ARmed viOlenCe iMPoses costs acrOsS multiple levels of socieTy and espccially on the poorest and most vulnerable. Although armed violence can benefit a small minority of the population—some gain from (new) employment opportunities and (often illicit) wealth transfers—there is overwhelming evidence of the ways it diminishes development prospects for the majority and hinders achievement of the Millennium Development Goals.¹

The annual global economic costs of armed violence run into the hundreds of billions of dollars. These financial, fixed, and human capital costs need to be considered in any estimate of the global burden of such violence. The precise dimensions of this economic burden depend, however, on how ‘costs’ are measured. The ‘costs’ of armed violence are here defined as the short- and long-term measurable effects that are convertible to welfare losses. Although there are many ways to calculate the economic costs, their true extent is ultimately shaped by the duration, severity, and spatial distribution of armed violence.

Specifically, this chapter finds that:

- Non-conflict armed violence produces direct and indirect economic effects that can exceed the costs of armed conflict. The economic costs of non-conflict armed violence in just 90 countries—measured in terms of lost productivity—is USD 95 billion and may reach as high as USD 163.3 billion, or 0.14 per cent of the annual global gross domestic product (GDP) in 2004.
- The overall costs of armed violence escalate higher still when the consequences of armed conflict are taken into consideration. Violent civil conflict decreases the GDP growth of an average economy by at least two per cent per year.²
- The subjective experience of armed violence generates tremendous economic costs. Using contingent valuation approaches, the global cost of ‘insecurity’ generated by conflict amounts to up to USD 70 per person, or a global annual burden of USD 400 billion.

This chapter adopts a broad approach to measuring the economic costs of armed violence. Looking beyond the narrow financial costs, it finds that the negative economic impacts of armed violence are more extensive than often assumed and include:

- fiscal effects (macroeconomic instability, increases in inefficient military and policing expenditures, and decreases in welfare spending);
- losses in productive capital (destruction of infrastructure, land, houses, and assets);
- depleted financial capital (capital flight, soaring inflation and depreciating investments, and rising transaction costs);
- eroded human capital (due to communicable disease, reduced nutrition, diminished edu-
cation, displacement, and out-migration measured as a function of years of life lost); 
- rising transaction costs (lowered consumer and investor confidence, particularly in cities); and 
- the reallocation of development assistance (to less risky environments).

It is only in accounting for all of these costs that one can achieve a genuinely global picture of the economic consequences of armed violence.

Developing a better estimate of the economic burden of armed violence is essential for prioritizing, designing, financing, and implementing effective interventions. The Geneva Declaration on Armed Violence and Development emphasizes how measurement of the economic costs of armed violence can encourage investment in preventive action and hedging against future losses.3 Demonstrating who loses what, where, when, and under what circumstances, can assist policy-makers, activists, and researchers in identifying constituencies to support armed violence reduction in the public and private sectors.

Unfortunately, most efforts to calculate the costs of armed violence at the global or even national level have been frustrated by the absence of a unified conceptual framework, complementary methodologies, or the availability of data over time. As discussed below, there are consequently extreme variations in estimates.4

The importance of documenting the economic dimensions of armed violence is today widely appreciated. But research is often narrowly focused on two core manifestations of armed violence—war and crime—with issues such as intimate partner and sexual violence often left hidden from view. In the case of war, researchers frequently adopt a case study or cross-country comparative approach, measuring economic effects as a function of GDP losses in absolute or relative terms.5 Such costs imply a loss of income (and purchasing power) that, in most developing countries, would otherwise be devoted to the acquisition of basic needs, such as food, shelter, and clothing.

These studies reveal that the annual burden of war-related violence ranges from 2 to 20 per cent of a country’s GDP.6 While the studies have limitations and contradictions, they overwhelmingly
observe that war has negative effects on economic growth and well-being. As for criminal violence, researchers frequently account for public spending on law enforcement and the judicial sector, together with foregone investment and non-productive expenditures. A review of these studies suggests that, in developing countries, public expenditures on law enforcement consume 10–15 per cent of GDP, as compared to 5 per cent in developed states (IADB, 2006; Londoño and Guererro, 1999). There is ample evidence that criminal violence also undermines human welfare and, ultimately, social development (UNODC, 2007a; 2007b).

This chapter examines different approaches to measuring the economic costs of armed violence, in order to increase our awareness of its broad implications for development. The first section of the chapter introduces a three-fold approach to costing armed violence by drawing on accounting, modelling, and contingent valuation methodologies. The second section considers the economic costs of armed violence in a selection of countries for which there is adequate data and draws explicitly on all three approaches. The third section provides a short overview of the distributional effects of armed violence. The fourth section discusses the possible positive effects of armed violence. The chapter closes with some brief conclusions and considers next steps for development policy-makers and practitioners.

**Approaches to costing armed violence**

The earliest assessments of the costs of war were undertaken by Werner Sombart (1913) and John Maynard Keynes, particularly in the latter’s seminal *The Economic Consequences of Peace* in 1919 (Keynes, 2005). As mainstream economists became interested in the issue, they sought to demonstrate whether investment and destruction arising from armed conflict had the potential to generate new efficiencies and release productive energies.

Following the Second World War, however, emerging research highlighting the negative consequences of collective armed violence gained more credence, particularly in the context of civil wars. By the end of the 20th century, contemporary analysis of the negative economic consequences of civil wars and criminal violence began to grow in breadth and sophistication.

Evidence began to mount of the way upward shifts in military and policing spending constituted unproductive expenditure and detracted from welfare spending. The primary metrics of these negative costs consisted of macroeconomic functions such as GDP growth or simply government revenue.

This chapter considers three ways of measuring the economic burden of armed violence: accounting, modelling, and contingent valuation. Each of these approaches adopts different assumptions, methods, and data sources, and they are not necessarily comparable. But each offers important insights into the scale and magnitude of the economic burden of armed violence. A first step to generating a realistic estimate of the economic costs of armed violence, then, is to recognize the differences among the approaches.

