THE COSTS OF ORGANIZED VIOLENCE: A REVIEW OF THE EVIDENCE*

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ABSTRACT: I critically review recent studies that estimate those costs of violence and conflict that can emerge among *organized political groupings*, from states, religious and ethnic organizations to guerillas and paramilitaries. The review includes studies that estimate direct and indirect costs due to internal conflicts (civil wars and other lower-level conflicts), terrorism, and external conflicts, including military spending. There are a number of key theoretical concerns on what counts as a cost and, depending on the methods and evidence used, estimated costs vary widely. However, even minimum estimates are economically highly significant, especially for low-income countries; this is even more so when the costs of different types of organized conflict and violence are aggregated.

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Violence can occur virtually at all levels of human interaction, from domestic violence within households, to fighting between youth gangs, to guerilla warfare, to wars between states or between alliances of states. Although conflict and violence at all its different levels can be expected to have economic consequences, its study by economists has been rather neglected until relatively recently.[1] However, the pace of research in the area has picked up in the past decade and is accelerating, as it is becoming increasingly evident to academics and policymakers that wars and other types of conflict have very high costs that can severely impede economic development. In this paper I review recent studies that estimate those costs of violence and conflict that can emerge between *organized political grouping* such as states, religious and ethnic organizations, political parties, unions, guerillas, or paramilitaries. In particular, I will examine the costs associated with:

- *Internal conflicts:* More than seventy countries have experienced civil wars since World War II (Fearon and Laitin, 2003, p.75). Their median length of a war has been more than seven years and the costs include: the loss of life (at least 16 million in such wars), the destruction of crops, buildings, infrastructure, and other collateral costs, the cost of arming, the wages or opportunity cost of soldiers or guerrillas, injuries and psychological incapacitation that can be long-lasting, as well as long-term consequences on investment and economic growth.
  Civil war is not the sole form of violent conflict that can occur within countries. Lower-level insurgencies as well as protests, strikes, boycotts, road-blocks, and other similar "appropriative" activities that are undertaken by well-organized

[1] Studying the effects of conflict and violence from an economic perspective is perhaps more difficult than studying the effects of ordinary economic activities, because both the basic theoretical framework of economics and, as a result, much empirical research assumes that property rights are perfectly and costlessly enforced. Conflict and violence directly contradict this assumption. Furthermore, engaging in conflict and violence against others is an *adversarial* activity, not a socially cooperative or productive activity as economic activities typically are. (For an overview of the theoretical literature on conflict that formally examines these issues, see Garfinkel and Skaperdas, 2007.) Then, estimating what is a cost (and what is a benefit) of conflict can be confusing and potentially controversial. However, regardless of method, even the minimum estimated costs of conflict and violence appear to be higher than estimated deadweight costs that are typically of major concern to economists (like the effects of taxation, regulation or trade protection) and therefore potentially of higher economic significance than the effects of more exhaustively-studied distortions.

groups can lead to violence. We will touch upon these lower-level types of conflict, although there is a lot less evidence on them than there is for civil wars.

- *Terrorism:* In some cases, violence is directed at civilians who may not even be related to the political target of the perpetrating group, resulting in what has come to be referred to as terrorism. Properly speaking, terrorism is a tactic that is usually part of a larger conflict that can be internal to a country (like in Sri Lanka or Spain's Basque region) or transnational in scope (like that of Al Queda). We review the costs of it separately from internal and external conflicts primarily because some of the recent literature on the costs of violence and conflict has focused on terrorism.
- *External conflicts*: Although external wars between states have been fewer and have caused less direct damage than internal wars have since World War II, still they have been very costly for some of the countries (e.g., Afghanistan and Vietnam) that have been involved in such warfare. Despite the relative paucity of such wars, perceived external threats induce considerable military expenditures by countries. For 2004 world military spending was estimated to be over 1 trillion dollars, about 2.6% of world GDP (SIPRI, 2005, p.10), a considerable expenditure by any measure.

We exclude from our review the costs of organized crime, a type of activity that is present almost everywhere around the globe and for which the threat of violence and its use are integral parts of. Journalistic accounts even argue that organized crime accounts for one-fith of world GDP (Glenny, 2008). However, to my knowledge, there are very few systematic economic studies that estimate the costs of violence due to organized crime and this is the main reason for excluding them from this review.[2]

The costs of violence and conflict are not just those direct ones that come when there is overt violence. Trying to keep overt violence from actually occurring, as during cold wars or through low-level suppression of insurgencies, involves economic costs as well;

[2] A recent study (Asmundo and Lisciandra, 2008) provides a lower bound estimate for the cost of protection in Sicily to be 1.4% of gross regional product. However, this is mostly an estimate of transfer costs (the protection payments) rather than the net economic costs of the Sicilian Mafia. Skaperdas (2001) provides an overview of the economics of organized crime.

most military equipment and many soldiers have never faced or will never face war, for instance. Moreover, the potential for conflict, even if it never materializes, can have powerful negative incentive effects on investment, trade, and economic growth. Though difficult to identify these negative effects of conflict potential that may never materialize, some of the studies that we review attempt to capture such effects.

The first section of this paper briefly discusses the types of costs that we review and the methods that are used in measuring and estimating these costs. The second section reviews the estimates of different types of costs associated with civil wars, other forms of internal conflict, terrorism, and external wars. The coverage of the expanding literatures is not meant to be comprehensive; instead, I selectively review contributions from the different categories of costs that have been examined. The final section identifies potential gaps of the costs that might not be adequately taken into account or estimated.

1. Methods of measurement and types of costs

The replacement cost of a house that has been destroyed during warfare, and the loss of the benefit of its services, can be relatively easily calculated. The cost of the possibly reduced tourism in a volatile region or the effects of post traumatic stress disorder (PTSD), however, are less easy to estimate and can be expected to depend on the method of measurement and the model employed by the researcher. The range of probable values of such costs can then vary widely. In estimating costs of violence a continuum of possibilities exists, from considering only the most direct costs that have an easily calculable value to estimating different indirect costs, depending on what channels of causality, scenarios, and counterfactuals are assumed or which models are estimated.

The methods to estimate costs that have been used in the literature reviewed here, as well as the type of costs that have been estimated, are now briefly discussed.

1.1 Direct Costs: Accounting within and outside budgets

The costs that can be directly attributed to a violent event (or a series of such events as in a war) can be in principle counted using conventional accounting methods. Some of these direct costs of conflict can include the following:

- Destroyed public infrastructure.
- Destroyed factories and machinery
- Destroyed housing, autos, and other personal property
- Budgetary appropriations for cost of war and cost of lost equipment
- Deaths
- Physical and mental injuries
- Future costs of disability
- Future costs of physical and mental health care

Information on some of these costs can be easily obtained, or inferred, from government budgets or estimated using straightforward methods. Other direct costs, however, can be more difficult to ascertain and calculate. Even some costs that are part of a government's war budget, can be hidden in items that are not related to any particular defense expenditure, let alone part of a particular appropriation for a war. For example, many of the expenditures of the Iraq and Afghanistan wars are not to be found in the appropriation bills for these wars, but elsewhere in the U.S. budget (see Stiglitz and Bilmes, 2008, Chapter 1).

Accounting for the costs of death and injuries also typically goes way beyond the costs that might be included in some budgets (like the death and life insurance benefit of soldiers that might be provided by their countries). Such accounting requires confronting the issue of the value of life and, even more seriously, whether the life of a citizen of a poor country should be valued very differently from that of a citizen of a rich country. Other questions regarding some difficult-to-measure direct costs include: How do you account for the pain and suffering of the physically and mentally injured? What about the lost wages and other missed opportunities of family members who have to care for the long-term disabled?

