TURNING SWORDS TO PLOUGHSHARES & LITTLE ACORNS TO TALL TREES: THE CONFLICT-GROWTH NEXUS & THE POVERTY OF NATIONS

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4th January 2006

ABSTRACT

The importance of the growth and intra-state conflict nexus cannot be overemphasised. The lack of growth prevents poverty reduction and the achievement of the millennium development goals. Similarly, poverty and low growth help to increase the risk of conflict, as individuals have less to lose from conflict in situations of poverty. Consequently, the security and development agendas cannot be dichotomised; the freedom from fear cannot thrive in the absence of the freedom from want. The causes of growth failure in the long-term have similarities to the causes of civil war, the most obvious being institutional failure. The recent economic history of the world provides ample evidence of diverging average incomes between rich and poor countries. This rising inequality between rich and poor nations adds considerably to global insecurity. As far as the causes of conflict are concerned, both the greed and grievance hypotheses have some validity. But the operation of either or both these motivations for civil war require the breakdown of the institutions of conflict management; something that can be described as the break-down of the social contract. The greed explanation for conflict is mainly applied in cross-country econometric studies. Its validity as a direct causal mechanism behind the risk of civil war onset has recently been brought into serious question. The relationship between conflict onset and natural resource revenues, must work through other mechanisms, such as a weakening social contract and withering state capacity. But the abundance of capturable mineral resources or illicit drugs can help to perpetuate already existing civil wars, and the prevalence of conflict seems greater amongst mineral and coffee/cocoa exporters compared to other agricultural and manufactured goods exporters. The latter two categories of economies also seem to experience higher growth rates. The grievance explanation for contemporary civil war is dominant in detailed conflict case studies. Grievances can be historical, but it will have a measurable counterpart in group inequalities in socio-economic achievement. Here, the neglected dimension of inter-group or horizontal inequality, measured by factors such as human development gaps can have a great deal of explanatory power. The most robust explanatory factor for conflict risk is low per-capita income, implying growth failure. Growth can reduce conflict risk in four ways. First of all, by lowering poverty it provides fewer ready recruits for conflict entrepreneurs. Secondly, growth ultimately lowers inequality, and this can also reduce conflict producing inter-group or horizontal inequality. Thirdly, growth creates denser sets of interaction between economic agents, resulting in situations where there is much more to lose from conflict. Fourthly, growth can improve institutional functioning, creating better chances of peaceful conflict resolution; even producing situations ripe for the emergence of democracy. One of the greatest contemporary problems in connection with conflict and civil war is the instability of most peace agreements. Peace agreements need to be strengthened via commitment technologies, and better peace arrangements involving fair division of the post-war economic and political pie are required. The economic reconstruction following war must be broad based and pro-poor, and also address the horizontal *inequalities* that helped engender conflict in the first place.

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1   Introduction

A fifth of humanity lives in abject poverty.[1] This is something that should be unacceptable to those living in more affluent circumstances for two inseparable reasons. First of all, it affronts our sense of common humanity. Secondly, it undermines international security, as poverty eventually engenders violence and revolt. Enlightened self-interest therefore dictates that poverty should be alleviated. In short, it is difficult to separate the development and security agenda. Among donors, those motivated by a genuine commitment to the development *per se* of the global South are being sidelined by others to whom the security agenda of containing the unpleasant and sometimes violent spillovers of extreme poverty in the third world is paramount (Murshed, 2003). Despite rhetoric to the contrary, the security agenda dominates donor thinking, because bilateral aid and even multilateral aid (when controlled by the great powers such as the USA and the UK) is an extension of donor strategic foreign policy. But the important point is that the reduction of absolute poverty yields a double dividend by simultaneously addressing security considerations and developmental concerns. Thus, the achievement of the millennium development goals (MDGs) regarding poverty reduction is twice blessed: it serves both the altruistic and security minded motives of the donor community.

Most wars nowadays are intra-state or civil wars. The overwhelming majority of these civil wars occur in developing countries. Ultimately wars are not rational when compared to negotiated settlements, because wars destroy part of the initial endowment of belligerents, no matter what the final outcome of war. But the logic of bounded or myopic rationality can sometimes make war rational. Furthermore, there is an intimate link between poverty and conflict. One the one hand, war prevents the achievement of the MDGs; perpetuating poverty, under-development and the lack of growth. And, on the other hand, poverty provides fertile grounds for conflict entrepreneurs, as potential combatants have less to lose from death and destruction on account of their own poverty. For all of these reasons ending conflict, or reducing its intensity, must be a high policy imperative in the development, poverty reduction and international security agenda.

Despite the reservations of some, economic growth constitutes the principal avenue via which sustainable poverty reduction can take place in low-income developing countries. Redistributing income, without making the cake bigger, will only serve to make the already poor more equal. Thus, growth is a necessary condition for poverty reduction in low-income countries. Growth can reduce poverty if some of the benefits of growth trickle down to the poor, even if its principal beneficiaries are the wealthy. This is where other notions of pro-poor growth, such as those advocated by Kakwani and Pernia (2000) become relevant. According to this view, in order for growth to be truly pro-poor it must disproportionately benefit the poorer segments of society; this requires an improvement in the distribution of income. Additionally, such pro-poor growth can also serve to stem the seeds (poverty and inequality) of conflict. Moreover, there are similarities between conflict prevention and the deep determinants of growth in the long-run because of factors common to both: institutions, inequality, endowments and so on. Despite our

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[1] Based upon the widely accepted purchasing power parity (PPP) concept of a dollar a day per person as the international absolute poverty line.

concern with poverty reduction, we cannot ignore the consequences of inequality within and between nations because of the insecurity that high inequality engenders. The lack of growth creates more inequality, and inequality breeds human insecurity. Thus an important growth-conflict nexus does exist, and the purpose of this paper is to explore that link.

The rest of the paper is organised as follows. Section 2 describes the growth record (recent and historical) of developing countries as a whole, and contains a summary of the causal mechanisms behind long-term growth. Section 3 is concerned with conflict. It describes the stylised facts of civil war and the typology of conflict, summarises and synthesises the causes of civil war (greed versus grievance), before moving on to consider the instability of peace agreements. Section 4 contains a simple description of the empirical association between endowment, growth, polity and conflict at the level of individual states, following on from the conceptual analysis of the previous two sections. Finally, section 5 concludes with some policy recommendations.

2   The Long-Run Determinants of Growth

2.1   Divergence and Inter-National Inequality in the Global Economy

Table 1: Long-Run Patterns of Growth in the World Economy

Per-Capita GDP levels in 1820 and 1998 (1990 PPP), and growth rates.	1820	1998	1820-1998 (% annual growth rates)
Western Europe	1232	17,921	1.51
Western offshoots	1201	26,146	1.75
Japan	669	20,413	1.93
Average-rich	**1130**	**21,470**	**1.67**
Latin America	665	5795	1.22
Asia	575	2936	0.92
Africa	418	1368	0.67
Average-poor	**573**	**3102**	**0.95**

 Source: Maddison (2001). Western offshoots implies North America and Australasia.

The economic history of the world in the last two centuries is a sorry tale of widening disparities between rich and poor nations, see Maddison (2001). As table 1 indicates the average income gap, measured in 1990 purchasing power parity (PPP) dollars, between rich and poor nations was 1.97: 1 during the early stages of the industrial revolution in 1820. In a 178 year period to 1998 this gap widened to 6.92. The increase in the average disparity between rich and poor nations was approximately 350% during this period. The problems of development are primarily to do with the lack of growth, because growth presents us with the best set of possibilities for engendering development. Table 1 clearly illustrates the fact that the present-day disparities between rich and poor states are a consequence of the lower growth rates in poor countries.[2]

It is beyond the scope of this paper to outline the various theories that cause growth, see Ray (1998) for an exposition. Nevertheless, it is worth bearing in mind that one of the precepts of neoclassical growth theory is that poorer regions should grow faster than richer countries, eventually catching up with the higher living standards of affluent nations. The relative gap between rich and poor nations should become narrower over time, a phenomenon known as 'convergence'. In the general sense, this has not occurred, despite the fact that a handful of poor countries have qualified for membership in the club of affluent nations. Consider table 2, based on Milanovic (2005), describing the number of countries in transition from poor to middle-income to rich and so on, since 1960. Rich refers to a typical OECD country (minus Turkey and other new entrants to the OECD). Upper middle refers to countries with at least two-thirds of average income (per-capita income) in the poorest OECD country. Lower-middle refers to between a third and two-thirds of average income in the poorest OECD country. Poor refers to the number of nations with below a third of average income in the poorest rich country.

Table 2: The Number of Countries Going from Rich to Poor and vice versa, 1960-2000

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

Source: Milanovic (2005)

Between 1960 and 2000 the Western share of rich countries has been increasing; to be an affluent country has almost become an exclusive Western prerogative. Sixteen out of nineteen non-Western nations who were rich in 1960 traversed into less affluent categories by 2000 (for example, Algeria, Angola and Argentina). Against that is the fact

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[2] For instance, a nation growing at 2% per annum doubles its income approximately every 36 years.

that four Asian non-rich countries moved to the first group.[3] Most non-western rich nations in 1960, joined the second income-group by 2000, and most non-Western upper-middle income countries in 1960 had fallen into the third and fourth income categories by 2000. Of 22 upper-middle income nations in 1960, 20 had fallen into the third and fourth income categories (among them the Democratic Republic of the Congo or DRC also known recently as Zaire, and Ghana). Most nations in the third group in 1960 descended into the lowest income category by 2000. Only Botswana moved to the third group from the fourth category, and Egypt continues in the third category. We seem to inhabit a downwardly mobile world with a vanishing middle-class; most countries by 2000 were *either rich or poor* in contrast to 1960 when most nations occupied the middle-income groups.

Table 3 also illustrates that the growth rates for developing countries as a whole were greater in the 1960s and 1970s compared to the more globalised era of the 1980s or 1990s. For Africa and Latin America the last two decades of the twentieth century were lost decades in terms of growth and other human development indicators. Although countries in East and South Asia appear to have sped ahead, we still have ample evidence which suggests divergence in per-capita incomes between rich and poor nations, and growing inter-national inequality.[4] Many of the countries that have experienced this downward spiral in their relative income differentials with the rich world are prominent conflict-affected nations (Angola, Algeria and the DRC), besides having negative or very low growth rates in the 1965-2000 period (see the annex table).

TABLE 3: 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.

The lack of growth in many parts of the developing world not only serves to perpetuate poverty, but helps to breed greater inequality between countries; something that undermines human security in terms of humanity's freedom from want and fear[5], the latter because civil war and conflict is also related to the lack of success in achieving growth. In the past, income inequality was seen to be beneficial to growth in the early stages of development, because inequality was thought to generate more savings as the rich saved more (the Kuznets hypothesis). The conceptual and empirical basis for this

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[3] Hong Kong, Singapore, Taiwan and South Korea.
[4] This does not mean, however, that average incomes in certain affluent groups of countries do not converge to the average for that region (in Europe say).
[5] The original expressions are drawn from President Franklin Delano Roosevelt's address to Congress on 6th January 1941, see http://www. Fdrlibrary.marist.edu/od4frees.html, accessed 29th June 2005.

view has been challenged in recent times by Alesina and Rodrik (1994) and Alesina and Perotti (1996) because of the conflict and political instability that inequality breeds, and because successful East Asian countries such as Taiwan and South Korea began their modern growth experience with low inequality.

2.2   Factors Related to Long-Run Growth Success

A growth accounting exercise explains a country's relative prosperity as depending on its endowments and application of physical capital (machines) and human capital (skilled workers). Yet the productivity of these factors of production can be determined by more long-term considerations. This is what is discussed in this sub-section; where it is presented along the following lines: coordination failures, geography and culture, policies (openness), institutions and endowments and finally the role of democracy.

2.2.1   Coordination Failure

Murphy, Shleifer and Vishny (1989) describe a phenomenon known as the big push which dates back to earlier work done during the closing phases of the Second World War. The idea is that growth requires the adoption of modern as opposed to traditional technologies. The former exhibits increasing returns to scale, whereas the latter does not. What factors drive the adoption of the more profitable new technology? More productive technologies will be adopted by entrepreneurs if they regard it to be profitable, something that occurs only if they expect other entrepreneurs to also adopt the new technology, requiring coordination between sectors. This expectation may not materialise except in an enabling environment of the right policies and institutions (which I explore below). Otherwise, there is coordination failure. The failure to seize upon the profitable new technologies because of pessimistic expectations characterises the situation in many developing countries, and this in turn prevents economic growth.