The *accounting approach* is essentially a balance sheet of the accumulated costs of specific factors to the economy. Whether determined from a macro or micro perspective, it requires reliable data and the ability to identify appropriate cost factors associated with fatal and non-fatal injury rates. This is the principle methodology applied by public health economists associated with the
The modelling approach requires establishing a credible counter-factual situation and then determining the difference between expected and actual economic growth. It is most often measured as a function of GDP losses. This is the principal method applied to generate estimates of the costs of civil wars (Collier, 1999).

The contingent valuation approach seeks to capture the amount theoretically assigned by the ‘market’, or individuals’ willingness to pay to improve their security and reduce the incidence of armed violence.

It is useful to recall that armed violence is not necessarily bad for everyone. There are winners and losers in situations of war and crime-related violence. But, in economic terms, those who profit from violence are gaining from inefficient and unproductive activities. Put another way, those doing well out of armed violence simply reallocate wealth and do not increase the productive capacity of an economy (on the contrary, they often destroy value). While the development of war-related technologies can theoretically increase overall economic productivity, there is comparatively less evidence that this is the case in practice. In order to shed light on the externalities generated by armed violence, the chapter considers the ‘distributional costs’ that shape the transfer of assets and income arising from armed violence.

Accounting for armed violence

The accounting approach first identifies different categories of armed violence and then tabulates an overall burden. Categories include ‘direct costs’ arising from medical and rehabilitation services, policing, criminal justice, and private security; ‘indirect costs’, including lost earnings, reduced savings, and losses in investment and human capital; and ‘social multipliers’ relating to loss of social capital and reduced political participation. One way of accounting for multiple categories is by assessing the bottom-up distribution of external mortality from national surveillance systems (see Box 5.1).
Box 5.1 Accounting for the costs of violence: a typology and examples

Health economists often distinguish between the direct and indirect costs of armed violence. Direct costs arise directly from acts of intentional violence and require payments by individuals or institutions. They can be further subdivided into medical and non-medical costs. Indirect costs refer to lost resources and opportunities resulting from armed violence. Studies tend to emphasize the tangible costs (e.g. reduced productivity of survivors, lost investment in social capital, and reduced productivity of perpetrators), together with reduced quality of life. While these costs likely only reveal the tip of the iceberg, they can be accounted for and are reproduced in the typology given in Table 5.1.

WHO, the Centers for Disease Control, and the Small Arms Survey recently elaborated economic costing guidelines to assess the direct and indirect burden of violence (Butchart et al., 2008). These guidelines were subsequently tested to assess the costs of armed violence in ‘non-conflict’ contexts: Brazil, Jamaica, and Thailand. The preliminary assessment drew primarily from national surveillance data for the most recent years available.

In Brazil, the direct medical costs of interpersonal violence in 2004 totalled USD 235 million (BRL 382 million—more than three-quarters of which were attributed to injuries among men). Indirect costs exceeded more than USD 9.2 billion (BRL 15.4 billion).\(^\text{12}\) Taken together, the direct medical costs of injuries amounted to 0.4 per cent of the total health budget, while indirect costs amounted to 12 per cent of all health expenditures, or 1.2 per cent of GDP.\(^\text{13}\)

In Jamaica, the direct medical costs of interpersonal violence in 2006 totalled some USD 29.5 million (JMD 2.1 billion)—the vast majority of which was concentrated among young males. Indirect medical costs were ten times higher, exceeding USD 385 million (JMD 27.5 billion). Direct medical costs accounted for approximately 12 per cent of Jamaica’s total health expenditure, while the combined direct and indirect impacts were equivalent to four per cent of GDP.

In Thailand, the direct medical costs of interpersonal violence in 2005 amounted to approximately USD 40.3 million (THB 1.3 billion).\(^\text{14}\) Indirect medical costs were an order of magnitude higher at USD 432.7 (THB 14.4 billion). During 2005, the direct medical costs of both interpersonal and self-directed violence accounted for four per cent of the country’s health budget, while the indirect costs accounted for approximately 0.4 per cent of GDP.

### Table 5.1 A typology for costing armed violence

<table>
<thead>
<tr>
<th>Cost category</th>
<th>Type of cost</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>Medical</td>
<td>Hospital inpatient, Hospital outpatient, Transport, Physician, Drugs/tests, Counselling</td>
</tr>
<tr>
<td>Non-medical</td>
<td>Policing and imprisonment, Legal services, Foster care, Private security</td>
<td></td>
</tr>
<tr>
<td>Indirect</td>
<td>Tangible</td>
<td>Loss of productivity (earnings and time), Lost investment in social capital, Life insurance, Indirect protection</td>
</tr>
<tr>
<td>Intangible</td>
<td>Health-related quality of life (pain and suffering), Other quality of life (reduced job opportunities, access to public services, and participation in public life)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Butchart et al. (2008)
The annual direct costs of firearm injuries in Brazil and Colombia, for example, are an estimated USD 88 million and USD 38 million per year, respectively.\textsuperscript{15} When extrapolated to account for indirect costs arising from morbidity, foregone earnings, and policing, however, the costs skyrocket: they reach as high as USD 10 billion in Brazil and USD 4 billion in Colombia—or 0.5 and 1 per cent of their respective GDPs for a single year (Small Arms Survey, 2006, p. 207). In Guatemala, the direct and indirect costs of armed violence-related injuries in 2005 amounted to some USD 2.4 billion, or 7.3 per cent of GDP. In El Salvador, the accumulated direct and indirect costs of armed violence rise to some 14 per cent of GDP (UNDP, 2006).\textsuperscript{16}

**Box 5.2 Modelling the economic costs of civil war**

A recent study by Chauvet, Collier, and Hegre (2008) estimates the range of ‘core’ costs of a ‘typical’ civil war as USD 60–250 billion. These authors claim that the economic costs averaged about USD 123 billion per year over the past four decades. Likewise, coups were associated with core and total costs of USD 4–16 billion per annum.

Although these are only estimates based on a simple model, they do offer important insights into how economists determine the economic costs of war. Such estimates assume that the (economic) ‘feasibility’ of war is, ultimately, a key determinate of its onset. Countries predisposed to war therefore face low income, sluggish growth, high dependence on commodity exports, and (geographically) rough terrain.

