyzed. Empirical studies have estimated the effects of wars in economic growth and poverty (Alesina et al 1996, Collier and Hoeffler 2004, Miguel et al 2004, Doppelhofer, Miller & Sala-I-Martin 2004, Elbadawi & Sambanis 2002) as well as their impacts on education, health, nutrition, migration or household survival strategies (see Justino 2006 for a comprehensive literature review). Available evidence is generally inconclusive with respect to a dominant cause or set of causes of war - with studies rejecting the merits of the hypothesis of grievance (Collier and Hoeffler 1998, 2004), others accepting it (Deininger, 2003; Østby, 2008) and others arguing that grievance may coexist with greed (Murshed and Tadjoeeddin, 2005). Murshed and Tadjoeeddin (2008) provide a comprehensive review on the supporting evidence for each of these hypotheses. Results more often than not suggest some degree of association but rarely prove any causality between conflict and development.

Given both obvious data gaps and restrictions to disentangle causality, recent research has concentrated instead on the microeconomic theoretical underpinnings of conflict origin and resolution. Models develop a 'traditional' framework in which greed and grievance are driving forces to fuel conflict among local groups, with a recent incorporation of external players, commitment mechanisms and imperfect information (Rothchild 2005, Murshed & Verwimp 2006, Azam 2005, Addison & Murshed 2002, Walter, 2002). Azam and Mesnard (2001) characterises civil war as a situation in which the state breaks its implicit promise to make a fiscal transfer to all of society's members. That creates a grievance in the excluded group, which rebels and fights against the government to redress its grievance. Addison, Le Billon & Murshed (2002) present a model where civil war is motivated by the appropriation of natural resource rents with historical grievances playing a role in explaining how the two opposing groups engage in a conflict. Azam (2001) features inter-ethnic conflict in Africa as the result of the state's failure to make a fair provision of resources among ethnic groups, thus encouraging individuals to rely more on ethnic capital, a notion closely related to group-specific social capital or 'particularized trust' (see Ulsaner 1999). In this set up peace will fail to be restored and sustained if grievances about the distribution of rents, resources or public spending (and taxes) are not redressed.

At the centre of this theoretical approach is the notion of conflict as breach of an agreement between groups, a deviation from a contract that results in some sort of state of anarchy (Hirschleifer 1995), as was also mentioned by Hobbes in his *Leviathan* in 1651. Factors such as inequality, poverty, polarization, exclusion, ethnic tensions, natural resource appropriation all contribute to the risk of conflict, yet some

societies having such conditions do not descend into conflict. For greed, grievance or both to take the form of large-scale violence there must be some specific weakening of an agreement between parties, what Addison and Murshed (2001) call ‘social contract’. By social contract we mean a framework of widely-agreed rules, both formal and informal, that govern the allocation of resources, including resource rents, and the peaceful settlement of grievances. If viable, credible and enforceable, the contract can be sufficient to restrain, if not eliminate, opportunistic behaviour such as large-scale theft of resource rents and the violent expression of grievance.

What constitutes the basis for a viable social contract is not necessarily a closed matter. Hirshleifer (1995) implicitly draws our attention to the fact that within a society, social contracts can be vertical if they are authoritarian in the sense of Thomas Hobbes, or they may be horizontal if fashioned with popular consent, as advocated by John Locke. The former may be described as dictatorial, and the latter as democratic. Kant’s (1795)⁴ essay on the ‘Perpetual Peace’ provides us with the fundamental clues in this direction: first, contracts must be self-enforcing, so that there are no incentives to deviate from it; second, a good government (translated to more modern terminology, good governance) must hold the social contract together;⁵ and third, it must emanate from a sovereign and legitimate power. To Kant’s list of conditions for a stable social contract we could add an economic dimension of peaceful exchange. Humphreys (2005) argues that sparse economic interaction makes wars between competing groups more likely as their opportunity cost from a

⁴ Although Kant speaks about a perpetual peace between nations, we can extend his argument to groups within a nation state.

