Copenhagen Consensus:
An Economic analysis of the challenge of Armed Conflicts

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Abstract

This paper aims at identifying the best solutions to the global challenge of Armed Conflicts. Given the complexity of the problem it will deal with a number of issues involved in understanding armed conflicts and dealing with the aftermath. It will then undertake an economic, cost and benefit analysis of policies of conflict prevention, i.e. policies to prevent conflict actually happening; intervention, policies to intervene after a conflict has started and stop it; and post conflict reconstruction, policies to assist countries to develop in the aftermath of conflict and prevent the conflict restarting. All of these have some overlap and have similar instruments, but it is important to see them as different parts of attempts to maintain and create peace, to see the reduction of armed conflicts as a process rather than a programme.

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Introduction: The problem

In each year of the 1980s and 1990s decades there were between thirty and forty major armed conflicts in progress, though over the past decade active major armed conflicts has declined. In 2007, there were 14 major armed conflicts active in 13 locations around the world, nearly all of which were internal or interstate disputes over government or territory –civil wars. There was a wide variation in the intensity of these conflicts, from 'low intensity' guerrilla-government conflicts, to conflicts between relatively large and well-equipped armies[1]. While there are less of them they tend to last longer and range from ideological struggles (Mozambique, Eritrea, Nicaragua) to more fragmented decentralised conflicts (Somalia and Rwanda), with many a mixture of both at any particular time. The nature of war has changed with an increasing role for less formal armies, lack of battlefield engagement, and increased involvement of civilians as victims. There are now more states and more disputes, but still relatively few lead to war.

The causes of conflict are as varied as the nature of conflict and the roots of war are multifaceted, with important historical contexts. There are a number of potential factors that can be identified including colonial legacy; military governments and militaristic cultures; ethnicity and religion; unequal development; inequality and poverty; bad leadership and/or polity frailties and inadequacies; external influences; greed/opportunity/feasibility; and natural resources. Very few conflicts are simple, they are often a combination of factors and this fact can have important implications for the achievement of peace and the success of post conflict reconstruction policies.

There are differences in opinion on the effects of war. Some suggest a positive role of modernisation, conflict and war can be positive or at least have positive effects, but most emphasise that the destructive effects of conflict and war have real costs and impact upon economies negatively. They also have legacy costs that can last for a long time. As we shall see the actual costs of conflict are huge, both direct and indirect, and tend to fall on some of the world's poorest countries. The true costs are almost invariably understated as the legacy costs can continue for many years in countries the international community would see as peaceful.

The benefits of armed conflict and armed violence

While there is little discussion of the possible benefits of conflict and armed violence, they do exist and can be important. Many modern states owe their form to some conflict or other and conflict and war can have positive economic effects in removing bad leaders or leading to the introduction of structures and governance needed for modernisation. In an attempt to rebalance the analysis of civil wars Cramer (2006) points out that conflicts could be important in the process of economic development, allowing the 'primitive accumulation' that allows resources to be placed in the hands of a ruling class that can use them to support industrialisation. In addition, the basic neoclassical models would forecast that countries will just bounce back quickly from conflict to long term trend, with some sort of phoenix effect–

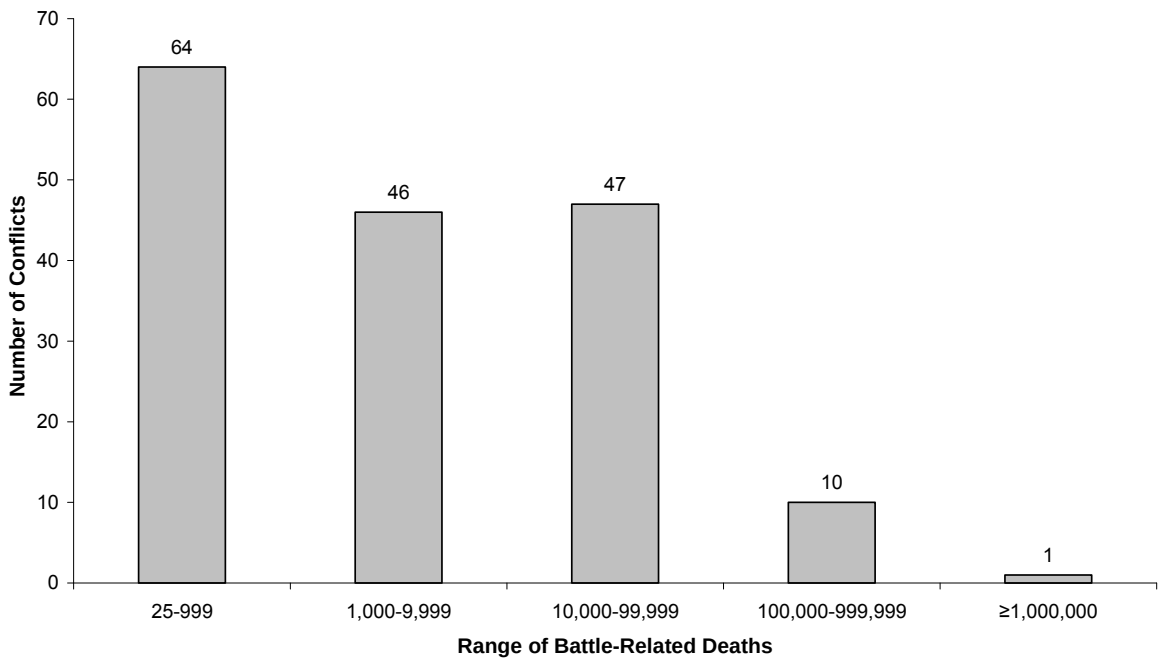
[1] Low-intensity conflicts are those between 25 and 1,000 battle deaths a year and the 'major armed conflict' figure is for conflicts with 1,000 or more battle deaths a year.

Organski and Kugler (1977). But such predictions would be for the long run and it is unclear how long that could take. Certainly the destruction of old capital can have benefits and there may even be human capital benefits, while there may be positive effects of spillovers, as immigrants/refugees can boost the labour force in the host country. While there may be such benefit, it is extremely difficult to measure them, or to disentangle them from the negative impacts we consider next. It is, howver, important to recognize that conflicts can be complex and have complex effects and that care needs to be taken in any form of intervention.

Measuring the costs of armed conflict and armed violence

The costs of armed conflicts are massive and wide ranging. We can distinguish a range of them, starting with the short and medium term ones that are generally recognized, the lives lost, the permanent injuries, the refugees, military expenditure, asset losses [destroyed capital including human], GDP/production losses [income losses], trade losses [specialization losses]. In addition there are the long term costs which are often not considered, including, intergenerational effects, transboundary effects, and environmental effects. Alternatively, another way of looking at the costs is to distinguish, destruction and deferred accumulation and legacy costs

Figure 1 Battle related Deaths 1946-2005

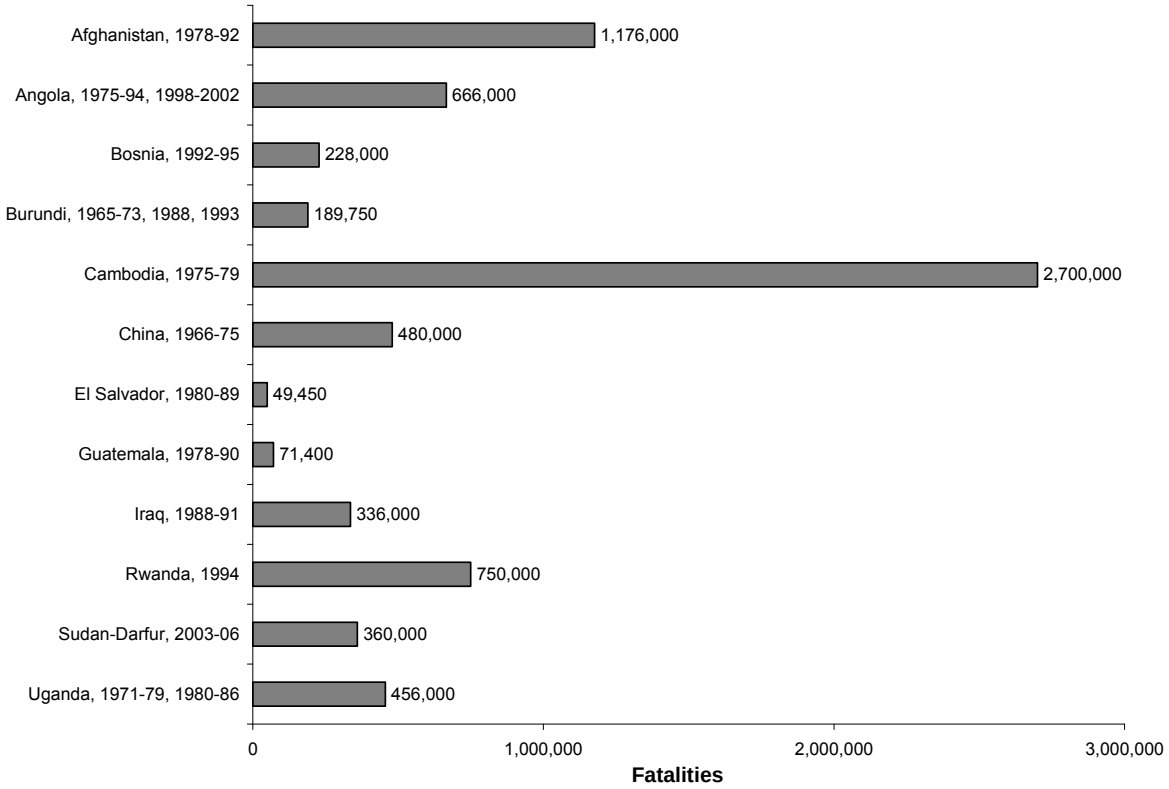


Source: Anderton and Carter (2009) based on PRIO data

The immediately apparent costs are loss of life. As Figure 1 shows, most wars are relatively small, with most in the 25-999 battle related deaths. In some datasets these would not be considered as the definition of an active war is >1000 battle related deaths. The vast majority of conflicts have less than 100,000 battle related deaths. But this is not the whole

story by any means, as in many countries conflict leads to many hidden casualties and the devastation can means people die for years after a conflict ends –a legacy cost of the conflict that is often ignored. As Figure 2 shows estimated fatalities for genocides and politicides are disturbing. Up to 1992 Afghanistan had seen over 1 million fatalities, with estimates suggesting almost 1m military related casualties since the US and coalition invasion. A figure that is dwarfed by the genocide in Cambodia which took an estimated 2.7 million lives.

Figure 2: Fatalities



Source: Anderton and Carter (2009)

While the accuracy of these figures can be questioned, as more recent estimates tend to reduce the figures given here (for example in Bosnia) and as they contain relatively imprecise estimates of wider/indirect deaths from war, they still give support to the argument that the costs of conflict can be very large. Deaths are, however, only part of the violence engendered by conflict. The World Health Organization (WHO) (2002) differentiates among forms of violence by grouping them into three categories: self-harm (including suicide), interpersonal violence (e.g., violence between intimate partners and other forms of family violence; rape and sexual assault by strangers; violence committed in institutional settings, such as schools, prisons, and workplaces), and collective violence (e.g., armed conflict between, among, and within states; violent political repression and genocide; violent acts of terror; organized crime). Together, these form a system of violence progressing from individual and relationship-related violence to communal and large-scale violence. The existence of conflict in a country creates the environment in which all forms of violence are possible and the less 'headline' forms often remain as a legacy when the conflict is supposedly over.