2.2.2   Geography and Culture

In connection with geographical explanations for economic development, Gallup, Sachs and Mellinger (1998) have argued that a tropical location, particularly a tropical African location, is disadvantageous to long-term growth for the following reasons. Agricultural productivity is lower in sub-Saharan Africa, because of the lack of seasonal variation of the type present in more temperate climates. Secondly, Africa carried a greater disease burden even before the AIDS pandemic, special and virulent types of malaria were found there. Finally, there is a feature of landlockedness, a lot of the population of Africa live at great distances from the sea, making it difficult to transport goods.

Cultural explanations for growth or its absence are neatly summarised by Cuesta (2004). The notion goes back to the celebrated study of Weber who argued that Protestantism inculcated values essential to the development of capitalism. Other economic historians have also attempted to explain the Industrial Revolution in Britain as a consequence of the right value systems prevalent there. The problem with culturalist explanations, as pointed out by Cuesta (2004), lies in the fact that a culture adjudged to be inimical to

growth in the past may now be regarded to foster growth. The best example would be Confucianism, which was thought to promote atrophy a century ago, but is now regarded by culturalists to be beneficial to growth. No one nowadays regards Catholicism to be as growth retarding as a century ago. Certain cultures, however, may promote trust amongst the citizenry that help to promote growth. The problem with both the cultural and geographical explanations for growth is that they are immutable; nothing can be done to change them. I now turn to other explanations for economic growth which are more amenable to policy choices.

2.2.3   Policies (Opennnes)

It has been stressed that more open economies, those with a greater exposure to international trade, grow faster. This argument has been used particularly to explain the high growth rates of East Asian economies. Trade openness is an outcome and not a policy, often an outcome of policies to promote free trade and competitive industrialisation. The highly influential Sachs and Warner (1995) paper argued that countries that were more open (based upon a number of openness indicators) grew faster than countries that were not open, hence creating pre-conditions for poverty reduction.[6] Rodriguez and Rodrik (2000) have convincingly demonstrated that the Sachs and Warner (1995) study suffered from sample selection bias and that some openness indicators could be highly correlated to other indicators of good governance or institutional quality. As an example of the first problem, countries in sub-Saharan Africa failed to be counted as open as most of them had state monopolies controlling the export trade. This is not true because "open" economies such as Indonesia also had state monopolies in petroleum, for example. Secondly, another indicator of the lack of openness, a black market premium on the exchange rate could be highly related to institutional quality (corruption, regulatory capacity). Most damaging of the Rodriguez and Rodrik critique of Sachs and Warner's assertion that openness promotes growth is the fact that an Africa dummy variable capturing the special effect of Africa on cross-national growth could be substituted for the two crucial openness indicators that contributed significantly to growth. More recently, Rodrik, Subramanian and Trebbi (2004) show that institutional quality, specifically the rule of law, has greater explanatory power than openness in explaining long-term growth. This result has been criticised by Glaeser et al. (2004) who argue that another policy: initial levels of skills in the economy (human capital) best explains long-term growth, and in turn also contributes to superior institutional quality and demands for democracy. This brings us to the next argument: are institutions or the endowments of the economy more significant in predicting its long-term growth prospects?

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[6] The indicators are: (a) non-tariff barriers cover less than 40 percent of trade, (b) average tariff rates are less than 40 percent, (c) the black market premium was less than 20 percent, (d) the economy is not socialist and (e) the government does not control major exports through marketing boards.

2.2.4   Endowments and Institutions

Murshed (2004) presents evidence that developing countries with a large mineral type natural resource endowment (measured by their GDP share or share in total exports) have tended to have low growth rates, compared to resource poor countries, since the 1970s, notwithstanding a handful of success stories like Botswana.[7] Natural resource rents can make corruption, predation and rent-seeking a more attractive option. This incentive is greater the weaker the environment of law and contract enforcement. A rich mineral type natural resource endowment, where ownership and production is concentrated may therefore produce poor institutions. Malfunctioning institutions may then retard growth. A related problem concerns the allocation of entrepreneurial talent, as analysed in Murphy, Shleifer and Vishny (1991). The idea being that talent can focus either on production or predation. This decision is a function of the relative returns to these two activities; predation may be more attractive when there is a wealth of natural resource rents. Recent empirical studies also confirm the independent importance of institutions in determining economic performance as measured by the levels of per-capita income. We have currently rich data on government capacity (Kaufmann/ Kraay/Zoido-Lóbaton 2002). The rankings are for voice and accountability, political stability, government effectiveness, regulatory quality, rule of law and control of corruption. They extend from –2.5 at the lower end of the spectrum, to 2.5 at the upper end. The implication also is that a positive score is good and a negative score is below average. The scores are highly correlated with per-capita income.[8] Most developing countries, particularly low-income nations score negatively in these areas. Easterly and Levine (2003) present evidence based on cross-country econometrics that a mineral natural resource endowment, a poor geographical (tropical) location and an excessive mortality rate (disease burden) does retard economic development but via *institutional quality* as measured by Kaufmann, Kraay and Zoido-Lóbaton (2002). Similarly, bad economic policies and choices also hinder economic development via institutions. Consequently, institutions and institutional functioning are the crucial link between resource endowments, geography, policies on the one hand and economic outcomes on the other hand.

Auty and Gelb (2001, Table 8.1) construct a typology of states based on whether they are homogenous or factional (several ethnic groups), as well as benevolent or predatory. A benevolent state, whether homogenous (Indonesia, North-East Asian countries) or factional (Botswana, Malaysia) tends to maximise social welfare, invest in infractstructure and human capital. Above all a reliance on market forces, and competitive industrialisation of a variety not relying on state subsidies, tends to emerge in the benevolent state. A predatory state promotes rent-seeking, lobbying and uncompetitive industrialisation. The line of reasoning adopted in the Auty-Gelb (2001) typology does, indeed, go a long way in explaining the development successes of the past

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[7] Note, however, that the historical evidence regarding natural resource abundance suggests that many of these countries like the United States, Canada, Australia and New Zealand have done well in the past. The resource curse is a more recent phenomenon.

[8] This illustrates the reverse causality or endogeneity problem that exists between institutions and growth. Good institutions may promote growth, but growth also leads to better institutional functioning.

forty years, but we are left wondering what determines the emergence of either of the two models and their associated institutions of governance? The current economic literature points out to several sources of institutional determination, some of which may be related to natural resource endowment; see Murshed (2004) for a more detailed literature survey.

Authors such as Acemoglu, Johnson and Robinson (2001) date back poor (or good) institutional determination to at least a century ago, and the pattern of colonialisation. They distinguish between two types of colonies. The first group corresponds to parts of the new world settled by European migrants, as in North America and Australasia. The second group refers to tropical developing countries, today's third world. The idea is that better institutions, especially property rights and the rule of law, were embedded in to the first group.[9] In the second category of colonial countries, an extractive pattern of production was set up. This extractive and exploitative pattern of production is also the legacy of colonialisation, malign colonialisation in these cases. Clearly, this pattern was more prevalent in some parts of the world, particularly in Africa and Latin America, the Belgian Congo is cited as the worst example. The latter's contemporary counterpart, the Democratic Republic of Congo (DRC) has probably the worst growth experience on record. As the extractive state is expropriatory and predatory, bad institutions emerge and become entrenched even after independence, and a predatory equilibrium emerges. The important question that remains unanswered is why does de-colonialisation, and the opportunities it provides for policy changes, not alter the destiny of an extractive economy? It does in some, but not others. Secondly, despite the saliency of the colonial phase in history, many developing nations have had a collective experience prior to, and after, colonialisation that must have also shaped institutions. In East Asia, South Asia, the Middle East and North African regions of the developing world, well functioning institutions of good governance existed well before the advent of colonialisation, and European colonial powers merely adapted pre-existing administrative institutions. The work of Acemoglu, Johnson and Robinson (2001) is therefore mostly applicable to sub-Saharan Africa, Latin America and the Caribbean.

Another strand of the literature builds on the link between inequality and mineral type resource endowment, see the work of Sokoloff and Engerman (2000), as well as Easterly (2001). Commodity endowments of the mineral or plantation variety tend to depress the middle-class share of income in favour of elites, as in Latin America. The idea being that these elites, in turn use their power, identical with the forces of the state, to coerce and extract rents. When different groups compete with another for these rents, the rent-seeking contest can lead to even more perverse and wasteful outcomes than when elites collude. The important point made by Easterly (2001) is that small elite-based societies do not have a stake in the long-term development of the land. Unlike in middle-class dominated societies, publicly financed human capital formation and infrastructural development falls by the wayside, hence depressing growth prospects. The reason is that mass education promotes growth, although it eventually leads to power shifting away

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[9] The authors argue that the mortality rate amongst Europeans is what determined whether Europeans settled a colony or not.

from elite groups. Education is costly, but it results in a private benefit for the educated (higher life-time income), as well as an all-important growth enhancing public benefit. The benefits from the latter effect also accrue to oligarchs. This may induce the selfish elite to redistribute income as it allows the capital-constrained poor to obtain an education and contribute to rapid national economic development, even though this means the eventual loss of power for the oligarchy through democracy. The important point is that a tiny oligarchy may be the most disinclined to redistribute income. A smaller and extremely wealthy elite group is most likely in mineral and plantation rich economies. Before concluding this section it is worthwhile noting that many of the causal mechanisms related to the contribution of endowments and institutions to growth are similar to their relationship to the causes of conflict, as will be discussed in section 4.

2.2.5   The Role of Democracy

There are two questions of interest here. First, does democracy assist economic growth; secondly, what economic factors underlly transitions to democracy? With regard to the question, as Tavares and Wacziarg (2001) point out it can work in both ways. Democracies retard growth by:

- Hindering investment in physical capital by favouring labour over capital and by reducing wealth and income inequalities. This is not always true, contemporary third world democracies, and classical 19th century democracies with property qualifications protected capital (oligarchic interests) against labour.

- Democracies encourage public consumption: large government

- Dictatorships insulate themselves from lobby groups (Singapore, Taiwan).

- Democracies may produce greater market distortions and lower trade openness.

Democracies may promote growth if:

- Inequality is bad for growth.

- Dictatorships are predatory also: Mobutu in Zaire.

- Human capital accumulation: democracies foster universal access to education.

- Autocratic states may also want to expand the public sector (former Soviet Union).

- Democracies may produce fewer market distortions and have greater trade openness.

Tavares and Wacziarg (2001) find that democracy raises growth by raising human capital accumulation and lowering income inequality, the latter is a less robust result. They also find that democracy lowers growth by reducing physical capital accumulation, and by expanding the size of government (the latter less robustly). Note that the channels between democracy and growth are both indirect and numerous. Much depends on which channel we wish to focus on.

With regard to the second question, as to what economic factors contribute to democracy emerging, we have two views in the literature. One view, stated in Przeworski and Limongi (1993) may be regarded as the exogenous theory of democratisation. According to this view, most poor low-income countries are dictatorships (at least until recently), and most rich countries are stable democracies. What happens in between (typically within the $1001-4000 per capita income range in 1985 PPP dollars) is a random draw, some countries become democracies because it is imposed from the outside following defeat in a war, or more typically because they were compelled to embrace democracy following economic crises, as with most developing nations in the post-cold war period. Most developing countries are imperfect democracies having characteristics of both democracies and autocracies (anocracy), because they combine weak checks on the executive and imperfect rule of law with regular elections.[10] The alternative to this hypothesis is Lipset's (1960) famous *modernisation* hypothesis, which is an endogenous view of democracy. According to this theory democracy is an inevitable outcome of economic progress. At high levels of income the demand for democracy is unstoppable. Similarly, at high levels of income the risk of societal conflict and civil war is less likely, as people have more to lose (relative to their prospects for gain) from violent struggles over resources. The Lipset view certainly seems to fit the historical experience of Western democracies. Furthermore, according to Glaeser et. Al (2004) it may even describe the experience of successful countries in the third world. In the 1960s, all developing countries were dictatorships. Some countries, as in East Asia, pursued enlightened policies and invested more in human capital, unlike in Africa. This raised the income of the Asian countries, they grew faster and most (except say Singapore) have become democracies, because of pressures from their more affluent and educated populations; not because of external forces as in Africa. Thus, both the endogenous and exogenous theories have their applicability in different parts of the world.