⁵ Kant refers to a ‘republican’ constitution. By this he means the separation of powers between the executive and legislature (this ensures their proper and efficient functioning), and we may also add the independence of the judiciary. Our contemporary understanding of good governance can include a host of other factors beyond the separation of powers, such as decentralized decision making powers.

destructive war is smaller (Collier and Hoeffler, 2004). Thus, war, or the breakdown of the social contract, is more likely among economically underdeveloped societies. Fearon and Laitin (2003) put the emphasis not so much on opportunity costs but rather on a lower ability to put down rebellions among impoverished conflict-ravaged nations.

A related notion to the social contract in the context of analyzing the effects of conflict is that of state capacity to collect taxes (fiscal capacity), enforce contracts and promote markets (legal) as presented in Besley and Persson (2007). The authors argue that external wars may promote the development of state capacity on behalf of a common interest externally threatened. At least up to a certain level. The political science literature shows that democracies fight fewer external wars than autocracies (Maoz & Russett 1993, Gartzke 2007). Besley and Persson (2007), instead, consider the opposing effects on state capacity building that internal conflict might have *vis a vis* external wars. Interestingly, the notion that a given, exogenous, level of state capacity determines the incidence of a conflict is recently challenged by a more interlinked endogenous proposition. Prospects of different types of conflict, internal or external, have distinctive impacts on the incentives of a government to invest in state capacity. In the case of resource-rich societies, prospects of future conflict may or not result in increasing state capacity. In such economies, conflict prospects may specifically increase resource extraction, which may be used to either finance the military, increase elite's gains or diversify the economy and deliver public goods to buy peace (Brunnschweiler and Bulte 2007). The preferred outcome will both depend on what optimizes the survival function of those in power (Caselli and Cunningham

2007) and on the set of rebels' opportunity and incentives to appropriate such gains.⁶ More often than not, this results in strained and feeble social contracts.

From a modelling point of view, the existing literature highlights several channels that may lead to the breakdown of the social contract within a nation state. The first refers to the fiscal and revenue sharing agreements the state (or those in power) have with various stakeholders, and the breakdown of these arrangements can produce greed and/or grievance. In turn, greed and grievance may perpetuate the disintegration of a social contract. There are many examples of conflicts emerging out of fiscal disputes. Côte d'Ivoire, for instance, became unstable with the collapse of the social contract engineered by the late President Houphouët-Boigny, in which he allocated public spending across the regions to buy the loyalty of the country's ethnic groups. Disputes over the apportionment of revenues from natural resources are especially common and, as in Indonesia and Nigeria, these take on ethnic and regional dimensions. Also the social contract is less likely with regimes that prefer military expenditure over making a fiscal transfer to the rebels, common in countries with powerful militaries as, for instance, Pakistan or Central American nation states in the Eighties.

A second feature to consider when modelling the breakdown of the social contract is growth failure in low-income developing countries and/or a failure to redistribute in a

⁶ Snyder and Bhavnani (2005) argue that the causal mechanism between conflict and lootable resources is broadly speaking a government *revenue* effect. This implies examining how the state obtains its revenues--whether or not taxing the mineral sector (which may or may not be lootable) is important to the state. Even if a lootable sector exists it may not be important for state revenues if other revenue sources exist side-by-side. Additionally, the mode of extraction matters --whether it is artisanal or industrial. Only the former makes resources lootable. Finally, and most importantly, how governments spend their revenue is significant-- if the state spends its revenues on social welfare, military expenditure and growth enhancing investment, conflict is less likely than if it appropriates revenues for factional and kleptocratic purposes. Consider Sierra Leone. Prior to 1985 its alluvial diamonds were extracted in an industrial fashion rather than by artisans making it non-lootable. It did not collapse into civil war until after that.