There are two main frameworks used to measure the economic costs. First, the economic growth framework, which considers that if conflict affects performance of the economy it should be through the factors of production or technology, plus the institutions and culture that augments them. Different frameworks can give different conclusions. In a basic neoclassical growth model a onetime shock to capital stock may not affect the equilibrium, but poverty trap, endogenous growth and vintage type models will give persistent effects that can be damaging. Asymmetric destruction could influence the recovery of an economy and certainly in a Barro type endogenous growth model a disproportionate loss of human capital could lead to slower recovery. There is also an identification problem in that countries in conflict could be different to peaceful countries, so that bad performance after the conflict could reflect what country was like before conflict rather than the fact that it was damaged by the conflict[2]. As regards physical capital, the evidence suggests the post-war evolution of capital shows a rapid recovery to equilibrium, consistent with the neoclassical prediction[3]. Such predictions may be overoptimistic, however, as economic devastation may also prevent a durable peace leading to further costs. In addition, there are also factors that the models don't consider, the destruction household assets –peasant households, the flight of capital, the effect of uncertainty on cost of capital, which can play important roles in economic recovery. As mentioned, lots of people are killed in conflict and this has an impact on the labour force and human capital, but while there may be mixed evidence on how long the economic effects last, there are clearly negative human capital effects on both non-combatants and combatants. While fatalities may be relatively low, as a proportion of population, related deaths and injuries can increase the impact significantly. At the same time institutions and economic networks also suffer damage and these can be important in growth, though there is little work on how they evolve, adapt and decline in civil war. However, war does not need to be destructive to institutions, as it may create a better state or ruler and improve governance, but in general this is not the case and certainly not during the conflict (from a civilian perspective). What effects conflicts have can also vary by depending on how the war started and why and how it ends, such as in stalemate or victory for one side (Blattman and Miguel, 2010). There are also other non-neoclassical frameworks that identify other paths and impacts. Again there is a tendency to see war as destructive and bad for economies in Keynesian approaches, though the preparation may not necessarily be so. There may also be disequilibrium effects on economies and impacts on the path of technology that can reduce potential growth.

To measure the actual impact, the cost of conflict, there are two approaches, the accounting and counterfactual methods. In the accounting approach the researcher would try to work out the total value of goods destroyed. A fairly comprehensive schema would set the direct and indirect costs as in the Table 1 below. The task is then to find values for as many of the headers as possible. This is a very difficult task and can really only be attempted for case studies of individual countries and in most cases there will be many missing values and guesstimates. Some recent effort has been made in this, but it is difficult to compare and aggregate to get a figure for total costs. Different countries are likely to have different headers completed and different levels of detail available (de Groot et al, 2009). The problem with this sort of method is the more carefully you look the more cost you can find and so high

[2] For example Gates et al (2010) seem to find that fragile states without conflict seem to have worse educational outcomes than countries emerging from conflict.

[3] There are studies of effect of bombing in the Second World War, which suggest that it was not as damaging as hoped or expected.

costs might simply reflect high effort by the researchers rather than any real difference in cost of conflict

Table 1: Accounting for the costs of conflict

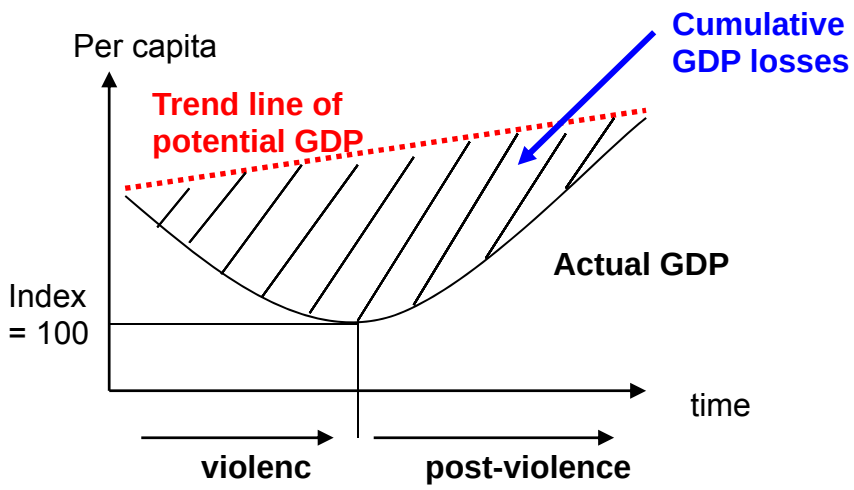
economic level	**direct costs**	**indirect costs**
external relations	foreign debt	capital flight of domestic capital capital flight of foreign capital discouragement of new foreign investments emigration of skilled workforce reduction of incoming tourists less exports less imports less development aid less humanitarian aid military aid +/-
economic level	direct costs	indirect costs
national economy level	physical destruction of production capacity, infrastructure, factories, machinery physical destruction of transport vehicles and routes agricultural production capacity physical destruction of land death and injuries on workforce higher military expenditure refugee care land mines	non-production because of threat situation taxation by rebel and government troops less investment less developed human resources as less health expenditure, less education expenditure missed education opportunities for combatants less production of transport and physically limited intensive production more production for short term profits, less long term
household level	death, injuries and illness extra legal income +	food scarcity inflation emigration, forced migration

Source Lindgren and de Groote et al (2009)

The second and more commonly used approach is counterfactual analysis, where an attempt is made to compare the path the economy in and after the conflict with the likely path it would have taken in the absence of conflict. This comparator could be a simple trend, the

average for the income bracket of the country, another similar country, or an artificial country (a combination of countries that reflect the characteristics of the one under study). The graph below illustrates this using a simple trend line. The curved, solid black line represents the average fall and rise of per capita GDP in the sample during and after war and the dotted red line represents the potential GDP growth path had war not interfered. The area in between the lines then indicates cumulative GDP losses (Brauer and Dunne, 2012).

Figure 3: Cost of Conflict



This is clearly a stylised perspective and there is some debate over what happens during the crisis and how to measure the counterfactual, but it is a useful heuristic device.

The costs of armed conflict and armed violence

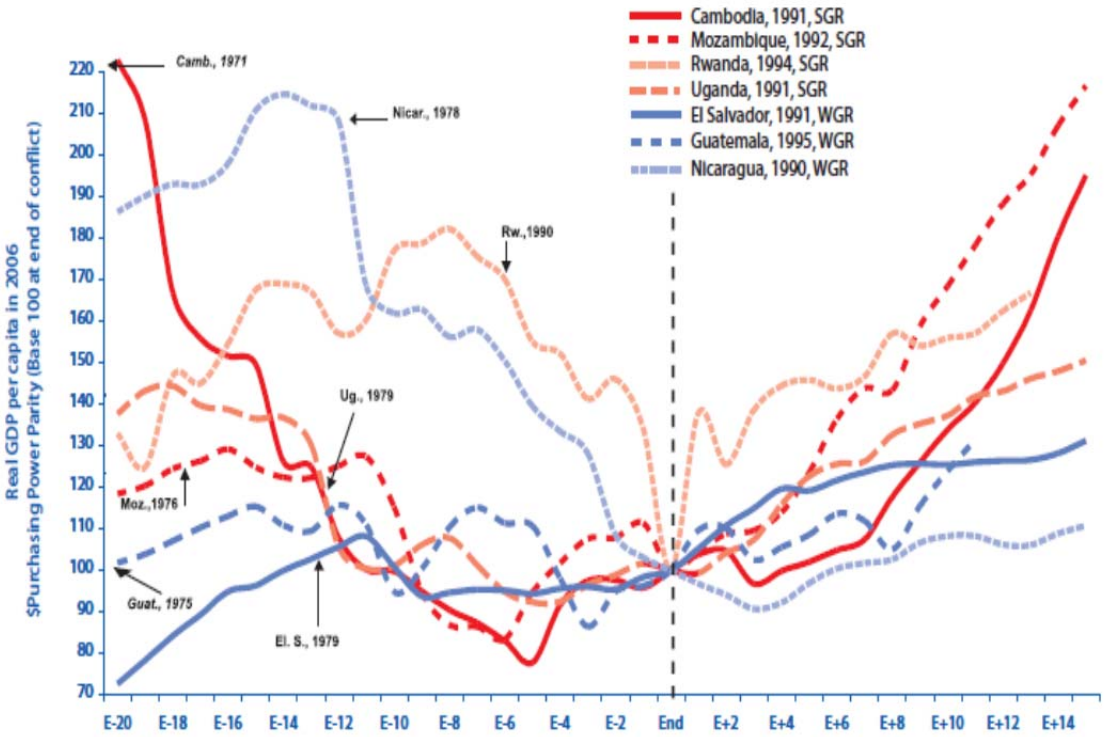
In 2008 the United Nations Development Programme (UNDP) Bureau for Crisis Prevention and Recovery provided a useful illustration of this graphing the GDP per capita for a seven countries that had experienced conflict, collecting data on the pre- and postwar real per-capita gross domestic product (GDP), adjusting for purchasing power differences with the start of the conflict at the same point on the graph, an index of 100, shown by the vertical dashed line in the figure.[4] An arrow for each state indicates its war's start date. The result is striking. In most cases, before the war began, per capita GDP was growing. With the start of war, GDP collapsed and, with peace, GDP started to grow once more. Three of the countries El Salvador, Guatemala, and Nicaragua—experienced weak postwar growth and hence are designated as weak-growth recovery (WGR) states, four others, Cambodia, Mozambique, Rwanda, and Uganda—are considered strong-growth recovery (SGR) states. But the macroeconomic policies of each country differ from the others, as do the trajectories of their recoveries. Rwanda bounced back strongly right after 1994, but since then its growth has been modest, while Mozambique did badly initially before starting to grow more strongly. Cambodia's per capita income index had still not recovered to its pre war per capita income levels after thirty-five years. Nicaragua's high-point in per capita GDP was fourteen years

4. The war periods are Cambodia, 1970–91; El Salvador, 1979–91; Guatemala, 1965–95; Nicaragua, 1978–90; Mozambique, 1976–92; Rwanda, 1990–94; and Uganda, 1979–91.

before the end of the war and by fourteen years after the end of the war, its income level still was only one-half of what it had been, while in El Salvador, average income levels improved slightly, but the peace after the war ended was worse than the war itself. It is said that more people were killed there in the ten years after the war than during the twelve-year conflict (Stohl et al, 2007)

Figure 4: UNDP GDP per Capita Profiles of Conflicts

Figure 4.2 GDP per capita in selected SGR and WGR countries (year conflict ended, group)



Note: Arrows point to starting year of conflict, unless where conflict is ongoing over the entire period covered (Cambodia, Guatemala), in which case the arrow points to the first year of the series.

The study suggests that the economic cost of civil war lies somewhere between 1.7 and 3.3 percent of GDP per country per conflict year before 1990 and around 12.3 percent of GDP after 1990, the post–Cold War era (UNDP, 2008). The apparent loss of output is staggering and while countries do recover it is not for a good number of years.

So measuring the costs is not straightforward. There are different methods, which measure different things and can give rather different answers. Economists do not agree on how to fully enumerate, let alone compute, the global cost of war, let alone the cost of all violence, war-related or not. What is required are comprehensive and consistent computations of current cost, legacy cost, and spillover cost. The current cost is the direct and indirect cost of violence, the legacy cost includes the cost of past violence that carries into the present (e.g., reduced productivity on account of permanent injury; continuous health care for the injured) and the spillover costs relate to the impact on others (e.g., refugees) (Bozzoli et al, 2008, 2010).

Although the linkage between armed conflict, violence and development is not explicit in the Millennium Development Goals, objectives such as reducing poverty, ensuring maternal

health and promoting education are all associated with effective armed violence prevention and reduction initiatives. The World Bank's *World Development Report 2011* points out that not a single low-income country afflicted by violence has achieved even one of the eight goals[5]. An example is Ethiopia which showed a steady rise in GDP from 1950 to 1974, with per capita GDP $279 in purchasing power parity dollars in 1950 and $473 in 1974, an increase of about 70 percent over 25 years, or 2.8 percent per person per year. Then things changed, 1974 saw a violent revolution and 1977 a war with Somalia. The early 1980s saw several massive famines and a brutally repressive political regime, while the early to mid-1990s saw violently contested elections and long-running secessionist movements in Tigray and Eritrea resulted in more violence. Eritrea gained independence in 1993, but a border war with Ethiopia broke out in 1998 that was only nominally settled in 2000. Over the thirty-year period from 1975 to 2004, economic output per person was flat. Had Ethiopia continued to grow at its 1950–74 rate average production should have reached about $800 in 2009 instead of the $684 actually achieved, and it reached this level only due to a growth spurt of the last five years of the data series. The size of the cumulative loss of production was $7,721, over eleven years' worth of 2009 income (Brauer and Dunne, 2012).