3   CONFLICT

3.1   Definitions & Stylised Facts

As mentioned in the introduction, most wars nowadays are civil wars that mainly occur in developing countries, chiefly low-income nations. Globally, the number of countries embroiled in civil war may be declining since the mid-1990s, as are the total number of fatalities per year associated with war. But the average duration of civil war may well be rising. It has to be borne in mind that the collection of data in connection with conflict duration, fatalities and incidence is fraught with difficulties. First, and foremost, there is no consensus regarding the methodology regarding data collection. There are difficulties in accurately gauging the year in which a civil war starts, and when it terminates. But this

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[10] Many data sets on democracy exist. To give one example, the Polity data set gives a democracy score of between 0-10 (with Western democracies scoring 10). A truly meaningful democracy is only arrived at with a Polity score of 8. The autocracy data set gives an autocracy score of between -10 and 0. The Polity 2 score is a combination of both autocracy and democracy, and a reflection of a country's democratic or non-democratic status. See www.cidcm.umd.edu/insr/polity.

task is not as daunting as the considerably greater problems associated with measuring fatalities in civil wars. This is because there are no official statistics in this regard. The researcher is left to scavenge for sources, ranging from newspaper accounts to reports by the Red Cross (ICRC) and human rights organisations, and then use his/her personal value judgement regarding the authenticity of these different and varying sources.[11] Figures regarding casualties can vary considerably from source to source.[12] Additionally, definitional problems arise; some figures include civilian casualties, other data sources only report battle related deaths. In summary, conflict related data on fatalities is gathered via a rough and ready process, and can be unreliable.

Be that as it may, conflict like other political-economic phenomenon requires measurement. The quantitatively minded conflict research community has increasingly placed its faith on the Uppsala data set, see Harbom and Wallensteen (2005) and Eriksson and Wallensteen (2004) for recent descriptions.[13] The Uppsala data set defines several types of conflict: inter-state (between nation states), intra-state (civil wars), intra-state internationalised (where foreign powers are involved) and extra-state (wars of national independence, which mostly ended in the 1970s). A conflict is defined as minor if there at least 25 battle-related deaths per year for every year in the period. It is intermediate when more than 25 battle-related deaths occur per year for every year in the conflict period, and more than 1000 deaths in the entire conflict, but with less than 1000 per annum. War is defined to describe situations with more than a thousand battle-related deaths in each year of the conflict. Any particular conflict can slip between these categories as the war escalates and wanes over time.

The salient stylised facts regarding recent civil wars are:

1. In 2004 there were 30 armed conflicts in 22 different locations. Note that there can be more than one civil war in a country in a given year, as in India (Kashmir, Manipur, Bodoland, Tripura, Assam and the Maoists) and Sudan (Darfur, Southern Sudan).
2. According to Harbom and Wallensteen (2005), reporting the Uppsala data-set, there have been 118 conflicts in 80 locations since the end of the cold war in 1989.
3. Since 1946 the peak in the number of armed conflicts was either in 1991 or 1992 according to the above source. When we refer to another data source cited in Fearon (2004) the peak was found in 1994! This is in an illustration of the definitional non-consensus as well as difficulties in gathering political science data. The Uppsala data-set also depicts an upward trend in the number of civil wars during the 1974-91 period. The period prior to that was the period of the high cold war (particularly in the 1950s). That era shows no discernable single upward or downward trend in civil war, except that the total number of conflicts

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[11] Contrast this with the tight, comprehensive and universally coherent methodology in household surveys used across the world to measure living standards. Compared to the methodology involved in counting casualties, household surveys are considerably more scientific.

[12] For example, the human cost of the war in the Democratic Republic of the Congo (DRC).

[13] The data are available at http://www.ucdp.uu.se and at http://www.prio.no/cwp/ArmedConflict.

were fewer. Thus it would be incorrect to deduce that the cold war was particularly bad for civil war initiation in the global South, as the Human Security Report (2005) alleges. It does seem that the number of intra-state wars has been declining since the mid-1990s, a point that is repeatedly stressed in the Human Security Report (2005). This may be more due to conflict terminations rather than a fall in the start of new civil wars (Hegre, 2004). True, the number of conflicts in sub-Saharan Africa, the Balkans and the former Soviet Union have declined through judicious outside intervention and aid (greater in per-capita terms in the Balkans). This does not, however, provide grounds for complacency regarding the dangers of civil war; the world, especially Western powers and aid donors, need to be vigilant regarding conflict risk and its consequences for poverty. The tone of the human security report may be excessively optimistic in this regard. We live in a world where, to give a few examples, the conflict in Afghanistan is not abating and is spilling over to Pakistan, the civil war in Iraq has assumed the proportions of 'war' as defined by the Uppsala data-set in terms of fatalities; the Maoist insurgency in Nepal is far from being resolved, the stand-off between the government and the Tamil rebels in Sri Lanka looks increasingly fragile, and the uneasy peace in Southern Sudan is juxtaposed by one-sided outside support for the 'rebels' in Darfur.

4. In terms of recent regional trends in conflict, the Human Security Report (2005) states that the Balkans and the former Soviet Union is quiet at present, political violence is on the wane in Latin America, in sub-Saharan Africa there appears to be a decline in conflict post-2002 (end of the war in Angola), in the Middle East-North Africa and the Asia Pacific region the number seems to be falling since 1980, and in South Asia the picture has not improved (Kashmir, Afghanistan, Nepal).[14]

5. The Human Security Report also reports the total incidence of conflict in different countries. In terms of the total number of conflict years, bearing in mind that there may be more than one conflict inside a single nation-state, which leads to more than one conflict in a single calendar year, the list is led by Burma with 232 conflict years since 1946. India follows with 156 years, Ethiopia has the third highest incidence of conflict with 88 years, and the UK with 77 years is in sixth position just behind Israel (79 years).[15]

6. The Human Security Report also reports a downward trend in the number of battle related deaths because of the nature of low-intensity warfare and smart weapons. Figures on war time casualties in the context of intra-state wars are notoriously unreliable, and can vary considerably from source to source. The figures for total war deaths for recent years (post 1998) as reported in the Human Security Report is, however, disputed by the World Health Organisation, who put them at a much higher level (more than ten times higher in some cases).

7. As far as duration or the number of years the average civil war lasts is concerned, this may be showing an upward trend, see Fearon (2004). He puts the average

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[14] This last point about South Asia is not made in the Human Security Report as it lumps South and Central Asia together.

[15] Interestingly, the UK is involved in the greatest number of inter-state wars (21) during the 1946-2003 period, ahead of France (19) and the USA (16).

duration of a civil war at sixteen years in 1999. He also argues that civil wars with sons of the soil dynamics (mainly wars of secession) last longer, as do wars where a lootable commodity such as alluvial diamonds or illicit drugs (coca or heroin), or a capturable commodity in terms of rent such as oil is concerned. The latter point is also emphasised in Ross (2004). Lootable/capturable commodities provide an excellent source of finance, that helps prolong war (even offering an opportunity for profit for some), and sons of the soil dynamics often imply non-negotiable or difficult to resolve war aims.

3.2   Typology

Civil wars are not a homogenous phenomenon. Their origins, motivations and objectives do vary. A useful guide to the typology of conflict can be found in Besançon (2005) and Fearon (2004). Hirshleifer (1995) describes conflict between small homogenous groups, where each rival faction chooses between peaceful production, defensive measures against attack and predation on others. This, perhaps, is most akin to inter-tribal warfare seen since time immemorial, but is of limited relevance to modern civil war. I shall confine the discussion on the typology of conflict into four broad types: genocides, revolutions, secessionist wars and internationalised wars.[16]

  o *Genocide*: this is a systematic attempt to physically eliminate a particular ethnic, religious or linguistic group. These episodes, brutal though may be, are relatively short. The state is usually an active participant in these actions. Besançon (2005) has suggested that they are correlated to significant income inequalities between groups.

  o *Revolutions*: these involve attempts to overthrow the state by armed force. Revolutions can be sub-divided into coups d'etat and rebellions. Military coups, as has been pointed out by Fearon (2004), tend to have the shortest duration of the various types of conflict. Rebellions against the state, for example the Maoist insurgency in Nepal, or the peasant revolts in Peru and Colombia, are of the type modelled analytically by Grossman (1991). In that model the state (or its agent) is a tax farmer. It is the peasant who is subjected to this tax, and chooses between peaceful production, joining the state as a soldier or tax farmer, or rebellion against the state. Rebellion is favoured when the tax burden is excessive and/or when the state's ability to coerce becomes weaker.

  o *Secessionist Wars*: refer to areas struggling to separate from the centre, usually containing sons of the soil dynamics, such as with Tamil separatism in Sri Lanka, and Aceh in Indonesia. As Fearon (2004) has emphasised, these wars have a long duration, and furthermore they are most likely to be associated with the intractable indivisibilities of the type described by Wood (2003).

  o *Internationalised Conflict*: refers to a situation when neighbouring countries or other external powers are involved. This is not necessarily a separate category in

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[16] Besançon's (2005) typology involves genocides, revolutions and ethnic wars. Ethnic identities and dimensions can, however, run across all varieties of civil war. I am, therefore, eschewing this categorisation. This definition of pure ethnic conflict is more likely to be applicable to 'inter-communal' conflict such as between Hindus and Muslims in India and Christians and Muslims in Indonesia. The state is usually not an explicit combatant in these, even if it takes sides. Therefore, they are not civil wars.

the typology of war. Often a civil war zone abuts another country. Sometimes rebel groups flee to, or seek succour in, neighbouring countries, as with Maoist insurgents in Nepal. Powerful nations adjoining the conflict may interfere in the conflict process, as was the case with Indian involvement in the Sri Lankan civil war. The great powers may also get involved in active peacekeeping, as with the British in Sierra Leone. The civil war may involve a variety of other states, some neighbouring and others from far, who take active sides in the civil war, as in the case of the Democratic Republic of the Congo (DRC).

In practice, the typology of civil war enumerated above can be mixed. Many examples of contemporary conflict do not fit neatly into only one of the boxes described above, striding across more than one category. Rebellion and secessionist motives may sometimes go hand in hand, as can be argued to be the case in the conflict in Aceh in Indonesia.

3.3   Causes of Conflict

In broad terms, the contemporary rational choice economics literature offers two possible explanations for the origin of conflict. They are, respectively, grievance and greed; see Addison and Murshed (2002a) and Murshed (2002) for summaries. 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 may be lootable, in producing inter-group rivalry for their control; a competitive process 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.[17]   In practice both motivations may co-exist simultaneously; it is difficult to motivate groups to fight one another without historical grievances even when valuable resource rents are at stake. The abundance of natural resources can also generate grievances over how these rents are spent (Indonesia and Nigeria). Also, wars motivated mainly by grievances can also degenerate into greed, once war creates 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 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). A country's economic status or relative affluence dominates all other factors in predicting the risk of a start of civil war. 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. This does not mean, however, that we can ignore factors related to greed and grievance. Poverty also plays a major role in this regard, as it makes soldiering less unattractive and predation a more obvious survival strategy. Finally, the outbreak of conflict always requires events that actually trigger war; these may internal or external.

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[17] For example, it is easier to steal alluvial diamonds compared to Kimberlite (deep mine shaft) diamonds. Similarly, it is more feasible to exact rent by obstructing a land oil pipeline than when the oil is offshore.

To organise the discussion in this sub-section I will first summarise the role of relative deprivation (grievance), then go on to the contest over resource wealth (greed) before synthesising these arguments.

3.3.1   Relative Deprivation

Relative deprivation—the perception by one or more parties that they are unjustly treated—is a major 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. Research on conflict has emphasised the importance of *horizontal* or inequalities between groups, classified by ethnicity, religion, linguistic differences, tribal affiliations[18] etc., as sources of conflict, see Stewart (2000) for example. This concept should be distinguished from *vertical* inequality, which is inequality within a homogenous group. The conventional measures of inequality such as the Gini or the Theil index pertain to vertical inequality.   Three dimensions of horizontal inequality are discussed below:

- o *Discrimination in Public Spending and Taxation*. Discrimination in the allocation of public spending, and unfair tax burdens, lead to serious unrest. Grossman (1991) develops 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 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, as in Burundi. 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.
- o *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[19] has been achieved between contending ethnic groups. Inclusion in the political process is more crucial to preventing this type of conflict, which are not usually civil wars, as the state is not involved.

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[18] For example, Hindus-Muslims, Muslims-Christians, Catholics-Protestants, native American-European settler, white-black, Hutus-Tutsis, upper caste-versus-lower caste in South Asia.
[19] Note that income equality is different from asset equality, which concerns wealth.

o *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 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. Also, as Rodrik (1999) emphasises, countries with weak institutions of conflict management, as well as high income inequality are less able to withstand economic shocks and experience growth failure. They are also more prone to the risk of civil strife and war, since their weak institutions, which are further weakened by shocks and lower growth, are unable to contain the resulting social pressure and distributional conflict.

