INEQUALITY, INDIVISIBILITY AND INSECURITY

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Civil war and organised collective violence is a complex phenomenon. Not only does it produce human tragedies on a colossal scale, but it creates humanitarian crises that are of concern to the international community, as well as contributing to global and regional insecurity. To economists, especially development economists, civil war is important as it is now recognised as a major cause of underdevelopment and the persistence of poverty (see Murshed, 2002a; Collier et. Al. 2003). The number of countries embroiled in a civil war seems to have waned after 1994 (Hegre, 2004). The number of new civil wars emerging also seems to have fallen in the last decade (Hegre, 2004). But the average duration of civil wars, standing at 16 years in 1999, does not seem to exhibit a significant downward trend (Fearon, 2004). The number of fatalities in civil war may be declining recently, but the numbers of refugees and internally displaced persons is rising (Human Security Report, 2005). For all of these reasons ending conflict or reducing its intensity must be a very high policy imperative within the development and international security agenda.

As is well known, the contemporary rational choice literature on the origins of conflict and civil war offers two possible explanations for the origin of conflict, see Addison and Murshed (2002a) for a review. They are, respectively, grievance and greed. The former notion refers to historical injustices and inter-group inequalities that could be both economic as well as involving unequal political participatory rights. The latter concept emphasises the role of rents, which are occasionally lootable, in producing inter-group rivalry for their control; a competitive process of rent seeking that can descend into outright war. Here, the role of natural resource rents is crucial, as some types of resource rents are more easily appropriated.[1] In practice both motivations co-exist simultaneously; it is difficult to motivate groups to fight one another without historical grievances even when valuable resource rents are at stake. This is because the collective action problem in the sense formulated by Olson (1965) needs to be overcome so as to coalesce groups to fight each other. Similarly, wars motivated mainly by grievances can also degenerate into greed, once war produces new avenues for profit for the few. Thus, greed and grievance are inextricably intertwined. Furthermore, societies with well established mechanisms for peaceful conflict resolution tend not to experience outbreaks of war. In this connection, it has to be pointed out that per-capita income levels tend to be the single most important

[1] For example, it is easier to appropriate mineral based commodities rather than agriculturally based goods, see Murshed (2004) and Addison and Murshed (2002a).

factor in explaining civil war across nations. In other words the poorer and less developed a nation, the greater the risk of civil war, see for example Collier et. Al (2003). Greed and grievance are secondary factors to per-capita income in explaining the risk of onset of civil war on an average across all conflict cases. A country's economic status or relative affluence dominates all other factors in predicting the risk of civil war onset. This is because poorer countries tend to have correspondingly inferior institutions of conflict management, greater short-termism in decision making and less to lose from war. In other words per-capita income and governance standards are strongly and positively correlated. This does not mean, however, that we can dismiss factors related to greed and grievance. Poverty also plays a pivotal role in this regard, as it makes soldiering a less unattractive option, and predation a more compelling survival strategy, see Addison, Le Billon and Murshed (2002).

My intention, in this piece, is to go beyond greed and grievance and focus on two issues that promote insecurity leading to collective violence: inequality and indivisibility. The former idea is elaborated on in section 1, and contains an international and national dimension. On the international side, the rising inequality between nation states may be contributing to international insecurity. Inequality within a nation state can take on a variety of forms and I will concentrate on inter-group or *horizontal inequality*. Incidentally, this notion is also central to the grievance explanation for contemporary conflict. Section 2 is concerned with indivisibilities. One aspect of indivisibility concerns the difficulties in arriving at fair divisions amongst contending parties that ensures peace. These factors help to explain the intractability of contemporary civil war, and why conflict resolution is so difficult. Furthermore one could argue that indivisibility, and not just poverty or low-income, underpins the coordination failures, misperceptions and short time horizons that contribute to the persistence of war, as well as being a reason for the absence of credible commitment to peace. Very often this is because of an excessive emphasis on the present, and the heavy discounting of the future costs that present profit and power entail. In some societies the future cannot be foreseen or is substantially discounted. This implies the non-recognition of the fact that the future and the present are indivisible or inter-connected. Finally, section 3 attempts to synthesise these ideas about inequality and indivisibility and their connection to insecurity by way of a conclusion.

1 Inequalities

As indicated above the kinds of inequalities that promote insecurity are at two levels, one pertaining to the growing income disparities between nations, and the other relates to group inequalities within nation states. This section considers these two types of inequalities in turn.