Figure 5: Ethiopia

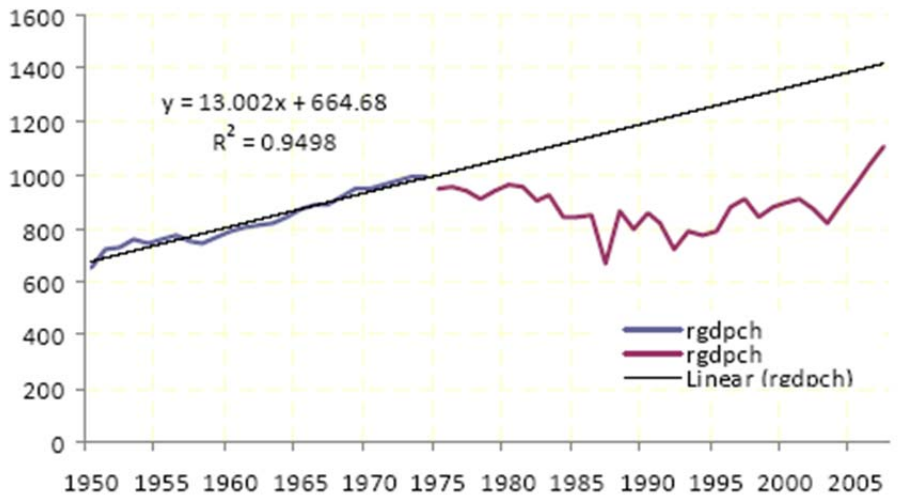


Figure 1.5: Population-, inflation-, and purchasing-power adjusted GDP, Ethiopia, 1950-2007 (base-year = 2005).
Source: Penn World Table, v6.3.

[5] Though there could be other reasons than the conflict that the goals were not achieved. It is still an interesting observation.

An even more extreme example is Nicaragua. Its per capita production, in ppp dollars, grew from $1,948 in 1950 to $4,554 in 1977, or about 4.8 percent per person per year, a significant achievement despite a repressive political regime. A long-running revolutionary campaign finally gained some success in 1978 and came to power in 1979, provoking an undeclared proxy war with the United States that involved harbour mining, arms smuggling, and the clandestine support of counterrevolutionaries by the U.S. administration against the express wishes of Congress. An internal war continued until multiparty elections were held in Nicaragua in 1990, resulting in the revolutionaries' electoral defeat. By then the economy had completely collapsed, resulting in production per person of only $2,192 in 2009—almost equal to the level of $2,148 in 1951. The trend line projection suggests that average production without conflict would have reached nearly $7,000 by 2009. In other words, in the sixty years from 1950 to 2009, Nicaragua's economy has not grown at all, with stagnation even after the 1990 elections due to political turmoil[6]. (Brauer and Dunne, 2012).

Figure 6: Nicaragua

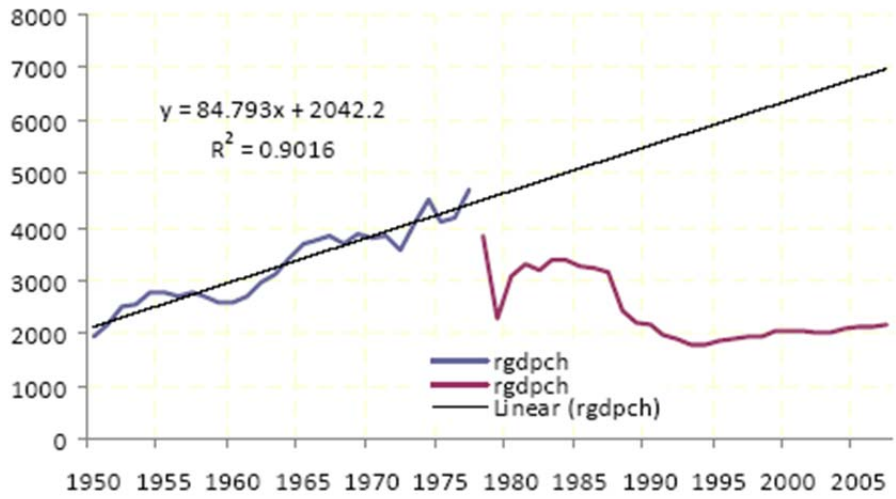


Figure 1.6: Population-, inflation-, and purchasing-power adjusted GDP, Nicaragua, 1950-2007 (base-year = 2005).
Source: Penn World Table, v6.3.

Nonwar-related homicide can also severely damage an economy as Brauer and Dunne (2012) illustrate with the example of the Dominican Republic. There has been steady production growth from $1,820 in 1951 to $9,911 in 2009, or production growth of 7.5

[6] Former president Arnoldo Alemán (1996–2001) was convicted of embezzlement, money laundering, and corruption and sentenced to a twenty-year prison term—and this by his presidential successor, Enrique Bolaños (2001–06), of the same political party. The former rebel leader, Daniel Ortega, was reelected to the country's presidency in 2006

percent per person per year—an impressive achievement. A study by the United Nations Office on Drugs and Crime estimated that since 1975 growth could have been increased by an additional 1.7 percent per person each year if homicide rates in the Dominican Republic could have been halved from over 16 per 100,000 people to Costa Rica's rate of about 8 per 100,000 people (UNODC, 2007). This implies that, by 2009, average production should have been around $16,456 rather than the around $10,000 actually achieved, more than a 60 percent difference. This illustrates the validity of the World Bank (2011) conclusion that "violence is a major impediment to development." Clearly, violence prevention, or at least mitigation, and the post conflict and violence reconstruction of a stable social order are necessary conditions for development, while lack of development or even the hope of advancement is a primary cause of violence (Collier & Hoeffler, 2004).

Figure 7: Dominican Republic

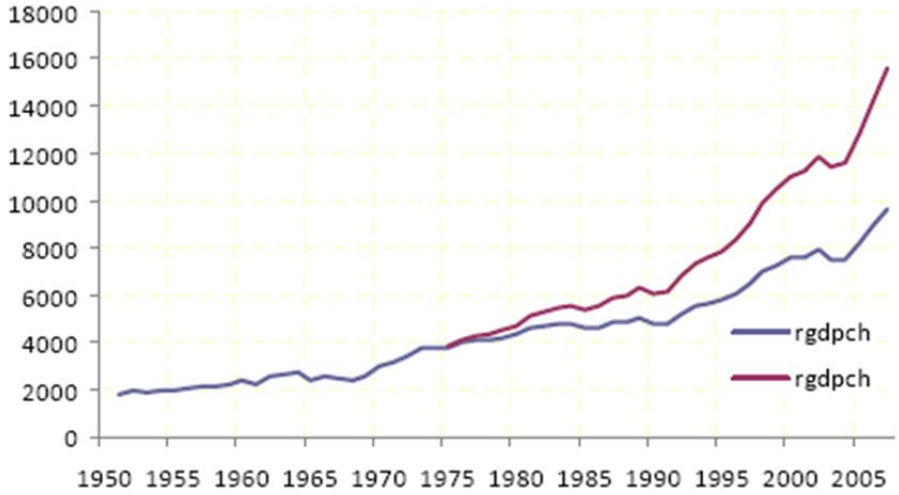


Figure 1.7: Population-, inflation-, and purchasing-power adjusted GDP, Dominican Republic, 1951-2007 (base-year = 2005).
Source: Penn World Table, v6.3.

That said, violence rarely permeates the whole of a society. Often it is highly localized, consistently affecting some city neighbourhoods more than others, or some districts or provinces more than others. However, it can also move from one place to another, sometimes in response to policy action.[7]

[7] Colombia's drug-related violence abated in the 2000s, at least partly because concerted efforts by its government, with overseas assistance, made it suitable for drug gangs to move to Mexico. Mexican government countermeasures appear to have led to an explosion of violence since 2006, which has led to bases for narcotics trafficking being set up in El Salvador, Guatemala, and Honduras—that is, in countries with weaker systems of law and order (Brauer and Dunne, 2012).

On the basis of a case study analysis of 15 countries Harris (1999) argues that war is associated with slow growth, declining food production and declining exports and while war is generally not the only or essential cause of such economic problems, once it has started it does impact negatively on human development. Nordhaus (2002) considered the costs of the US Iraq war, considering different scenarios, while Bilmes and Stiglitz (2006, 8) provide a more recent and much higher estimate study. In an interesting recent study, Abadie and Gerdeazabal (2003) look at the effect of conflict (ETA) on Basque region. They use counterfactual based on construction of an artificial region, a combination of other unaffected ones to replicate characteristics as closely as possible. They find a difference of around 10%.

Rather than using deviations from trends to measure the cost of conflict, one can use some form of counterfactual based on an estimated model. An early example is Fitzgerald (1987) who used a regression counterfactual for Nicaragua to estimate the cost of the conflict. More recently and more generally, Collier (1999) used regression analysis, with cross country data. He estimated the costs of civil war in terms of the reduction in the rate of economic growth, adapting standard approach of empirical growth econometrics, taking as the dependent variable the growth rate during a decade, and introducing the number of months during which the country is at civil war as an explanatory variable. Each year of civil war is found to reduce the growth rate by around 2.2%. On average civil war lasts for around seven years (Collier and Hoeffler, 2002, 2004). Thus, by the end of a civil war the economy is approximately 15% below its counterfactual level[8]. One interpretation of Collier's finding then is that countries in violent conflict are essentially stagnant; that all their "natural" growth is negated by violence, or that their "above normal," "catch-up" growth is dampened. Dunne (2007) in the context of arms proliferation, summarises their estimates of the costs of civil wars:

Economic growth NPV costs:	105% initial GDP
Increase milex during and after conflicts NPV :	18% initial GDP
Deterioration in health (0.5 DALYs pa @ $1th)	£5m
Spillover effects on neighbours	115% initial GDP
Increase milex neighbours	12% initial GDP
Total:	**250% initial GDP**

Benefit of averting war to a low income country	= £54bn
Conflict trap cost	= £10.2bn
Total	**= £64.2bn**

Other estimates have been made from aggregations of case studies, and these tend to propose rather higher growth costs of war, but case studies were not selected randomly and there may have been a tendency to select particularly costly wars. A comparative analysis of the cost of conflict is undertaken by Skons (2006), who considers the costs of armed conflict to the external actors, with the goal of comparing these costs with the costs to the external actors of the alternative i.e. polices to reduce the incidence of conflict or to prevent violent conflict. The aim being to cost the option of funding international public goods in peace and security. Recognising the difficulties with making any such estimates and the variation in the

[8] One difficulty is deciding what the counterfactual is a linear trend or some other forecast path, or using the experience of a group of similar countries.

estimates, she suggests external costs of $4.5–$54bn. Even without considering the country costs, the upper bound of this estimate is around half the value of all development aid. She also reports the estimates of Collier and Hoeffler (2004) for the internal costs of war and emphasises that international (interstate conflicts would likely have considerably higher costs, especially if a developed country was involved. Hess (2003) estimates a lower bound of the cost of war at an average cost of $72 per person. This gives a total world cost of conflict in 1985 US$ and 1985 population of $399.12 bn, a permanent payment growing with population.[9] To get figures for 1985–2006, one can increase this amount by the growth in world population of around 2% pa (the 2000 figure).