perceived 'fair' manner gains from economic growth among groups in rich natural-resource countries or middle-income developing countries. The famous Lipset (1960) modernisation hypothesis states that demands for democracy surely follow economic development and the attainment of a high standard of living; once a particular (high) level of average income is achieved violence becomes a very costly means of settling disputes. Instead, conflict theorists (see LaFree & Tseloni 2006) argue that the transformation towards capitalist market modern economies has more often than not resulted in an increasing inequality, unemployment and poverty. Similarly, Hegre et al. (2001) rejects the notion of a virtuous circle between growth, democracy and peace, pointing out that the risk of conflict is lower in both well-established democracies and autocracies perhaps because of greater state capacity. It suggests that conflict risk is at its highest during transitions to and away from democracy when state capacity is weak, and also in fledgling and imperfect democracies (anocracies) – an argument similar to the presence of systemic violence in 'dysfunctional' democracies: see Caldeira and Holston (1999). High or higher average incomes may well mask a widening gap among groups (or among countries), leading to sentiments of greed, selfishness and historical resentment all congruent with increasing violent conflict (LaFree & Tseloni 2006). The least developed conflict-affected nations have histories of weak social contracts (or once a strong social contract that has degraded). This weakness is in many instances a legacy of colonialism which institutionalised mechanisms favouring settlers over indigenous peoples (Guatemala, Zimbabwe, South Africa); divide and rule favouring one ethnic group over another, as in Rwanda; market controls to create rents for settlers to the cost of locals (Zimbabwe); and the expropriation of land and resource rents (Angola, and the Belgian Congo). A single ethnic group, or a subset, often assumed power in the immediate post-independence

era, subjugating others and concentrating the fruits of state power—public employment, other public spending, and resource rents—into its own hands (Burundi and Rwanda). Pre-colonial ethnic rivalry over territory and assets, the case in resource-scarce countries such as Afghanistan, Somalia and Sudan, and the failure of long-standing independent states to strengthen mechanisms of political representation, also lie behind weak social contracts.

A third highlight is that in the face of an unstable polity where the separation of powers and the sources of (legitimate or illegitimate) power are inherently unstable, it is important to focus on individual incentives faced by rulers that may or may not cause them to promote development, modernisation and peace. This emphasis on the behaviour of leaders is at the centre of the political economy approach to explain the onset and duration of conflict (Caselli and Cunningham 2007).⁷ Political leaders may adopt developmental or impoverishing strategies based on what maximizes their survival function. Survival is subject to a fundamental trade-off between increasing power and increasing the probability of coups. Some authors, such as Acemoglu et al (2004), argue that states intentionally prevent development because of fear of losing power, failing to invest in sectors that may benefit their rivals. Instead, Brunnschweiler and Bulte (2007) argue that the probability of survival could be either decreasing or increasing in investments in such sectors. Specific conditions will give way to survival strategies that imply increasing repression ('patronage'), increasing productive investments ('visionary' leaders), increasing unproductive investments ('resigned' leaders), or increasing both repression and productive investments ('unconstrained' leaders). Similarly, within the context of a two period-two agent-two

sector model, Dunning (2005) compares Mobutu's Zaire (1965-1997) to Suharto's Indonesia (1965-98) and Botswana during the same period. In Botswana, revenues from Kimberlite diamonds were very stable, due to Botswana's unique relationship with De Beers and its important position as a major supplier. It did not need to diversify its economy. But it chose a developmental path because of the mature nature of political elites there. In Indonesia and Zaire resource flows were volatile. In one case the dictator (Suharto) chose diversification and growth enhancing strategies, as well as policies aimed at equalisation and poverty reduction to contain political opposition. Development in Indonesia was impressive, and may have led, at least partially, to endogenous demands for democracy (Lipset, 1960). In the other case (Zaire, now DRC), Mobutu did not, because he felt that diversification and investment in infrastructure would loosen his grip on power and strengthen political opposition to him based on ethnicity. Zaire or the DRC has perhaps the poorest post-1960 growth record on the planet. Perhaps, in East Asia, greater fears of communism strengthened benevolence in dictators (South Korea, Taiwan, Singapore and Indonesia), whereas in Africa a certain type of factionalism dominated policies and politics, retarding growth-enhancing economic diversification and infrastructural development.