The measurement of horizontal inequality presents a number of challenges, as no consensus exists in this regard in the literature. It is a relatively new concept, and the associated metric has not been properly worked out. For example, the use of Gini coefficients to measure between group horizontal inequality is hugely problematic, because these different cultural or ethnic groups are not homogenous in size, and have rich and poor segments within each group, making it difficult to array equal sized population groups on the basis of income or some other socio-economic indicator. See Murshed and Gates (2005) for an example of these problems of trying to measure group inequalities based upon caste in the context of Nepal. Horizontal inequality is best measured in the sense of a gap with a certain national average, see Murshed and Gates (2005) who pioneer this concept, with its first application it to Nepalese data.[20] For example, the human development index or HDI gap with the national average HDI or the HDI for the capital city can be regarded as the reference point for national achievement.[21] Within country, disaggregated data on the human development index is collected for many countries in Asia and Latin America. This data is usually available spatially--- across provinces or districts. But we can impute group inequalities from spatial data, because certain ethnic groups chiefly reside in certain areas. In a few instances, household surveys also explicitly ask questions about the ethnicity of households. If that is the case, we can compute differences (gaps) in income, poverty incidence, educational and health status across ethnic groups. Such data, for example, is available in Indonesia.

Two further points are worth emphasising at this juncture. First of all, horizontal inequality has to be measured at the level of the nation state. In a sense it refers to cross-sectional variation *within* a specific country. It does not really lend itself to cross-country comparisons, unlike the impact of natural resource rents on conflict risk, as discussed in the next sub-section. The data in different countries on horizontal inequality is

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[20] Analogies with the poverty-gap measure are appropriate.
[21] The human development index is an un-weighted average of income per-capita, educational status and longevity.

embryonic, subject to methodological differences, and no single homogenous metric for horizontal inequality with universal applicability exists as yet. Even if that were to eventually emerge, horizontal inequality will remain essentially a gap measure, and that will limit cross-country (as opposed to within country) comparisons. The application of horizontal inequality is likely to continue at the level of detailed quantitative country-case studies.[22] Secondly, most nation states do not keep detailed or systematic data on group inequalities (say between Catholics and Protestants, Hutus and Tutsis, Muslims and Christians etc.) because of obvious political sensitivities. However, an ethnic question in household surveys will go a long way in helping us to enumerate data on inter-group differences in socio-economic achievement.

Nevertheless, horizontal inequalities have been found to significantly affect conflict in Nepal and Indonesia, to cite two such examples. Nepal has had a Maoist armed insurgency since 1996. Based upon data on human development indicators at the district level in the year of the conflict onset in Nepal in 1996, Murshed and Gates (2005) find that HDI gaps with the capital Kathmandu, as well as greater landlessness, significantly explain the intensity of conflict-related fatalities across different districts in Nepal. Initially, at least, the conflict was greatly localised in Nepal, and insurgent incidents had local dimensions[23]; this is explained by HDI gaps with Kathmandu and a greater incidence of landlessness.

Indonesia is plagued by several conflicts, some of which are secessionist in nature, others are inter-communal. Four resource natural rich provinces: Aceh, Riau, East Kalimantan and Papua have wanted to separate from the federation. Brown (2005) argues that the socio-economic achievements (in terms of jobs and education) of the native Acehnese declined during periods when GRDP (regional income) rose substantially. This rise in GRDP took place because of the presence of oil and gas in Aceh. For example, poverty in Aceh rose by 239% during 1980-2002, whereas it fell by 42% in the rest of Indonesia. In Aceh, income (GRDP) per capita is 39% greater than the Indonesian average but expenditure per head, after redistribution through the fiscal system, was 18% below the national average. In Papua (rich in copper and silver), income per capita was 65% above the national average before the fiscal system came into operation. After taxes and subsidies expenditure is 9% below the Indonesian average and there is a higher incidence of poverty, particularly amongst indigenous peoples. Thus, these separatist tendencies, in whole or part, are a reflection of the dissatisfaction in some of the richer and natural resource endowed areas with the federal authority's redistributive policies taxing richer provinces to subsidise poorer regions.

Ethno-communal violence can be partly explained by differences in district health status, see Mancini (2005). Tadjoeddin (2003) finds interesting results in this connection. Widening gaps in socio-economic achievements contribute to ethnic violence amongst

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[22] This sort of detailed case-study cannot, at the present moment, be conducted in many conflict-ridden countries in Africa because of data paucity pertaining to horizontal inequalities.

[23] At first, the Maoist insurgency was highly localised, attacks took place on government targets, including say banks were mortgages were held. Gradually as the Royal Nepalese army became more and more involved, Maoist insurgents moved around the country to engage the army.

Muslims and Christians in Malaku. Whereas, converging indictors have contributed to Dayak-Madurese violence in Kalimantan. The latter point has also been emphasised by Besançon (2005).[24] What matters is the perception of change in the relative position of each ethnic group's rival community. All in all, horizontal inequality as a cause of conflict can work in two directions, the rich may initiate conflict to extricate themselves from the relatively poor (the rage of the rich), or the poor may rise up in revolt against the rich (the rage of the poor). The former may be more likely in cases where a region suddenly discovers it can exist viably on its own resources, thus wishing to secede and not hand revenues over to the rest of the country. The latter is more likely to manifest itself in rebellions, and attempts to overthrow an oppressive state (the classic revolutionary cause).

3.3.2   The Contest over Natural Resource Rents

Collier and Hoeffler (2002, 2004) find empirical evidence showing that a relatively high dependence on primary commodity exports is highly correlated with the risk of civil war. This finding is in the context of cross-country regression analysis. This result has had immense influence in the media and the policy community, including in Ministries for Overseas Development (and among relevant Ministers). Natural resources constitute 'booty' and this fact has been used to emphasise the greed or *criminal* motivation for civil war (see also the papers in Berdal and Malone, 2000). Certain varieties of resources are more easily captured: they may be lootable such as alluvial diamonds (in Sierra Leone, Angola) available at river beds using artisanal techniques or illicit drugs such as coca in Colombia; or obstructable like an oil pipe line; see Ross (2003) on these issues. Belligerents in the wars of natural-resource rich countries act in ways that are closer to what Mancur Olson (1996) called 'roving bandits'—who have no encompassing interest in preserving the state or its people but are simply intent on loot—than to 'stationary' bandits who take control of the state and seek to maximise their own profit by encouraging stability and growth in their new domain. Civil wars motivated by the desire to control natural resource rents are also akin to "warlord competition", a term that owes its origins to the violent competition between leaders attempting to control economic resources in the context of medieval European cities, Skaperdas (2002).

How valid is the simple version of the greed hypothesis in empirical work? Ross (2004) and Fearon (2005), among others, point out that the widely accepted Collier and Hoeffler (2002) finding that the share of primary commodity exports as a proportion of national income significantly contributes to the risk of conflict (in a logistic regression) is not an econometrically robust finding. In other words, this cross-country result will not withstand variation in sample and data coverage. There is also a problem with the variable definition itself. The term *primary* commodity includes both agricultural commodities and minerals/fuels, but crucially excludes illegal substances (coca and heroin) as well as illegal alluvial diamonds. Illegal gemstones and drugs are arguably more crucial to financing rogue conflict entrepreneurs in a greed based conflict; their omission is a serious flaw. Of course, excuses based on data paucity can always be made. But even before we begin to consider the search for more appropriate natural resource

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[24] Besançon (2005) argues that ethnic conflicts are more likely as the disparities between groups diminish.

rent data for conflict analysis, it is important to understand that the famous Collier-Hoeffler pronouncement about civil wars being mainly greed thinly masked as grievance does not survive serious scrutiny. Fearon (2005) re-estimates the Collier and Hoeffler (2002) model using country-year data on conflict rather than five year averages. His method of multiple imputation does not lead to Collier and Hoeffler's (2002) list-wide deletion, because in the latter case arbitrary five year averages result in twenty seven out of the seventy nine conflict cases being dropped due to missing data on right-hand side explanatory variables. Fearon (2005) does, however, find that one legal primary good, oil, does significantly contribute to the risk of civil war because he argues that it constitutes a capturable prize besides undermining state capacity to resist rebels. Lootable or obstructable mineral resources may not be the initial cause of civil wars, but once started these wars tend to persist for a long time, as the rents from these commodities help to finance war besides being a source of profit (Fearon, 2004; Ross, 2004).

Lujala, Gleditsch and Gilmore (2005) go a step further in refining the *lootable* natural resource rent data. They focus on data on the production and deposits of alluvial or secondary diamonds, sometimes referred to as conflict diamonds. They do find that these types of diamonds significantly increase the risk of civil war incidence and duration. These are mainly ethnic civil wars rather than other forms of civil wars. This risk has been greater since the end of the cold war. Non-lootable deep mine shaft diamonds, however, lowers the risk of civil war onset. In the same vein, Humphreys (2005) argues that in some instances it is better to utilise data on oil deposits rather than oil exports to study the resource-civil war nexus.

There may be mechanisms that exist in-between natural resource endowments and the risk of civil war, and help to explain why an abundance of certain types of resources actually leads to war. As pointed out by Humphreys (2005), these can have two empirical econometric implications for cross-country studies. One is that certain variables, the conflict dependent variable or the natural resource explanatory variable, needs to become more finely defined. For example, the conflict (dependent) variable may have to be disaggregated along the typological lines suggested above, or the natural resource variable may need to be refined in accordance with the suggestions in the previous paragraph. Secondly, a variety of other causal mechanisms could be tested by interacting it with the natural resource rent independent variable. Two promising explanations, among a plethora proposed in Humphreys (2005) include an undiversified economy (sparse economic interactions imply less economic interdependence and a greater scope for conflict, this really means low growth along the lines of Lipset's modernisation theory) and weak state capacity (kleptocracy versus relative benevolence). [25]

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-

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[25] Empirically diversification can be measured by per-capita GDP levels or the share of manufacturing (or its converse agriculture) in GDP, and state capacity through measures such as Polity 2 scores.

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 matters: 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.

Dunning (2005) makes an argument, based on a two period-two agent-two sector game theoretic model, about choices by rulers regarding the future growth path of the economy in the context of natural resource abundance. He 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 it 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 high growth rendering policies, as well as policies aimed at equalisation and poverty reduction to contain political opposition. 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. 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.

The greed versus grievance dichotomy is a useful entry point into the debate about the causes of conflict. But for these forces to take the form of large-scale violence there must be other factors at work, specifically a weakening of what Addison and Murshed (2001) call the 'social contract' (see also Murshed, 2002). This is similar to the state capacity arguments made above. Therefore, while rents from capturable resources do constitute a sizeable 'prize', 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, including resource rents, 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 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 (Indonesia and Zimbabwe); and the expropriation of land and resource rents (Angola, Sri Lanka 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. Hegre et. Al. (2001) point 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 the transition to democracy when state capacity is weak, and also in fledgling and imperfect democracies (anocracies). A final complexity in fatally weakening social contracts was the interaction of these 'domestic' factors with external events, notably the Cold War, which provided finance and ideological succour to ruling elites and rebels (notably in Central America, Central Africa, and the Horn of Africa). 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. And the collapse of the social contract, and the resulting civil war, nearly always has a strong fiscal dimension: the state is increasingly perceived to exercise favouritism in public spending and to tax unjustly.

Greed is rarely the sole cause of conflict. Addison, Le Billon, and Murshed (2002) construct a game-theoretic model of contemporary conflict involving the competition for resources combined with historical grievances. In addition to resource rents, grievances also play their part in fuelling conflict by explaining inter-group non-cooperation and serving to lower the cost of participation in conflict (see appendix 1). Conflict can increase because of heightened intrinsic grievances, or because there are more lootable resources. Additionally, they distinguish between two main types of resource exploitation: *point resources*, which mostly (but not exclusively) involve the *extraction* of non-renewable resources (minerals), require less labour input and are geographically concentrated; and *diffuse resources*, such as those which mostly involve the *production* of renewable resources (crops), require large amounts of labour, and are spread geographically (see also Murshed, 2004). Occasionally, coffee/cocoa exporting economies are also classified as point because coffee is often marketed like minerals, and coffee/cocoa based economies are characterised by a (rentier) political economy, similar to point-source economies. The same argument could be applied to the production and export of illicit drugs (heroin, coca) where data for these exist.