Likewise, social characteristics—small populations, large share of youth, and social fractionalization—are also connected to war onset. Finally, and much more controversially, ‘democracy’ appears to have a benign effect—but, in some cases, even increases rather than decreases the risk of war onset (Chauvet, Collier, and Hegre, 2008). This latter finding is challenged by Elbadawi (2008) and Bodea and Elbadawi (2007), who see robust democracies as mitigating conflict recurrence.

More importantly, efforts by Chauvet, Collier, and Hegre to model the economic costs of civil war offer a number of straightforward and compelling policy prescriptions. They suggest that aid packages provided to a ‘typical’ post-conflict country of about USD 4 billion could potentially generate an overall benefit of USD 10.7–13.8 billion over a ten-year period, depending on the discount rate and cost of conflict (Chauvet, Collier, and Hegre, 2008, pp. 61–63).

**Modelling armed violence**

Economists studying war commonly adopt a modelling approach to measuring the economic costs of collective armed violence. They estimate the costs of armed conflict by undertaking growth simulations in countries affected by civil wars. Such estimates should take account of the social and geographic concentration of the effects of war (particularly among the poor), the opportunity costs for development, the persistence of the economic costs of war over time, and spillover effects, such as crime, disease, and terrorism.

A variety of researchers have shown that a civil war of five years can reduce the annual average growth rate of a country by approximately 2–2.2 per cent (Collier, 1999; Hoeffler and Reynal-Querol, 2003).\textsuperscript{17} Drawing on more recent data and estimation techniques, researchers show that civil conflict likely decreases the growth of GDP for an average economy by 2.17 per cent (Restrepo et al., 2008).\textsuperscript{18}

Put in straightforward country terms, a ‘typical’ civil war is estimated to cost a country at least USD 64 billion.\textsuperscript{19} This includes an estimated USD 49 billion in military expenditure and economic losses, USD 10 billion in post-conflict effects, and USD 5 billion in national healthcare costs above what might have been expected had war not taken place (Collier and Hoeffler, 2004b).

Recent modelling of armed conflicts in Africa between 1990 and 2005 estimated economic losses at approximately USD 284 billion (Oxfam-GB, 2007). By focusing on GDP losses, the modelling approach accounts for reduced growth and finds that these effects can persist long after wars come to an end (Bates, 2008).

Modelling can provide an especially robust account of the costs of armed violence at the country or sub-national level. Estimates of the economic costs
of conflict and collective armed violence reveal significant GDP losses. During a protracted cross-border conflict with Iraq in 1979–81, for example, Iran experienced a cumulative loss of some 48 per cent of GDP. Iraq was also significantly affected, having lost an estimated 11 per cent of GDP over two conflicts (1977–93). Internal or civil wars also generate significant losses. For example, Ethiopia lost approximately four per cent of expected GDP (1977–93), Liberia nearly two per cent (1984–95), and Sri Lanka 2–16 per cent, depending on the periods under review (1983–87 and 1983–94) (Stewart, Huang, and Wang, 2001, p. 96).

The modelling approach also suffers from limitations in comparability since methodologies and datasets often differ significantly among studies. In Nicaragua, for example, models estimating lost GDP range from 0.8 to 90 per cent (Stewart, Huang, and Wang, 2001; Lopez, 2001). In countries not affected by armed conflict, modelling armed violence reveals a tremendous array of hidden costs. For example, the estimated costs of interpersonal violence in the United States range from USD 1.8 billion to USD 507 billion depending on how violence and its consequences are measured (WHO, 2004, pp. 13–14). Likewise, in the United Kingdom and Wales, the costs of criminal violence were estimated at between USD 40.2 billion and USD 63.8 billion per year (Brand and Price, 2000).

Contingent valuation of armed violence

Contingent valuation or ‘willingness-to-pay’ approaches are also commonly employed to estimate the costs of armed violence. Such techniques measure what individuals and households are prepared to pay in order to improve their safety from, or live free of the threat of, armed violence. It assumes that people (or individuals, households, and firms) seek to avoid uncertainty and are prepared to give up some degree of their consumption permanently in order to live in a less uncertain world.20 Contingent valuation does not necessarily address all the possible economic costs of armed violence. For example, material impacts associated with lost assets and inefficiencies generated by changes in behaviour (induced by criminal violence, for example) are not easily captured by this method (Merlo, 2004). Even so, there is evidence that suggests that non-monetary costs of armed violence and crime are at least as important as material ones (Soares, 2006).

Recent analysis indicates that individuals living in conflict-affected countries would be, on average, prepared to contribute the equivalent of eight per cent of their annual consumption (per annum) to live in a more peaceful environment. If extrapolated on the basis of international datasets, the average global cost of ‘insecurity’ generated by armed violence amounts to roughly USD 70
Box 5.3 Measuring the health dimensions of violence using contingent valuation

The economic costs of armed violence extend beyond material losses to longer-term welfare losses arising from higher mortality. Mortality rates and their distribution across age groups can determine reductions in life expectancy that can then be valued using a marginal willingness-to-pay approach.

A seminal work by Soares (2006) examines the health dimensions of the welfare costs of violence in 73 countries. It is the first comprehensive cross-country estimate of the non-monetary costs of violence and a first attempt at using the ‘value of life’ methodology to estimate the social value of violence reduction. Together with the age distribution of a population, the willingness-to-pay approach can be used to estimate the social value attached to violence reduction—or the welfare costs of violence.

The study finds that the reduction in life expectancy due to homicidal violence represents a substantial welfare loss—in the same order of magnitude of the direct material costs of crime. On average, one year of life expectancy lost due to violence is associated with a yearly social cost of 3.8 per cent of GDP. Taking account of all related health dimensions increases the estimated social costs of violence by 40 per cent in the United States and 57 per cent in Latin America (Londoño and Guerrero, 1999).

Figure 5.1 reveals the social value attached to violence reduction as a share of GDP for all countries sampled by Soares (2006), ordered from highest to lowest. Of the top ten countries, eight are found in Latin America. The 11 remaining countries that complete the top 20 are all in Latin America and the Caribbean or are former Communist regions. At the other extreme of the distribution, the ten lowest values are for Western European countries and Japan (Soares, 2006).