1.1 Global Inequalities

Globalisation is meant to be beneficial for the world's poorer nations as participation in international trade and reforms aimed at attracting foreign finance are meant to narrow the gap between rich and poor nations. This process is called "convergence", and means that the real income per-capita between richer and poorer nations moves closer to one another. Greater international trade is meant to be the engine that achieves this. Globalisation as a phenomenon describing a high degree of international economic integration in terms of trade and finance is not a new phenomenon. The era before the first world war (1870-1913) was equally, if not more, globalised as our present age, see Murshed (2002b). Both episodes of globalisation involved economic interaction between developed (the North) and developing (the South) countries, and there are many similarities between the two periods. Is the globalisation game played on a level playing field? Or does greater power confer an advantage? Who has greater voice in determining the rules of the game? My argument is that 19th century globalisation in a colonial context set the stage for the second act, which is our contemporary experience of globalisation, notwithstanding the fact that a few actors or countries experienced role reversals (there is entry and exit from the developed-developing nation categorisation). The rules governing globalisation are fundamentally unfair to the developing world. 19th century globalisation was preceded by an industrial revolution in the UK and some other parts of North-Western Europe and the colonialisation of the present-day third world. Colonialisation was accompanied by the de-industrialisation of the then industrialised part of the South: India and China, see Baldwin and Martin (1999). Moreover, the colonial contract, as Milanovic (2002) calls it, ensured trade policies favourable to the export of manufactured goods from the colonial power to the colony, stifling any nascent indigenous manufacturing capacity. In short, globalisation in the 19th century did not benefit the South which became poorer as the North grew richer. It, however, assisted the convergence of incomes towards higher levels for the Atlantic economy: countries in North-Western Europe and North America.

Globalisation, therefore, increases the income gap between richer and poorer nations. To see this, it is worth examining historical income gaps between the richest and poorest nations. UNDP (1999) reproduces figures to show that this gap was only 3:1 during the dawn of the industrial revolution in 1820, rising to 11:1 by the end of the first episode of globalisation in 1913. More recently, it grew to 35:1 in 1950, rising slightly to 44:1 by 1973. More recently, after the commencement of the present round of globalisation, this figure has acquired a staggering magnitude of 72:1. This is the most conclusive evidence of the process of marginalisation of developing countries during the two great phases of globalisation.

Table 1: GDP PER CAPITA (1995 CONSTANT US$) GROWTH RATES

Area/Country	Annual average GDP growth % 1960-1970	Annual average GDP growth % 1970-1980	Annual average GDP growth % 1980-1990	Annual average GDP growth % 1990-2000
All developing countries	3.1	3.3	1.2	1.9
East Asia & Pacific	2.9	4.5	5.9	6.0
South Asia	1.8	0.7	3.5	3.2
Latin America & Caribbean	2.6	3.4	-0.8	1.7
Sub-Saharan Africa	2.6	0.8	-1.1	-0.4

Source: World Development Indicators (2002), World Bank.

Globalisation at present (the post-1980 period) has also marginalised much of the third world and low-income developing countries. Table 1 attests to that fact. Apart from East and South Asia, all the world's less-developed regions grew faster during the relatively less globalised era of the 1950s and 1960s. Yet all regions have expanded their exposure to international trade. While it is true that some middle-income developing countries as well as the most populous countries, India and China, are doing well out of globalisation, the benefits of globalisation are far more being widespread in the South (Murshed, 2002b). In Africa, in particular, the era of globalisation is associated with huge development failure. Not only have incomes declined, but also other indicators of inclusion and well being have deteriorated. This includes the return of old diseases such as tuberculosis, the AIDS pandemic, stagnating maternal mortality and literacy rates.

Three different concepts that may be used to measure inter-country inequality, see Milanovic (2005). All three methods arrive at the Gini coefficient, the most commonly used measure of income inequality. The Gini coefficient ranges from perfect equality (0) to perfect inequality (1), or in percentage terms from 0 to 100. The population whose relative inequality is being measured is categorised in several groups of equal size, five groups (quintiles) or ten groups (deciles) and so on.

The first concept used to measure international inequality treats all countries, large or small, equally. This is known as category 1 inequality. According to this concept all countries for which data is available are arrayed according to per-capita income in comparable purchasing power parity (PPP) dollars. If, for example there were a total of 150 nations, we would be effectively measuring the inequality across 150 different individuals. This is because each nation consists of a representative individual, whose income is that country's average or per-capita income. Category 2 inequality is the same as category 1 inequality with the important difference that each national per-capita income is weighted by its population size (national population relative to the world). Thus, China is given a weight of about 0.2 as it accounts for a fifth of humanity. This may appear to be a reasonable procedure, but a serious flaw in category 2 type inequality measures is that most changes are accounted for by the alterations in populous countries such as China and India, and downwardly bias events elsewhere. Moreover, when nation states are the unit of analysis, each state should be treated equally, as each nation is an independent entity and represents a unique policy experiment. Equal treatment for all nations means that each unit's income should not be population weighted; rather there should be equal weighting, which implies no weighting at all. Both category 1 and 2 type inequality indices do not, however, take into account within-country inequality. In any nation there are income differences between inhabitants of town and country, the capital and places in the hinterland. Within larger states such as China and India there are huge regional disparities in economic performance and socio-economic conditions, consequently income levels differ. It might be better to focus on individuals rather than nations as the unit of analysis even for assessing international inequality. This measure, known as category 3 international inequality, however, represents a tall order in terms of comparable international data collection. Since the late 1980s, however, household surveys have become more common across the globe.