Moreover, since a substantial fraction of these costs can be incurred in the future, calculating their present values requires not just estimates of their future trajectory but also assumptions about the discount rate that is employed in such calculations.

1.2 Indirect Costs

Indirect costs of violence and conflict can include:

- Population displacement
- Reduced production due to violence or its threat
- Reduced trade due to violence or its threat
- Lower current and future physical investment
- Reduction in educational opportunities
- Brain drain (i.e., emigration of educated work force)
- Reduced tourism from abroad
- Other macroeconomic effects (inflation, further unemployment, reduced economic growth)
- Overall welfare costs

Simply using an accounting method does not suffice in the estimation of such costs. The use of counterfactual worlds in which conflict is absent, models of such worlds, econometric estimation, quasi-experimental methods, and combination of these methods have been used in estimating indirect costs of conflict. We briefly outline two main classes of these methods next.

Estimating indirect costs under different scenarios

A simple way of estimating some indirect costs is to create scenarios in the absence of conflict and, based on previous empirical estimates of parameters under similar scenarios, make comparisons between the "conflict" and "non-conflict" scenarios.

The long-run effects of budgetary expenditures through "multiplier" effects is a simple example of estimating some indirect effects. The cost of war expenditures on foreign soil, for instance, may not involve just its opportunity cost in other types of expenditures but

may well lead to lower multiplier effects because a significant portion of the expenditures "leak" outside the country (see Stiglitz and Bilmes, 2008, on the costs of the Iraq war). In a very different context, Evia et. al. (2008) estimate some indirect costs of socio-political conflict in Bolivia by assigning different disruption coefficients to different incidents (e.g., road blockades, strikes, lockouts) in estimating such indirect costs of conflict for the economy.[3]

The advantage of such methods is that they are rather easy to perform and, if previous estimates of key parameters are reliable, the obtained estimates of costs can be plausible, at least as a first approximation. The disadvantage is that such estimates might take inadequate account of general equilibrium interactions and complex effects that cannot be detected through just simple scenario calculations. However, these estimates are usually taken as rough, with wide bounds for probable range of values typically provided.

Estimating indirect costs via regressions

With appropriate data, counterfactual scenarios could be estimated and tested econometrically. For instance, in a cross-country growth regression that includes a variable for a particular type of conflict, one could compare the differential effects of that conflict on growth by calculating the effect of the conflict variable in the estimated equation.[4] As an example of that approach, Collier (1999) employed such an approach for a sample of 92 countries (19 of which had civil wars), using as the dependent variable the decade average of per capita GDP between 1960 and 1989. As one measure of the level of conflict, Collier used the number of months that each country had been in civil war during the decade. In addition to control variables, Collier also used a variable for postwar recovery and its interaction with the months-of-war variable. Blomberg et. al.

[3] A strike, for example, was assumed to induce 2.77 times the estimated direct economic losses of the event because of the potential disruption to related industries. The activity with the greatest disruption multiplier assumed (12.5 time its estimated direct economic cost) was an urban blockade. Due to the population density in cities, it was estimated that every individual participating in an urban blockade affects 100 more individuals, but not for the same amount of time of the blockade, since people have other options to move around. The study assigned one hour loss per individual suffering a blockade in the city. This is 1/8 of a labor day, so that the final effect was 100*1/8=12.5 (see Appendix A in Evia at. al., 2008).

[4] Of course, such an exercise would be subject to critiques aimed at cross-country growth regressions in general, as well as on how the particular regression has been implemented.

(2004) is another example that employed a similar approach using many different data sources for a large number of countries, with four different types of conflict,[5] and in addition to cross-country and panel regressions used vector autoregression (VAR) methods to identify possible causal directions and the economic costs of different types of conflict. In this case, the inclusion of different types of conflict allows for the detection of possible complementarities between different types of conflict; for example, terrorism and certain types of internal ethnic conflict could be complements and the analysis might tease out which effect is more important.

Given the econometric estimates, the effects of various types of conflict could be calculated by considering a "counterfactual" country or region that has the same characteristics as the country or region in question but without conflict. Of course, such approaches can be criticized on many grounds.[6] The most fundamental problem is typically the possible endogeneity of conflict when estimating its costs and its effects on investment, growth, capital flight, tourism, and so on, and therefore there is the possibility that the causality could the reverse from that assumed. After all, low or negative growth can cause conflict (see Miguel et. al., 2004). Different studies attempt to overcome this problem by the use of Instrumental Variables, but some healthy skepticism is warranted in considering such estimates, just as in the case of the scenario-based estimates of indirect costs. The further away one moves from easily measurable direct costs, the more uncertain and subject to argument are the estimates of many indirect costs.

2. Reviewing the findings on the costs of conflict

In reviewing the findings I will break down the literature into four categories: Civil wars, lower-level internal conflicts, terrorism, and external wars. As civil wars have been studied the most and their effects have been the costliest and most wide-ranging for low-income countries, I will discuss civil wars in terms of the different categories of costs examined in the literature.

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[5] The four types of conflict include: terrorism, internal wars, external wars away from home territory, and external wars at home.

[6] See, for example, the critique of Blomberg et. al. (2004) by Garfinkel and Jeliazkov (2004).

2.1 Internal conflicts: Civil wars

Civil wars are typically defined to be those types of internal conflict that involve the government and at least one other party as well as a threshold of deaths (typically, 1000 per year).[7] Collier et. al. (2003, Ch. 1) provides a comprehensive discussion of the different types of costs of civil wars and an overview of different quantitative estimates that were to be found up to its publication. The two edited volumes by Stewart and Fitzgerald (2001) also contain a number of country studies and overall evaluation of the effects of war on economic development. Two recent overviews are Blattman and Miguel (2008), a survey of the theory, causes, and consequences of civil wars, and Collier et. al. (2008), a directly policy-oriented piece, that includes estimates of the costs of civil wars. We provide a breakdown of the different types of costs and report some of the findings from these studies as well as from other recent research.

Budgetary costs

As reported in Collier (et. al., 2003, pp.13-4), the average developing country in 1995 (one with less than $3,000 per capita GDP) increased its military expenditures during civil wars from 2.8 to 5 percent of GDP.[8] That is, before accounting for other direct and indirect costs, on average the extra cost of military expenditures due to civil wars is 2.2 percent of GDP. Furthermore, other government revenues and expenditures – and, therefore, the public goods supplied through them – tend to decrease with the length of wars. For a sample of 6 countries, for example, Fitzgerald et. al. (2001) report that tax revenues during war decreased or remained flat relative to GDP for five countries (Mozambique, Sierra Leone, Sri Lanka, Sudan, and Uganda) and increased only for one country (Nicaragua). Then, reductions in the fiscal capacity of states to provide for

[7] However, there are considerable issues of concern in the definitions that are employed in data sources. The different thresholds for deaths and the classification of a war as internal (instead, of say, colonial) are two of the main concerns. Sambanis (2004) provides a detailed account of the issues and the empirical consequences of using different definitions of civil war.

[8] There is no direct reference on how these figures were calculated, but it appears that they were arrived at by using the estimated coefficients for a cross-country type regression. Additionally, note that a higher percentage of GDP devoted to military expenditures could, in principle, result from a sufficiently precipitous drop in GDP without a change in actual defense expenditures. However, the reduction in per capita GDP due to civil war was estimated to be on the order of 2 percent by Collier (1999) and growth rates for a country in civil war is not typically negative. Therefore, the increases in military expenditures can not be just due to decreases in GDP.

public goods like basic health care and other social services induces various indirect effects on the population to withstand disease, injury, malnutrition, and poverty.