A final complexity in fatally weakening social contracts was the interaction of these 'domestic' factors with external events and actors. In the pre 9/11 world, the Cold War provided finance and ideological succour to ruling elites and rebels. The net result of these processes is the accumulation of grievances within a context of a disintegrating social contract, with a state increasingly perceived to exercise favouritism in public spending and to tax unjustly and increasing greed-based motivations aimed at

⁷ It is, nonetheless, in line with the 'looting versus provision of public goods' dilemma that political leaders face in resource rich societies – as argued by more *economicist* approaches such as Collier and

controlling natural resources far from the central government powerhouse. In such situations, external players can also promote durable and stable peace through mechanisms that enhance commitment to peace. Peace talks, aid, debt relief, economic sanctions, military peacekeeping interventions, internationally sponsored courts prosecuting human rights violations (such as the most recently created International Commission Against Impunity in Guatemala), among others, can reduce or eliminate conflict provided that they are credible in making it costly for local factions to renege on their commitment to peace. For the Arab world recent US efforts to mediate between the Israeli and the Palestinian may not be credible after its historical support to the Israelis. Murshed and Verwimp (2006) analyze theoretically the issue of commitment incentives and conclude that the shape and cost of the peace enhancing technology matter for the effectiveness of external interventions. Former conflict regions in the Balkans, which have maintained stable peace agreements, received more external assistance per capita than their counterparts in Africa. UN peace-keeping humanitarian interventions may be less credible for local factions than NATO military deployments. In Darfur, Sudan, peace-keeping is carried out by African military forces typically perceived to be too-little-too-late, ill-equipped and subject to the flinching moods of public opinions in the rich Western countries that finance them. Diamond (2004) argues that the Bush administration failed to commit military forces necessary to ensure order in post-war Iraq, which would have needed half a million troops deployed in Iraq to keep the same ratio to population as NATO had in Bosnia.

3. A Model of Social Contract and Civil Conflict

Hoeffler (2004).

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 maximize 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, starting with the expected utility of the government side (G), which is given by:

The Government Side

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

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 (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.

$$\begin{aligned}
G^p &= Y^G - pF^G - T \\
G^c &= Y^G - cF^G \\
c > p > 0, c + p &= 1.
\end{aligned}
\tag{2}$$

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, and the inclusion of the otherwise excluded group in government jobs (Rwanda and Burundi) and state contracts. On these points see Azam (2001). F , 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).⁸ This is because the low-intensity conflict is not a war of 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.

⁸ This is where the chances of winning the prize (winner takes all) is related to the outlays (fighting effort) made by each protagonist relative to the total effort of all contenders.

In fact, the strategic actions of the two players are a trade-off between peaceful-belligerent behaviour. On the government side, its strategic action, (a), depends on which is welfare from peace and a trade-off between T and F^G .

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

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. We may simplify the expression above into:

$$a = -bF^G + (1-b)T \quad (4)$$

The above expression is justified by the fact that war involves fighting (negative sign before the first term on the right hand side of (4)), and peace implies transfers to the rebels (a positive sign before the second term on the right-hand side of (4)). Totally differentiating the expression in (4) we obtain:

$$da = -bdF^G + (1-b)dT \quad (5)$$

A more benevolent and developmental state may prefer making transfers to rebels to fighting them.⁹ 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 $b \rightarrow 0$, we have a social contract from the government's point of view, and when $b \rightarrow 1$, 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).

⁹ We refrain from making the distinction between democracies and military dictatorships in this regard, as democracies are occasionally 'militaristic' and dictatorships pacific, even inclusive.

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 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 $C_{aa} > 0$. This cost function may also incorporate psychological costs of making peace to historical foes.

The Rebel Side

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

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

where

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

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 a comparable characterization of that used by international donors transferring resources to ‘buy’ peace. Analogously, diasporas may transfer resources to ‘buy’ war, through money, arms trafficking or lobbying for international support, for example. Interestingly, they also bear historical grievances as do the rebels, but they do not benefit from government 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 the diaspora finance S to use either 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 , measures the valuation that rebels grant to transfers received, both from the government and the diasporas. For the sake of analytical simplicity, we have made transfers (T) from the government occur only in peace-time, and diaspora 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 made this depend 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.¹⁰ 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:

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

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

Totally differentiating the above:

$$de = -k dF^R - k dB + (1 - k) dT - \delta k dS \quad (9)$$

If $\delta = 0$ the state is perfectly credible to the diaspora, and totally incredible when $\delta = 1$.