To get an idea of the range of estimates available, de Groote et al (2009) compare the results of different types of studies for one country (Sri Lanka). Costs are in billion US$ (constant 2000 prices)

Table 2: Case study conflict costs

Study	1	2	3	4	5
War years	1983-88	1983-88	1983-92	1983-87+ 1990-94	1994-1996
Total costs	6.15b US$	1.99b US$	6.31b US$	16.74b US$	22.34b US$
Average p.a.	1.02b US$	0.33b US$	0.63b US$	1.72b US$	1.93b US$
% of GDP p.a.	2.2%	0.7%	1.3%	3.3%	3.5%

1. Richardson and Samarasinghe (1991)
2. Grobar and Gnanaselvam (1993)
3. Harris (1999)
4. Kelegama (1999)
5. Arunatilake et al. (2001)

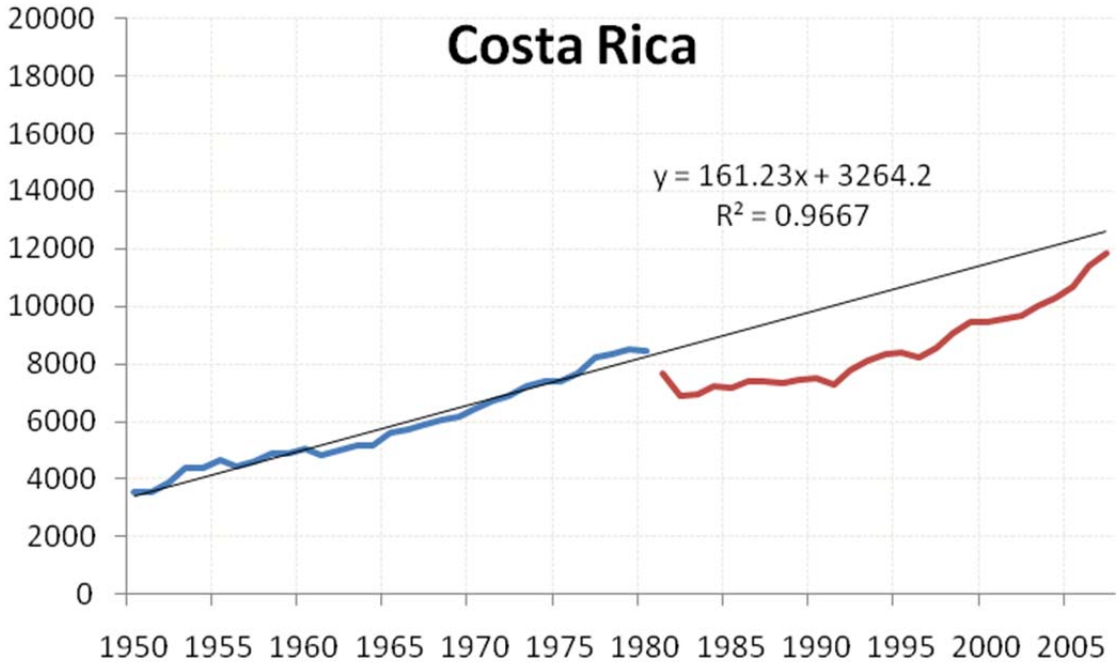
To give this some perspective, the respected and non-partisan Congressional Research Service estimates that the US will have spent almost $802bn on funding the Iraq war by the end of fiscal year 2011, with Stiglitz and Bilmes (2008) putting the true cost at $3 trillion once additional impacts on the US budget and economy are taken into account. In the UK, the conflict has been funded from the Treasury Reserve Fund (extra money on top of the normal Ministry of Defence budget) and figures released in June 2010 put the cost of at £9.24bn ($14.32bn), the vast majority of which was for the military but which also included £557m ($861m) in aid. For comparison UK GDP was around £1.3 trillion and US £8.3 trillion or just over $13 trillion.

In measuring indirect costs, some studies aim to analyse how conflict affects a particular attribute of economic wellbeing. In doing this it is important to be careful about double counting various costs under different heading when aggregating. The costs include military expenditure effects (opportunity cost, economic effect, international spillovers); intertemporal effects (generational, growth, welfare effects); human capital effects (health,

[9] This is based on estimating the amount of consumption individuals would lose through conflict and hence would be willing to pay to prevent conflict. A Lucas-type new classical model was used.

civil and military casualties, aftermath, education); effects on inequality; environmental consequences; and international spillovers. Conflict in a particular country or region can have a wider impact. This is obvious for large wars, but a surprising example is Costa Rica –a peaceful country that seems to have suffered from conflict in the region.[10]

Figure 8 Costa Rica

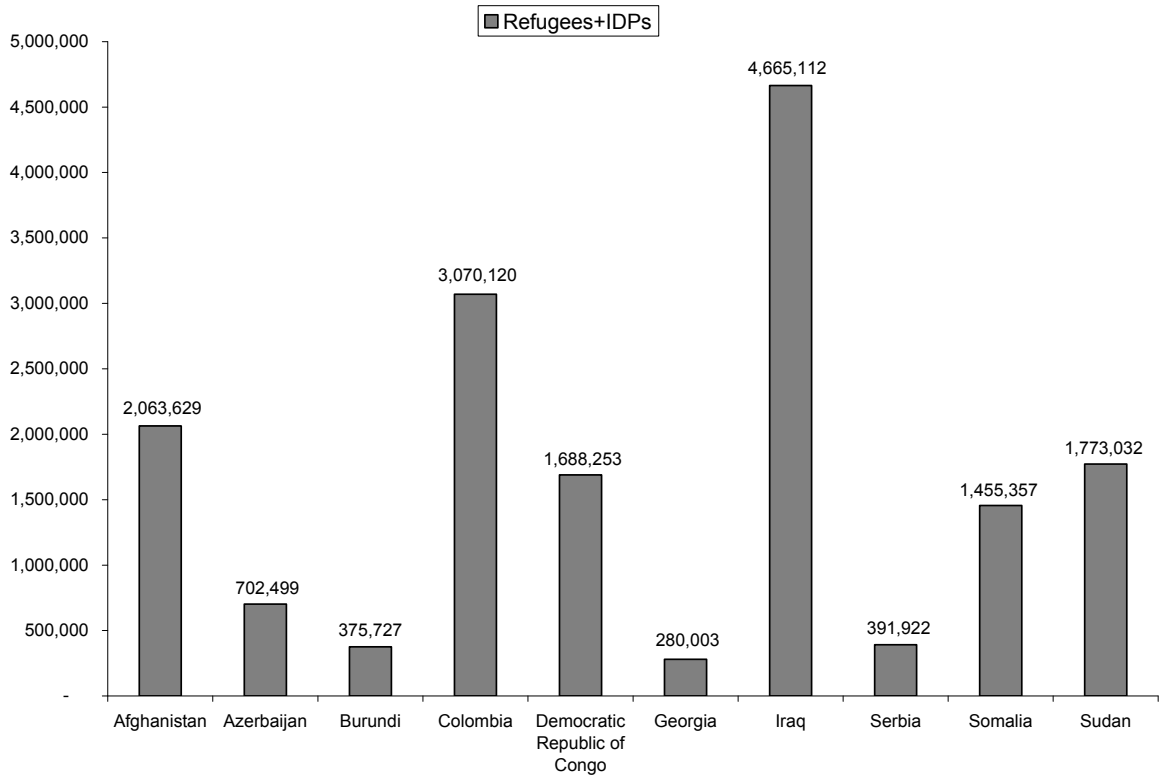


Population, inflation and ppp adjusted GDP 1951-2007, with base year 2005.
Source: Penn World Tables v6.3

More generally, Murdoch and Sandler (2002) look at effect of civil war on per capita income growth in home country and neighboring countries, using model based on Solow's augmented growth model, they consider human capital, migration, investment, shift factors (such as interrupted supply lines), measures of neighbors' contiguity and distance. Their results suggest that there are more spillovers in the long-run than the short-run and that there is smaller reach (less dispersion) in Africa. Africa is also more resilient and recovers faster, with estimated negative neighborhood effects actually stronger than the home-country effect. The spatial reach is both region-specific and time-period specific. De Groote (2010) provides some updates to these results. Recently there has been further empirical work focusing on refugees. Using the number of refugees and internally displaced persons (IDPs) for selected countries of origin, Sahelyan and Gleditsch (2006) examine (one of) the mechanisms involved and propose that refugees help spread civil war to neighbours, with some refugee camps acting as bases for military operations. Civil wars are clustered in time and space,

[10] There are, of course, other possible explanations and other regional effects that could be important, but there does seem to be some justification in suggesting the security situation in the region has had a negative impact.

suggesting non-independence or knock-on effects and while states are bound by political borders, its citizens are not. They form "dense networks of social relations that transcend national boundaries". Refugees are also usually highly clustered or concentrated, which can exacerbate their impact in particular regions. But there can also be positive effects as immigrants boost the labour force in the host country.



Source: Anderton and Carter (2009)

A complete survey of the various estimates for general violence found in the literature does not exist, though Brauer and Tepper-Marlin (2009) partially survey the economic cost of self-harm, interpersonal, and collective violence, including civil wars and terrorism. They conclude conservatively that, if all violence had ceased, the 2007 value of world economic production, called gross world product (GWP)—the sum of GDP across all states—could have been 8.7 percent larger than it actually was. They distinguish between static effects and dynamic effects. The former recognizes that cessation of violence makes some security services superfluous, freeing expenditure to be shifted to other goods and services. But this substitution effect does not increase GDP; it merely reallocates spending from one sector of the economy to another, without increasing GDP. Being more secure does, however, tend to increase the effectiveness of effort and productivity of investment and so does increase GDP. It is this effect of nonviolence that they suggest would have amounted to an 8.7 percent gain in GWP in 2007. To put this in context, it is interesting to note that the International Monetary Fund (IMF) estimates that the world economic crisis of 2009 amounted to a one-time world output loss of 0.5 percent. The world economic crisis would have been worse had it not been for extraordinary policy intervention worldwide and is still ongoing. Whatever the final cost it is clear that the cost of violence presents an even more severe economic problem and by comparison receives very little attention.

Overall, there are a wide range of estimates for the costs of armed conflicts. Using an accounting method, the more you look into it the higher the costs can become, though there are informational constraints. Counterfactual methods have a number of conceptual issues, but tend to be more transparent and readily understood, but again can produce a number of estimates. So in estimating the costs of conflict it is always important to either offer a range of estimates or to be careful to emphasise the uncertainties involved.

For this study, we return to the estimates in Collier et al (2008a), which derive from those used in Collier and Hoeffler (2004) and which they find, despite developments in the analysis of the effects of conflict, still seem to be reasonable. They estimate that a country's growth rate is reduced by about 2.2% for the duration of the conflict, which is within the aforementioned UNDP (2008) range of 1.7% to 3.3% per conflict year. More recent estimates seem to agree that 2.2% remains around the centre of the estimates. Since the typical civil war lasts about 7 years this implies that the economy is likely to be around 15% poorer than if there had been peace. When the conflict is over Collier and Hoeffler (2004) and Elbadawi et al (2008) estimate recovery takes about twice as long as the war itself, which fits in with our earlier discussion (discussion of UNDP graph, page 8). So they consider a reasonable counterfactual to be growth reduced by 2.2% for seven years, during the conflict and 1.1 % afterwards for 14 years, giving a net present value of conflict of 105% of one year's GDP measured at the point of conflict onset.

They also consider spill over effects, with Chauvet et al (2006), making efforts to account for neighbourhood effects that have nothing to do with the war, such as drought. They estimate that a conflict will have around 0.9% reduction in growth rate if a neighbour is at war, might have 3 or more neighbours typically and with gradual recovery post conflict 1.1% per annum, the cost of the conflict to each neighbour 42% of onset year GDP. A valuation for the cost of conflict using figures for civil wars by Collier and Hoeffler (2004) which suggests that the net present value costs of conflict is around 250% of initial GDP[11]. In calculating a contemporary cost of conflict Collier et al (2008) simply update the GDP figures, giving the cost to the country directly affected is $20bn ppp prices and the cost to neighbours $23bn (there are more of them and they tend to be larger and richer. This gives them a combined cost of $43bn, slightly lower than Collier and Hoeffler (2004). They also consider the cost of the increase in military spending, which tends to increase by 1.8% during conflicts (though there are data issues) and remains high, declining by about around one fifth from the conflict level, suggesting 1.5% of GDP. Their total is then $56.6 billion and as since 1960 there have been about 2 wars starting every year they suggest $123bn per year, which as they remark is the same order of magnitude as the total for global development aid.

To take account of the severe effect civil war can have on human health, by expressing the cost in terms of Disability Affected Life Years (DALYs). This measure the total number of people affected and the period for which their disability lasts. They suggest an average war causes an estimated 0.5 million DALYs each year and assuming a recovery period of 21 years gives the net present value of health costs when hostilities start as 5 million DALYs as. If each DALY is valued at $1,000 (roughly the per capita income in many at-risk countries), the economic cost of harm to human health in a typical war is around $5

[11] Murdoch and Sandler (2002) show conflicts can permeate whole sub region, meaning the cost to neighbours could well be greater than to the country at war.

billion[12]. Collier et al (2008) update this and adopt two values for DALYs, namely $1,000 and $5,000. With a discount rate of 3%, these gives an additional cost of a civil war of $13bn and $33bn respectively and a 6% discount rate, gives total war costs of $46bn and $66 bn.