Destruction of capital, investment, and capital flight

Infrastructure – roads, bridges, railroads, public buildings, hospitals – are often at the center of fighting between rebels and governments. Private capital, from factories to housing and cattle are also often subject to significant destruction. Studies that systematically quantify these costs and compare them across countries do not appear to exist, but in countries that have experienced long wars these costs are high. For Mozambique, which experienced war continually from 1964 to the early nineties, Bruck (2001) has made the following estimates: the stock of cattle had decreased by 1993 to 20 percent of its size in 1980 (figure 3.1); from 1983 to 1991 almost 60 percent of primary schools were closed or destroyed (table 3.3); and, overall, 40% of immobile capital was non-operational and destroyed (p.65). For Nicaragua, Fitzgerald and Grigsby (2001, p.113) have estimated that, over the years of most intense conflict (1987-9), the cumulative total economic damages were equal to about one year's GDP.

Collier et. al. (2003, p.21) also reports estimates of capital flight for countries in civil war: the share of private wealth held abroad goes from 9 percent before the war to 20 percent by its end. Moreover, as far as capital is concerned, war according to Collier et. al.'s report has lasting effects as by the end of first decade of post-conflict peace, capital flight rises to 26.1 percent. However, as mentioned on the section on terrorism below, Blomberg et. al. (2004) does finds neither a statistically nor economically significant effect of internal conflict on investment.

Effects on growth

According to Collier's (1999) estimates countries at war grow around 2.2 percentage points more slowly that during peace. Long-lasting wars tend to induce lower levels of growth. Stewart, Huang, and Wang (2001, Table 4.16) calculate the difference in growth rates for 14 countries at war to those of comparable countries and found them lagging on

average about 3.4 percentage points in GDP.[9] More recently, Cerra and Saxena (2008), estimate the effect of civil wars on economic growth using the beginning of civil war as a shock in a VAR model. Using impulse response functions, the immediate effect of a civil war is estimated to induce a reduction of 6 percentage points in GDP, although almost half of that loss is recovered after about six years and the long-run estimates are imprecise, in the sense that the standard error bands allow for the possibility of a zero long-run effect. In the event of a long civil war, these negative effects on growth can be expected to compound over time and it is not clear to what extent output can be expected to partially recover in the long run, as it does in the impulse response to a theoretical one-time shock.

Country experiences in terms of growth of course vary widely. Afghanistan's GDP per capita fell by 20% from 1980 to 1990 and by 7.5 % per year from 1990 to 1995 (Mardsen and Samman, 2001) but Sri Lanka has experienced robust growth rates during war. In fact, according to O'Sullivan (2001, p. 182) Sri Lanka experienced a 4.4 percent GDP growth rate during war and only 3.2 percent in the absence of war. One possible reason for such a performance was the geographical concentration of war in the Tamil areas of the island that left the rest of the country relatively unaffected. Speaking of regional differences, Miguel and Roland (2006) exploit the regional variation of the air bombing campaign of the U.S. in Vietnam in order to estimate long-run effects of conflict. They find that areas that suffered heavy bombing did not suffer a long-run negative impact on poverty rates, consumption levels, infrastructure, or literacy. It could be that this finding is due to the absence of long-run effects from bombing. Nevertheless, it is also likely that the government of Vietman directed more resources towards the areas that were heavily bombed, including possibly the building of more modern infrastructure that could enhance the growth potential of these areas over those areas that were not bombed as much and kept their older infrastructure. And, naturally, Vietnam has been a rather poor country in terms of absolute levels of income since the war ended, and the war likely had

[9] However, the sample includes Iran and Iraq that were engaged in external war during part of the sample period, with Iraq experiencing the worst performance of all 14 countries in the sample.

an effect on its growth rate. The possible diversion of resources to the more heavily bombed areas likely reduced the country's overall growth rate.

Another long-term effect of civil wars is that military expenditures increase permanently, on average, to 4.5 percent of GDP, instead of going back to 2.8. according to Collier et. al. (2003, p.20). That implies a long-term substitution of 1.7 percentage points of GDP that become unavailable for civilian investment, other public expenditures, and consumption that come in addition to the possible permanent reduction in income induced by civil war.

Mortality and health

A conservative estimate of the deaths directly attributable to civil war between 1945 and 1999 is 16.2 million (Fearon and Laitin, 2003, p.75). In 1999 itself, wars were estimated to have caused 269,000 deaths directly (Ghobarah et. al. 2003, p.189; information attributed to World Health Organization (WHO)), a rate that is a bit below that of the years up to 1999. The International Rescue Committee estimates that 5.4 million people have died from war-related causes in the Democratic Republic of Congo since 1998 alone. [10]

For public policy purposes, the cost of death in rich countries is usually monetized using estimates of the value of life. For example, Stiglitz and Bilmes (2008) use US $7.2 million as the Value of Statistical Life (VSL), which is consistent with recent usage, to estimate the cost of U.S. soldiers' deaths. However, Stiglitz and Bilmes did not think it was proper to estimate the cost of death for Iraqis using a different figure. But it might help to make rough estimates to have a sense of the order of magnitude of what the cost of death in low income countries might be. For instance, if we were to value the life of a citizen of the DR of Congo at 1/72 of that of an American citizen (that is, $100,000), the total cost would be $540 billion over the past 10 years (for comparison, the GDP of the country in 2007 was estimated at a little over $19 billion at PPP by the CIA World Factbook). Even if the value of life in the DR of Congo were considered at 1/720 of an

[10] http://www.theirc.org/special-report/congo-forgotten-crisis.html

American life ($10,000), still the cost would be $54 billion. What such numbers indicate is that no matter how one looks at the loss of life in civil wars, they involve an immense cost for those close to them and for the countries involved.

One persistent source of death and injury that lasts beyond the length of wars is landmines. For 2001 the International Campaign to Ban Landmines estimated the total number of casualties to be between 15,000 and 20,000 (cited in Collier. et. al., 2003, p. 30). Such figures represent a significant improvement from previous years, when casualties were estimated around 26,000 a year. This reduction is attributed to the international ban on antipersonnel mines, agreed in 1997. Landmines can also have serious economic consequences. Not only maimed farmers may be unable to work but also land that is suspected to have mines can be underutilized or abandoned, thus contributing to the affected population's poverty. Merrouche (2008) is a case study of the effect of landmines in Mozambique, one of the most heavily mined countries in the world. The study finds that going from average amount of landmines to none is associated with an 11% points decrease in the fraction of people in poverty and an increase of 27% daily consumption.

Beyond mortality and injury, civilian populations become highly vulnerable to disease as a result of worse nutrition, living conditions in camps, or deteriorating health care. Malaria, diarrhea, respiratory infections, even measles and meningitis, as well as AIDS occur more frequently during wars and result in higher death rates than during peace time (see. Table 1.2 in Collier et. al., 2003). There are measures for aggregating the impact of different diseases like disability adjusted life-years (DALYs).[11] For 1999 alone, 8.44 million DALYs were directly attributed to wars (Ghobarah et. al., 2003, p.189, using WHO estimates). Moreover, during the same year an additional 8 million DALYs were lost as a result of wars that had ended in the years 1991-97. In principle, one could use

[11] "DALYs for a disease are the sum of the years of life lost due to premature mortality (YLL) in the population and the years lost due to disability (YLD) for incident cases of the health condition." (Quote is from World Health Organization website:
http://www.who.int/healthinfo/boddaly/en/
Further details on how DALYs are calculated are to be found there as well.

such estimates along with their value in terms of prevailing wages, as well as estimates for pain and suffering, to arrive at dollar estimates of the cost of disease.