In practice, it is a measure of diaspora's grievance that affects the valuation of transfers to rebels: the higher that grievance, the higher should be expected the

¹⁰ 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 currently the opposing side is 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.

valuation by rebels of transfers accruing from diasporas vis-a-vis government transfers. Note 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.¹¹ Note that the peaceful effort of the rebels depends both on 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.

4. Solving the Model

Non-Cooperative Behavior

Conflict (non co-operation) occurs because neither side can co-operate 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 co-operative 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.

¹¹ As in the case of δ , which measures the historical grievance of the diaspora, k may be deemed as the historical grievance and/or greediness of the rebels.

Each side will maximise its own utility function with respect to its own choice variable. For the government it implies maximising utility in (1), with respect to a (holding the arguments in the a function as given and constant):

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

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

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

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:

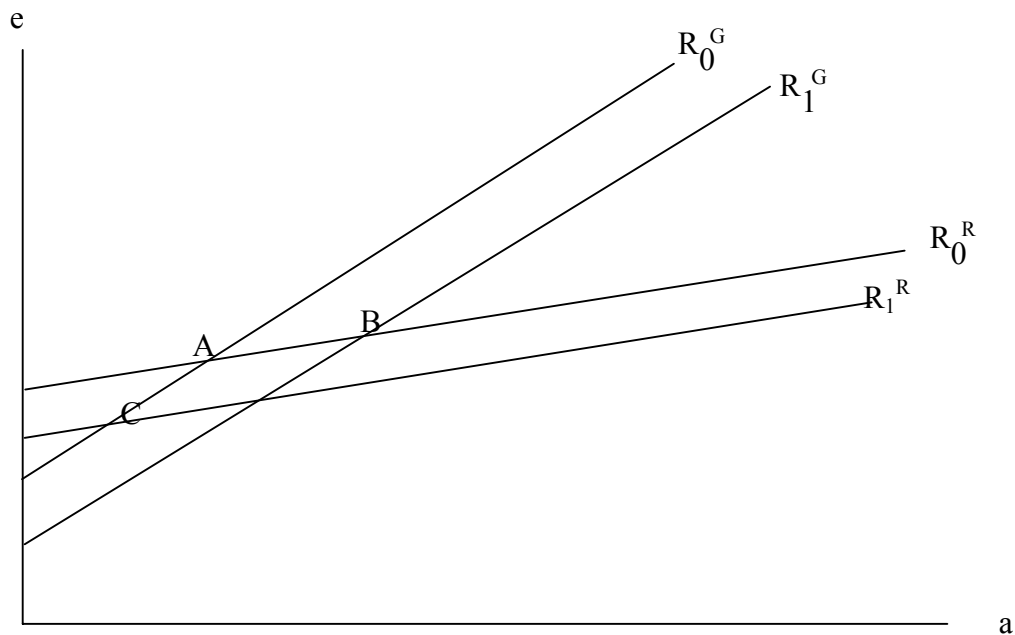
$$\frac{de}{da / R^G} = \frac{C_{aa} + \pi_{aa} [G^C(\cdot) - G^P(\cdot)]}{\pi_{ae} [G^P(\cdot) - G^C(\cdot)]} \begin{matrix} \geq \\ \leq \end{matrix} 0 \text{ if } \pi_{ae} \begin{matrix} \geq \\ \leq \end{matrix} 0 \quad (12)$$