In summary, the type of economy can matter in explaining either or both civil war onset and its duration. Certain mineral based economies, and countries where there is a substantial production of crops from which illegal drugs are produced are at a greater risk, although the mineral wealth *per se* does not cause conflict. As we will see in the next section, diffuse economies also widely experience conflict. As far as the competing greed versus grievance hypotheses are concerned, they may be complementary explanations for conflict. Insofar as they do provide alternative views, a fair test for their relative explanatory powers can only be conducted at the level of a quantitative country-case study, because cross-country comparisons of horizontal inequality are largely meaningless. Indonesia's resource rich regions that have had separatist conflicts with the federal government offer us a striking contrast in trying to gauge the relative explanatory power of the greed versus grievance explanations for conflict. When viewed via the lens

of a detailed quantitative case study, the grievance and horizontal inequality explanations dominate any greed motivation. Yet, when looked at as one or more observations through the prism of a cross-country study, Indonesia's resource-rich reasons are examples of a modified form of the greed explanation (resources helping to prolong the duration of conflict and encouraging secession). It would appear, therefore, that the greed explanation for conflict duration and secessionist wars works in cross-sectional studies, but has to make way for grievance-based arguments in quantitative country-case studies. Grievances and horizontal inequalities may, after all, be better at explaining why conflicts begin, but not necessarily why they persist.

Before moving on to the next sub-section it should be re-iterated that a review of the empirical literature on the causes of conflict tells us that the most robust and significant predictor of conflict risk and its duration across all studies is some indicator of economic prosperity such as income per-capita within a cross-section (of countries or regions) where average income does vary. This is because at a higher income people have more to lose from the destructiveness of conflict (Lipset, 1960); and higher per-capita income implies a better functioning social contract, institutions and state capacity. Above all, there is less poverty; masses of impoverished individuals provide the best catchment areas for rebel recruitment.

3.4 The Fragility of Peace Agreements

In most situations, war is irrational and inefficient (not Pareto optimal) as pointed out by Skaperdas (1992, 2002) because it destroys part of the protagonists initial endowment. Also, there is no shortage of external efforts to mediate peace between warring factions in a civil war, especially by Nordic countries such as Norway and Finland. Yet, as Walter (2001) has pointed out, several attempts at negotiated settlements are required before lasting peace emerges. The implication is that many of the arrangements and agreements to end civil war are very fragile. Why is this the case, especially if peace is Pareto optimal? Below, I consider three reasons why this may be the case: the lack of fair division, indivisible war aims and commitment problems to an agreement or peace treaty.

3.4.1 Fairness and Indivisibility

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. This can lead to spoiler groups, usually but not exclusively amongst rebel groups, wrecking a peace agreement because it does not give them enough in terms of cabinet places or other lucrative positions in power. Secessionist wars where territorial sovereignty is contested can also be tricky to resolve. But in other cases, certain common territories can be dear to both sides, and the

sharing rules proposed for them are not acceptable, as is the case with Har'm El Sharif or Temple Mount in Jerusalem. Compared to these, disagreements over sharing economic resources, such as oil revenues, may require less challenging solutions.[26] For example, it can be argued that separatist tendencies in Indonesia have eased following the decentralisation of the fiscal system, which allows regions to keep more of locally generated natural-resource revenues. While the federal government is keen to preserve the territorial integrity of Indonesia, there are no indivisible symbols akin to Jerusalem.

The theoretical literature on sharing and division offers us several insights. For example, Brams (2005) and Brams and Taylor (1996) point 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, as these arrangements will tend to break down. Sharing in this regard must be equitable in several senses, as well as being 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) and Brams and Taylor (1996) require design and implementation by an outside agency, a mediator and/or external power.

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, which includes natural resource revenues and the imputed value of post-conflict overseas development assistance. Cake cutting, in a two player situation, implies one person doing the cutting and the other player having the right to call a halt to the slicing procedure. The application of the envy-free criterion, however, 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 categories of post-war aid, and the dividing up of land that may require a great deal of parcelling.[27]

A second situation considered by Brams (2005) and Brams and Taylor (1996) 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*. The adjusted winner mechanism not only satisfies the standard efficiency and equity criteria, but additionally has a further equitability condition,

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[26] A counter-example may be in the Sudan. Although the North and South had reached agreement earlier, the discovery of oil meant that the civil war re-kindled and was finally resolved via oil revenue sharing

[27] If 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. This is also like saying that those who dislike risk will do their best to achieve a minimum utility threshold.

because it ensures that each player gets more than its share of the bargaining chips initially allotted to them. For example, in a two person case, each player will get more than 50% of the total value attached to all the issues and goods at stake. 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. In general, players will remain honest, and not risk losing on high valued issues by undervaluing their personal bid for them out of their total allocation of bargaining chips. 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 matters, where values diverge considerably, tend to be winner take all based on which side places the higher value. A 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) and Brams and Taylor (1996) consider allocating several indivisible issues. 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.[28] 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 2005. A criticism of the method adopted in that Iraqi election, for example, could be that the electoral mechanism is not envy-free for the minority Sunni community, and has therefore not enlisted their full cooperation. Furthermore, the power sharing mechanism devised does not have the properties of the equitability adjustments of the adjusted winner mechanism, which would give each side a larger share of the outcome than is strictly proportional to the bargaining chips it receives. One could even argue that the Sunnis received a smaller allocation of the total bargaining chips for negotiation than is warranted by their historical position. Despite the fact that the historical Sunni domination in Iraq was disproportionate to their (minority) population share, the present US-backed dispensation makes them feel vulnerable and disproportionately disadvantaged because of the lack of

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[28] This is, however, consistent with one person having everything, and another person nothing in a two person world.

perceived constitutional safeguards for special groups. To them, there is a palpable lack of consensus and consultation. The country is, consequently deeply mired in civil war.

Generally speaking, 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' type arrangements that eschew winner take all outcomes.

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) and Brams and Taylor (1996) involving mediation and refereeing, making the outcome resemble 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 or spoiler groups with more pessimistic views about their opponent's strategies. This will depress their value of any share of the post-war pie. Indivisibilities regarding the issues contested, and the post-war pie, also lower the expected worth of any share of the post-war settlement, making self-enforcing compromises difficult. In more extreme cases, as with virtually all contemporary civil wars, this may require external intervention in the form of aid to increase the total size of the potential peace dividend, 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.

3.4.2   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. We may describe this as the lack of recognition of path dependence. This may lead to problems of commitment to negotiated settlements even when Pareto optimal, that is when each side is better off in a state of peace. A commitment or credibility problem implies that the signal, or treaty, establishing peace is simply 'cheap talk', and by implication the arrangement is not self-enforcing. Why is 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.

Sometimes agents or groups cannot commit credibly because there are no institutions or mechanisms upon which to anchor promises. In that situation they are not believed, even when they are honest. 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 some of the parties involved (Addison and Murshed, 2002, see appendix 2). In situations of poverty and high uncertainty, agents may 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 central to the credibility of peacemaking. Breaking an agreement damages *future* reputation, but with a high enough discount rate it might pay to renege for the sake of temporary gain because the cost comes in the future (see appendix 2).

Solutions lie in directly increasing the cost of reneging on peace agreements and devising commitment technologies through institutional innovation, particularly at the international level. The latter is particularly important because many contemporary civil wars do not have self-enforcing negotiated settlements. Without external intervention, and the sanctions that it entails in terms of peacekeeping, as well as the palliative effect associated with aid, peace is just not sustainable. Improving the quality of peacekeeping forces is an urgent need, as is increased commitment to bringing war criminals to trial. Peacekeeping also needs to be more legitimate and acceptable, and the current ventures involving cooperation between local peacekeepers (as in the case of African Union interventions) and major aid donors (the European Union) is a step in the right direction. More adequately mandated and efficient United Nations involvement can enhance the acceptability of peacekeeping operations. Sanctions, aid and trade restrictions and resource redistribution, if effective, might help to eliminate conflict. But external sanctions, themselves, must not be perceived by potential combatants as cheap talk. In other words, the external sanctions must *also* have credibility. If the cost of effective sanctions is too high, or it yields little security benefit to the sponsor as is likely to be the case for conflicts in distant lands, there is under-production of the sanction, making it more likely that it really is cheap talk. Perhaps, that is why we do not see the end of many civil wars in Africa, where large territories as in the DRC are policed by relatively small and weakly empowered peacekeeping forces. Civil wars in Europe, such as in the Balkans, by contrast are quickly concluded, with a huge relative (to population and geographical size) commitment in peace keeping forces and aid. The will and resources to end more distant wars by external powers may be strictly limited. In the ultimate analysis, credible commitments to peace must be found in effective domestic constitutional restraints and delegation. These domestic commitment technologies require deep interventions in institution building, something that is notoriously difficult to achieve because of the persistence of vested interests in conflict.

4   Growth, Polity, Endowments and Conflict

I have argued that war, by destroying part of the initial economic endowment of belligerents, is bad for growth. Inter-state wars, as during the Second World War, may have, however, freed up pent-up aggregate demand in the presence of excess capacity, and may even have raised the level of aggregate demand, increasing aggregate economic activity. This situation is unlikely in supply-constrained low-income countries that are plagued by civil war nowadays. Koubie (2005) points out that although war is bad for economic growth in a cross-section of developing countries (1960-89), the growth rates in the post-war period are positively correlated to the duration and intensity of civil war. This means that civil wars lower contemporary growth, but raise post-war growth prospects due to a 'phoenix' factor, or because a change has been effected in elite interests in post-conflict societies. The study, however, fails to take into account the endogeneity between growth rates and conflict incidence, as poor countries face a greater civil war risk, as well as having higher growth prospects because of low income.

There are several obvious similarities between the causes of growth failure and factors affecting the risk of conflict: a substantial point resource endowment being the most palpable feature. Also, analogies can be drawn between the coordination failure game that explains the absence of a big push in growth, and the game describing commitment failure to peace agreements. Also, stable democracies and autocracies lower conflict risk, just as democracy's impact on growth contains positive and negative channels. But more fundamentally, the lack of economic growth significantly contributes to the risk of conflict in low-income nations because by perpetuating poverty and increasing inequality they breed grievances and enhance horizontal inequality. Even the foremost exponents of the greed hypothesis (Collier et al, 2003) concede that poverty has an important part to play in engendering conflict. Institutional malfunctioning is hugely important in explaining both the lack of long-term growth and the emergence of conflict. Whether the cause of growth failure in the long-run is attributable to geography, culture, endowments or wrong policies they all impact on growth rates via institutional functioning. Similarly, irrespective of whether the causes of conflict are greed or grievance (or both), the outbreak of violent conflict requires institutional failure in conflict management, something which has been referred to in the previous section as either poor state capacities or the failure of the social contract.

To get an empirical feel for some of the channels mentioned above, a descriptive look at the data may be in order. We compare growth rates, the combined democracy and autocracy score known as Polity 2, endowment type and conflict intensity or incidence in selected developing countries during the period 1965-2000. This is done selectively in Table 4, and more fully in the annex table. The Polity score is a proxy for institutional capacity[29], which is coded 1 for autocracies (those with an autocracy score below -4), 3 for democracies (for democracy scores above 4) and 2 for anocracies that have both democratic and autocratic characteristics (with scores of between -4 and 4), and the endowment typology (based upon a country's principal exports, which is subject to

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[29] There are no time series data on other governance indicators, such as provided by Kaufmann et al (2002).

change) integrates economic typology to institutional quality and conflict occurence (measured by conflict incidence and intensity), and then on to growth.[30]

Table 4: Conflict Years, Growth, Polity and Economic Typology in Selected Countries

Country	Conflict incidence in years, 1960-2000	Most frequent regime type	Annual average Per-capita income Growth rate 1965-1999	Economic typology
Burma (Myanmar)	177	1	1.5%	Diffuse, Point
India	104	3	2.4%	Manufacturing
Ethiopia	81	1	-0.3%	Coffee/Cocoa
Philippines	59	1;2;3	0.9%	Diffuse, Manufacturing
Iraq	57	1	-3.5%	Point
Angola	43	1	-2.1%	Point
Iran	41	1;2	-1.0%	Point
Algeria	37	1;2	1.0%	Point
Chad	36	1	-0.6%	Point
Colombia	35	3	2.1%	Coffee/Cocoa
Indonesia	32	1	4.8%	Point, Manufacturing
Guatemala	31	1;2	0.7%	Coffee/Cocoa
Sudan	31	1;2;3	0.5%	Diffuse, Point
South Africa	31	2	0%	Point
Mozambique	27	1	1.3%	Diffuse
Uganda	23	1;2	2.5%	Coffee/Cocoa
Sri Lanka	22	3	3.0%	Diffuse, Manufacturing

Sources: Conflict years at http://www.prio.no/cwp/ArmedConflict; UNCTAD data base and Murshed (2004) for the typology of the economy; Polity data at www.cidcm.umd.edu/insr/polityand World Development Indicators (2002) for growth rates.