Population displacement and emigration

Another important direct effect of civil war is the displacement of populations. The number of refugees around the world peaked at over 17 million in 1992, but has barely fallen below 10 million since then (United Nations High Commission for Refugees /UNHCR, 2007, p. 4). However, by the end of 2006 all of the UNHCR's "persons of concern" (which mostly includes refugees and Internally Displaced Persons (IDPs), but also other categories) reached 32.9 million, whereas it was hovering around 20 million for the preceding decade. The rise of IDPs is the category with the greatest increase in 2006. Displaced persons and refugees often not only cannot find work but also need to be fed and housed. Thus, an accounting of the costs of population displacement should include both the cost of their care and at least a partial measure of the opportunity cost of the population.

Psychological effects and community life

Evidence from case studies suggests that the psychological effects of civil war are significant and long lasting. For example, as cited in Collier et. al. (2003, p. 29), "approximately 68% of the Cambodia refugees on the Thai border displayed symptoms of major depression and 37% showed symptoms associated with posttraumatic stress disorder (PTSD)." Community life under such conditions can be expected to suffer. "Social capital," according to Collier et. al. (2003) is lost, who also write: "Civil war can have the effect of switching behavior from an equilibrium in which there is an expectation of honesty to one in which there is an expectation of corruption." (Collier et. al., 2003, p. 21).

However, the evidence on the psychology on civil war participants and victims and community life is not completely one-sided. Bellows and Miguel (2008) have used household data on conflict experiences and postwar outcomes to examine the effects of the 1991 to 2002 civil war in Sierra Leone. Those that experienced more violence are 2.6

percent more likely to vote and 6.5 percent more likely to attend community meetings and contribute to public goods. "Civil war experiences are transformative for many, and our analysis suggests that one short-run legacy is increasing individual political participation, community activism, and local public good provision." (Bellows and Miguel, 2008, p.4.) However, the sample is highly localized so that no general inference can be made about the whole country. Blattman (2008) also finds that forcibly conscripted soldiers in Uganda actually increased their political participation compared to a control group. These two studies in Sierra Leone and Uganda open the possibility that at least some individuals in some cultures might be psychologically resilient to being victims of violence in ways that make them, if they survive, more determined in participating in the social and political life of their communities.

Although many of the costs we have already mentioned are difficult to estimate, there are still others I have not mentioned thus far that are both difficult to estimate but also difficult to compare with the other costs because it would be difficult to monetize them. For example, the very old, the very young, the infirm, or the poorest are more vulnerable to the direct and indirect effects of civil wars, and are therefore more likely to suffer. That is, civil wars appear to disproportionately affect the poor and most vulnerable members of society. Studies like those of Merrouche (2008) do provide estimates of specific effects (landmines, in this case) on poverty, yet quantifying this effect beyond the reduction of income for those involved is a matter of debate. Aggregate estimates of the increased risk of mortality and morbidity could pick some of the costs of poverty and vulnerability. However, the value of less poverty in itself or the possible higher value of an extra dollar to a poor than a rich person are issues that have been, and will likely continue to be, contested and a matter of debate within the economics and policy communities. Justino (2006) provides a summary of research and of the methodological issues of both the effects of war on poverty and about how chronic poverty might induce war.

Collier et. al. (2008) have ventured on some overall estimates of civil wars. Counting only the direct costs for an average low-income country, as well as those imposed to its

neighbors as a result of the war, the estimated total cost is $43 billion.[12] Adding estimates for the costs of death and DALYs yield a total minimum cost of almost $60 billion for a single civil war. Based on that estimate and the number of civil wars that have taken place since 1960, the yearly cost of civil wars is estimated to be $123 billion, which is about the same order of magnitude as the total of yearly development aid. Collier et. al. (2008), however, think that a better estimate of the total costs that includes all the indirect costs of a typical civil war is not $60 billion but closer to $250 billion. That is, according to their estimates the minimum cost of civil wars equals all the development aid provided, but is likely to be much higher than that.

2.2 Lower-level internal conflicts

Civil wars, by the definitions usually adopted, involve a high enough number of deaths (typically, 1,000) that involve the government and at least one other domestic organized adversary. Conflicts with low numbers of deaths so that they do not formally qualify as civil wars, however, can have high long-term indirect costs as well. Moreover, other lower-level conflicts between organized groups can involve violence or, even if there is no direct violence, the possibility of violence lurks in the background. Strikes, road blockades, or protests that might have economic, ethnic or regional motivation, or disputes between organized prospective squatters and landowners are examples of such conflicts that are common in many countries. As is the case with the other types of conflict that we examine, there are direct and indirect costs involved in them. However, because often there is no destruction of property, direct deaths or injuries, and typically related actions are dispersed geographically, even if frequent and economically disruptive, there is little standardized information (or, "data") that is systematically gathered so that even the most direct costs of such conflicts can be assessed. Their long-term indirect effects, though, could be as economically disruptive as those of civil wars.

[12] The costs to neighbors ($23 billion) are actually higher than those to the country itself ($20 billion). (There is no description in the paper of the methods used to arrive at the costs for the country itself.) The estimates of the cost to neighbors use the results from Murdoch and Sandler (2002) that are based on an estimated growth model that allows for such spillover effects.

Evia et. al. (2008) use data on different incidents (strikes, road blockades, protest) from Bolivia between 1970 and 2005. The time cost alone of the participants in such incidents was on the order of 1 percent of GDP. Such incidents can also have significant spillover effects on the economy. A strike in a manufacturing plant can affect the output of other downstream and upstream production and a road blockade can bring about wide-ranging disruption in the affected city or region, whereas a sit-in or a protest with few participants does not have much of an effect on economic activity. Based on assumptions of different multipliers regarding the spillover effects of different incidents, the average yearly cost of spillovers was estimated to be over 3 percent of GDP. These costs varied widely over the years and were much higher for the mid-1980s and the 2002-05 period, with some years approaching a loss of as much as a tenth of GDP.

Summarizing results of research that includes the costs of common crime as well as other types of conflict for Colombia, Roscias and Vargas (2004) find that they are at least 3 percent of GDP, with some estimates going as high as 15 percent. Note that a 3 percent annual cost of conflict implies that after the passage of 24 years of paying such a cost a country would have 50 percent less income than it would otherwise obtain in the absence of such conflict.

2.3 Terrorism

Terrorism could be defined as the use of violence against civilians by organized groups.[13] Since it is a tactic in the conduct of violence, it can be used and has been used in civil wars, other internals conflicts, and in some international disputes. The disproportionately large number of civilian casualties (compared to previous wars) during the Second World War and the wars that have occurred since them could be attributed to

[13] Often it is specified that there is a political purpose in that violence. Whereas in the large majority of cases political purpose is a feature of what is called terrorism, there are some cases in which it does not have to be so. For example, mafias and gangs can engage in terrorism in order to expand their turf and profits and there is no scientific or policy reason for excluding in principle such activity from the definition of terrorism. Sometimes actions of organized crime groups might even take political dimensions, even though the clarity of that dimension might be murky. For example, Pablo Escobar of the Colombian Medellin cartel made a clear bid for political power and some of his actions against civilians could be considered terrorism. Another qualification typically provided, and which is followed by all the studies reviewed here, is that the organized groups are non-state actors, even though, again, there is not scientific or policy reason that terrorist actions by governments should be excluded from consideration.

such a tactic (and the technology that made such tactics possible). However, effectively the data and the related empirical literature focus on the activities of organized groups that are often, but not always, militarily weak in other ways and employ terrorism as a primary tactic. For example, almost all instances of systematic mutilation or raping of civilians (which can have an audience and a political purpose from the perpetrator's viewpoint) that has occurred in many post-WWII civil wars, especially those that have occurred in Africa, are not typically included in the data used in studies of terrorism.