and

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

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

Figure 1: Strategic Complements

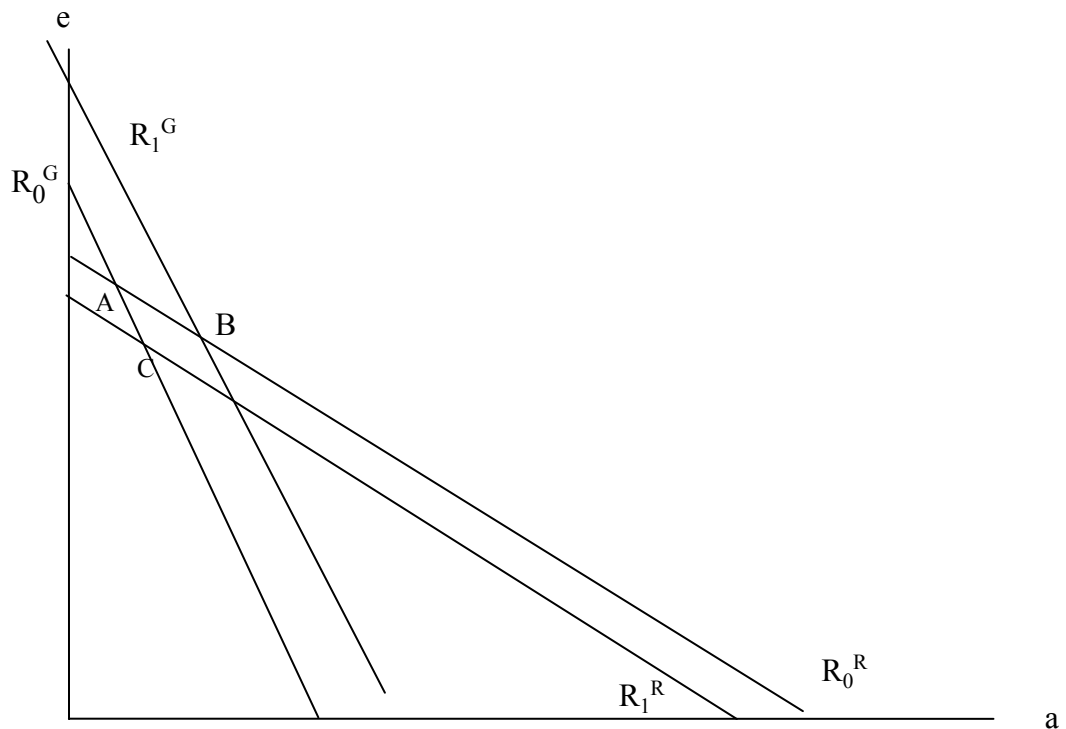


The reaction functions are positively sloped if $\pi_{ae} > 0$, implying that the two strategies are complements (figure 1). This is the standard assumption in the literature on conflict, see for example Hirshleifer (1995). It means that increases in fighting or peaceful efforts by one side are matched 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 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 is the state of belligerency. The higher is 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.

Figure 2: Strategic Substitutes



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.¹² 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 (5) this means that donors are dealing with a state that derives greater welfare from transfers to the rebels when its income in (1) rises, rather than trying to emasculate them through military force ($b \rightarrow 0$).

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 rebel's 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 react 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, conflict resolution or 'peace talks' are believed to be periods used by 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

¹² However, it is often the case that donors can reach out to rebel groups via intermediaries such as NGOs or their own secret services.

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 $b < \frac{1}{2}$. And, 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 $b = \frac{1}{2}$ in (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 other 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 diaspora finance, S (or ideologically motivated assistance from a superpower during the cold war)¹³, reduced credibility of the state's transfers (increases in δ or k , heightened grievances), increases in greed

¹³ Such as the Western backed assistance to rebels in the Angolan and Mozambique civil wars who were initially aided via South Africa.

(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.