* The values ascribed to Colombia and the Philippines are roughly 280 per cent.

Source: Soares (2006)
Table 5.2 The social value of violence reduction in selected WHO regions, 1990s*

<table>
<thead>
<tr>
<th>WHO region</th>
<th>Life expectancy (years)</th>
<th>Homicide rate (per 100,000)</th>
<th>GDP per capita (USD)</th>
<th>Expected years of life lost</th>
<th>Social value, future generation (USD billions)</th>
<th>Social value as % of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latin America and the Caribbean</td>
<td>71.4</td>
<td>21.8</td>
<td>7,708</td>
<td>0.6</td>
<td>49.8</td>
<td>57</td>
</tr>
<tr>
<td>North America</td>
<td>76.1</td>
<td>6.5</td>
<td>25,672</td>
<td>0.2</td>
<td>456.14</td>
<td>15</td>
</tr>
<tr>
<td>Western Europe</td>
<td>76.2</td>
<td>4</td>
<td>11,383</td>
<td>0.1</td>
<td>7.23</td>
<td>7</td>
</tr>
<tr>
<td>Former Communist</td>
<td>68.9</td>
<td>17.2</td>
<td>6,009</td>
<td>0.4</td>
<td>6.59</td>
<td>20</td>
</tr>
<tr>
<td>Western Pacific</td>
<td>76</td>
<td>7.8</td>
<td>17,839</td>
<td>0.2</td>
<td>82.3</td>
<td>46</td>
</tr>
</tbody>
</table>

* Regional statistics are unweighted averages. Due to data availability, the only African country included in the sample is Mauritius, and the only eastern Mediterranean country is Kuwait (these regions are not included in the table).

Source: Soares (2006)

...per person, or a global annual ‘cost’ of USD 400 billion (Hess, 2003). Such general estimates must, however, be treated with caution.

More common, however, are studies that focus on the willingness of people to live free of certain forms of criminal violence. One recent contingent valuation assessment examines the value of permanent reductions in homicide for individuals in more than 70 countries (see Box 5.3). Part of the reason for this relates to the relative novelty of the study of the economic costs of armed violence. Investment in such research can, however, illustrate the huge economic costs of conflict and non-conflict armed violence.

This section considers four countries—Uganda, Sri Lanka, Nicaragua, and Guatemala—for which there is data that offers important insights into the applicability of a multi-method approach to estimating the economic burden of armed violence. In all four countries, a combination of counting, modelling (counterfactual), and contingent valuation approaches were attempted by various researchers to generate comprehensive estimations of the costs of armed violence for society. It finds that the economic burden depends in large part on the duration, severity, and geographic spread of armed violence, as well as the types of indicators used and quality of available data. The section also considers the costs of armed violence that are often obscured from view, including violence against women (see Box 5.4).

Costing armed violence in a sample of countries

There are comparatively few cases in which the economic burden of armed violence has been carefully measured using various types of methods.
Box 5.4 The economic costs of intimate partner and sexual violence during war

Though often hidden from view, the economic costs of intimate partner and sexual violence against women act as a development disabler. Although there are no comparative assessments of the economic burden of intimate partner violence, a number of case studies exist in high- and medium-income country contexts. According to UNIFEM (2007) and CDCP (2003), the direct medical costs of intimate partner assault, rape, and related victimization amounts to at least USD 5.8 billion per annum, while the indirect costs total some USD 1.8 billion.

In less-developed countries, particularly those affected by war, sexual violence directed against women undermines formal and informal economic productivity. Female single-headed households are often confronted with the pain and suffering related to missing relatives, as well as economic uncertainties. In many cases, missing or killed male relatives served as the primary breadwinners and/or the household property owner. In Chechnya, (northern) Kenya, Liberia, Nepal, Somalia, and Sri Lanka, a noticeable rise in female-headed households was observed in the wake of armed violence (CICS, 2005).

In both war and peace, female-headed households face an increased workload. They also regularly find themselves excluded from formal economic activities, thus leading to reduced earning options. Such households make up a disproportionate share of the poor. In southern Sudan, for example, where women outnumber men, widow-headed households represent up to 50 per cent of the poor and poorest quintiles (Burns-Mackenzie and Buchanan-Smith, 2005). In Bosnia and Herzegovina, women-headed households (16 per cent of all households in 1998) often live in precarious conditions, with some members resorting to prostitution to make ends meet (Bastick, Grimm, and Kunz, 2007).

Women also face a range of additional challenges tied to discrimination and social exclusion. The economic condition of displaced women may further deteriorate due to a decline in access to formal and informal credit from their social networks (Brück and Vothknecht, 2007).

During bouts of intense collective violence, gender roles can change and adapt. The protracted absences of male family members and the destruction of productive assets can force women and girls into the labour market in new ways. In Nepal and Kenya, for example, large numbers of women are involved in farm management and labour migration, work traditionally reserved for men. Others have observed an increase of the share of women in the formal and informal labour force in Bosnia and Herzegovina, Cambodia, El Salvador, Georgia, Guatemala, and Rwanda in the aftermath of war (Brück and Vothknecht, 2007).
In Uganda, a protracted armed conflict between the Lord’s Resistance Army (in the north) and the Ugandan People’s Defence Forces reveals the heavy economic costs of mass violence. In examining a range of variables from the mid-1980s to 2002 and data from national and sub-national sources, it appears that the economic costs of more than two decades of war in northern Uganda accounted for at least USD 1.3 billion. These effects are primarily related to direct military expenditure (28 per cent), loss of income from cash crops (27 per cent), and reductions in tourism revenue (14 per cent) (Dorsey and Opeitum, 2002). Drawing on additional variables and country data, the estimated total rises threefold to more than USD 3.5 billion (Bozzoli et al., 2008).