For this paper, we use GDP data for the group of low income countries and estimating the actual annual growth rates for 1990-2010, rather than extrapolation, we simulate a conflict by introducing a reduction in the growth rate by 2.2% for 1991-97 and then an increase in the growth rate of 1.1% till 2010. This takes the GDP figure close to the counterfactual at the end of the 21 years. Calculating the net present value using a 5% discount rate gives a value of conflict of 120% of GDP, which is higher than Collier et al (2008). Using a reduction of 0.9 percentage points for seven years and a recovery of 0.5 to the counterfactual level by 2010 suggests a cost of conflict to a neighbour of 58% of initial GDP. We also add in 1% of initial GDP to allow for the increase in military spending. These results are summarised below

Cost of Conflict		
Discount rate	3%	5%
NPV cost of conflict	1.5	1.2
NPV cost to neighbour	0.58	0.5
NPV cost to neighbour	0.58	0.5
NPV cost of military spending	0.01	0.01

While HSR (2012) show how the cost of conflict in terms of fatalities continues to decline, there are still considerable effects on the health of the countries, indirectly through disease etc as well as directly. To allow for these health costs of conflict we use Collier et al (2008) figures for the typical war:

DALY	$1000	discount 5%	$13bn	discount 3%	$35bn
DALY	$5000	discount 5%	$33bn	discount 3%	$54bn

Collier et al (2008) also add in the cost of coups, arguing that these have become important costs to developing countries. The first cost is the direct loss of income due to the political disruption, quoting Collier et al (2006) finding reduced growth of around 3% in the year following a coup, but the effects were not found to be highly persistent. In addition, Collier and Hoeffler show coups lead to increase in military spending and this effect is persistent. If the shift was across the political spectrum from full democracy to severe autocracy (using Polity definitions) military spending would be consistently higher by 2%. In addition, where coup risk is high governments tend to increase military spending. Like civil wars coups can be politically beneficial and in case may have improved governance. Collier

[12] Ghobarah et al. (2003) use data on 23 major diseases and find significant adverse effects of civil war. Using WHO data they estimate that during 1999 then-current wars were causing the loss of 8.44 million DALYs, and that a further 8.01 million DALYs were lost as a legacy effect of the civil wars that had ended during the period 1991-97. Collier et al use the first of these figures, giving the typical civil war as incurring around 0.5 million DALYs a year of loss during the conflict. This yields a health cost of the typical civil war of around $5bn. (There are typically around 17 civil wars at any one time, hence, the loss per war is 8.44/17).

et al (2008) estimate the cost of coups at 10% of one year's GDP, around $2bn per successful coup.

These only deal with civil wars, so they may represent underestimates of the cost of conflict, but the approach taken seems reasonable. The more recent literature does not lead one to consider these estimates unreasonable and they seem consistent with the case studies. However, the focus on the costs of coups does raise further issues of importance and tends to move away from the specific concerns of armed conflict, so in this paper the focus will simply be on conflict.

For this paper we take the 2010 mean GDP for low income countries in $2000 prices, $8bn and for both low and middle combined, $72bn, assuming that a country has 2 neighbours and that they are the same size we get a cost of one conflict for the average low income country of $18bn and for low and middle of $160bn, using a 5% discount rate. While conflicts are more common among low income countries, they do increasingly occur in higher income groups, which makes the lower income group too low an estimate and the combined low and middle too high (Fearon, 2010). It seems reasonable to take an estimate of $40 billion, midway between the two means as a representative country with conflict. This gives a cost of war of $107bn. Adding in the DALYs to our estimates provides figure for the benefits of preventing conflict based on the mean for low income and the mean for low and middle income countries:

Assumptions	**Low income**	**Low and middle**	**Our estimate**	**Full**
$1000 DALY, 3%	**56**	**228**	**142**	**284.0**
$1000 DALY, 5%	**31**	**173**	**101**	**202.0**
$5000 DALY, 3%	**75**	**247**	**161**	**322.0**
$5000 DALY, 5%	**51**	**193**	**121**	**242.0**

Collier et al (2008) rightly emphasise their figure of around $60bn per year omits a number of factors, that the people affected by the violence are among the poorest and most disadvantaged; that the absence of peace means other development initiatives and interventions won't work; that the costs are borne by societies least able to cope; that the costs are highly persistent; that there are global spillovers than can be indirect and large – drugs, crime, disease, terrorism. These costs cannot be readily enumerated and so are generally not considered, but they suggest that each of these factors could increase the cost of conflict by 20%, then allowing for four factors increases the cost more than fourfold to around $250bn for the cost of a typical conflict. They suggest treating $60bn as lower bound and consider $250 to be closer to full costs and use both figures. Our estimates for low income are similar to the Collier et al (2008) lower bound, but the low and middles income and our representative estimate somewhat higher (the comparison is with the $1000 DALY and 3% discount rate). We are comfortable with using a higher GDP estimate, as more recent conflicts reflect this, but we are still missing the wider costs mentioned in the last paragraph, plus the increased probability of conflict that countries that have had a conflict experience, and feel the need to increase these figures to take account of this. It seems reasonable to increase by a lower factor that Collier et al (2008) and double the representative value to take it from $142bn to $284bn.

The focus of this paper is to suggest how some share of additional spending up to $75bn per year over next 4 years targeted at the challenges identified by the Copenhagen Consensus, could best be spent to deal with the problem of armed conflict. So the solutions have costs computed over four years, with some allowance for the fact that the benefits may have much longer run effects. This is particularly important in the solutions proposed here, which are likely to be additions to already existing streams of expenditure and successful initiatives are likely to attract further funding. So now we move on to consider the proposed solutions in terms of prevention, intervention and post conflict reconstruction.

The Solutions

In the literature the argument of economic growth reducing the risk of conflict is now more generally accepted than in the past, with evidence that higher income reduces the probability of conflict, both directly and indirectly[13]. Collier (2007) suggested some solutions that aim to increase growth, to reduce conflict risk as well as to improve security. These solutions include increased aid; increase aid with limits on military spending; increased peacekeeping forces; and external guarantees of security.

Collier et al (2008) follow this, but argue the results are new as they focus on the two types of what they consider preventable, the recurrence of civil war in post conflict situations and the prevention of coups in countries that are democratic. They consider two strategies, first an attempt to change the size of the domestic military establishment in post conflict situations, not only to remove expenditure from unproductive sector, but also because of the increased risk of recurrence of conflict that can result from high military spending, in contrast to the usual argument that it could increase security and reduce the likelihood of recurrence (Collier and Hoeffler, 2006). They do not bother with the neighbourhood arms race effects[14] that might occur as ,with the countries being post conflict, they are unlikely to have a big effect. Second, they suggest providing military services internationally generally, but not exclusively, under the auspices of the United Nations. They argue the supply of effective peacekeeping troops is limited and suggest that keeping them in their home countries, but providing over the horizon guarantees of rapid intervention when necessary would be more cost effective. Examples of the role of the UK in Sierra Leone and French support for Francophone Africa till the late 90s are used to illustrate the feasibility and effectiveness of such a strategy. The troops may be more expensive per se, but keeping them at home reduces costs and one lot could be used for a number of countries, with decent transport (pool). This might also include over the horizon guarantees of external military support, to intervene in the case of an attack on a democratic government.

The discussants had some valid concerns over the suggested solutions. Mack (2008) pointed out that there has been a growing number of negotiated settlements, a significant change in the way conflict come to an end. At the same time, while grievances may not show up in aggregate as determining conflict this can be because they are specific to groups or areas. If so it is important to deal with them to prevent wars restarting. This means any ‘solutions” should reflect the likely need for negotiation, reconciliation and power sharing.

[13]The evidence may now be less strong than in the past, Fearon (2010).

[14] Where a country increases its military spending, which leads neighbours/rivals to increase theirs, the country then responds with a further increase and so do the rivals, leading to an arms race.

He was also concerned about the fact that the small intervention forces, such as the British in Sierra Leone may have worked there, but might not in other situations. There are political problems, the US has tended to oppose a permanent UN volunteer force, while practically any centralised UN force would be mainly OECD country soldiers and this might not be acceptable to the regional states who are involved in the conflicts. In addition, Elbadawi (2008) was concerned with their focus on economic 'feasibility' in determining conflict risk and their downplaying of political legitimacy. This leads to the proposals to be externally driven and ignore domestic institutions and regional dimensions, ignoring the importance of the UN mandate for any intervention.

These are all valid criticisms, that are hopefully more readily dealt with in the solutions proposed in this paper. We argue that it is hard to take the Collier et al (2008) approach of compartmentalising the problems and offering solutions in this way. First, there is the heterogeneity of conflicts, meaning it is difficult to generalise and difficult to have generic solutions. Second, the issue of seeing 'peace' as a process rather than trying to suggest it is a state that some group –often foreign powers/institutions define.

There are three facets to consider and each of these represent a solution, but really each of these solutions are interlinked and should be running at the same time. The first is prevention, putting networks, organisations and resources in place to stop conflicts happening; the second is intervention, where a conflict has already broken out; and the third is post conflict reconstruction, when a conflict has ended. Many of the instruments are already in place, so the in many cases the contributions being considered would be adding to existing initiatives.

These solutions, will also have different benefit profiles as prevention will be stopping the conflict from occurring and so would be prevent the full cost, while intervention would mean that the conflict is already underway to some extent and post conflict reconstruction would mean the conflict has come to an end –by some definition and so the solution can only claim a fraction of the full cost. We argue that the legacy cost of conflict is high and so the post conflict solution remains relatively high.

Share of conflicts averted for different interventions:

Assumptions	**Prevention**	**Intervention**	**Post Conflict and reconstruction**
Conflict cost averted (share)	**100%**	**75%**	**50%**
$1000 DALY, 3%	**284**	**213**	**142**
$1000 DALY, 5%	**202**	**151.5**	**101**
$5000 DALY, 3%	**322**	**241.5**	**161**
$5000 DALY, 5%	**242**	**181.5**	**121**

Note: we assume prevention avert 100% of conflict costs while intervention and post conflict initiatives will avert 75% and 50 % respectively.

For the period 1990-2008 (18 years) there were 132 conflicts, which is around 7 a year. The number of conflicts has been declining as we saw earlier, so we would not expect as many to start. It is also unlikely that war onsets would be spread uniformly and wars that might have started after the first year would not have continued over the whole period and not all attempts would be successful. Given this it seems reasonable to allow for 4 wars over the 4 year period in what follows.

Conflict Prevention:

The first solution is to set up procedures to try and prevent conflicts from occurring. We now have a wide literature that give some idea of countries that are most at risk and if there were tools that could be used to prevent them moving into conflict then the world would be saved the loss of life and economic costs outlined above. The best means of stopping a conflict is surely to stop it happening in the first place.

Early Warning: A major part of this would be establishing an effective 'early warning system', to provide warnings of the onset of conflict. There is already an established set of tools for this, though as Wulf and Dibel (2009) and OECD (??) show the effectiveness of the response is open to question. So there would some cost in improving the data collection and the effectiveness of existing systems within the context of regional organisations, such as the African Union. Certainly the research has been done to try to identify problem countries, though improvements could be made. A major problem is likely to be the translation of 'early warning into 'early action', given past experience, where countries and their allies have resisted conflict prevention methods, as a threat to their national sovereignty and richer countries have been loath to intervene unless there is a perceived threat to their national interest

With this in mind Chalmers (2004) considers the cost effectiveness to the international community of conflict prevention activities. He starts by providing a useful summary of research on the probability of conflict for countries when they have been involved in a major conflict in the last 5 years and when they have not, disaggregated by income group. The differences are striking. Countries that have been in conflict seem twice as likely to be involved again, while low income countries are the most likely to be involved in conflict. This information is combined with a series of risk assessment factors, so that case studies can take the relevant probability and then adjust it for the specific characteristics of the individual country

Table 2: Chalmers (2004) Assessment Criteria

Fifteen Year Conflict Probability Estimates

Income level (2002)	**Major Conflict In last 5 years**	**No major conflict in last 5 years**	**Total**
Low	80	37	50
Lower middle	61	28	33
Upper middle	11	5	6
Total developing	61	28	34

In undertaking conflict risk assessment, Chalmers and collaborators take the income and recent conflict history to give a base probability. Judgement is then made of whether the country is greater, equal to or less than the norm, with the weights based on the following characteristics shown to be important in the empirical literature: whether there is a dominant ethnic group; high dependency on commodity exports; decline in per capita GDP over last decade; large population; interregional inequality; if in first year of independence; if an

immature democracy; political instability; low CPIA score; migrant communities in neighbourhood; conflicts in neighbourhood; violent leaders; international peacekeeping forces; other factors. These are summed to give a judgement of conflict probability

What is needed is the continuous support for research, collection of information and an increase in coverage, plus resources to develop capabilities at country level and within regional bodies. In addition, some attempt could be made to develop international resources to improve diplomatic engagement at UN level, improve mediation services and provide resources for fact finding missions (Cranna, 1994). This would allow the international community to engage with government and groups within countries and between countries when the early warning systems had flagged up problems. The cost of providing this sort of support would be relatively minor. Much of the framework already exists.