A main distinction is made between terrorism committed for domestic purposes, like those undertaken by the Tamil Tigers in Sri Lanka or ETA in Spain, and terrorism committed for transnational purposes, like those of Al Qaeda. Two recent overviews of the costs of terrorism are Enders (2007; section 5) and Sandler and Enders (2008).

With the exception of major incidents like those of 9/11 and the Madrid bombings, the direct costs of individual terrorist incidents are not usually large. Even the direct cost of 9/11 has not been large relative to GDP.[14] Therefore, the main effects that could exist, if any, would be indirect, on perceptions of security and their effect on investment and other economic activities.

Abadie and Gardeazabal (2003) studied the possible indirect effects of ETA on the economy of the Basque region of Spain from the mid-seventies onward, when ETA significantly expanded its operations. The main exercise they undertake is to estimate what the Basque region's per capita GDP would be in the absence of terrorism. To do so they created a "synthetic" region, a weighted composite region of the other regions of Spain (in terms of population and other key economic characteristics) to resemble the Basque region before the emergence of terrorism, in order to compare it to the actual Basque region. They found that the Basque region by the late 90s was about 10 percent poorer than it would have been without terrorism. Abadie and Gardeazabal performed a number of robustness tests, including a "placebo" test, whereby they created another

[14] A direct cost estimate that includes the costs of destruction, cleanup, lost hours, and the values of lives lost totals $48.7 billion (Enders, 2007, p. 849).

synthetic region resembling Catalonia and found, contrary to that of the Basque region, that it did not perform differently compared to the actual Catalonia region.

On another tack, Blomberg et. al. (2004) took a macroeconomic perspective. They examined the effects of terrorism but also those of internal and external conflict on growth across 177 countries. They only considered transnational terrorist incidents, with the measures of internal conflict presumably being highly correlated with domestic terrorism. Through cross-country regressions they found the effect of terrorism to be statistically significant, but the quantitative effect to be economically very small and smaller than those of internal or external conflicts. Furthermore, the estimation of a structural vector autoregression (VAR) model showed that negative shocks to GDP due to internal or external conflicts yield much larger and longer-lived effects than those obtained from a negative shock due to terrorism. Blomberg et. al. also find that terrorism has a strong negative impact on investment and a positive effect on government expenditures, thus providing a possible reason for the small economic effects of terrorism: that is, the negative effects on investment might be consciously counteracted on the part of governments by increasing expenditures. Nevertheless, it might be more plausible that increases in government expenditures are due to increased security expenditures as a result of terrorism. This last possibility is corroborated by the fact that internal conflict also induces greater government expenditures to an even greater extent than terrorism. Curiously, though, internal conflict does not appear to have the expected negative effect on investment in Blomberg et. al.(2004)'s study.

The issue of terrorism's impact on investment – specifically foreign direct investment (FDI) – is picked up by Abadie and Gardeazabal (2008), who also use a very different measure of terrorism than others. Following the criticism of Frey et. al. (2007), who argued that measures of terrorism underestimate the number of incidents and casualties, they use the World Markets Research Centre's Global Terrorism Index (GTI) as their terrorism variable. The GTI combines expert ratings at the country level and covers 186 countries and territories for the period 2003/2004 (World Markets Research Center, 2003). Abadie and Gardeazabal estimate a statistically significant effect of terrorism on

FDI that may be economically significant. Nevertheless, as Blomberg et. al. (2004) suggest, such reductions in FDI may well not lead to lower growth because reduced investment may also be correlated with higher government expenditures. Furthermore, given that the GTI is compiled by country experts (typically not from the country being evaluated), the index may reflect not so much "terrorism" risk but the types of other risks that typically lead foreign investors to reduce investment in a country; that is, GTI might not be truly exogenous as far as its effect on FDI is concerned.

The estimated costs of terrorism are either very small or, as in the case of Spain's Basque region, of the order of 10 percent of GDP. That is considerably lower than the effects of either civil wars or lower-level internal conflicts. Moreover, as I have stressed, terrorism is a tactic and not an altogether different type of conflict. ETA's campaign used terrorist tactics but also, I suspect, the Basque region had more strikes, protests, and other manifestations on lower-level conflicts than other regions of Spain had. That is, the difficulty of finding strong effects of terrorism could likely be due to the fact that it is inherently difficult to isolate its effect from the broader conflictual context. When terrorist tactics are isolated from broader internal conflicts, like it is in the case of richer countries (with exceptions like those of the Basque region), the effects are negligible. When terrorism is just one part of a larger internal conflict, like it usually is in low-income countries, the effects are stronger as they are correlated with these broader conflicts.

2.4 External conflicts

There have been considerably fewer external wars compared to internal wars since World War II, but their costs were far from being negligible and the two types of war can not be completely separated. After all, for much of this time period there was a "Cold" war taking place, fueling high military expenditures by the United States, the Soviet Union, and their respective allies. Moreover, from Vietnam and Cambodia to Angola and Nicaragua, some of the civil wars that took place were at least partially or indirectly due to superpower rivalry and the actions of proxies of the two superpowers were critical in the instigation or propagation of such wars.

The easiest cost to identify that has partially external sources is military expenditures by governments. (Of course, as mentioned earlier, for many countries that have engaged in internal wars government military expenditures had not been directed towards external adversaries but towards domestic ones.) Such expenditures vary widely across different countries, rarely going below 1 percent of GDP but in a few cases, as in the case of Saudi Arabia, go above 10 percent of GDP. In fact, for 1991 and probably because of payments associated with the first Gulf war, Saudi Arabia's military expenditures went over 22 percent of GDP. Japan is one country with its military expenditures hovering around or just below 1 percent of GDP, although these expenditures have been large in absolute numbers and have consistently exceeded US $ 40 billion over the past decade.[15] For 2004 world military spending was estimated to be over 1 trillion dollars, about 2.6 percent of world GDP (SIPRI, 2005, p.10). Military spending data does not include some other defense expenditures on intelligence or on civilian R&D that is in practice military R&D.[16] There is some evidence military spending has decreased since from earlier decades. For a sample of 122 countries, Knight et. al. (1996, Table 1) report that military spending was an average of almost 5.2 percent of GDP for the 1972-1985 period.

A comprehensive accounting of the costs of an external war is Stiglitz and Bilmes (2008) who estimate the cost of the Iraq war for the United States. Stiglitz and Bilmes do not engage in a similar estimate for the costs to Iraq itself, although they do provide a considered qualitative assessment of the costs to the country that is the battleground for the war. In their estimates, they included items like the following: budgetary

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[15] Note that Japan's Constitution prohibits a military and, thus, formally these are considered "police" or "internal security" expenditures. (All information from the Stockholm International Peace Research Institute (SIPRI), http://first.sipri.org/non_first/result_milex.php?send)

[16] However, some military R&D expenditures have direct civilian applications or are disguised civilian R&D. In fact many major breakthroughs in technology -- the internet, various high-tech materials, computers, shipbuilding -- have their roots in military R&D. One could possibly argue then that military spending is worth it just for the tremendous technological spillovers that it has had in history. However, the question that emerges is why should one spend money on military R&D in the hope of receiving some uncertain technological spillovers in the future, instead of directly spending them on R&D for targeted civilian applications?

appropriations to date for military operations, and estimates for their future values, all appropriately discounted; future disability and health care for returning veterans; future costs of restoring the military to its prewar strength, replenishing spent armaments, repairing equipment where maintenance has been deferred; estimates of some costs to the economy (for example, in some scenarios, they allow for increases in the price of oil of $5 and $10 per barrel to be due to the war); other macroeconomic effects, like the possible crowding out of some investment expenditures. Overall, Stiglitz and Bilmes estimate that the total cost of the war ranges from $2.7 trillion in strictly budgetary costs to $5 trillion in total economic costs.