More than two decades of armed conflict in Sri Lanka has stimulated a range of analyses of its economic consequences. Data generated by the state, the national bank, and international agencies such as the World Bank allow for robust accounting and modelling. Depending on the period under consideration, the independent variables assessed, and the regions of the country that are considered, the economic costs of collective armed violence in Sri Lanka range from USD 333 million to USD 1.93 billion per year. These costs are attributed primarily to lost earnings arising from foregone foreign investment (42 per cent), military expenditures (27 per cent), lost tourism revenue (10 per cent), depleted infrastructure (8 per cent), and other factors (Bozzoli et al., 2008, p. 19).

In the wake of an insurgency in Nicaragua launched in 1980, several econometric studies were undertaken to examine the extent of the costs of mass armed violence. Drawing on data from the Nicaraguan government and international agencies such as the UN and the World Bank, it is possible to examine the economic implications of external embargoes, military expenditures, and even changes in the behaviour of economic actors (shifts in propensity to import and consume). The overall estimated costs of civil war range from USD 80 million to more than USD 1.1 billion (FitzGerald, 1987; DiAddario, 1997; Stewart, Humphreys, and Lea, 1997). The primary impacts were reported in relation to export revenues, fiscal deficits, and inflation rates, and easily rivalled official development flows to the country.

More than a decade after a protracted internal conflict, Guatemala continues to suffer from one of the highest rates of armed violence in the world. The UN Development Programme has estimated that the costs of armed violence amounted to almost USD 2.4 billion in 2005, or 7.3 per cent of GDP (UNDP, 2006). The estimate incorporates health sector costs, institutional costs, private security expenditures, impacts on the investment climate, and material losses.

Estimating the global economic costs of non-conflict armed violence

There are comparatively few attempts to estimate the global costs of homicidal violence. The Conflict Analysis Resource Center (CERAC) in Colombia recently generated a global estimate on the basis of the lost product due to violent deaths (LPVD) in more than 90 countries. The use of the LPVD method highlights the cost of lethal intentional violence above ‘normal’ or ‘expected’ rates. ‘Normal’ is defined levels observed in countries with a low or very low incidence of homicides. The approach first considers the potential gains in life expectancy that would be achieved by reducing the risk of violent death. This is represented by the added years of life expectancy the population would gain if deaths from armed violence were reduced or eliminated. Estimating
potential gains in life expectancy for a country requires mid-year population estimates by age and gender, data on all causes of mortality by age and gender, an estimate of total homicides, purchasing power parity (PPP) indices, GDP per capita, and GDP per capita growth rates.

The assessment generated a range of insights into the global economic burden of homicidal violence. Of the more than 400,000 reported homicides in 2004 (from 90 countries), the lost product due to violent deaths per homicide amounted to USD 85,000–363,000 (2007 US dollars), depending on the rate at which future earnings are discounted (ten and three per cent, respectively).30

Overall, the annual lost productivity from lethal non-conflict armed violence is roughly USD 95 billion per year. These losses could range from as high as USD 163.3 billion (at a three per cent discount rate) to as low as USD 38.3 billion (if a ten per cent discount rate is used). This amounts

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**Box 5.5** What is a discount rate?
A discount rate is the deduction that is applied to a future value when brought back to the present in order to make it comparable to current values. It is equivalent to what a given investment would yield if put to productive uses.

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**Map 5.1** Potential gains in life expectancy in years in the absence of non-conflict armed violence, by country, 2004

**Legend:**
- Potential gains in life expectancy in years
  - 1.00–1.81
  - 0.66–1.00
  - 0.42–0.66
  - 0.26–0.42
  - 0.00–0.26
  - 0.00
- Male
- Female
- Not included

**Source:** CERAC
to between 0.03 and 0.14 per cent of global GDP. Put another way, the annual global LPVD is equivalent to the GDP of Chile, Hungary, or Romania, and 47 times that of Burundi, in 2004 (Restrepo et al., 2008).

There are considerable regional variations in the economic costs of non-conflict armed violence. North America features the highest loss of life expectancy and lost economic productivity in the world. In this region, homicide reduces male life expectancy by 0.44 years and females by 0.26 years. Likewise, North America experiences the highest loss of GDP when compared with other regions, though Latin America and Africa feature a larger share of GDP lost to homicidal violence. Indeed, Latin America and the Caribbean region feature the highest rates of homicide per 100,000 population, and the lost product due to violent deaths is USD 79,000–304,000 per homicide, again depending on the discount rate (ten or three per cent) (Restrepo et al., 2008).

Reviewing homicidal violence in 15 countries also highlights the national variations in lost productivity. For example, Jamaica, Colombia, Angola, South Africa, and Bolivia experienced among the highest homicide rates in 2004. Not surprisingly,
Table 5.3 Lost product due to violent deaths, USD million (2007) and % of GDP (2004)

<table>
<thead>
<tr>
<th>Region</th>
<th>Lost product due to violent deaths, USD million (2007)</th>
<th>Lost product due to violent deaths as % of GDP (2004)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Discount rate 3%</td>
<td>Discount rate 5%</td>
</tr>
<tr>
<td>South-east Asia</td>
<td>24,540</td>
<td>14,513</td>
</tr>
<tr>
<td>Western Pacific</td>
<td>35,068</td>
<td>18,510</td>
</tr>
<tr>
<td>North America</td>
<td>46,760</td>
<td>26,756</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>1,870</td>
<td>1,236</td>
</tr>
<tr>
<td>Europe</td>
<td>9,946</td>
<td>5,963</td>
</tr>
<tr>
<td>Africa</td>
<td>6,404</td>
<td>4,771</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>38,762</td>
<td>23,694</td>
</tr>
</tbody>
</table>

Sources: Small Arms Survey and CERAC calculations

Figure 5.2 Potential gains in life expectancy (years) in the absence of violent deaths by region, 2004