Peacekeeping Operations: The international community is of course already involved in dealing with conflicts, but to give some context to the effort made the budget for UN Peacekeeping operations for the fiscal year 1 July 2011-30 June 2012 is about $7.84 billion By way of comparison, this is less than half of one per cent of world military expenditures in 2010. The estimated cost of all UN Peacekeeping operations from 1948 to June 2010 amounted to about $69 billion. The top 10 providers of assessed contributions to United Nations Peacekeeping operations in 2011-2012 are: 1. United States (27.14%); 2. Japan (12.53%); 3. United Kingdom (8.15%); 4. Germany (8.02%); 5. France (7.55%); 6. Italy (5.00%); 7. China (3.93%); 8. Canada (3.21%); 9. Spain (3.18%); 10. Republic of Korea (2.26%). Many countries have also voluntarily made additional resources available to support UN Peacekeeping efforts on a non-reimbursable basis in the form of transportation, supplies, personnel and financial contributions above and beyond their assessed share of peacekeeping costs. Not all countries pay their contributions in a timely manner.

To undertake such roles properly would require a larger and better-resourced UN force than exists at present, as the ineffectiveness of the UN troops in Lebanon illustrated.

Mission	**Country**	**Date**	**Troops**	**Total pers**	**%troops**	**Fatalities**	**Budget ($US million)**
UNTSO		1948	0	383	0	50	70.3
UNMOGIP	India/Pak	1949	0	114	0	11	21.1
UNFICYP	Cyprus	1964	857	1076	79.6	181	58.2
UNDOF		1974	1046	1190	87.9	43	50.5
UNIFIL	Lebanon	1978	12138	13156	92.3	293	545.5
MINURSO	W.Sahara	1991	24	510	4.7	15	63.2
UNMIK	Kosovo	1999	0	403	0	54	44.9
UNMIL	Liberia	2003	7812	10943	71.4	164	525.6
UNOCI	Cote d'Ivoire	2004	9418	12363	76.2	89	646.0
MINUSTAH	Haiti	2004	7699	13377	57.6	170	793.5
UNMIT	E. Timor	2006	0	2752	0	12	196.1
UNAMID	Darfur	2007	17777	27795	64.0	110	1689.3
MONUSCO	DRC	2010	16975	23205	73.2	35	1489.4
UNISFA	Abyei	2011	3715	3823	97.2	6	175.5
UNMISS	S. Sudan	2011	4726	7369	64.1	1	722.1
Total			82187	118756	69.2	1234	c 7.84b

Sources: UN DPI/1634/Rev. 129 –Feb 2012

GAO-06-331 consider the cost of the US conducting a peacekeeping operation similar to the UN Stabilization Mission in Haiti (MINUSTAH) . They estimate that it would cost the United States about twice as much do the same job. They argue that while the UN budgeted $428 million for the first 14 months, a U.S. operation in Haiti of the same size and duration would have cost an estimated $876 million, far exceeding the U.S. contribution of $116 million. Virtually all of the cost difference is attributable to civilian police, military pay and support, and facilities, and reflects higher costs and standards for police training, troop welfare, and security[15]. In addition to military considerations, including nation-building and development assistance activities in the scope of the operation would increase the cost significantly. Official donors, including the United States, distributed $382 million for these activities during the first year of MINUSTAH.

Political considerations are likely to influence decisions about the role of Western powers and the UN in peacekeeping. U.S. led operations in Haiti between 1994 and 2004 benefited from a vast military infrastructure, giving strong communications, command and control, readiness to deploy, tactical intelligence, and public information. The UN's provided multinational participation, extensive peacekeeping experience, and an existing structure for coordinating nation-building activities.

Chalmers (2004) looks at a number of conflict prevention packages for a number of conflicts in an attempt to evaluate the cost effectiveness of such activities. He estimates the likely probability that particular conflict prevention policies, military and non-military actions, would have stopped the conflict. It then considers the actual cost of the conflict to the international community and works out the breakeven probability. It turns out to be very low. The study estimates that £1 on conflict prevention generates savings of £4.1 to the international community, with range 1.2–7.1 based on their case studies. He estimates NPV costs at 2004 prices of between $0.2bn and $139.4bn, the latter being for Afghanistan.

Again there is the issue of how intervention operations should be structured and arranged. It is vital that the UN play a major role. Cranna (1994) suggested a range of conflict prevention policy initiatives which would firstly establish clear principles for international action following precedents in UN Security Council and then provide guidelines for how and when action would be taken. Some organisational structure would be required to respond to the 'sparks of conflict, implying effective early warning, fact finding missions, diplomacy and mediation. Sanctions could be applied, targeted for effectiveness and fairness. UN troops could be deployed to prevent conflict (and if that failed for peacekeeping), support for humanitarian aid, to shift military balances. The UN could also provide safe havens and even

[15] They show how various military and non-military factors can substantially affect the estimated costs of a U.S. operation. They analysed three military factors: the mix of reserve and active duty troops, the rate of deployment, and the operational tempo. Deploying all reserve troops would increase the cost estimate by $477 million, since it would require paying more reservists a full salary. Deploying troops at a faster rate than the UN—within the first 60 days instead of 180—would cost an additional $60 million. Conducting the operation at a higher tempo—with more intensive use of vehicles and equipment—would increase estimated costs by $23 million.

UN Trust territories, a much longer commitment. They also suggest policies to curtail the arms trade, some of which have been pursued, but with limited effectiveness. A few years later, Brown and Rosecrance (1999) undertook a similar exercise and argued for the need to distinguish the long term efforts of reducing security concerns, promoting political justice and human rights, promoting economic development and justice and overturning patterns of discrimination from focussed efforts. The latter being such things as fact finding missions, mediation missions, confidence building missions, traditional peacekeeping operations, multifunctional peacekeeping operations, military and economic technical assistance, arms embargoes and economic sanctions and finally the use of military force.

There has also been some analysis of the costs and benefits of setting up a free standing UN rapid reaction force. Klein (2006) discusses the cost of setting up a UN rapid reaction force and the benefits of it, which in Klein and Marwah (1996) was costed at $50bn for 1 million persons ($50,000 per person per year)., with a 'standing' UN rapid reaction force of 15,000 plus back up reaching 45,000 persons. More recently Kaysen and Rathjens (2003) used £30,000 per person, but to give perspective recent pseudo official estimates suggest that the cost of a US soldier in Afghanistan of Iraq is $390-900,000.

It is unlikely a UN force would be as expensive as this and for conflict prevention it may be that heavily armed troops are not required, though there may need to be some stronger units in reserve. So a reasonable a reasonable estimate for a force of this type would be say $200,000 pa for each of the 15,000 including backup, giving a cost of 3 billion pa. These are in fact similar to the per annum costings of Collier (2008) for peacekeeping troops, when over the horizon guarantees are ignored. In addition, as we have argued peacekeeping operations need strong non military support. So we add in another $1bn for non military personnel, police, administrators, professional, mediators and so on to assist in peacemaking activities.

Aid and Economic sanctions: Have both long been tools of foreign policy and sanctions have noticeably increased in use in recent years. There are a range of available type that can be categorised as comprehensive, targeted general; targeted financial; targeted commodity. Comprehensive sanctions, such as those on Iraq, can be an effective foreign policy tool and achieve concessions, but targeted sanctions can also be effective and less damaging. Targeted commodity sanctions, for example on oil and diamonds, have been common, though UN monitoring and enforcement capabilities need to be improved. In the UK the costs to business of sanctions policy is seen as relatively minor (House of Lords, 2007). Recent research by Escriba-Folch (2010) has found strong evidence for the effectiveness of economic sanctions in reducing the duration of conflicts, finding total economic embargoes are the most effective and that while embargoes by all actors have negative effects, those imposed by international organisations are more likely to lead to conflict resolution, while those imposed by others tend to increase the probability of military victory. This is supported by Petrescu (2010) finding that countries involved in a dispute are less likely to participate in another in the future if they were sanctioned by a large country or group of countries.

Targeted sanctions could play an important part in policies aimed to prevent conflict, aimed at one or both sides in the dispute. The obvious instruments include arms sanctions, to prevent further militarisation, financial sanctions to limit income and commodity sanctions, to prevent exports reduce income flows to protaganists (as Collier and Hoeffler have shown most civil wars need clear income sources for both rebels and government). Such sanctions would best be organised through the UN and are unlikely to be particularly costly to the world economy and would need to be designed to minimise suffering for individuals within the targeted countries, to maximise the impact on the elite and minimise the impact on

ordinary citizens. When the sanctions are being used to prevent conflict the threat may be the most important and so there may be no cost.

To get some idea of potential costs, consider Hufbauer et al (1997) who estimate that the US in 1997 had sanctions on 26 target countries and that this led to between $15 and $19bn in foregone earnings. This suggests costs of about 0.6 to 0.7bn per country. Given the type of sanctions we are looking at and the small size of most countries in conflict, these are overestimates, but there may also be costs of enforcement and there are other countries involved.

In the situation where attempts are being made to prevent conflict there may also be carrots as well as the stick of sanctions. Indeed, one might even see the sanctions as threats and aid as the main instrument. In these situations the aid could be targeted in such a way as to deal with any stated grievances, provide needed humanitarian assistance, or even contribute to more infrastructural investments –even actions that might be tantamount to bribes. Dumas (2006) argues that minimizing economic stress points also helps minimize the potential for conflict, These would obviously be in addition to any other aid programmes within the target countries.

Aid can also play an important role in preventing the onset of conflict, by targeting any of the problems that seem to be increasing the probability of conflict. Official development assistance (ODA) reached about $100 billion in 2006. If we assume an extra 1.5% would provide the necessary leverage and allow a reasonable figure seems to be 1.5bn. It is also possible that targeted economic sanctions may be necessary, which we put at a cost of 0.5bn.

This gives a cost of 2bn pa for economic sanctions and aid combined, to reflect the contributions and the sacrifices of a number of countries, some of whom may need to be compensated. This allows for different mixes of the two.

Action on Arms trade: Certainly sanctions can be imposed on countries at risk of starting a conflict, but theses need not be particularly successful given the nature of the arms trade. It may be that the major suppliers withhold arms, making it difficult to get high tech equipment in particular, but there are also other ways of getting arms, particularly the low tech equipment of most wars. This is through countries not committed to sanctions and through the private and second hand arms market, especially the illicit one. While the centre of small and light weapons (SALW) is difficult to control, there are actions that can be taken to try to deal with this, through agreements and treaties, assistance with border controls and anti-smuggling and the international investigations of illegal arms flows and those involved in the trade. If nothing else, the actions would increase cost and lower affordability. So it is worthwhile adding in some funds to support such activities. It is not clear how one would cost this, but $0.5 billion a year should provide some effective activities.

Table : # conflicts by region and intensity

	1946-2008					1990-2008				
	major	medium	small	minor	all	major	medium	small	minor	all
SSA	24	22	8	40	94	8	11	3	28	50
Asia	31	21	8	25	85	4	6	7	16	33
MENA	20	6	3	16	45	5	1	0	9	15
L. America	11	4	3	17	35	0	0	0	5	5
E.Eur/FSU	12	7	2	11	32	10	5	2	10	27
West	1	0	0	5	6	0	0	0	2	2

total	99	60	24	114	297	27	23	12	70	132

Note: Average kia/year: major 1000, medium 500-999, small 250-499, minor 25-249.
Source Fearon (2010)

Summarising these, the costs per year per conflict for this solution are:

	$bn pa per conflict
Early warning etc	1
Economic sanctions/Aid	2
UN Troops and backup	3
Non mil forces	1
Action on Arms trade	0.5
Total	7.5

Which means a total cost of around 7.5 billion per year, which over 4 years will cost 30bn, discounting this by 3% over 4 years gives $28.7 bn and at 5% give $27.9bn in 2000 prices.