Other than this recent Stiglitz and Bilmes study, there appears to be a relative scarcity of studies that seek to estimate the costs of external wars in the long run. Blomberg et. al. (2004) and Hess (2003) do so only parenthetically as they examine the effects of other types of conflict as well, although they both find a negative impact of external wars on growth.

However, there has been an older literature regarding the effects of military expenditures on economic growth, some of it finding positive effects on growth, presumably due to short-run demand effects or long-run technological externality effects. I will not review this literature here but Knight et. al. (1996) provide an overview and also find negative effects on growth. Moreover, as Dunne et. al. (2005) point out, such empirical studies are hampered by the fact that they are based on either defense-economics models or expanded endogenous growth models that emphasize the possible technological externalities of military expenditures without taking adequate account of the resource cost of these expenditures. Moreover, apparently in none of these empirical approaches is the possibility that military expenditures are determined strategically (that is, in reaction to potential adversaries).

2.5 Overview of costs

The sole study I am aware of that attempts a comprehensive estimate of the costs of conflict from many different sources is Hess (2003).[17] Adapting a model of Lucas (1987) that was meant to measure the costs of business cycles, Hess estimates the impact of conflict thought of as a "shock" on consumption and welfare. No direct or indirect costs are calculated or estimated. Instead Hess compares the expected welfare from each country remaining in its actual path of consumption that may include conflict to another counterfactual path of consumption where there is no state of war. Using data from 1960 to 1992, someone living in a county that experienced some conflict would permanently give up at least 8 percent of current consumption to live in a peaceful world; this figure is calculated by Hess as a lower bound of the true welfare cost of conflict. Naturally, there is wide variation across countries. All high-income countries included in the study (Australia, Canada, France, Italy, the U.K., and the U.S) have considerably lower cost of consumption as a percentage of consumption (with France and the U.S. at the top of the list with a bit over 3 percent of their consumption), but still high costs in absolute terms. Most African countries have higher costs than the average, with the cost for Angola being over 40 percent of annual consumption. Iraq tops the list with a cost of 65 percent of its annual consumption, whereas for Iran the cost is 26 percent; both of these high levels are due to the war between these two countries during the 1980s.

The lower bound of the total world cost of conflict in 1985 dollars is estimated by Hess to be close to $400 billion to be paid every year, with that payment growing at the rate of population growth. Given Collier et. al.'s (2008) lower-bound estimate for the yearly cost of civil wars alone of $123 billion (in, presumably, 2008 dollars) and an average estimate of close to $500 billion, Hess's lower-bound estimate for all types of conflicts appears reasonable. Therefore, without even counting the extra military expenditures of the Unites States during the twenty first century, an overall annual cost of organized violence of $1 trillion should be considered a low-end estimate. Taking into account military expenditures and other direct and indirect effects of conflict and violence would result in considerably higher cost estimates.

[17] The study includes four types of external wars in terms of whether they were at home or not and whether they were "small" and "large." Internal wars are subdivided into genocides, ethnic conflicts, abrupt and disruptive regime changes, and revolutionary wars.

3. Open Issues and Future Directions

Interest in the costs of conflict and violence as a legitimate policy concern and as an endeavor worthy of study by economists has been very recent. With the exception of the literature relating military expenditures to economic growth, virtually all research on the costs of conflict and violence has occurred and has been published over the past decade. Already though the literature has become large and, if anything, the pace of research is picking up speed, especially as it relates to civil wars. The increasing interest is obviously warranted given that the costs of conflict and violence are quantitatively very significant, arguably more significant than any other measured economic costs that might be relevant to economic development.

Some direct costs, such as those due to destruction or increased expenditures in government budgets, are easy to measure. Most costs, however, even direct ones like those due to death and injury, are not easy to estimate, let alone indirect costs that might be due to lower investment, capital flight, or reduced tourism from abroad. Such estimates are based on either deterministic scenarios or stochastic models that are econometrically estimated, the latter often using small samples and, sometimes, data of questionable provenance. Different researchers and policymakers are unlikely to always agree on the relevance or truth of particular scenarios or models and, therefore, on the estimated costs derived under the same scenarios or models. The representation of different points of view and methodologies is healthy and vital in arriving at estimates that can be robust to criticisms. In some cases, general agreement might be infeasible because there are just too many disagreements about processes, causal mechanisms, or simply about judgments regarding issues that depend on the personal views of those who are involved (as, for example, when poverty and inequality are considered to have costs beyond those that reduce a country's income).

I will now briefly discuss some remaining issues and possible future directions for measuring and estimating costs associated with the four types of conflict reviewed. I will close with some general remarks on assessing the costs of conflict.

Civil wars

As it is apparent from the previous section, civil wars have received the lion's share of attention in recent research. The large number of civil wars in the post-war period and the human and economic costs accompanying them obviously deserve such attention. Detailed studies of country experiences along with comparative assessments, as those that have appeared in Stewart and Fitzgerald (2001), are very helpful complements to econometric studies that rely on more aggregated data. In particular, recent trends of micro-based studies, like those of Bellows and Miguel (2008) or Blattman (2008), which attempt to follow samples of soldiers or individuals involved in war in order to determine possible consequences of war at the individual and community levels, are a welcome development. Such approaches already challenge some of our preconceptions regarding the effects of war on individuals and their communities (or, "social capital") and additional studies are needed to help clarify what those effects are. Are former victims of violence truly better adjusted because of self-selection – in the sense that those who are not well-adjusted in the first place might be more likely to die or not be included in studies – or are they so because war experiences have truly galvanized them so that they become civically engaged?

Collier et. al. (2003) have emphasized the possible negative role of civil wars on social capital and trust within the society and the feedback from this reduced social capital and trust on economic growth. They did not provide, however, much evidence on that negative relationship. Therefore, operationalizing notions of social capital in various settings and examining its relationship in both the direction of civil war and economic growth is certainly a worthy avenue for future research. The effect of civil wars on poverty and inequality, and the costs associated with them are also of obvious continued interest. Another effect that Collier et. al. (2003) as well as Collier et. al. (2008) have emphasized as a quantitatively very important effect is the spillover effect of war on neighboring countries. Following on Murdoch and Sandler (2002), who appear to be the sole researchers who have made estimates of such spillover effects, is another issue worthy of additional investigation. Finally, the effect of internal wars and other types of

conflict on investment and capital flight that is surely to be expected does not always appear as statistically or economically significant (e.g., see Blomberg et. al., 2004). Since this effect is expected to be one of the key channels through which wars negatively impinge on economic growth, it is important to continue investigating the relationship both in country and comparative studies.

Lower-level internal conflicts

As argued by Sambanis (2004) the particular definition of civil war adopted in any cross-country comparison can significantly change the effects one finds. This is indicative of the fact that civil wars are not completely distinct from all other types of internal (or, externally-generated) conflict. Rather, there is a continuum of conflict intensities that might include the DR of Congo and Rwanda on one end of the spectrum and the myriads of internal conflicts that might involve either minimal violence or the threat violence, like strikes or road blockades, on the other end. The middle and lower end of the spectrum have been understudied, perhaps severely so if one were to compare it to the study of civil wars.