Table 5.4 Aggregate lost product due to violent deaths, selected countries, 2004

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Discount rate 3%</td>
</tr>
<tr>
<td>United States</td>
<td>45,112</td>
</tr>
<tr>
<td>China</td>
<td>24,620</td>
</tr>
<tr>
<td>Brazil</td>
<td>23,140</td>
</tr>
<tr>
<td>Indonesia</td>
<td>6,376</td>
</tr>
<tr>
<td>Colombia</td>
<td>6,231</td>
</tr>
<tr>
<td>India</td>
<td>6,179</td>
</tr>
<tr>
<td>Korea</td>
<td>5,586</td>
</tr>
<tr>
<td>Thailand</td>
<td>5,503</td>
</tr>
<tr>
<td>Nepal</td>
<td>4,723</td>
</tr>
<tr>
<td>South Africa</td>
<td>4,435</td>
</tr>
<tr>
<td>Mexico</td>
<td>4,110</td>
</tr>
<tr>
<td>Philippines</td>
<td>2,247</td>
</tr>
<tr>
<td>Canada</td>
<td>1,648</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1,477</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>1,358</td>
</tr>
</tbody>
</table>

Source: Small Arms Survey and CERAC calculations

Jamaica experienced the highest potential gains in life expectancy if such violence had not occurred, at 1.81 years for males and 1.0 for females, followed by Colombia, El Salvador, Guatemala, Venezuela, Bolivia, and Honduras—all of which are in the Latin American and Caribbean region. The United States experienced the highest total lost product due to violent deaths with a value of USD 45.1 billion (at a discount rate of three per cent), followed by China, Colombia, Indonesia, India, and the Republic of Korea (see Figure 5.3 and Table 5.4).

Positive effects of armed violence?

Armed violence generates effects in all directions. It can result in the loss of capital and opportunity costs, but can also redistribute wealth and build
find ways of laundering their newly acquired resources into the formal economy (Keen, 1998; Reno, 1999). But these gains are offset by losses in other areas: every resource spent or destroyed in armed conflict is a resource that would be more efficiently used for purely productive purposes. Nevertheless, the motivations, interests, and outcomes among those who ‘profit’ from armed violence are still critical to explain the onset and perpetuation of armed violence.

The dynamics of the informal and illicit economies are often not captured in formal statistics. The boundaries between the criminal and the informal economies are, in some cases, blurred. This blurring is especially significant in lower- and middle-income countries. For example, armed violence may generate opportunities for involvement in informal activity, such as narcotics production, ‘conflict diamonds’, or trade in contraband. While such activities may undermine the legitimacy of the state, they can also contribute to household incomes and local markets and spill over into the formal economy.34

Armed violence may also result in the transfer of assets from one set of actors to another. The extent to which such redistribution is ‘progressive’ must be carefully scrutinized. When armed groups with no clear political agendas redistribute the spoils of conflict, it is likely that armed violence negatively affects the most vulnerable. It is the elite who most often benefit from such redistribution (Collier and Hoeffler, 2004a; 2004b). Though the costs frequently outweigh the benefits, there may nevertheless be benign transfers, particularly when armed violence yields more ‘neutral’ transfers of goods from wealthy to wealthy or from poor to poor.35

While debate over the potentially positive economic effects of armed violence persists, there is evidence that intense bursts of violence are

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**Figure 5.3** Potential gains in life expectancy (years) in the absence of violent deaths, top 15 countries, 2004

<table>
<thead>
<tr>
<th>Country</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jamaica</td>
<td>0.6</td>
<td>1.0</td>
</tr>
<tr>
<td>Colombia</td>
<td>0.8</td>
<td>1.2</td>
</tr>
<tr>
<td>El Salvador</td>
<td>0.6</td>
<td>1.0</td>
</tr>
<tr>
<td>Guatemala</td>
<td>0.4</td>
<td>0.8</td>
</tr>
<tr>
<td>Venezuela</td>
<td>0.4</td>
<td>0.8</td>
</tr>
<tr>
<td>Bolivia</td>
<td>0.6</td>
<td>1.0</td>
</tr>
<tr>
<td>Honduras</td>
<td>0.4</td>
<td>0.8</td>
</tr>
<tr>
<td>Somalia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Africa</td>
<td>0.4</td>
<td>0.8</td>
</tr>
<tr>
<td>Sudan</td>
<td>0.6</td>
<td>1.0</td>
</tr>
<tr>
<td>Angola</td>
<td>0.4</td>
<td>0.8</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>0.6</td>
<td>1.0</td>
</tr>
<tr>
<td>Brazil</td>
<td>0.4</td>
<td>0.8</td>
</tr>
<tr>
<td>Liberia</td>
<td>0.6</td>
<td>1.0</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>0.4</td>
<td>0.8</td>
</tr>
</tbody>
</table>

*Source:* Restrepo et al. (2008)
bad for an economy. Even the nominal growth accompanying a 'post-conflict' transition is unlikely to help a society catch up quickly to levels experienced prior to the conflict. The 'peace dividend' is more akin to an 'efficiency dividend,' as previously inefficiently mobilized resources are redirected to productive ends. After a long guerrilla war in Uganda culminated in victory in 1986, for example, Uganda's National Resistance Movement presided over the country's longest period of economic development since independence (Gutierrez, 2008; Mutebi, 2008a). Similarly, the Rwandan Patriotic Front also presided over sustained economic development after it came to power following the genocide in 1994. More controversially, in Somaliland, protracted armed violence led to the formation of a (largely unrecognized) state that appears to ensure a degree of economic security for its residents (Gutierrez, 2008; Ahmed and Green, 1999). Ultimately, determining who prevails after bouts of collective armed violence may inform a country’s possible ‘trajectories’. Some countries may rise from the ashes, while others may remain in limbo.

While often neglected, some actors in the private sector can do well in situations of armed violence. The assumption that foreign direct and local investment always tumbles in contexts of acute armed violence does not hold (see Box 5.6) (Mihalache, 2008). It is often the case, however, that the private sector profits due to monopolies or inefficiencies. But it is important to recall that the private sector is both heterogeneous and expanding rapidly in lower- and middle-income countries. In some instances, extractive and smaller-scale companies can rapidly develop specific niches in societies severely compromised by armed violence (Ballentine and Sherman, 2003). For example, in Guatemala, high profits were accumulated in the post-war period by a modest number of business elites who effectively secured rents through tight connections with the government (Joras, 2007).