What do the 3 types of international inequality measures show us? Category 1 measures indicate a rise in inequality in the globalised era. From about 46 in 1978, the Gini coefficient has risen to over 54 by 2000. In contrast, during the less globalised period of 1960 to 1978 the Gini remained fairly stable between 48 to 46, Milanovic

(2005). Clearly, this shows that globalisation produces winners and losers and does the converse of achieving income convergence. It also captures the collapse of output and national income, lowering income per-capita in Eastern Europe and the former Soviet Union following the demise of socialism. The decline in income in those regions may be likened to the fall in output brought about a prolonged and intensive war. Moreover, while within region income differentials within OECD nations continued to decline in the 1978-2000 period, it rose in all regions in the developing world except Latin America and the Caribbean.

Recall that category 2 inequality is the same as category 1 except that it is population weighted. Category 2 measures will show a fall in international inequality in the highly globalised era, because of the impressive growth in China's real per-capita income. Using this method the Gini for the world declines from 54.4 in 1978 to 50.1 in 2000 (Milanovic, 2005), indicating a decline in inter-country inequality. But category 2 measures are based on per-capita income as the unit of analysis. Thus, not only are category 2 indicators biased by what happens in China and India (large countries), but also any country's income growth success in overall terms masks within country income variations along spatial or socioeconomic lines.

The category 3 measure is based on household surveys, with households as the unit of measurement. Category 3 measures do not, unfortunately, allow us to go back farther than 1988. We would expect globalisation to have already produced winners and losers by 1988, intensifying inequality. Milanovic (2005) shows a rise in inequality (Gini coefficient) during the globalised phase from 62.4 in 1988 to 66.0 in 1993, falling back slightly to 64.6 in 1998. Moreover, these figures would be higher, implying greater inequality, if instead of PPP dollars ordinary dollars based on market exchange rates were used. It therefore, captures the huge rises in inequality amongst citizens inside the former communist bloc. The urban-rural divide in inequality inside China and India are also explained, and indeed this particular factor greatly explains the gap in the measured Gini coefficient using category 2 and 3 methods.

Table 2 Number of countries in different 'social' groups

Type	1960	2000
Rich (OECD)	41	31
Upper-Middle	22	8
Lower-Middle	39	25
Poor	25	67

Source: Milanovic (2005)

It can be argued that the category 1 Gini is still the best measure of inter-country differences in income, and especially whether there is convergence between incomes of poor and rich nations. This has patently not occurred; see Table 2 based on Milanovic (2005). Whereas in 1960 there were 22 upper-middle class nations, contending to join the wealthy group with two-thirds or more of the average income in the poorest OECD or rich country, by 2000 there were only 8 such nations. The number of countries with between a third and two-thirds of the poorest OECD country income declined from 39 to 25 during the same period, indicating that the lower-middle classes too have been squeezed. The numbers of rich (OECD type) countries also fell, from 41 to 31; the rich man's club is much more exclusive nowadays. Most importantly, the number of really poor nations (the fourth world or the lower classes) defined as having an average income less than a third of the lowest OECD national average income rose from 25 in 1960 to 67 in 2000. This is conclusive evidence that the world is becoming polarised into rich and poor nations since the beginning of moderate globalisation in 1960. We are therefore living in a world where there is a vanishing middle class in the sense of inter-country differences (Milanovic, 2005).

Is rising global inequality, or inequality for that matter, cause for concern? Or should we only worry ourselves with absolute levels of poverty whether based on national standards or the international dollar a day measure of abject poverty. Clearly, this depends on our notion of justice. The current development-donor focus is on poverty alleviation. While this is a noble objective, citizens of the globe, including those residing in poor nations are more aware of the differences in their own circumstances and capabilities compared to those of fellow human beings in rich nations. This is all the more so in a digital age, where satellite television and the Internet is widespread. A Gini coefficient of 66 (category 3 inequality) means that the expected difference between two random individuals income is $9200 based on an average world income of $7000.[2] It also implies that accidents of birth, in terms of nationality, not social class can cause a $9200 earning difference. The same figure would be $7560 with a Gini coefficient of 54 (category 1 inequality). Such levels of inequality are truly staggering; they would be intolerable in most Western democracies. Countries with national Gini coefficients around 60 such as Brazil and South Africa are ridden with strife, usually taking on the form criminal violence.

I have argued elsewhere, Murshed (2002a) that a viable social contract with agreed upon rules for redistribution, is necessary to contain dissent and open conflict in developing countries. This concept of the social contract has its international counterpart too, one which we might refer to as the development contract, that is needed to sustain world peace. Growing global inequality since 1980 and the end of the cold war has undermined this development contract.