Examples of such violence abound: In addition to the war in Aceh province, violence has been endemic over at least the past decade in Indonesia, from the Mollucas to Borneo and Irian Jaya, to Javanese villages and towns, with motives that are difficult to decipher. (They can be characterized as overtly religious, ethnic, economic, or regional but one has to be careful about what appear as overt motives.) Conflict has been continual in Nigeria's delta since the Biafra war, and recently has flared up with consequences for oil production there. In Brazil and other Latin American countries, there are systematic disputes over land rights, pitting large landowners against organized unions of squatters that sometimes involve deadly clashes of private security forces and union members. Some of these disputes can be considered economic and be over the disposition of revenues from exportable natural resources, and they have been studies as such under the rubric of the "natural resource curse" (see, for example, Ross, 2003, and Mehlum et. al., 2006). Nevertheless, there has been no comparable effort to that for civil wars to systematically create databases that classify and measure aspects of those softer types of

internal conflicts across countries. Yet, given the limited evidence obtained thus far, the long-term costs of such conflicts could well be of a similar order of magnitude as those of civil wars. Collecting then evidence at both the micro and macro levels in a similar fashion that has been occurring with research on civil wars would be highly advisable.

Terrorism

Since terrorism is correlated with other types of conflict, it is difficult to isolate the effects of the tactic itself from the wider conflict to which it might be part of. Pursuing the approach of Blomberg et. al. (2004), which includes other types of conflict in regressions so as to tease out substitution or complementary effects, would be worth imitating in future studies.

External conflicts

A major unresolved issue that pertains to the costs of external wars is that of the relationship between military expenditures and economics growth. As we mentioned above, the main problem is disentangling (i) the negative effect of military expenditures due to the reduction of resources that become unavailable elsewhere in the economy for consumption or investment – and any distortions that might be associated with such expenditures -- from (ii) the possible positive effects of military expenditures because output is below its potential level or because of technological and organizational externalities to the rest of the economy. It appears that all the models that have been estimated do not adequately take into account the resource cost of military expenditures and, especially, its endogeneity to those of other countries or to the choices of internal potential enemies (to the extent that in some countries military expenditures are directed against such enemies).[18] It is therefore advisable to take account of such strategic feedback effects on security and military expenditures in studying their effect on economic growth.

Furthermore, the related literature has relied solely on cross-country evidence using aggregated data (e.g., GDP, investment, military expenditures, and other aggregate variables). More detailed country case studies could break down the various components of military expenditures, investment, and other variables. Institutional knowledge of a country's economy and government

[18] Models that do take into account this endogeneity include Hirhsleifer (1995), Grossman and Kim (1996), and others reviewed in Garfinkel and Skaperdas (2007).

should not be ignored in making assessments regarding the composition of these components and how they might relate to one another and to economic growth.

Adding up the costs of organized violence

There is no attempt that I am aware of that adds up the all the types of costs of organized violence that I have reviewed in this paper. Hess (2003) represents the closest attempt but, as discussed earlier, his approach is highly indirect and "top-down" in the sense that he estimates econometrically in a cross-country framework the effects on consumption of conflict viewed as a "shock." Whereas this is a valuable approach that has produced plausible estimates, and expanding and refining Hess's approach would be most welcome, there is scope in also pursuing a "bottom-up" approach, whereby direct and indirect costs of the various types of organized violence are estimated and added up for individual countries and for the whole world. Collier et. al. (2008) do provide overall estimates for the cost of civil wars, but there is no documentation in that paper on how these estimates were derived. Having both bottom-up and top-down estimates of the total costs of organized violence would help check the plausibility of each other and perhaps and, if the estimates do not vary too widely from one another, to have high confidence in them.

In closing, let me mention, without however being able to go into any appreciable detail,[19] one final fundamental issue that was touched upon in the introduction that may be of concern to economists and policymakers. In particular, an argument could be made that at least some of the costs of war and violence are necessary, as they could be considered as costs in "enforcing property rights," by states or other organized interests. Military expenditures and other security costs, even possibly the destruction that ensues from the outbreak of wars, could be considered a necessary input into an output called "security," and therefore, from a social welfare viewpoint, may not be considered real costs that could be avoided (without incurring some other costs in present or the future).

[19] For a detailed treatment of related issues, see Skaperdas (2008).

A very short response to this perspective would first point out that, contrary to other inputs in economics, the inputs to conflict and violence are combined in an adversarial fashion, not the cooperative fashion that inputs to ordinary production are supposed to be combined. Then, increases in arming by one side that is met by similar increases by its adversary would increase the costs of security to both sides without necessarily changing the security of either, however that latter is measured. (On the contrary, the increased arming could increase the likelihood of war and, through this, decrease the security of both.) Whereas indeed the response of states and other organized groups could be considered as individually rational responses in the short term, it does not imply that the resulting state of affairs is socially rational. The outcome is similar to that of the prisoners' dilemma: if the sides could commit to their actions they could achieve a better outcome for both. And, in other settings economists routinely calculate the costs of what are considered (socially) suboptimal actions like those of trade protection, where the actual policies are compared to ideal policies. Likewise, then, we can think of the costs of organized violence to be due to deviations of actual security policies that are suboptimal from an ideal world. What is also different from other settings, however, is the possibility that in the actual world, the costs of providing security may increase dramatically while simultaneously the benefits derived from it are drastically reduced, as is the case with wars that escalate beyond the original expectations of any of the participants.

BIBLIOGRAPHY

Abadie, Alberto and Javier Gardeazabal, "The Economic Costs of Conflict: A Case Study for the Basque Country," *American Economic Review*, 2003, 93(1), 113-132.

Abadie, Alberto and Javier Gardeazabal, "Terrorism and the world economy," *European Economic Review*, 2008, 57, 1–27.

Asmundo, Adam and Maurizio Lisciandra, "The cost of protection racket in Sicily," *Global Crime*, August 2008, 9(3): 221-240.

Bellows, John and Edward Miguel, "War and Institutions: New Evidence from Sierra Leone," *American Economic Review Papers and Proceedings*, 2006, 96(2), 394-399.

Bellows, John and Edward Miguel, "War and Local Collective Action in Sierra Leone," 2008, Working Paper.

Bilmes, Linda and Joseph Stiglitz, "The Economic Costs of the Iraq War: An Appraisal Threes Years after the Beginning of the Conflict," NBER Working Paper 12054, 2006.

Blattman, Christopher. From Violence to Voting: War and political participation in Uganda. CGD Working Paper Number 138, January 2008.

Blattman , Christopher and Jeannie Annan, "The Consequences of Child Soldiering," HiCN Working Paper 22, 2007.

Blattman , Christopher and Edward Miguel, "Civil War," June 2008, manuscript.

Blomberg, Brock S., Gregory D. Hess, and Athanasios Orphanides, "The Macroeconomic Consequences of Terrorism," *Journal of Monetary Economics*, 2004, 51, 1007-1032.

Biswas, Basudeb and Rati Ram, "Military Expenditures and Economic Growth in Less Developed Countries: An Augmented Model and Further Evidence," *Economic Development and Cultural Change*, Jan.1986, 34(2), 361-372.

Bruck, Tilman, "Mozambique: The Economic Effects of the War," in Stewart and Fitzgerald (eds), Volume 2, 2001.

Cerra, Valerie and Sweta Chaman Saxena, "Growth Dynamics: The Myth of Economic Recovery," *American Economic Review*, March 2008, 98(1), 439-457.\

Chen, Siyan, Norman Loayza and Marta Reynal-Querol. The Aftermath of Civil War. *World Bank Economic Review*, 2008, 22(1), pp 63-85.

Chingono, Mark, "Mozambique: War, Economic Change and Development in Manica Province, 1982-1992", in Stewart and Fitzgerald (eds), Volume 2, 2001.

Chowdhury, Abdur, "A Causal Analysis of Defense Spending and Economic Growth," *Journal of Conflict Resolution*, Vol. 35, No. 1. (Mar., 1991), pp. 80-97.

Collier, Paul, "On the Economic Consequences of Civil War," *Oxford Economic Papers*, 1999, 51, 168-183.