In some other countries, however, due in large part to the opportunity costs and uncertainties generated by armed violence, companies can also help broker peace, such as in South Africa or Northern Ireland.36

The effects of armed violence on the business climate—whether due to homicide, kidnapping, extortion and the destruction of physical infrastructure or in relation to the prospects of international sanctions and heavily conditioned loans and credits—are severe. In some cases, these economic costs may render active or tacit complicity in armed violence unbearable. In such environments, private sector actors may support preventive initiatives and mobilize networks to reach out to national stakeholders. In El Salvador, Brazil, Colombia, and Nicaragua, the private sector can play or is

Box 5.6 Armed violence and investment

Does armed violence universally deter foreign direct investment (FDI) (Mihalache, 2008)? While armed violence may increase transaction and transport costs, disrupt labour and commodity markets, and put a company’s assets and personnel in danger, the relationship is not as straightforward as it may appear. For example, in Algeria, Eritrea, the Democratic Republic of the Congo, and Sri Lanka, FDI actually peaked during periods of intense collective violence (Mihalache, 2008). One of the reasons for this is that investors are not homogeneous or equally sensitive to risk, including the risk of armed violence.

The real and relative effects of armed violence on investors will depend in part on the characteristics of the investor and the nature of the risk. Characteristics include the scale of physical assets, the expected costs of an exit strategy, and whether outputs are directed to foreign or domestic consumption. The energy and natural resource sectors tend to be more vulnerable to targeted armed violence than the finance, service, telecommunications, or construction sectors. The nature of the risk is tied to the geographic distribution of armed violence: if a company is based primarily in a capital, but violence occurs in remote areas of the country, than there will be comparatively fewer effects on routine operations (Fielding, 2003).
playing a role in promoting an end to armed conflict and criminal violence (UNODC, 2007a).³⁷

Conclusion

Agreement on the meaning and use of different approaches to measuring the economic costs of such violence is a core priority. Drawing on accounting, modelling, and contingent valuation to understand the economic burden of armed violence are important steps forward. Designing and investing in reliable data collection and analysis tools to monitor and measure these costs is another critical pillar to generate consensus on priorities, entry points for action, and benchmarks of success.

Developing comprehensive longitudinal assessments of the economic burden of armed violence requires the generation of reliable and continuous data. Current datasets are highly dispersed, piecemeal, and poorly funded. Investment in data generation must be commensurate with the real challenges on the ground. The development of a network of standardized information gathering mechanisms on armed conflict and criminal violence and the pooling of data for public use are of clear value.

Quantifying the costs of armed violence is critical to draw attention to the way such violence impedes development. While this will not by itself improve the livelihoods of those affected, a better understanding of the factors contributing to armed violence onset and severity; the temporal, demographic and spatial relationships between armed violence and human development; the role and motivations of armed violence entrepreneurs; and the ways in which armed violence affects growth can potentially enhance preventive and reduction initiatives. 

Photo ▲ Police officials patrol the impoverished neighbourhood of El Milagro, Guatemala City, 2004. © Rodrigo Abd/AP Photo
Abbreviations

BRL  Brazilian real
CERAC  Conflict Analysis Resource Center
FDI  foreign direct investment
GPD  gross domestic product
JMD  Jamaican dollar
LPVD  lost product due to violent deaths
PPP  purchasing power parity
THB  Thai baht
USD  United States dollar
WHO  World Health Organization

Endnotes

1 In situations of war or organized crime, the poor often have the opportunity to join the ranks of fighters or private security agents. Enlistment may be an opportunity for upward social mobility and the acquisition of status (Small Arms Survey, 2006, pp. 189–213).

2 In a random effects model, a 2.53 per cent decrease per year was detected (Restrepo et al., 2008).

3 For more information on the Geneva Declaration, see <http://www.genevadeclaration.org>.

4 The wide discrepancies in estimates are often due to non-comparable cost factors, different time periods of analysis, distinct ‘contexts’ shaping collective or interpersonal violence, and different levels of analysis (from the international to the local level) (Sköns, 2006, pp. 172–73).

5 In some cases, studies also account for international spillover effects, as well as long-lasting consequences (Murdoch and Sandler, 2004; Arunatilake, Jayasuriya, and Kelegama, 2001). More advanced assessments also seek to account for the role of the informal economies of the countries concerned, which are often left out of official GDP estimates (Bozzoli et al., 2008).

6 In Africa alone, the cost of conflict is estimated at USD 284 billion (1990–2005) and approximately 15 per cent of continental GDP (Oxfam-GB, 2007).

7 Single case studies tend to lack comparable and consistent frameworks and contain inconsistencies caused by double counting and latent biases (Bozzoli et al., 2008). Cross-country studies tend to draw on conventional econometrics and do not sufficiently account for different types of conflicts.

8 This ‘creative destruction’ or ‘phoenix factor’ resulted from, it was argued, enhanced state control over key industries, replacement of obsolescent capacities with more efficient infrastructure, technological innovation, and other factors (Sombart, 1913).

9 FitzGerald’s (1987) analysis on the US-backed destabilization of Nicaragua by the right-wing Contras is considered by experts to be the first contemporary analysis of the economic costs of mass violence. The assessment by Stewart and FitzGerald (2001) is also the first comprehensive account of the relationships between mass violence and economic development in non-Organisation for Economic Co-operation and Development countries. Considering the economic costs at the macro-, meso-, and micro-levels, they assess the impacts of armed violence in relation to average rates of income, share in the agricultural subsistence sector, foreign exchange effects, flexibility of the economic system, monetary aspects of poverty, education and literacy, health and nutrition, coping strategies, and other factors.

10 Although some of these studies extend beyond GDP and government revenues, key assessments include Grobar and Gnanaselvam (1993), Stewart, Humphreys, and Lea (1997), Stewart, Huang, and Wang (2001), Hess (2003), Hoeffler and Reynal-Querol (2003), and Chen, Loayza, and Reynal-Querol (2007).

11 The various approaches are potentially connected. The modelling approach should provide a statistical estimate of what a society has lost economically as a result of armed violence. Contingent valuation should, in turn, inform the accounting approach in identifying potential imbalances. Where there may be major differences in the outcomes of the two approaches, the accounting specialists may need to refine their core variables. Applying all of these approaches together helps to elaborate a more sophisticated assessment by emphasizing the ways in which armed violence affects different sectors of society.