Table 4 gives us 17 countries with the highest conflict incidence since 1960[31], along with their average annual long-term growth rates of per-capita income accompanied by the typology of the economy and the most frequently occurring regime type. Note that countries can have more than one year of civil war in any given calendar year if there are several conflicts taking place within the nation simultaneously. Burma, India, Ethiopia, Philippines, Iraq and Angola (also Israel) have had more than one conflict per annum in a 41 year period reported in table 4. Note that incidence does not imply anything about conflict intensity, something which is measured by fatalities (see the definitions given in page 11). The highest conflict intensity per-country is reported in the annex table.

Only five of these high conflict incidence nations reported in Table 4 have a per-capita income growth rate in excess of 2% per annum in the long-term: Indonesia, India, Sri Lanka, Colombia and Uganda. Generally speaking, poor growth performers have more conflict years in Table 4. Even in these cases, it might be possible to construct counter-factual analyses to demonstrate that conflict adversely affected growth. In Indonesia and India, conflicts have been highly localised in the context of vast populations, so as to not affect the entire economy, also Indian growth rates were very low prior to 1990. In

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[30] I do not propose any *direct* econometric investigation, which would be fraught with endogeneity and reverse causality problems

[31] I have excluded Israel with 49 years, as it is a rich country when one excludes the Palestinian territories, as well as Cambodia (36 years) and Yemen (23 years) because of the paucity of economic data.

Uganda, there was a sharp and remarkable growth recovery in the 1990s post-conflict era making up for earlier lost years. Only four economies (India, Philippines, Sri Lanka and Mozambique) have not been point-source or coffee/cocoa economies (the Burmese conflicts are fuelled by trade in illegal substances which cannot be reported here, because of data paucity). This lends some support to the arguments made above regarding empirical regularities regarding conflict across a cross-section of countries.

The annex table gives us a fuller picture of the relationship between economic typology, regime typology, growth rates and the presence or absence of civil wars measured by its highest intensity. Countries are type-cast as point-sourced, coffee/cocoa, diffuse or manufacturing based on their principal exports in 1985 or the nearest year in the 1980s. In reality, of course, export patterns change, as is described in the fourth column of the annex table. But we do need some descriptive standard upon which to anchor economic type. Growth failures, described as average growth in per-capita income below 2% per annum during 1965-99 are most common in point-sourced and coffee/cocoa economies. Note that only four point-sourced and three coffee/cocoa based economies have had growth rates of over 2% per annum in per-capita income. Botswana and Indonesia are the best performing point-sourced economies. Among diffuse economies, growth successes are more frequent (in about nine out of twenty nine cases). Manufactured goods exporters do best in terms of growth.

Many point-sourced and coffee/cocoa economies that are growth failures (with long-term growth rates under 2% per annum on an average) have tended to fall into conflict, as well as having polities that are not democracies. The annex table indicates that only three point-sourced countries and four coffee/cocoa economies did not descend into some form of civil war. Diffuse economies also have conflict; examples of the high incidence of civil wars occurring in diffuse economies are in South Asia, the Philippines and Burma, as well as Mozambique and Zimbabwe in Africa. In total, eight out of thirty diffuse economies have avoided civil war, a record that is better than for point-sourced and coffee/cocoa based economies. Two prominent examples of growth failures not experiencing civil war are Tanzania and Zambia. Notwithstanding India, manufacturing economies are least likely to experience outright civil war. Perhaps this is because they have the best growth rates and institutional quality. They also probably have the most diversified economies, and are able to withstand the commodity price and national income fluctuations associated with the staple trap (reliance on a single commodity), which make economies more prone to the risk of conflict

It is very discernable that India, Sri Lanka and Colombia are the stable democracies in the post 1960 era that have had civil wars, including high intensity conflict. India, in particular, is interesting because of its very high democracy score, and having the highest number of total conflict years (due to the multiplicity of civil wars in India) after Burma, which has not been a democracy in the period under question. All the transitions in regime type from autocracy to anocracy to democracy (during 1960-2000) are described in the annex table, column 6. It is clear that multiple switches in all directions are possible, and not just from autocracy to democracy. Nevertheless, only 5 out of the seventeen nations with a high conflict incidence have ever been democracies with a

democracy score over 4. Three points about democratic transitions need to be reiterated here. First, most developing countries were not democracies before the end of the cold war. The end of the cold war heralded democratisation due to outside pressures, but many of these countries descended into anocracy. Secondly, few developing countries are fully established and meaningful democracies in the sense of having democracy scores of 8 or above. Costa Rica is the best example of a full democracy in the global South, followed by India. Even Colombia has sometimes slipped down to a score of 7. Finally, the system of characterising democracies and autocracies in the Polity data-set has its limitations. There seems to be a systematic bias in describing Arab countries as autocracies. Democracy, even stable democracy, does not guarantee the absence of armed conflict, both of the secessionist and rebel varieties, as the examples of India, Colombia, Sri Lanka, the Philippines and others indicate. Autocracies also fall into conflict, as table 4 and the annex table points out. Nevertheless, stable autocracies such as China and Singapore have avoided civil war, as did Taiwan and South Korea which became democracies recently. Despite prominent outliers such as India, Colombia, and Saudi Arabia, most conflict prone countries are neither stable democracies nor autocracies (see column 6 of the annex table), lending support to the Hegre et. Al (2001) finding that conflict risk is greatest when regime types are in transition.[32]

While we can never be sanguine about the true nature of the causes of conflict, it does seem to occur more frequently in non-manufacturing and non-diffuse economies. This does not mean, however, that conflict does not occur in diffuse-agricultural economies, if these economies are poor, because that explains the undiversified nature of the economy and shallow economic interaction adding to conflict risk. There does seem to be a distinctive positive association between conflict and growth failure.

5   Conclusions and Policy Recommendations

The importance of the growth and intra-state conflict nexus cannot be overemphasised. The lack of growth prevents poverty reduction and the achievement of the MDGs. Similarly, poverty and low growth help to increase the risk of conflict, as individuals have less to lose from conflict in low income situations, and because poverty helps to supply conflict warlords with ready recruits. Consequently, the security and development agendas can never be dichotomised. I have summarised the causes of growth failure in the long-term, and this can have certain similarities to the causes of civil war. Also, the recent economic history of the world provides ample evidence of diverging average incomes between rich and poor countries. This rising inequality between rich and poor nations also adds to global insecurity. As far as the causes of conflict are concerned, both the greed and grievance hypotheses can have some validity. But the operation of either or both these motivations for civil war require the breakdown of the institutions of conflict management, which is something I have referred to as the break-down of the social

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[32] India, Sri Lanka, Colombia, Papua New Guinea, Trinidad and Tobago and Venezuela are stable democracies which have experienced conflict, the first three have high intensity conflict. Costa Rica, Jamaica and Mauritius are examples of stable democracies that have avoided civil war. Similarly, Mauritania is a stable autocracy that has not had civil war. Iraq and Saudi Arabia are examples of stable autocracies that have failed to avoid civil war.

contract (Addison and Murshed, 2001). The greed explanation for conflict is mainly applied in cross-country econometric studies. Its validity as a direct causal mechanism behind the risk of civil war onset has recently been brought into serious question. The relationship between conflict onset and natural resource revenues, must work through other mechanisms, such as a weakening social contract and withering state capacity. But the abundance of lootable mineral resources or illicit drugs can help to perpetuate already existing civil wars, and the prevalence of conflict seems greater amongst mineral and coffee/cocoa exporters compared to other agricultural and manufactured goods exporters. The latter two categories of economies also seem to experience higher growth rates. This does not mean that undiversified agricultural economies are not at conflict risk. The grievance explanation for contemporary civil war has been found to be dominant in detailed conflict case studies. Grievances can be historical, but it can have a measurable and quantitative counterpart in group inequalities in socio-economic achievement. Here, the neglected dimension of inter-group or horizontal inequality, measured by factors such as human development gaps can have a great deal of explanatory power. It is useful to remind ourselves that the single most robust explanatory variable for conflict risk is (low) per-capita income (implying growth failure), as it acts as a proxy for institutional quality. One of the greatest contemporary problems in connection with conflict and civil war is the instability of most peace agreements. This appears to be true, despite widespread attempts at conflict mediation all over the world. Peace agreements need to be strengthened via commitment technologies, and better peace arrangements involving fair division of the post-war economic and political pie.

Finally, I turn to a number of policy recommendations:

- o The goal of international security cannot be achieved unless there is development and poverty reduction. The freedom from fear cannot thrive in the absence of the freedom from want. Growth can reduce conflict risk in four ways. First of all, by lowering poverty it provides fewer ready recruits for conflict entrepreneurs. Secondly, growth can ultimately lower inequality, and this can also reduce conflict producing inter-group or horizontal inequality. Thirdly, growth creates denser sets of interaction between economic agents, resulting in situations where there is much to lose to from conflict. Fourthly, growth can improve institutional functioning, creating better chances of peaceful conflict resolution; even producing situations ripe for the emergence of high quality (and endogenous) democracy.
- o Poverty reduction and achieving the MDGs also lower conflict risk.
- o Improvements in institutional quality and good governance are important for both growth and conflict prevention (or peaceful conflict resolution). Historical experience suggests that not all resource-rich countries (in North America and Australasia, for example) have had low growth rates; it all depends on institutional quality (Murshed, 2004).
- o The greed explanation as a direct and immediate predictor of conflict risk (in a cross-section of countries) has been largely called into question. Grievance explanations work best at the level of the individual country-case study. In this connection the best measure of horizontal inequality are gaps in human development indicators. The United Nations with organisations on the ground

such as country-UNDP offices should be even more engaged in gathering regional, spatial and group human development indicators, especially in Africa.

o Conflict avoidance, as well as other developmental considerations such as truly pro-poor growth create a hugely important link to *inequality*, as this determines the venality of society, its attitude to poverty and its approach to broad based human capital formation. Consequently, strategies of poverty reduction by themselves are insufficient, attention has to be focussed on lessening inequality if sustainable growth is to take place and be truly pro-poor. Also, the reduction of group or horizontal inequalities is important in outright conflict prevention in low-income countries characterised with lootable resources and weak institutions.

o Lessons can be learned from why some countries avoided conflict and others did not, despite having similar initial conditions. It is instructive to contrast cases of success such as Botswana and Malaysia after the 1970s on the one hand, against failures such as the Democratic Republic of Congo (Zaire), on the other hand. Those in the former group all: (a) redistributed income, because of political exigencies, via policies of asset redistribution; and, (b) invested in infrastructure and human capital. Botswana's economy is a lot less diversified compared to Malaysia, providing us with one instance of a high growth, conflict free undiversified economy relying on a capital-intensive natural resource (Kimberlite diamonds).

o Cutting off sources of finance for belligerents, or military intervention on the side of one of the protagonists in war may end conflict, but does it produce lasting peace? Failing peace agreements that characterise the conflict ridden world at the moment deserve greater attention than superficial and patchy attempts to end war. Despite copious external intervention of the peaceful (Norway, Finland) and forceful (UK and the USA) varieties, most peace agreements do not stand a very high chance of being sustainable and self-enforcing. To avoid this requires:

• Fairer peace treaties that treat all belligerents equitably in the peace settlement; a good example of unfair division is the dispensation of power amongst different communities in Iraq following the 2003 invasion, which by disadvantaging Sunnis relative to their historical position, has helped Iraq descend into a complicated and multi-factional civil war, and

• Strengthening the anchors (or commitment) to the peace treaty itself by making it more self-enforcing, requires substantial aid and effective sanctions against spoiler groups. This is expensive, and donors may be more willing to do this nearer home (Balkans) compared to expensive interventions in distant lands (Africa).

o A major challenge is effective post conflict reconstruction. Otherwise conflict may break out again. Some issues in this connection include:

• We need to exercise caution when employing the term *post-conflict* reconstruction. As indicated earlier, peace treaties ending conflict are unstable, and solutions directly imposed by the West are even more

fragile. Consider events in countries like Afghanistan and Iraq, where despite the installation of pro-Western governments, and the commencement of reconstruction involving Western donors, there is little sign of the end to war, or more importantly there are no indications of a sustainable and self-enforcing peace.

- Conflict distorts the economy, making activities with short-term returns such as services more attractive compared to areas which require long-term investment such as agriculture or manufacturing, see Addison and Murshed (2005). Analytically, the effect is similar to Dutch disease problems that distort the economy towards greater non-traded, relative to traded, goods production. The post-conflict economic recovery may be similarly lop-sided. To avoid this, selective policies of subsidies to the productive sectors have to be followed, see also Murshed (2001).

- The economic reconstruction must be broad based, and address the horizontal inequalities that helped engender conflict in the first place. This means, among other things, pro-poor growth which redistributes income towards the poor.