1.2 Horizontal Inequalities within the Nation State

Relative deprivation—the perception by one or more parties that they are unjustly treated—can be an important cause of civil war. Many conflict societies are characterised by large inequalities in access to the productive assets necessary for livelihoods and in public spending on economic and social infrastructure and services. The importance of *horizontal* or inequalities between groups, classified by ethnicity, religion, socio-economic class, etc, as sources of conflict is potentially important, see Murshed and Gates (2005) and Stewart (2000) for example. This subject is seriously under-investigated by rational-choice researchers because of the paucity of data. Horizontal inequality can be much more crucial compared to vertical (or income class based) inequality, because it helps to overcome Olson's (1965) collective action problem. Three dimensions of horizontal inequality are noteworthy:

Discrimination in Public Spending and Taxation. Discrimination in the allocation of public spending, and unfair tax burdens, lead to serious unrest. Grossman (1991) gives us a theoretical model of insurrection against the state by the peasantry reacting to over taxation, where the state is a tax-farmer interested in maximising the income

[2] This figure is obtained by multiplying the Gini coefficient of 0.66 by 2 times the mean world income, $7000.

of the rentier class. Discrimination in the allocation of public employment is particularly resented in societies in which public employment represents the principal avenue for personal advance. In addition, the over taxation of smallholders encourages insurrection, and indigenous peoples often face discrimination in access to schooling, health care, and public-sector jobs; many of these factors are present in Nepal's current civil war, for example, see Murshed and Gates (2005). Where there are inter-group fiscal transfers, which may take the form of spending on education and health for disadvantaged groups or including them in government employment, commitment to the transfer by those in power may be imperfect. This lack of credibility of the transfer can eventually lead to civil war.

High Asset Inequality. Agrarian societies with high income inequality—for example El Salvador, Guatemala, Nepal, the Philippines, and Zimbabwe—have high asset inequality, and are very prone to conflict. In these societies, agrarian elites use their collateral to further leverage their existing wealth through a financial system that they control by means of family/business cross-holdings. Asset redistribution such as land reform to lessen inequality is more difficult than public finance reform. Besançon (2005), however, points out that purely ethnic conflicts, as opposed to revolutions and genocides, are more likely when a greater degree of *income* equality[3] has been achieved between contending ethnic groups. Inclusion in the political process is more crucial to preventing this type of conflict, which do not usually take the form of civil wars[4], as the state is not involved.

Economic Mismanagement and Recession. In Africa, Latin America and the former Soviet Union conflict ridden countries have also suffered prolonged economic mismanagement and growth collapse. Successive IMF and World Bank supported adjustment programmes in DRC-Zaire, Somalia, Russia and elsewhere not only proved incapable of promoting economic recovery, but given the level of corruption within the state, themselves became targets to be captured by elite groups. Economic mismanagement is often associated with an uneven and unfair distribution of the burdens of subsequent adjustment; public spending benefiting the elite and the military is protected, often favouring particular ethnic groups, with the burden of adjustment placed on expenditures of value to the poor and disadvantaged groups.

Despite the existence of horizontal inequalities violent conflict is unlikely to take hold if a country has a framework of widely-agreed rules, both formal and informal, that govern the allocation of resources and the peaceful settlement of grievances. Such a viable social 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.

Conflict-affected nations have histories of weak social contracts, or a once strong social contract that has degenerated. 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 (Mexico, Brazil, Zimbabwe); and the expropriation of land and resource

[3] Note that income equality is different from asset equality, which concerns wealth.
[4] Such as Hindu-Muslim riots in India, or Christian-Muslim violence in Nigeria or Indonesia.

rents (Angola and the Belgian Congo). 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, notably Ethiopia, Haiti, and Liberia also lie behind weak social contracts (see Nafziger, Stewart & Väyrynen 2000). A single ethnic group, or a subset, often assumed power in the immediate post-independence era (the 1960s), subjugating others and concentrating the fruits of state power—public employment, other public spending, and resource rents—into its own hands. A final complexity in fatally weakening social contracts was the interaction of these domestic factors with external events, notably the Cold War, which provided finanancial and ideological succour to ruling elites and rebels. The net result of these processes is the accumulation of grievances within the context of a disintegrating social contract that would otherwise have provided the rules of the game to govern the distribution of the social pie and to achieve peaceful conflict resolution.

2 Indivisibilities

As indicated in the introductory section, the duration of civil wars shows little signs of diminishing. Also, as Walter (2001) and Wood (2003) have suggested, peace agreements that end civil wars are notoriously unstable in that they are often not implemented, or break down as was dramatically the case in Angola. This is much more the case than in inter-state wars. One reason that such conflicts continue to persist could be certain indivisibilities in perceived shares of power and income in the peace settlement, as well as the inability to correctly infer the value of path dependence (the future depends on present actions). The former problem mainly relates to the problems of sharing the post-war economic pie or the peace dividend; the latter concerns credible commitment problems to the peace agreement itself. Both of these concepts pertain to the durability or fragility of peace agreements. This section considers the two factors mentioned above in turn.