12 A recent study by the Institute for Applied Research found that the estimated cost of violence in Brazil amounted to more than USD 56.5 billion (BRL 92.2 billion), of which roughly one-third was linked to public sector expenditures and the remainder tied to tangible and intangible costs paid by the private sector (Cerquiera et al., 2007).

13 By way of comparison, the annual costs of road accidents in Latin America and the Caribbean (including Brazil) are estimated to be about one per cent of GNP (Butchart et al., 2008).

14 A further USD 17.1 million was attributed to self-directed violence.

15 These medical costs appear relatively consistent with those of other developing countries, e.g. El Salvador and South Africa (Small Arms Survey, 2006, p. 196).
Specifically, the health and years lost in Guatemala amounted to an estimated three per cent of GDP. Institutional costs relating to police and justice provision were between one and two per cent of GDP. Costs associated with private security amounted to between two and three per cent of GDP, while foregone tourism ranged from 0.2 to one per cent (UNDPO, 2006, p. 11; 2007).

Collier (1999) found that the annual growth rate is reduced by 2.2 per cent using a sample of 92 countries for the period 1960–89. Hoeffler and Reynal-Querol (2003) draw on data for more than 200 countries (for the period 1960–90) and note a reduction of 2 per cent.

This rises to as high as 2.53 per cent, if random effects are taken into consideration (Restrepo et al., 2008). This figure assumes certain temporal parameters relating to conflict and post-conflict duration. Collier and Hoeffler (2004a; 2004b) define these parameters as 7 ‘war years’ and 14 ‘post-conflict years’.

Soares (2006), for example, assumes that violence affects life expectancy. The extension of one’s expected lifetime by a small amount yields a marginal utility benefit that can be measured. The equivalent consumption value to achieve this benefit can be calculated.

Data on the number and cause of deaths is derived from WHO statistics in order to determine the age-specific reduction in survival probabilities. Contingent valuation is then applied in order to estimate the monetary value of the reductions in survival probabilities for individuals at a given age.

The value of violence reductions is described by Soares (2006) as ‘the marginal willingness to pay of an 18-year-old individual, as the lifetime aggregate social value for the current population and for the future generations, and as the sum of these aggregate values as percentages of the 1995 GDP’ (Soares, 2006, p. 830).

Crime and justice expenditures are expected to amount to 2.1 per cent of GDP per annum in the United States and 3.6 per cent in Latin America (Londoño and Guerrero, 1999).

These include Colombia (281 per cent), followed by the Philippines (280 per cent), Venezuela (95 per cent), Chile (86 per cent), El Salvador (73 per cent), Belize (71 per cent), Suriname (67 per cent), Mexico (67 per cent) and Brazil (65 per cent) (Soares, 2006).

Homicidal violence generates extraordinary welfare costs across countries: from Colombia, where it contributes to the reduction of 2.2 years in life expectancy at birth, to the United States and Western Europe, where violence reduces life expectancy at birth by 0.3 and 0.1 years, respectively (Soares, 2006).

In Western Europe, on the other hand, the average social value of violence eradication measured in terms of yearly income corresponds to only 0.24 per cent of the 1995 GDP. These findings do not necessarily imply that additional expenditures on armed violence reduction should be pursued. As Soares (2006, p. 829) notes, ‘the desirability of increased investments in public safety depends on whether further reductions in violence can be achieved at a cost lower than the social willingness to pay’.

See, for example, Grobar and Gnanaselvam (1993); Harris (1997); Richardson and Samarsinghe (1991); Kelegama (1999); Arunatilake Jayasuriya, and Kelegama (2001).

The first study was undertaken by FitzGerald (1987) as evidence for a case brought to the International Court of Justice. A second study was done by DiAddario (1997) and was later supplemented by others.

‘Normal’ levels are defined as the average homicide rate of two groups of countries (classified as having low-level and very low-level rates of homicide) that report mortality statistics to the WHO. The average homicide rate for these 27 countries was 1.24 per 100,000 population in 2004.

The total number of homicides used to calculate this—449,865—is about ten per cent lower than the figure presented in the chapter on non-conflict armed violence (NON-CONFLICT ARMED VIOLENCE), but is drawn from the only country-level data that is available (Restrepo et al., 2008).

Measured as per 100,000 population, homicides rates were as follows: Jamaica (53), Colombia (48), Angola (47), South Africa (36), and Bolivia (43) (Restrepo et al., 2008).


As Keynes (1978) notes, wars do not only produce destruction, but also change the baseline. Keynesian policies emphasize military production, infrastructure and transport construction, technological innovation, the transformation of women’s roles in the labour market, and the overall strengthening of the state.

Natural resources played an important function in financing a number of African conflicts, as evidenced in recent reports of the UN Security Council Sanctions Monitoring Mechanism in Angola, the Democratic Republic of the Congo, and Sierra Leone (Smillie, Gberie, and Hazleton, 2000). But such resources were only one of many financing options for armed violence (Jean and Rufin, 2006). As such, interventions focusing exclusively on single commodities through sanctions or even multistakeholder initiatives, such as the Kimberley Process and anti-terrorist financing, may only address one part of the problem.

Gutierrez (2008) observes that a distributional analysis should take into account (i) programming effects (i.e. the take-over of assets, income, or political rights of adversaries...
or third parties); (2) incentive systems (i.e. the distribution of prizes and punishments to mobilize different sectors of the population); (3) patterns of action (i.e. the possibilities for massive redistribution); (4) organizational structures (i.e. the type of organization can have long-term implications for patterns of redistribution); and (5) baselines (i.e. the ability to recruit and promote high-risk collective action depends on disaffected and/or risk-prone critical mass) (Gutierrez, 2008, p. 16).

36 See, for example, Portland Trust (2007); Ben-Porat (2005); Charney (1999); Wennmann (2007).

37 See, for example, UNODC (2007a), which describes how, throughout Central America, crime and corruption are considered leading problems for business leaders. More than 80 per cent of 455 Guatemalan businesses polled said they saw crime as a major problem, as compared to the global weighted average of 23 per cent (UNODC, 2007a, p. 18).