- Aid fatigue usually sets in after the first few years of donor involvement in post-conflict situations, either because the war does not really end or because of the conventional reasons why aid fatigue arises. In the early stages of donor involvement, relatively large sums are promised by donors. But these funds cannot always be absorbed by war torn economies in early 'post-conflict' phases. One idea is to create an aid trust fund, where aid monies can be lodged for future use, instead of reverting back to donors because of the inability to spend currently committed funds.

o In connection with natural resource rents, particularly oil revenues in the context of the current temporary rise in crude-oil prices, the notion of revenue management is a popular policy proposal. Essentially, this involves the creation of societal trust fund, whose principal aim is to minimise the kleptocratic siphoning-off of revenues and revenue windfalls by ruling elites. Several points deserve mention in this connection:

- Commodity price stabilisation funds may be considered, as commodity prices are very volatile and subject to over-shooting; fluctuating national incomes as a result of commodity price volatility leads to government revenue and growth collapses in developing countries with its conflict consequences.

- Monies in the trust fund should be mainly used for public investment, in activities such as education and infrastructural development, rather than consumption.

- The above will require developed fiscal and budgetary institutions that are open and transparent; otherwise cynically concealed kleptocratic practices may re-emerge through abuses of trust fund monies.

- The main aim should be to create a diversified economy, and avoid the staple trap (reliance on a single commodity). The staple trap can also

exist for agricultural-diffuse economies. A diversified economy is better able to withstand economic shocks, as not all sectors (prices and quantities) decline simultaneously. Economic diversification implies competitive industrialisation strategies. And, ultimately economic diversification emanates from economic growth.

o There are always two sides to the corruption coin, the demand side and the supply side; this principle applies also in the case of resource rents. Large bribes to governing elites, as well as the violent manipulation of governments in the global South by companies and states in the global North in order to gain commercial advantage by their extractive multi-nationals was very common during the cold war, and have not quite withered away in our uni-polar world.[33] The list of manipulated (mainly resource rich) developing countries is endless, ranging from Chile, Iran, Saudi Arabia to Chad and Angola. There should be initiatives that restrict the political activities and payments of bribes by extractive multinationals registered in the global North. Two proposals are currently doing the rounds in policy circles:

- Publish what you pay, as advocated by Global Witness. This is meant to work via company regulation in the countries where they are incorporated, so it is a mainly a matter of corporate governance in developed countries, where interest in this regard is marginal.
- The extractive industries transparency initiative, proposed by the UK government, as a voluntary code of conduct for participating host countries and companies. Its voluntary nature can promote opportunistic behaviour.

Both initiatives can work if there is enough political will to ensure their success, which is not completely unlikely because of pressures from developed country based development non-governmental organisations (NGOs).

o Finally, extractive industries should exercise greater corporate social responsibility in countries that they operate in, at least seeing to it that natural resource rents do not become a source of the *increased* grievances and horizontal inequality that produce conflict.

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[33] Historically, multinational firms such as the British and Dutch East India companies literally established empires to further their commercial interests and profitability, even running formidable military establishments (armies and navies) to protect their trading interests.

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APPENDIX 1: Natural Resource Conflict[34]

There are two parties to the conflict: the government, *G*, and the rebels, *R*. The government's utility is denoted by *U* and the rebel's utility is given by *V*. There are two states: one more peaceful (*P*) and the other associated with greater conflict (*C*), with probabilities π and $1 - \pi$, respectively. Note that in our model, the states of conflict or peace are *relative*. The probability of either state is in turn affected by an action (*a*) by the government and effort (*e*) by the rebels. These are also the strategic variables employed by the two sides to the conflict. The probability of the good (peaceful) state π rises with the input of action and effort by the two sides, but at diminishing rates. These actions or efforts are drawn from a continuum of peacefulness (all out war occurs when $\pi = 0$). In this way, we capture situations in which belligerents may prefer low-intensity conflict to total war. One can imagine a range of activities by one or both sides if they wish to promote peace, including a greater willingness to compromise, devote resources to peaceful economic development, or a greater willingness to respond to calls for peace by third-parties. Efforts to seek peace entail costs for each party (for example measures to increase security or redress inequalities in public spending) and these enter as negative values in the respective utility functions. To capture the contest over natural resource wealth, we introduce war booty (*B*) into the payoff or utility from belligerency of both sides. The more booty is available, the less likely is the belligerent to seek peace. Booty can take the form of natural resource rents, although in the cold war era it could have included aid to belligerents.

The expected utility of the government side is given by

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

Where U^P and U^C denote utilities or payoffs in peace and conflict respectively, weighted by the probabilities of the two states. Payoffs are exogenous whereas the strategic choices are endogenous. *T* is the revenue obtained by government in peacetime (and could also include foreign aid). *F* is the payoff during war, and B^G stands for any booty accruing to the government. *C* is the cost function of undertaking the action, *a*, which increases the probability of peace, π. Note that the pure payoff or utility in a state of war, *F* is less than in times of peace, *T* due to the costs of war.

Turning to the rebel side, we have

$$V = \pi(a,e)V^P(D) + (1-\pi)(\cdot)V^C(S+B^R) - \theta E(e) \tag{2}$$

V^P and V^C denote the rebel's utilities in peace and conflict respectively, weighted by the probabilities of the two states. *D* is the income obtained by the rebels in peacetime and *S* is the payoff during war, which may be supplemented by war booty, B^R, *D > S*. *E* is the cost of effort, *e*, which increases the probability of peace, π. A shift parameter, θ affects the rebel cost function ($0 < \theta < 1$). A rise in θ could be caused by an increase in poverty

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[34] Based on Addison, Le Billon and Murshed (2002).

or a greater perception of injustice; it serves to increase the cost of peaceful effort and raises the belligerency of rebels. The parameter θ could also reflect the income gap between the government and rebels.

The nature of the non-cooperative Cournot-Nash game played by the two sides involves two stages. In the first stage the payoffs or utility levels from the two states of nature to both sides are calculated. During the second stage the strategic choices regarding levels of *a* and *e* are made. Both sides move simultaneously. In the non-cooperative or Cournot-Nash game played by the two sides both sides move simultaneously. The solution to the model involves backward induction given sub-game perfection. Each side, therefore, maximises its own utility function with respect to its own choice variable. For the government it implies maximising utility, Equation (1), with respect to *a* as shown by

$$\frac{\partial U}{\partial a} = \pi_a \left[U^P(\cdot) - U^C(\cdot) \right] - C_a = 0$$

Rebels maximise Equation (2) with respect to *e*

$$\frac{\partial U}{\partial e} = \pi_e \left[V^P(\cdot) - V^C(\cdot) \right] - \theta E_e = 0$$

Note that in the equations above, each side will equate its marginal benefit from exercising their own strategic choice to the corresponding marginal cost. The levels of *a* and *e* chosen will be sub-optimal and below the Pareto optimal levels, see Addison, Le Billon and Murshed (2002).

It can be shown that an increase in grievance can raise levels of conflict chosen by the rebels, with the government following suit. Similarly, an increase in available booty (lootable resources), B^G or B^R can increase equilibrium conflict.

APPENDIX 2: Credibility and Reputation in Peace Making[35]

Let there again be two sides, a government and a rebel group. One side is either tired of fighting or it has an interest in peace, the government in our example. The other side, the rebels, may have something to gain from the resumption of fighting such as rents from resources. Both sides have entered into a peace deal. The government side derives no benefit from breaking this agreement. Consider the utility function of the rebel group (U^R):

$$U^R = -(1/2)c_1 w^2 + E\theta c_2 (w - w^e) \tag{3}$$

where $c_1 > 0, \quad w, w^e, \theta, c_2 \geq 0.$

$\theta = B + \varepsilon, B \geq 0$

$\varepsilon = \varepsilon_{t-1} + \eta, \eta(0, \sigma^2)$

In equation 3 and what follows the utility functions correspond to expected utilities. The expectation operator (E) is introduced for the value of a random variable within the function, and a superscript e is used for an expectation of a variable on which information is incomplete. The first term on the right-hand side of equation (3) is the pure cost of conflict in quadratic (squared) form, where w represents warfare or belligerent behaviour and c_1 is the parameter measuring the direct cost of warfare. The negative sign before it is to indicate the cost or disutility from fighting. The quadratic form of the cost indicates that the costs of war rise more than proportionately as the level of w rises, implying that the low intensity conflict is 'less low'. The parameter (1/2) is introduced for analytical tractability. The second term on the right hand side of (3) indicates the gains to the rebels from reneging on a peace agreement, or the benefit from a 'surprise' war, where the level of actual conflict (w) exceeds the level of conflict expected by the opposition, the government in our example (w^e). In other words, the spoils of war can only be wrested via the ruse of peaceful intentions. The parameter c_2 captures the magnitude of this effect, the higher is c_2 the greater is the gain from feigning to make peace first and looting later. It may also be viewed as a subjective measure of *greed*. In addition to this the greater the abundance of lootable resources, or rents to be extracted, the higher is the gain from surprise war. This is measured by the expected value (E) of the parameter θ which captures the rent (B) from disputed natural resources such as oil, diamonds and so on. It could include financial contributions from non-residents, and during the cold war period fungible military aid from superpowers. The rent or booty is subject to random shocks (ε) with a first-order auto-regressive process resulting in shocks persisting for some time. As far as the gains from surprise war are concerned it is part of a process of income generation for the rebels (y^R) described as:

$$y^R = y^N + E\theta (w - w^e) \tag{4}$$

Here the income of rebels is equal to some fixed or natural rate (y^N) as part of the peace deal plus an additional component arising from surprise warfare. The income associated

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[35] Based on Addison and Murshed (2002b).

with the natural rate is received with certainty in the state of peace. In contrast, the gains from the surprise element are based upon capturing the prize, and driving a wedge between actual and expected levels of belligerence.

The rebels maximize their utility in (3) subject to w, which leads to optimal w*:

$$w^* = E\theta c_2 / c_1 \tag{5}$$

This result can be interpreted in the following manner: the equilibrium choice of warfare is greater the higher is the element of pure avarice, c_2, the higher the expected availability of lootable resources and other sources of finance, θ, and the smaller the direct cost of fighting, c_1.

As far as the government (G) is concerned, a simple version of their utility function is:

$$U^G(w^e / w) = -(w - w^e)^2 \tag{6}$$

The meaning of (6) is that government's utility is declining in surprise warfare, when w diverges from w^e. In case actual fighting levels are in excess of the government side's expectation it is clearly caught less than fully prepared for war. In the event that actual fighting is less than expected, the disutility arises because the government has to engage in unforseen military expenditure that lowers other public expenditure or increases its borrowing/aid requirement. Maximising (6) with respect to w^e yields:

$$w = w^e \tag{7}$$

The government reacts at the same time as the rebels. Substituting (5) into (3) for the rebel group, and (7) in to (6) for the government, gives us:

$$U^R = -(E\theta c_2)^2 / 2c_1$$
$$U^G = 0 \tag{8}$$

This is the outcome when the rebels have an incentive to renege on an announcement of complete peace, but it does not have a first mover advantage. Both announcements by the rebels and expectations formation by the government take place simultaneously. What if the rebels pursue a policy of no warfare with w = 0? Then:

$$U^R{}_P = 0$$
$$U^G{}_P = 0 \tag{9}$$

This is the Pareto optimal outcome and superior to the result in (8). In the optimal state there is no war, and $y^R = y^N$.

Now if we assume that the rebels enjoy a first mover advantage and can announce complete peace and then engage in surprise warfare. In this case the actual and expected

levels of warfare would diverge, w = $E\theta c_2/c_1$ and $w^e = 0$ in equation (3). This involves cheating on a pre-announced commitment:

$$U^R{}_C = (E\theta c_2)^2 / 2c_1 \qquad\qquad (10)$$

Note that the rebels' utility is greater in this case than under (8). At this juncture we introduce reputation. The reputation of the rebels is all or nothing, and it hinges on its behaviour in the past. Consider the following rule. The opposition believes the announcement if the rebels' acted honestly in the previous period and kept its commitments. Otherwise it is not believed, and its actions are predicted to be that of a rogue group. This implies that there exists a future cost of cheating in the context of a low intensity conflict. The cost is equal to the loss of reputation and the inability to create surprises, but this cost (C) is in the future and is given by:

$$C = -((E\theta c_2)^2 / 2c_1) \qquad\qquad (11)$$

Hence the penalty for cheating (which is the loss of reputation) appears to exactly equal the gain from cheating in (10). But the punishment comes in some future period. If the rebel group discounts this *future* loss, the cost of cheating is always less than the gain from reneging on a fixed commitment. Typically in conflict situations in many developing countries the future is heavily discounted. The upshot is that the socially optimal policy of zero warfare (w = 0) is *time inconsistent* or incentive incompatible, and thus will not be a possible outcome. The optimal policy of no conflict is infeasible, as it is not consistent with the incentives and expectations of the parties to the game. More particularly, the government knows it is in the interests of the rebels to renege on a pre-announced policy of total peace, and thus will not find any peace offering credible. Furthermore, there will be a range of possible conflict intensities that are feasible equilibrium outcomes, and multiple equilibria are possible. Peace agreements of this type are not self-enforcing.