We allow for 4 wars over the 4 years and assume 3 of them are successfully prevented, with cost per war for 3% discount rate and $1000 DALYs $284 bn. So the total benefits are three quarters of $1156. It is unlikely that four conflicts would be dealt with each year and given the cross subsidisation and joint costs spread over conflicts, it seems reasonable to all for two conflicts per year for the total costs, giving cost per year per conflict of $15bn, which discounted over 4 years at 5% gives $54bn.

Solution	**Assumptions**	**Benefits**	**Costs**	**Benefit Cost Ratio**
Prevention	**$1000 DALY, 3%**	**852**	**56**	**15.2**
	$1000 DALY, 5%	**606**	**54**	**11.2**
	$5000 DALY, 3%	**966**	**56**	**17.3**
	$5000 DALY, 5%	**726**	**54**	**13.4**

Note: this assumes prevention averts three out of four conflicts and so 75% of the full four year costs

This gives a set of benefit cost ratios minimum 11:1 and maximum 17:1, showing conflict prevention to be an impressively beneficial use of any available funds.

Intervention:

Once conflict has started, or is starting it may be necessary to undertake policies of intervention. Brauer (2006) considers the difficulties real-world peacemakers might be expected to encounter. He identifies eight determinants of intervention that explain why it is relatively rare. First, there must be information that something is amiss; second, externalities such as refugees spill over to non-conflict neighbours; third, the closer the neighbours the more informed and caring; fourth, distance is mediated when relations exist eg colonial; fifth, problems with a number of neighbours distracts; sixth, problems at home reduce the likelihood of involvement; seventh, the existence of economic and strategic self-interest; eighth, the opportunity to train forces in real-time conditions. He does not include

“humanitarian good will” as peacekeeping tends to be done for rather more hard-edged reasons, nor the cost of peacekeeping as he argues this is usually trivial – at least in relation to the cost of maintaining standing, national armies (Fetterly, 2006 takes issue with this). It is also the case that peacekeeping can provide tangible benefits for the military: eg, it provides funds, keeps them in the political arena, and it provides opportunity for real-life training and equipment testing. This suggests that the problems may be getting countries to engage in the activity at all and that cost may not be an issue.

The peacekeeping costs cannot be directly generalised to consider peace making roles. But as mentioned Chalmers considers the argument that intervention saves the international community money I the long run, to be important. He considers a number of hypothetical packages for conflict intervention, estimates their costs and then considers what the breakeven point is i.e. at what probability of conflict occurring do the costs of doing something and doing nothing equate. Chalmers (2004) also provides some estimates for the successful British intervention in Sierra Leone. In addition to peacekeeping troops , sanctions and aid can play an important role in intervention in conflict, providing the carrot to the stick of military intervention. Collier et al (2008) suggests that the threat of international involvement has a role to play and the fact that Francophone countries had the support of the French army when needed made them less likely to end up in conflict. As discussed before we feel a UN rapid deployment force would be a better means to achieve this.

This solution really is intended to deal with an ongoing conflict and to stop it from continuing and deal with the immediate aftermath. Any further action would come under the next solution –post conflict reconstruction support.

Given the likely need for military action, this solution will require some better armed forces than those suggested for prevention, but these ‘peacemaking’ troops would have specific rules of engagement and would need to be supported by both peacekeepers and non military forces. Of course no action may be needed and if the threat is seen as credible that may be enough. To reflect the costs of better armed troops the proposed costs is around $4bn pa, a little higher than the force costs proposed by Collier et al (2008).

In addition, as before costs of non military forces, such as police, technicians, doctors, administrators etc. are added in to help deal with grievances and the immediate impact of any conflict and/or external action. Quick action might reduce the likelihood of reprisals. $1 billion a year is added for this.

Intelligence: improved intelligence could be extremely beneficial for any intervention, providing up to date and detailed information on conditions on the ground, political, military and social, so we allow for $1 bn a year to provide this.

Economic sanctions and aid: Economic sanctions could be important in putting increased pressure on the protagonists both before and during the military intervention. It may even be enough when combined with the credible threat of action to stop the conflict. As before it s important to have carrot as well as stick and aid can play an important role, as promises to help deal with grievances. Aid will be important in assisting the intervention and dealing with humanitarian problems, but it’s likely that its major role will come once the intervention has ended. The requirement will be considerably less than for intervention, so we allow for $1bn to cover both.

Summarising the expected per annum costs per conflict, it is clear that this solution takes a much more force heavy form and that this is where the majority of the resources will be required. This is not surprising give the possibility of military action, but we do not lose

sight of the concerns about external intervention and the need to plan this carefully through the UN and gain political acceptability.

	$bn pa per conflict
Intelligence etc	1
Economic sanctions and aid	1
UN Rapid reaction	4
UN Peacekeepers	2
Non mil forces	1
Total	9

This gives a net present value cost at 3% discount of around $34bn and at 5% of $33bn. If conflicts finish early they will be less costly and may reduce the cost of the post conflict reconstruction that is likely to follow. Given the joint costs, economies of scale and cross subsidisation, using four times these costs probably overestimates the costs of dealing with 4 interventions within the period, so we use three times in the estimates below. It is difficult to judge the true benefits of intervention, but given the conflict has started the benefits of ending it will be lower than if it had been prevented from happening, but the probability of success will be higher than for prevention. It seems reasonable to allow for benefits of around three quarters of the full costs for four wars. But this is not true of the DALYS as the earlier the intervention the less health costs will arise, but they are still likely to do so and in fact the intervention may inadvertently create some extra costs. For this reason we retain the full estimated cost of the DALYS. This gives costs and benefits:

Solution	**Assumptions**	**Benefits**	**Costs**	**Benefit Cost Ratio**
Intervention	**$1000 DALY, 3%**	**852**	**100**	**6.4**
	$1000 DALY, 5%	**606**	**96**	**4.8**
	$5000 DALY, 3%	**966**	**100**	**7.2**
	$5000 DALY, 5%	**726**	**96**	**5.7**

Note: This assumes that intervention averts 75% of the costs of conflict, as conflicts have already started.

Showing that intervention would still be a highly rewarding use of resources, with a minimum cost benefit ratio of 5:1 And a maximum of 7:1though not as high as prevention.

Post conflict reconstruction support:

Once peace has been achieved through victory by one side, stalemate, or the effects of intervention of some form, there is the need for reconstruction and repair of the economy and society, in a manner that prevents the country falling back into conflict. Considerable effort is already put into post conflict reconstruction at present, but it has certain weaknesses, most strikingly it may end before real peace has been achieved. This may leave huge legacy costs. As discussed earlier many countries or regions in countries can suffer through more general violence that can remain after the conflict. As we have seen the criticism of Mack (2008) that the acceptance by Collier et al (2008) on the dominance of the ‘feasibility’ understanding of conflict, tends to reduce concerns over potential grievances that may have existed before the

conflict or have developed during the conflict. Putting more resources into this process can be hugely beneficial if used to deal with some of the criticism of present policy, to focus on the legacy costs of conflict, rather than just the attainment of 'peace' and economic stabilisation.

It is useful to consider post conflict as a process that goes through a number of stages. Harris (1999) suggests four phases of recovery and reconstruction. The first is ending the fighting, which may continue even as a peace agreement is being drawn up so it can take time to end it and to start to put the agreement into practice. The second, rehabilitation and restoration, which will include the removal of limitations on civil activity, re-establishing civil law, re-establish civil institutions, disarming ex combatants, de-mining roads, and returning displaced persons. Then reconstruction and/or replacement, which will involve gaining financial resources for reconstruction, replacing and repairing capital and infrastructure, demobilisation and resettlement, rehabilitating victims of war, introducing or reintroducing democracy, developing and restructuring civil institutions consistent with post conflict environment, and beginning reconciliation. Finally, development and transformation, which will involve adopting and implementing a new vision for society, undertaking structural changes, establishing new institutions, and continuing reconciliation.

Seeing post conflict reconstruction in this way is valuable as it makes the achievement of peace a process and allows more effort to go into creating a 'peaceful' country, rather than a country no longer in conflict. It is certainly difficult to achieve any form of peace as the variety of forms of conflict and the various possible causes of conflict all make recovery from conflict and the reconstruction of the country difficult and fraught with the danger of a return to fighting. The peace will first depend on how the war ended, by victory of one side, by international imposition or by exhaustion and, whether it does in fact end completely. As war moves to peace the country and economy will require reconstruction and this will certainly need to be designed in such a way as to prevent any of the parties reverting back to war. This of course raises the question of how peace is defined and different groups are likely to disagree on this. Clearly, the process of transition to a commonly accepted 'peace' is as important as the end of hostilities. Rehabilitation and reconstruction is likely to aim for more than a return to the pre-conflict economic, political and social life. An important concern is the possibility of moving back to conflict simply because it makes economic sense. It has to be clear to the protagonists that they will benefit from the peace more than going back to war (Dunne, 2006).

Economic reconstruction is clearly vital and may start before the complete end of the conflict/crisis. An improving economy would clearly make it easier for all stages to be moved through. Whenever it does start, the first actors involved are likely be the aid agencies and the World Bank and IMF. An important issue to be dealt with by all those involved is the perceived balancing of the demands for greater economic growth with those for greater social justice and human welfare. The fact that conflict has occurred is likely to mean that a series of changes and promises will be needed to deal with grievances to underpin any peace deal. To ignore these and to impose generic policies for economic growth that may have high short run costs may well simply lead to a reigniting of hostilities. The protagonists may simply see themselves as being better off fighting.

The end of the war is likely to provide opportunities for government to reallocate spending, but it is likely to be limited in the short run. Conflicts seldom end tidily and continued military action may be required, even if only to defend the peace. Weapons often do not make up the majority of military expenditure in developing economies and demobilising soldiers is problematic and can take time. If it is done too quickly, the country could end up with disaffected and armed ex soldiers and this can be dangerous. Dismissing soldiers can also mean they are no longer spending their income and this reduction in demand

may affect regions damaged by the war particularly badly. More generally, the reduced spending power of the armed forces can reduce the demand they provide for goods and services in the economy as a whole and lead to economic problems. A 'war' economy faced with a sudden change in the form and level of demand will find it difficult to adjust. After a civil war the first stage may be to 'regularise' all combatants and this costs money. Unfortunately, the fiscal possibilities are also likely to be limited as well given the state of the economy. Generally revenue raising improvements will be result of foreign aid and loans and these can cause their own problems (displacement, dependency, difficult interest payments etc…) (Dunne, 2006). This means that the 'solution' of reducing military spending in post conflict countries proposed by Collier et al (2008) is not so clearcut, to the extent that we do not consider it as part of the solution here.

The end of war does not necessarily imply economic security. There may be problems of micro security, with armed inhabitants desensitised to violence and high rates of robbery, and macro insecurity, the considerable risk that war will be resumed (Collier and Gunning,1994). Political instability can discourage private investment, especially foreign direct investment (the growth of small scale national investment is particularly important as it drives the informal sector, probably the largest potential source of employment). Governments may find it difficult to raise taxes or borrow from the public and will be tempted to print money, possibly resulting in inflation[16] .

Aid can play a vital role in developing the infrastructure and is itself a valuable way of encouraging other investment. There is a need to consider how to develop local investment and to encourage entrepreneurs at the same time as encouraging foreign investment. There can be some tension between these two. For example the policy of keeping government expenditure down to keep inflation down may encourage investment in an economy but damage economic development, which itself may discourage foreign investment (through lack of potential profits).

Agriculture will be affected through the destruction of other infrastructure, but also has its own problems and given importance of 'food security' is vital to reconstruction. In a post crisis situation, it is necessary to get investment into the sector, support clear up, and to support agricultural development, through the development of public services, credit services and infrastructure. It is important to consider both subsistence and commercial farming, the former is crucial as it can allow much of the population to become self sustaining fairly rapidly and the latter is important as it may be the only earner of foreign exchange. Relatedly, land reform policies may be important, but need to be designed and implemented with care. There is a need to prevent an exodus to urban areas and to take pressure off them and targeting the development of rural areas is the obvious way to do this. Failing to prevent the break-up of social groups and communities, which is likely to result from moves to urban areas, could cause conflict with return of ex combatants, who will not be reintegrated into society (ILO, 1995).