Collier , Paul, V.L. Elliott, Håvard Hegre, Anke Hoeffler, Marta Reynal-Querol, and Nicholas Sambanis. Breaking the Conflict Trap: Civil War and Development Policy Washington, DC: World Bank and Oxford University Press, 2003.

Collier, Paul, Lisa Chauvet and Haavard Hegre, "The Security Challenge in Conflict-Prone Countries," Copenhagen Consensus 2008 Challenge paper, April 2008.

Davis, Steven J., Kevin M. Murphy and Robert H. Topel, "War in Iraq vs. Containment," National Bureau of Economic Research Working Paper 12092, March 2006 (original version from 2003).

Deger, Saadat and Somnath Sen. Military Expenditure, Spin-off and Economic Development. *Journal of Development Economics* 13 (1983), pp. 67-83.

Dube, Oeindrila and Juan F. Vargas, "Commodity Price Shocks and Civil Conflict: Evidence from Colombia," Working paper 12/26/2007.

Dunne, J. Paul, Ron Smith and Dirk Willenbockel, "Models of Military Expenditure and Growth: A Critical Review," *Defence and Peace Economics*, 2005, 16(6), 449-461.

Enders, Walter, "Terrorism: An Empirical Analysis," in T. Sandler and K. Hartley (eds), *Handbook of Defense Economics*, vol. 2, 2007, 815-868, New York: North-Holland.

Evia , Jose Luis, Roberto Laserna and Stergios Skaperdas. "Socio-political Conflict and Economic Performance in Bolivia," CESifo Working Paper, March 2008.

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

Fitzgerald, Valpy, Frances Stewart, and Michael Wang, "An overview of the Case Studies," Ch. 5 in F. Stewart and V. Fitzgerald, 2001.

Frey, Bruno S., Simon Luechinger, and Alois Stutzer, "Calculating Tragedy: Assessing the Costs of Terrorism," *Journal of Economic Surveys*," 2007,21 (1) , 1–24.

Fuentes, Juan Alberto. "Violent Conflict and Human Development in Latin America: The Cases of Colombia, El Salvador and Guatemala". Human Development Report Office Occasional paper, 2005

Garfinkel, Michelle R. and Ivan Jeliazkov, "Comment on "the Macroeconomic Consequences of Terrorism"," *Journal of Monetary Economics*, 2004, 51, 1033-1037.

Garfinkel, Michelle R. and Stergios Skaperdas, "Economics of Conflict: An Overview," in T. Sandler and K. Hartley (eds.), *Handbook of Defense Economics*, Vol. II, 2007, 649-709.

Ghobarah, Hazem Adam, Paul Huth and Bruce Russett, "Civil Wars Kill and Maim People – Long After the Shooting Stops," *American Political Science Review*, May 2003, 97(2), 189-202.

Glenny, Micha, *McMafia: A Journey through the Criminal Underworld*, 2008, New York: Alfred A. Knopf

Grossman, Herschel I. and Minseong Kim, "Predation and accumulation," *Journal of Economic Growth*, 1996, 1, 333-351.

Hess, Gregory, "The Economic Welfare Cost of Conflict: An Empirical Assessment," CESIFO working paper 852. February 2003.

Hirshleifer, Jack, "Anarchy and its breakdown," *Journal of Political Economy*, 1995, 103, 26-52.

Justino, Patricia, "On the Links between Violent Conflict and Chronic Poverty: How Much Do We Really Know?" HiCN Working Paper 18, July 2006.

Keefer, Phillip and Norman Loayza (eds.), *Terrorism and Economic Development*, 2008, New York: Cambridge University Press.

Knight, Malcolm, Norman Loayza, and Delano Villanueva, "The Peace Dividend: Military Spending Cuts and Economic Growth," *IMF Staff Papers*, 43, 1-37.

Lindgren, Goran, "Measuring the Economic Costs of Internal Armed Conflict – A Review of Empirical Estimates," undated, Paper for WIDER conference *Making Peace Work*.

Lucas, Robert, E Jr., *Models of Business Cycles*, 1987, New York: Basil Blackwell.

MacNair, Elizabeth, James Murdoch, Chung-Ron Pi and Todd Sandler. Growth and Defense: Pooled Estimates for the NATO Alliance, 1951-1988. *Southern Economic Journal*, Vol. 61, No. 3. (Jan., 1995), pp. 846-860.

Mardsen, Peter and Emma Samman, "Afghanistan: The Economic and Social Impact of Conflict, " in Stewart and Fitzgerald (eds), Volume 2, 2001.

Mehlum, Halvor, Karl Moene and Ragnar Torvik, "Institutions and the Resource Curse," *Economic Journal*, 2006, 116, 1-20.

Merrouche, Ouarda, "Landmines and Poverty: IV Evidence from Mozambique," *Peace Economics, Peace Science and Public Policy*, 2008, 4(1), Article 2.

Miguel, Edward and Gerard Roland, "The Long Run Impact of Bombing Vietnam," NBER working paper 11594, January 2006.

Miguel , Edward, Shanker Satyanath and Ernest Sergenti. Economic Shocks and Civil Conflict: An Instrumental Variables Approach. *Journal of Political Economy*, 2004, vol. 112, no. 4.

Murdoch, James C. and Todd Sandler, "Economic Growth, Civil Wars, and Spatial Spillovers," *Journal of Conflict Resolution*, February 2002, 46(1), 91-110.

Ram, Rati, "Defense Expenditure and Economic Growth," *Handbook of Defense Economics,* Volume 1 , Edited by K. Hartley and T Sandler. 1995.

Riascos, Alvaro J. and Juan Vargas. Violence and Growth in Columbia: What do we know after 10 years of quantitative research? Working Paper 2004.

Ross, Michael, "The Natural Resource Curse: How Wealth Can Make You Poor. In Natural Resources and Violent Conflict: Options and Actions," Ian Bannon and Paul Collier eds., World Bank, 2003.

Sambanis, Nicholas, "What is Civil War? Conceptual and Empirical Complexities of an Empirical Definition," *Journal of Conflict Resolution*, December 2004, 48(6), 815-858.

Sandler, Todd and Walter Enders, "Economic Consequences of Terrorism in Developed and Developing Economics," in Keefer and Loyaza (eds.), 2008, 17-47.

Skaperdas, Stergios, "The Political Economy of Organized Crime: Providing Protection When the State Does Not," *Economics of Governance***,** 2001 (2), 173-202

Skaperdas, Stergios, "Economics and Conflict: The Dark Side of Self-interest and its Governance as Economic Activities," preliminary draft, March 2008.

Stewart, Francis and Valpy Fitzgerald, eds. *War and Underdevelopment*, Volumes 1 and 2. Oxford University Press, 2001.

Stewart, Frances, Cindy Huang and Michael Wang, "Internal Wars in Developing Countries: An Empirical Overview of Economic and Social Consequences," in From War and Underdevelopment, Volume 1.

Stiglitz, Joseph E. and Linda J. Bilmes, *The Three Trillion Dollar War: The True Cost of the Iraq Conflict*, 2008, New York: W.W. Norton and Co.

Stockholm International Peace Research Institute (SIPRI), *2005 Yearbook Armaments, Disarmament and International Security*, Stockholm.

United Nations High Commission for Refugees (UNHCR), *2006 Global Trends: Refugees, Asylum Seekers, Returnees, Internally Displaced Persons, and Stateless Persons*, revised 16 July, 2007; available on-line: http://www.unhcr.org/statistics/STATISTICS/4676a71d4.pdf

World Markets Research Center, 2003 World Market Research Center, 2003. Global Terrorism Index 2003/4.