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 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 rebels' welfare. Let us call this social welfare function, SW , which is the sum of (1) and (6), the expected utilities of the government and the rebels. Maximisation with respect to a and e respectively would lead to:

$$\pi_a [G^P(\cdot) - G^C(\cdot) + R^P(\cdot) - R^C(\cdot)] = C_a \quad (14)$$

And

$$\pi_e [G^P(\cdot) - G^C(\cdot) + R^P(\cdot) - R^C(\cdot)] = E_e \quad (15)$$

In this type of cooperative behaviour the total social marginal benefits have been equated to social marginal costs, leading to a *greater (cooperative)* levels of peaceful behaviour (a and e), when compared to the levels in the non-cooperative equilibrium in (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 (4) and (8) involving an intervention M , which affects behavioural parameters:

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

and

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

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 to 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 :

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

$b_1 < 0$ if $M(t+1) > 0$; $b_1 > 0$ if $M(t+1) < 0$

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

$k_1, \delta_1 < 0$ if $M(t+1) > 0$; $k_1, \delta_1 > 0$ 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 (18) and (19) will acquire opposite signs and belligerents (or spoiler groups) will go back to war; see also Murshed and Verwimp (2006).

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 benefit 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 is 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 say, Laffont (2005). Let the utility function (V) of the external sponsor (principal) be:

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

Here D represents the benefit 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 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 :

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

On the right-hand side of (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.¹⁴ Note that a higher value of h implies a more productive agent¹⁵, 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 (21) and substitute it into (20), obtaining:

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

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

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

Maximising the above with respect to M :

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

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.

¹⁴ This effort (x) is different from a and e , when the agent is acting as a sub-contractor to the donor.

From (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 is the optimal level of sanction chosen. This relates to the “cheap talk” result above, related to (18) and (19). If the optimal level of sanctions and aid produced are low in (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. Unsurprisingly, the financing of such projects through taxation might be hard to sell to the ordinary median voter in the sponsoring country. Finally, the effort level required on the part of the sponsor’s agent might just be too great to make it worthwhile, and the probability of the agent’s success in this regard may be too uncertain. Perhaps, the result above helps to explain the security dilemma in African civil wars. 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.

¹⁵ If it is the domestic government, a low b type; if the rebels a low k type; if diasporas a low δ type.

5. Conclusions

This paper explores the micro-foundations of conflict generation and persistence within the traditional set up of greed and grievances governing government and rebels relations. We expand this traditional set up in various ways. First, we allow for substitutive (in addition to complementary) reactions by each party in a non-cooperative Cournot game. As a result, rebels may respond to pro-peace moves by 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 persist over time even when resources are mobilized to compensate for domestic rebels' grievances. Third, we further characterise international interventions as of two types: direct (and often fungible) resources to governments to buy peace in the form of money, developmental assistance, power sharing or inclusion measures; as well as mechanisms that induce behavioural change towards peace, such as conditional aid, sanctions, military peace-keeping (which may be altruistic as that from Nordic states or more strategic as support by the US, 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 solve or mitigate the issue of greed, grievance may still persist if efforts to increase viability, credibility, and enforceability are not in place. Simply put, lack of credibility is a wall that needs to be cracked –and eventually removed– for transfers to be somewhat effective. The lesson for the international community is that pouring in resources, aid or debt-relief and ensuring their distribution to rebels may not work on its own to alter strategic behaviour. Other things must occur for civil conflicts to end. Governments may also opt out from traditionally repressive policies and adopt a more developmental approach. Rebels –and diasporas– need to make concessions. Also, and importantly, conflict resolution must be in donor’s interests. For example, Pakistan military governments have been aided by the USA in the 1950s (cold war anti-Soviet military pacts), 1980s (Afghanistan) and now (post 9-11) but they mainly chose repression after initially choosing a mixture of development/repression as far as the population was concerned. In contrast, in ex-conflict zones in 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. Hence, the saliency of the expression, “cheap talk”, meaning that in the absence of a willingness to pay by external sponsors many of the peace deals brokered in far flung places of the world like in Africa are doomed to failure. Underlying the absence of a willingness to pay by international donors is the fact that peace, stability and progress are global public goods whose costs are borne only by donors’ taxpayers. In a context of conflicting donors’ interests, it is

unsurprising that the externalities of the peace public good result in a sub-optimal provision of peace-making efforts by the international community, with provision concentrated there where global benefits are more easily captured by taxpayers.

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