2.1 Indivisible Shares

Fearon (2004) points out that of all types of civil wars those with secessionist tendencies and 'sons of the soil' dynamics are the most difficult to resolve, and tend to last the longest. This could be because of an overlapping interest and attachment to the inviolability of land and territorial sovereignty by both parties to the conflict. Certainly other causes such as the ready availability of easily lootable narcotic or gemstone revenues that help finance conflict, or misperceptions about the chances of outright military victory, are important in prolonging conflict. But the indivisibility of war aims, symbols or land can also make certain civil wars intractable. Wood (2003) highlights *indivisibility* as a major impediment to peace deals. This arises when territory, symbols or revenue in a post-conflict situation cannot be divided up so as to achieve peace. The problem can be most acute when religious sites such as Har'm El Sharif or Temple Mount in Jerusalem are involved. Also, considerable difficulties arise when it is problematic to achieve compromise over a war aim such as land reform (Nepal and Colombia), or deep constitutional change (future of the monarchy in Nepal). There can also be seemingly irresolvable disputes over post-war power sharing, and the allocation of offices in a post-conflict government. Secessionist wars where territorial sovereignty is contested can also be tricky to resolve. Compared to these, disagreements over sharing resources may require less challenging solutions.

The theoretical literature on sharing and division offers us several insights. For example, Brams (2005) points out several allocation rules for a single divisible good, many divisible goods and several indivisible goods. All of these have implications for durable peacemaking involving compromises over issues and post-war economic stakes. If a peace agreement, and the divisions and compromises it entails are perceived to be unfair then the deal itself will not be robust. Sharing in this regard must be equitable as well as efficient. That is why envy-free allocative outcomes are so important. In an envy-free outcome each participant does not regard the allocation achieved by another player to be superior to what he/she has achieved. All the various allocative mechanisms considered by Brams (2005) require monitoring or intervention by an outside agency, a mediator and/or external power. This is all the more so in the case of allocations in a post-war situation.

In the case of a single divisible good the analogy with cake cutting is applicable. This may, for example, concern the division of the post-war peace dividend. The application of the envy-free criterion may entail several slices or divisions that may be inefficient and in excess of the number of parties to the conflict. This will be all the more true if what is being divided up is not homogenous. One can visualise situations to do with the division of the expenditure of post-war aid and the dividing up of land that may require a great deal of parcelling. If all players are risk-averse they will follow a maximin strategy, that is they will maximise the minimum allocation that they can achieve with certainty compared to uncertain prospects that yield higher returns but entail a positive probability for an outcome which is less than their maximin outcome.

A second situation considered by Brams (2005) entails several items to be divided, each of which is in principle divisible. Peace negotiations usually involve several issues, including regional autonomy, sharing of resource rents (such as oil revenues in the Sudan), constitutional changes, power sharing in the federal government and so on. Typically these issues will involve a long period of extended bargaining. The procedure behind the settlement, if reached, is described as the adjusted winner mechanism. Negotiations on the issues may involve placing upper and lower bounds on the values of each issue, bearing in mind that assigning pecuniary values is more amenable in quantifiable matters such as resource rents rather than for non-monetary matters involving status such as who should be President. Each side will allocate weights on the different issues at hand, and given that each side has a similar number of bargaining chips, each party will win on some of the disputed issues. These will tend to be in areas most highly valued by the concerned protagonist. So if regional autonomy is more highly prized by a rebel group compared to resource rents, they will put a higher weight on it and secure that goal under the adjusted winner mechanism. But one side can end up with wins on many high valued issues, and the consequent allocation could be inequitable to the other side. So this mechanism requires an equitability adjustment. Basically, this means sharing on high valued issues where the two sides preferences are close, or the weights assigned to them out of their bargaining chip allocation are similar. So if the government and the rebels assign a close and high weight to resource rents, they must share these. In other words, if the government and the rebels both value resource rents highly, one side cannot equitably be allowed to be a sole winner. There has to be a revenue sharing mechanism on this issue. Other issues, where values diverge considerably, tend to be winner take all based on which side places the higher value. This adjusted winner mechanism gives both sides an allocation which is roughly equal and more than 50% of the assigned weights from the bargaining chip pile. The problem with applying this equitability included adjusted winner mechanism is that many issues are not easily divisible, such as which side gets to first occupy a rotating post-war Presidency. A further difficulty can arise if the two sides do not have similar bargaining power, something that external actors need to engineer.