We now consider external policies to reduce conflict. Much of this implies manipulating the attitudes of the rebel leadership via sanctions, arms controls, trade restrictions and foreign aid. Consider a reformulated version of the rebel utility function where we embed external conflict prevention policy parameters, and an additional cost component associated with an implicit or explicit international agreement:

$$U^R = -(1/2)c_1(M)w^2 + E\theta c_2(A,T)(w - w^e) - c_3(S)(w - w^e) \qquad\qquad (12)$$

where: $c_1 > 0, c_2 \geq 0, c_3 \geq 0;$ $c_{11}, c_{31} > 0;$ $c_{21}, c_{22} < 0$

Also: $c_1(M) \geq c_1 \forall M, c_2(A,T) \geq c_2 \forall(A,T), c_3(S) \geq 0 \forall S$

In equation (12) the *behavioural* parameters of the rebel group, c_1, c_2 and c_3 are made functions of actions undertaken by external actors or foreign powers. The objective function of the external actor is not explicitly modelled, except that their own domestic security interests will motivate their actions.

Aid (A) may be utilized by a foreign power to reduce greedy attitudes, c_2. Similarly, trade sanctions (T) on items such as 'conflict' diamonds, money laundering and the activities of foreign entrepreneurs (in supplying arms and finance) might have the same effect. International controls on arms transfers (M) and/or sympathetic assistance from non-residents could be utilized to raise the direct cost of war, c_1.

Another way of reducing conflict and belligerent behaviour is through an international agreement or understanding. The last term in (12) represents such a *commitment technology* or *delegation*, and c_3 measures the costs of reneging on peace agreements as a function of sanctions (S) imposed by other signatories or parties to the agreement. Alternatively, the last term in (12) can be the force or delegated sanction imposed on warring parties by some outside power, such as an effective UN or another multinational peacekeeping force. Maximising (12) with respect to w yields the optimum level of w with commitment (w_c*):

$$w_c^* = (E\theta c_2 - c_3)/c_1 \tag{13}$$

Note that w_c* in (13) is less than w* in (5). These commitment technologies lead to lower levels of warfare when compared to (5). Even though the commitment technologies and sanctions are independent of actual w in (12) for simplicity, our result will hold through if A, T, M and S are increasing in w. There is a *direct* effect of the external sanction or outside commitment technology, c_3. Then we have the *indirect* effects emanating from the manipulation of the behavioural parameters of the rebels. Chiefly, this involves aid and restrictions on the export/import of the rebels' international revenue/finance sources, which lowers c_2. Also, controls on arms transfers and financial assistance from sympathetic outsiders raise c_1. Note, however, that these policies involve costs to outside parties, typically borne by international donors, and they themselves need to be credible.

Annex Table: Economic Category, Transitions in Export Type, GDP Per Capita Growth (1965-99), Political Regime Changes and Highest Conflict Intensity in Selected Developing Countries.

TYPE	Country	First and second exports in mid-1980s	Transition in Export type	GDP per-capita annual average growth rate 1965-99	Polity ID	Highest Conflict Intensity	Growth Failure
Manufacturing	Bangladesh	Woven textile, textile	D;M	1.3	3;2;1;2;1;3	2	Yes
	China	Vehicles parts, knitwear	P;M	6.4	1	0	
	Hong Kong	Manufacturing	M	5.4	n.a	0	
	India	Pearl, clothing	D;M	2.4	3	3	
	South Korea	Ships, clothing	D;M	6.6	3;1;2;1;2;3	0	
	Nepal	Floor cover, clothing	D;M	1.2	1;2;3	3	Yes
	Singapore	Manufacturing	D; P;M	6.3	3;2	0	
	Taiwan		D;M		1;2;3	0	
	Turkey	Clothing, textile	D;M	2.2	3; 2;3;1;3	3	
Diffuse	Argentina	Wheat, oil sees and nuts	D	0.4	2;1;3;1;3	3	Yes
	Benin	Cotton, cocoa	D	0.2	1;2;1;2;3	0	Yes
	Burkina Faso	Cotton, live animals	D	1.1	1;2;3;1;2	1	Yes
	Burma (Myanmar)	Rice, wood	D	1.5	3;1	3	Yes
	Dominican Republic	Sugar, pig iron	D; C P ;M	2.5	1;2;3;2;3	1	
	Fiji	Sugar	D		3;2;3	0	
	Gambia	Oil seeds, vegetable oils	D	0.5	3;1	1	Yes
	Guinea-Bissau	Fruits		0.0	1;3;2;3	2	Yes
	Guyana		D	??	2;1;3	0	Yes
	Honduras	Fruits, coffee	D	0.6	2;3	1	Yes
	Jordan	Fertilizers (crude), fertilizer (manual)	D;M	0.4	1;2	3	Yes
	Lesotho			2.8	3;1;3;2	1	
	Malaysia	Crude petrol, Vegetable oil	D; P; M	4.3	3;2	1	
	Malawi	Tobacco, tea	D	0.6	1;3	0	Yes
	Mali	Cotton, live animals	D	-0.1	1;2;3	1	Yes
	Mauritania	Iron, fish	D	-0.2	1	0	Yes
	Mauritius	Sugar, clothing	D;M	3.9	3	0	
	Morocco	Fertilizers, Inorganic elements	D; M	1.9	1	3	Yes
	Mozambique	Fish, fruit	D	1.3	1;3	3	Yes
	Pakistan	Cotton, rice	D;M	2.7	2;3;1;2;3;1	3	
	Panama	Fruit, fish	D	1.1	2;1;3	1	
	Paraguay	Cotton, oil	D	2.1	1;2;3	0	
	Philippines	Special trans, vegetable oil	D;M	0.9	3;2;1;2;3	3	Yes
	Senegal	Fish, vegetable oils	D;M	-0.4	1;2;3	2	Yes
	Somalia	Live animals, fruit	D		3;1;2;1;2	3	Yes
	Sri Lanka	Tea, clothing	D; C; M	3.0	3	3	
	Thailand	Rice, vegetable oils	D;M	5.1	1;2;1;2;1;2;3	2	
	Togo	Fertilizers, cocoa	D;M	-0.5	1;2	1	Yes
	Uruguay	Wood, meat	D	1.4	3;2;1;3	0	Yes
	Zimbabwe	Tobacco, Pig Iron	D;M	0.9	2;3;2;1	3	Yes

TYPE	Country	First and second exports	Transition in Export type	Growth rates 1965-99	Polity ID	Conflict Intensity	Growth Failure
Point	Algeria	Petroleum products, crude petrol	D; P	1.0	1;2;1;2	3	Yes
	Angola	Crude petrol, petroleum products	D; C; P	-2.1	1;2	3	Yes
	Bolivia	Tin, gas	P	-0.3	2;1;2;1;3	1	Yes
	Botswana	Diamonds	P	7.1	3	0	
	Chad	Cotton, live animals	D; P	-0.6	1;2;1;2	3	Yes
	Chile	Copper, nonferrous ore	P	2.5	3;1;2;3	1	
	Congo-Brazzaville	Crude petrol, petroleum products	P	1.7	2;1;2;3;1	3	Yes
	Ecuador	Crude petrol, coffee	D; P	1.9	2;3;2;1;3	1	Yes
	Egypt	Crude petrol, cotton	D; P	3.3	1	*3*	
	Gabon	Crude petrol, wood	P	0.8	1;2	1	Yes
	Indonesia	Crude petrol, gas	P	4.8	1;3	3	
	Iran	Crude petrol, tapestry	P	-1.0	1;2	3	Yes
	Iraq	Crude petrol, fruit	P;D:P	-3.5	1	3	Yes
	Jamaica	Inorganic elements, nonferrous metals	P; M	-0.2	3	0	Yes
	Liberia	Iron, rubber	P; D		1;2	3	Yes
	Mexico	Crude petrol, petroleum products	P; M	1.5	1;2;3	1	Yes
	Niger	Uranium, live animals	D; P; M: P	-2.3	1;2;3;1;2	1	Yes
	Nigeria	Crude petrol, cocoa	P; C: P	0.0	3;1;2;3;1;2	3	Yes
	Papua New Guinea	Nonferrous metal, coffee	C; P	0.7	3	1	Yes
	Peru	Petrol, nonferrous metal	D; P	-0.3	3;1;2;3;2;FI	3	Yes
	Saudi Arabia		P	-0.1	1	1	Yes
	Sierra Leone	Pearl, nonferrous metal	P	-1.2	3;1;2;1;2	3	Yes
	South Africa	Special, coal	P; D; P	0.0	2;3	3	Yes
	Sudan	Cotton, oil seeds	D; P	0.5	3;2;1;2;3;1	3	Yes
	Syria	Crude petrol, petroleum products	D; P	2.3	2;1	3	
	Trinidad & Tobago		P; D: P	1.8	3	1	Yes
	Tunisia	Crude petrol, clothing	P; D: P	2.7	1;2	3	
	Venezuela	Crude petrol, petroleum products	P	-0.8	3	1	Yes
	Zaire (Dem. Rep of Congo)	Copper, crude petrol	P; C ;P	-3.4	2;1;2	3	Yes
	Zambia	Copper, zinc	P	-2.0	2;1;3;2	0	Yes

TYPE	Country	First and second exports	Transition in Export type	Growth rates 1965-99	Polity ID	Conflict Intensity	Growth Failure
Coffee/cocoa	Brazil	Coffee, petroleum products	C; D; P; M	2.4	1;2;3	0	
	Burundi	Coffee, tea	C; D; C	0.6	2;1;2;1;2	3	Yes
	Cameroon	Coffee, cocoa	C; P	1.1	1;2	1	Yes
	Central African Rep.	Coffee, wood	C; P; C	-1.1	1;3	0	Yes
	Colombia	Coffee, petroleum products	C; P	2.1	3	3	
	Costa Rica	Coffee, fruit	C; D; M	1.4	3	0	Yes
	Cote d'Ivoire	Cocoa, coffee	C	-0.7	1;2	?	Yes
	El Salvador	Coffee, sugar	C; D; C	-0.3	2;1;2;3	3	Yes
	Ethiopia	Coffee, hides	C	-0.3	1;?	3	Yes
	Ghana	Coffee, aluminum	C; P	-0.7	1;2;1;2;3;1;2	1	Yes
	Guatemala	Coffee, crude veg materials	C; D	0.7	1;2;1;2;3	3	Yes
	Haiti	Coffee, clothing	C; M	-0.9	1;3;1;3;2	1	Yes
	Kenya	Coffee, tea	C: P; C	1.2	2;1;2	1	Yes
	Madagascar	Coffee, spices	C; D	-1.7	2;1;2;3	1	Yes
	Nicaragua	Coffee, cotton	D; C	-2.9	1;2;1;2;3	3	Yes
	Rwanda	Coffee, tin	C; P:;C	-0.1	1;2	3	Yes
	Tanzania	Coffee, cotton	C; D	..	1;2	0	Yes
	Uganda	Coffee, hides	C; D; P	2.5	3;2;1;2;1;2	3	

Notes: The typology of the economy in column 1 is determined by principal exports in the mid 1980s (mainly 1985) based upon UNCTAD sources, see Murshed (2004). Export transition refers to switches in the country's principal exports in the 1965-2000 period with: D (diffuse), M (manufacturing), P (point-source) and C (coffee/cocoa). Growth figures are drawn from the World Development Indicators and UNCTAD; growth failure implies an annual average growth rate of per-capita income less than 2% during 1965-1999. The Polity ID refers to transitions in the country's regime type in the 1965-2000 period: 1 (autocracy), 2 (anocracy) and 3 (democracy). The Polity data are obtained from: www.cidcm.umd.edu/insr/polity. Conflict intensity refers to the highest conflict intensity in the 1965-2000 period, italics refer to conflict intensities in inter-state wars; for the conflict data, see http://www.prio.no/cwp/ArmedConflict. A conflict score of 0 means no conflict, 1 implies minor conflict, 2 is medium intensity conflict and 3 is war.