In conflict situations, the informal economy can often come to the fore. This can be a complex circuit of exchange with international links, e.g. Sarajevo. But with the end of conflict the strength of this sector can act as a restraint on the reassertion of the formal economy and can introduce criminal elements. Indeed, as Duffield (1992) points out conflict can lead to a transfer of assets to middle men, which can be extremely destructive and embed

[16] A post Keynesian would argue that the link from money supply to inflation is not clear and if anything is likely to be the other way around.

inequality. At the same time this is usually a circulation of goods, with little new production of assets. The informal sector is, however, the only viable possibility of a livelihood for many and the impact of destroying it through reconstruction policies may not be compensated for by the growth of the formal sector. International intervention can in fact make things worse and care need to be taken by aid agencies and policy makers. Aid can destroy the existing market structures and lead to anomalies, such as farmers being ruined by inflows of cheap aid.

Given the heterogeneity and complexity, it is likely to be important to carefully research individual countries when attempting to design polices for post conflict reconstruction, but some generic requirements can be identified. There is also some level of overlap and it will be important to try to envisage a way in which this can be dealt with.

So there are a number of issues to take into account in looking at how best to contribute to post conflict reconstruction with the available instruments. Considering the costs of conflict that are relevant to this solution, the first consideration is the increase in military spending resulting from conflict. This is something considered in detail by Collier et al (2008), but it is a more complex issue than simply reducing spending to create growth and reduce the probability of conflicts recurring. It is in fact difficult and dangerous to simply disband the armed forces and as mentioned recently security sector reform has been an important policy issue. In post conflict situations the security sector is often characterised by politicisation, ethnicisation, corruption, lack of professionalism, poor oversight, inefficiencies and excessive military spending. The sector needs to be restructured to free up resources and stop it being a fetter on development, but the need for security while the rebuilding is taken place is still clear. Domestic public security institutions are needed and the re-establishment of the legitimate monopoly of violence. Linked to this provision of physical security, which primarily involves the police and the military, is the proper functioning of the courts and the prison system, as well as, small arms control and security institutions within the realm of rule of law. The international community may need to be directly involved if the relevant state structure have broken down (Brzoska nd Heinemann-Gruder, 2005). These will seem to justify some maintenance of security spending, but with some clear guidelines

Intelligence: Given the complexity and heterogeneity outlined above, it seems important to have good knowledge of the economic, political and social background of the countries, the causes of conflict, the reason for it ending and the context of the post conflict period. Many problems have come about with policies designed with a lack of understanding (Dunne, 1996). So it seems useful to allocate about 0.5 billion pa to support such efforts.

Peacekeeping forces: These can be important, but will have a different role to these intervention forces discussed above and will more likely be truly peacekeeping forces. Depending upon the situation in the country, the troops may be required to keep the sides apart, but are more likely to be involved in ‘policing’ the peace agreement.

Non-military support: Non military forces would be useful, such as police to support and train and overcome entrenched mistrust. Police and justice 'development' projects to ensure reduced corruption, with external auditing and maybe ‘accreditation' of police and justice forces. Support is likely to be required for creating credible and non corrupt institutions of state. This could include administrators and civil servants being brought in to support. Mediation and reconciliation services are also likely to be important, as it is also important to recognise that the end of conflict is not necessarily the end of violence and many countries are saddled with the legacy of conflict even when they are considered at peace. We include $2 billion pa to cover these services and personnel.

Aid: International aid, economic and humanitarian, will also play an important role, but there is considerable debate over its value and the type of aid that is useful in a post conflict environment (Duffield, 2006; Dunne, 2006). The usual post conflict policies of demobilisation, infrastructure development (maybe labour intensive methods), human capital development, development of banking and finance, macroeconomic and trade policy support will also be important. Aid will be important initially for humanitarian needs and demobilisation and reintegration, but then to assist with economic development and develop institutions and capabilities (including education). Infrastructure development will also be necessary. As discussed above aid has important roles to play, but it is important to recognise the need for security and the need to recognise the specifics of the individual countries problems when it is in such a fragile condition (Brauer and Dunne, 2012). It is also clear that foreign aid will need to be much larger in a post conflict situations that in the other solutions, as so much damage will already have been created. For this reason we suggest $8bn pa over the four years.

A considerable amount is spent on post conflict already, so really all we can do is look at the marginal effect. It would also be valuable if the resources allowed the programmes to be more flexible and deal with the legacy costs of conflict which are often ignored as the more usual indicators start to look better. As mentioned, the peace accord is often not the end of the fighting and the end of the fighting is often not the end of violence. As we have seen the violent legacy left behind can be devastating and cause great economic loss. It is difficult to gauge this within the framework here. Certainly the cost of this 'solution' is greater than the others, but it is also the final step, the solution needed when the first two fail.

Summarising the estimated costs:

	$bn pa per conflict
Intelligence	0.5
Aid	8
UN Troops and backup	3
Non mil forces	1
Action on Arms trade	0.5
Total	13

Over 4 years and discounting at 3% would suggest costs of $54bn and at 3%, $52bn per conflict. The benefits of post conflict policies will be the increased economic growth in the same manner as before. While there will be some cost sharing across the four conflicts we consider, the specific needs of the countries mean that it be reasonable to expect three times these costs to cover four conflicts. Growth in this case will be slightly slower as the economy takes off, but aid will play a major role. Engaging in the reconstruction of economies would prevent them from restarting and this is unlikely to be nonlinear with the largest probability of recurrence occurring in the first years[17]. So we allocate 50% of our base estimates to benefits and for speeding up the recovery phase. In this situation the benefits could be more widespread than under the previous solutions, as a focus on the legacy costs could increase

[17] Collier et al (2003) suggest post conflict countries face a 42% risk of returning to conflict in ten years.

the benefits. Brauer and Tepper Marlin (2010) estimate the costs of the wider effects of violence internationally are 9% of world GDP. When looking at low income countries there may not always be such a large externality effects, though the development of terrorism in conflict ridden countries is always a concern. As we are contributing to post conflict scenario and could focus on legacy costs the benefits of reduced DALY can be higher than before. After a conflict the health costs are bound to be large, because of what has happened during the conflict, the break down in infrastructure and communication and services. To reflect this and the impact on the chance of recurrence, we maintain the DALY cost per conflict, despite the initial conflict having ended:

Solution	Assumptions	Benefits	Costs	Benefit Cost Ratio
Post conflict	**$1000 DALY, 3%**	**568**	**145**	**3.9**
	$1000 DALY, 5%	**404**	**138**	**2.9**
	$5000 DALY, 3%	**644**	**145**	**4.9**
	$5000 DALY, 5%	**484**	**138**	**3.5**

Note: This assumes that post conflict reconstruction averts 50% of the costs of conflict, as the conflicts have already ended or are close to it.

These results show that there are certainly good returns to investing more funds in post conflict restructuring, but the benefit cost ratios are not as high as the other solutions. This is not surprising, given international organisations, governments and NGO already commit a lot of effort and resources to assisting countries coming out of, so additional resources would only have a marginal effect (the easy benefits have already been taken). It is also a long run process. In fact post conflict reconstruction is so important it is a necessity, with our main concern being that the legacy costs may not be identified correctly and that international effort may be ending before an end to violence.

Conclusions

Conflict is a major problem for the world and one that impacts most upon the very poorest individuals in the world. It has potentially huge costs which are generally never fully measured. The direct costs are always very evident in the headlines, but the indirect and legacy costs are much less apparent. It is possible to measure both direct and indirect costs, using accounting and counterfactual methods. Such studies find conflicts can be devastating in a number of ways, can have high economic costs, can have high spillover effects and are a major concern for development. Arguments remain that we may be interpreting the role of conflicts wrongly (Cramer, 2006) and that they can play a positive role, representing primitive accumulation, allowing the removal fetters on forces production, or making important institutional changes. But given the damage they can do the main focus is on their costs.

What is being measured by studies of the cost of conflict is unlikely to be the full legacy costs and there always remain the questions of what peace is and when does a conflict end. The high costs and complexity make the creation of solutions very difficult, but in some ways it is better to see the solutions as part of a process to deal with then problems at particular stages, rather than simple remedies. For this reason we put together a combinations of instruments that are relevant for conflict prevention, intervention and then post conflict reconstruction.

In this paper an attempt has been made to estimate the likely costs and benefits of using new funds to contribute to each of the solutions, which as they are essential phases show a degree of overlap. The analysis starts by considering the solutions presented in Collier et al (2008), using estimates that still seem reasonable for the valuations involved and adjusting where necessary. The approach taken here is quite different and the instruments focused upon deal with differently. Each of the solutions contains a number of instruments and trying to determine what the cost of these are, does illustrate the issues involved. The results of the reasoning and calculations provide the estimates below:

Solution	Assumptions	Benefits	Costs	Benefit Cost Ratio
Prevention	**$1000 DALY, 3%**	**852**	**56**	**15.2**
	$1000 DALY, 5%	**606**	**54**	**11.2**
	$5000 DALY, 3%	**966**	**56**	**17.3**
	$5000 DALY, 5%	**726**	**54**	**13.4**

Note: this assumes prevention averts three out of four conflicts and so 75% of the full four year costs

Solution	Assumptions	Benefits	Costs	Benefit Cost Ratio
Intervention	**$1000 DALY, 3%**	**852**	**100**	**6.4**
	$1000 DALY, 5%	**606**	**96**	**4.8**
	$5000 DALY, 3%	**966**	**100**	**7.2**
	$5000 DALY, 5%	**726**	**96**	**5.7**

Note: This assumes that intervention averts 75% of the costs of conflict, as conflicts have already started.

Solution	Assumptions	Benefits	Costs	Benefit Cost Ratio
Post conflict	**$1000 DALY, 3%**	**568**	**145**	**3.9**
	$1000 DALY, 5%	**404**	**138**	**2.9**
	$5000 DALY, 3%	**644**	**145**	**4.9**
	$5000 DALY, 5%	**484**	**138**	**3.5**

Note: This assumes that post conflict reconstruction averts 50% of the costs of conflict, as the conflicts have already ended or are close to it.

Clearly the results suggest that most cost effective way of dealing with the cost of conflict is to prevent the conflicts taking place, although care needs to be taken that this is not being undertaken against the interests of the citizens of the countries –in some cases conflict may have positive outcomes. If conflicts do break out then the next stage is possible intervention. This is shown to be extremely cost effective, but again there are a number of political issues and some clear guidelines and procedures need to be agreed and there needs to be transparency. If intervention succeeds it will lead to the post conflict reconstruction phase earlier than it would have happened otherwise and the costs to the country and the international community are likely to be smaller. When conflicts do end what is needed for reconstruction is contingent on the nature of the conflict and the way it ended. Already considerable effort is made on post conflict reconstruction, but it can be more effective. Particularly important are the legacy costs of the conflict, such as more general violence within the society and these are usually not picked up. Post conflict policies can be costly but also are cost effective in preventing suffering, important externalities and building up economies that provide new markets and raw materials. While post conflict policies may not

have the highest benefit costs ratio, they do represent necessities and already command the attention and resources of the international community.

It is important to emphasise that even with the efforts we have made the true costs of armed conflicts are still likely to be hugely underestimated. The unmeas-ureables are significant and the full legacy costs are not always registered as the cost of the conflict. The existence of drugs, criminal gangs and violence in South American countries such as Colombia in the present day, can be traced back to the ending of an armed conflict without true peace being achieved.

The solutions here have fitted the costs into the 4 year window specified for the project, but clearly it would make sense to continue these expenditures. The benefits reflect the long run impact of the expenditures, but might be greater if a longer time frame was used. It may be possible to have some immediate impacts in prevention and intervention, but the post conflict reconstruction initiatives are for the long run and in the past have failed because of short run attitudes. The bottom line is that without peace there cannot be development and the Millennium goals become unattainable. So one might see the contributions to the solutions discussed here as necessities, to create an environment where the other challenges can be hope to be attained. If this is accepted the benefits we have calculated here can only been seen as a mere fraction of what could be achieved.

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