Thirdly, and most importantly Brams (2005) considers allocating several indivisible issues. Once again external intervention or mediation is required. The allocation of indivisible goods requires the application of the envy-free principle for any allocation to endure. And, a unique envy-free allocation may not be Pareto-efficient. Pareto efficiency means that one side cannot be made better off without making another side worse off.[5] One can make an envy-free allocation Pareto efficient by improving the utility of one side without lowering the utility of the other. But such allocations may not remain envy-free as one side could have a lower allocation of relatively more highly prized items (yielding the same utility) that are being allocated, and consequently resent the other sides allocation. A similar argument can be made about a maximin allocation being envy-possible. Consider an application of the envy-free principle to the elections held in Iraq in January 2005. A criticism of the method adopted in that Iraqi election, for example, could be that the electoral mechanism (one person-one vote instead of representative bodies of each community) is not envy-free for the minority Sunni community, and has therefore not enlisted their full cooperation.[6] Generally allocations involving indivisible items that are more qualitative are more difficult to achieve. The answers, in the more intractable cases, must lie in *sharing*, equal user rights and other 'federal' arrangements.

Wood (2003) considers non-cooperative strategies of actors in a conflict, and whether their strategies to fight or compromise are self-enforcing without third party mediation. This is at variance with allocative rules considered by Brams (2005) that involve mediation and refereeing, making the outcomes mimic cooperative solutions. The decision to compromise is based on the pay-off in the peaceful state, as well as beliefs about the strategy which will be adopted by one's opponent. There also has to be bargaining over the share of the post-war pie that each side gets. The Nash equilibrium can involve either fighting or compromise; multiple equilibria are possible. If each side's expected post-war share is greater than what they can get from fighting, feasible compromise equilibria exist. But that depends upon beliefs about the other side's strategy. The feasible compromise equilibrium and the sharing it involves may not coincide with beliefs about the opponent's strategy. In general, there will be an optimal share of the post-war pie for each side which will maximise the robustness of a peaceful settlement (that is the agreement lasting or being self-enforcing) given beliefs of the two sides about each other. Within each group there may be factions with more pessimistic views about their opponent's strategies. This will depress the value of any share of the post-war pie. Indivisibilities regarding the issues contested, and the post-war pie, also devalue the expected worth of any share of the post-war settlement, making self-enforcing compromises difficult. In more

[5] This is, however, consistent with one person having everything and another person nothing in a two person world.
[6] In practice, the allocation of power in Iraq amongst the various communities includes several divisible and indivisible issues.

extreme cases this may require external intervention in the form of bribery to increase the total size of the potential peace dividend as in Sri Lanka, so there is simply more to be shared. In the case of sites and symbols steps have to be taken to encourage sharing and envy-free access through con-federal structures. This may require diplomacy, and in some cases coercive intervention by external powers.

2.2 Indivisible Periods and Commitment Problems

Another form of indivisibility arises when the future is heavily discounted, and when the future costs of current actions are similarly undervalued. This may lead to problems of commitment to negotiated settlements even when they are Pareto optimal, that is when each side is better off in a state of peace. In most situations, war is irrational and inefficient (non Pareto optimal) as pointed out by Skaperdas (1992, 2002). Why is therefore the credibility of the commitment to peace treaties so fragile? There could also be misperceptions about the benefits of war, or an overestimation of the prospects of military victory.

To deal with misperceptions first, the most obvious candidate that prevents peace in this category of explanations for civil war persistence is an overestimate of the probability of military victory, see Collier, Hoefller and Söderbom (2004) in this connection. The same authors also emphasise that the state of war may also be highly profitable for one or more of the belligerent groups. As indicated earlier, this is likely in the case of contraband substances and lootable minerals such as alluvial diamonds. Fearon (2004) has also pointed out that secessionist wars with 'sons of the soil' dynamics are notoriously difficult to resolve as noted above because of indivisibilities of objectives.

The commitment problem to an agreed peace treaty is also a serious problem. This difficulty arises when it is in the interest of one or either side to renege on the promise of peace, and the actions that peace involves. In that situation, commitments lack credibility. Sometimes agents or groups cannot commit credibly because there are no institutions or mechanisms upon which to anchor promises. For governments, this is more likely in the context of weak state capacity, as it is difficult for a state to guarantee pledges when its own legitimacy and power base is fragile.

An aspect of the commitment problem that has received scant attention is the very high discount rates, or the short time horizons of the parties involved (Addison and Murshed, 2002b). In situations of poverty and high uncertainty, agents strongly prefer a dollar today to a dollar tomorrow. Although the absolute value of future peace may be much higher than that of continued warfare, the present value may be much lower when the discount rate is very high and there is an impatience to consume. The same argument can be applied to reputation, a factor that is key to the credibility of peacemaking. Breaking an agreement damages *future* reputation, but with a high enough discount rate it might pay to renege because the cost comes in the future. Each failure of the peace process raises the discount rates of the belligerents, thereby increasing the difficulty of making peace. Given the tarnished reputations of belligerents it is even harder to establish credible peace. The problem is particularly apparent in Africa where most indicators of political risk are substantially greater than elsewhere in the world. Solutions lie in directly increasing the cost of reneging on peace agreements and devising commitment technologies through institutional innovation, particularly at the international level. Improving the quality of peacekeeping forces is an urgent need, as is increased commitment to bringing war criminals to trial. We need to assess why some 'post-conflict' countries returned frequently to war (Angola) while others have managed to sustain peace (Mozambique). Again, economic motivations may lie at the root of the problem—Mozambique has few valuable minerals over which to fight while Angola has several—and this may help explain several peace commitment failures in Angola

With regard to commitment and commitment technologies there are three other factors that can be considered: the separation of economic life and politics, time horizons and institutional settings.

Economics and Politics: There may be situations when conflict and business entrepreneurs are one and the same, as in many cases in Africa. This makes the commitment to peace less likely to hold, compared to societies with a relatively stricter dichotomy between those who rule (politicians) and those who conduct economic affairs. This is because in the former case the political and economic interests are one, and clearly pro-war. Economic interests in this instance centre around war-contracts and the harnessing of resource or illicit drug rents. In the latter case there is some room for competition between different interests; business activities such as the exporting of manufactured goods from Sri Lanka or Nepal may be disrupted by the war. Even when there are links between the two groups, the greater the institutional separation through parliament and the political process, the better are the chances for lasting commitments to peace.

Time Horizons: This turns out to be a crucial feature in individual decisions. When a future is seen to feasibly exist, this results in more peaceful attitudes. Generally speaking investment, which only bears fruit in the future, requires a long time horizon. More secure and affluent societies tend to have a longer time horizon. By contrast severely war torn, insecure and poorer societies have shorter time horizons, with a very strong preference for a dollar today compared to an uncertain prospect of more than a dollar in the future. Short-term income may be readily obtainable in a war situation, even if war destroys future earning prospects. In the language of economics, this is referred to as a high discount rate applied to future income, as opposed to the high value put on present consumption. All of this means discounting the future cost of conflict, as well as undervaluing the tarnished future reputation which arises from an excessive zeal for short-term profit. Furthermore, societies with faulty and degenerating institutions of governance and democracy tend to have a high discount rate, as the future is uncertain. New and fledgling democracies are often characterised by these high discount rates, as the future is uncertain due to the fact that the political system may collapse. The state apparatus in this situation run the risk of descending into kleptocracy. The important point here is that many groups in these situations are also characterised by similar short-term mentalities, making them often prefer current profits in a war situation when compared to investing for a far greater income that peace might bring in the future. Also, investment in trying to bring about future peace can have substantial present-day costs in terms of foregone profit.

Institutions of Commitment: Even when all parties agree to and recognize the benefits of peace they need to credibly commit to peace and the conditions stipulated therein. Generally, this requires institutions that help parties to credibly anchor their commitment to the peace treaty. The fear of reversal in the context of poor commitment technologies, leads to a peace treaty being imperfectly credible. And if it is not credible, the peace agreement will not last. Leaders of various groups and factions will then tend to behave like roving bandits with no concern for the country, rather than akin to stationary bandits who have an encompassing interest in nurturing the tax base from which they obtain rent (see Olson, 1996). A poor environment for commitment often arises when the government or the rebel leadership's power base is weak and/or lacks legitimacy. Solutions here lie in devising better mechanisms to engender credible commitment via institutional improvement. This includes better constitutional safeguards, greater respect for the rule of law and superior regulatory capacities. In this respect externally enforced commitment technologies via internationally enforced peace treaties may help.

3 CONCLUSIONS

I have argued that inequality both between countries and within groups at the level of the nation state can induce an insecure environment that may lead to open conflict. I also posit that indivisibility in terms of post-war stakes, envy-free allocations and the inability to connect the future to the present perpetuate wars and prevent lasting peaceful settlements. In doing this I am going beyond the greed versus grievance debate on the causes of conflict. There are signs that the rational choice literature is also inching away from these two explanations as competing theories of conflict to a position where these motives complement each other under conditions of poverty and underdevelopment, see for example Collier et. Al (2003). The current emphasis in the cross-country empirical (econometric) literature on conflict is on income per-capita as the most robust explanation for conflict onset. Low-income countries do tend to have poorer governance indicators and institutional quality. And those among them with a high endowment of lootable gemstones and illicit narcotics have a ready made source for financing civil wars which are on an average seemingly getting longer. These generalised propositions based upon cross-country regressions are, however, too broad to inform the policy maker, particularly when the unit of measurement for conflict is often suspect in a cross-country regression.

In emphasising the role of inequality and indivisibility I am searching for plausible explanations for conflict and its persistence over time, respectively. Neither of the two phenomenon can be adequately proxied in cross-country regressions. True, there are adequate measures of global inequality. But data on horizontal inequality is characterised by its paucity. At best we have regional and spatial data on countries which allows us to approximate group inequality because some communities are more geographically concentrated, see for example Murshed and Gates (2005). More work needs to be done in gathering data on horizontal inequality. Measuring indivisibility will be well-nigh impossible in a cross-country framework except on the basis of some ad-hoc and subjective coding practice.

It is worth stressing the fact that good econometrics needs to be informed by theory. In the case of the conflict literature this practice is very ad-hoc as far as *economic* theory is concerned, but superior when it is related to theory in political science. I believe group inequality and the indivisibility of post-war shares are compelling theoretical arguments for conflict onset and the continuation of conflict. They are best studied at the level of an individual conflict, not just through the method of thick description but also where use is made of all available economic statistics over time.

The message to policy makers is clear. Tackling horizontal inequalities is key to preventing and ending conflict. This means poverty reduction, growth, greater political participation and improved governance. Making peace settlements last implies that the indivisible has to be made divisible through external intervention in the form of diplomacy and coercion which encourage sharing, as well as greater economic aid to make the peace dividend more palpable. It also means strengthening institutions that help anchor commitment. Furthermore, post-war allocations need to be envy-free in order for them to endure.

REFERENCES

Addison, Tony and S Mansoob Murshed (2002a) 'On The Economic Causes of Contemporary Civil Wars', in S M Murshed (ed), *Issues in Positive Political Economy*, London: Routledge, 22-38.

Addison Tony and S. Mansoob Murshed (2002b) 'Credibility and Reputation in Peacemaking' *Journal of Peace Research*, 39 (4), 487-501.

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.

Baldwin, Robert and P. Martin (1999) 'Two Waves of Globalisation: Superficial Similarities, Fundamental Differences', in Horst Siebert (ed.), *Globalisation and Labour*, Tubingen: JCB Mohr, 3-58.

Besançon, Marie (2005) 'Relative Resources: Inequality in Ethnic Wars, Revolutions and Genocides', forthcoming *Journal of Peace Research*.

Brams, Steven J (2005) 'Fair Division' in Barry R Weingast and Donald Wittman (eds), *Oxford Handbook of Political Economy*, New York: Oxford University Press.

Collier, Paul; Anke Hoeffler and Måns Söderbom (2004) 'On the Duration of Civil War', *Journal of Peace Research*, 41 (3), 253-273.

Collier, Paul; Lani Elliot; Håvard Hegre; Anke Hoeffler; Marta Reynal-Querol and Nicholas Sambanis (2003) *Breaking the Conflict Trap: Civil War and Development Policy*, World Bank, Oxford: University Press.

Fearon, James (2004) 'Why Do Some Civil Wars Last So Much Longer Than Others', *Journal of Peace Research*, 41 (3), 379-414.

Grossman, Herschel I. (1991) 'A General Equilibrium Model of Insurrections', *American Economic Review*, 81, 912-21.

Hegre, Håvard (2004) 'The Duration and Termination of Civil War', *Journal of Peace Research*, 41 (3), 243-252.

Human Security Report (2005), University of British Columbia.

Milanovic, Branko (2002) 'The Two Faces of Globalization: Against Globalization as We Know It', www.worldbank.org/reseearch/inequality

Milanovic, Branko (2005) *Worlds Apart: Measuring International and Global Inequality, Princeton*: University Press.

Murshed, S Mansoob (2002a) 'Civil War, Conflict and Underdevelopment', *Journal of Peace Research*, 39 (4), 387-393.

Murshed, S. Mansoob (2002b) 'Perspectives on Two Phases of Globalization' in S Mansoob Murshed (ed), *Globalization, Marginalization and Development*, London: Routledge, 1-18.

Murshed, S Mansoob (2004) When Does Natural Resource Abundance Lead to a Resource Curse, IIED-EEP, Working Paper 04-01, www.iied.org

Murshed, S Mansoob and Scott Gates (2005) 'Spatial-Horizontal Inequality and the Maoist Conflict in Nepal', *Review of Development Economics*, 9 (1), 121-134.

Nafziger, E. Wayne, Frances Stewart & Raimo Väyrynen (eds.) (2000) *War, Hunger, and Displacement: Volume 1 - Analysis.* Oxford: Oxford University Press.

Olson, Mancur (1965) *The Logic of Collective Action*, Cambridge MA: Harvard University Press.

Olson, Mancur (1996) 'Big Bills Left on the Sidewalk: Why Some Nations are Rich, and Others Poor', *Journal of Economic Perspectives*, 10, 3-24.

Skaperdas, Stergios (2002) 'Warlord Competition', *Journal of Peace Research*, 39 (4), 435-446.

Skaperdas, Stergios (1992) 'Cooperation, Conflict and Power in the Absence of Property Rights', *American Economic Review*, 82, 720-39.

Stewart, Frances (2000) 'Crisis Prevention: Tackling Horizontal Inequalities', *Oxford Development Studies*, 28 (3), 245-62.

UNDP (1999) *Human Development Report-1999*, New York: United Nations Development Programme.

Walter, Barbara F (2001) *Committing to Peace: The Successful Settlement of Civil Wars.* Princeton: Princeton University Press.

Wood, Elisabeth Jean (2003) 'Modelling Robust Settlements to Civil War: Indivisible Stakes and Distributional Compromises', www.prio.no.

World Bank (2002) *World Development Indicators.* Washington DC: World Bank.