

The Costs of Armed Conflict

5 Chapter

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Knowledge about the costs of armed conflict is important for many reasons. One important reason is to make possible a comparison between the external costs of conflict and the costs to external actors of the alternative: implementing policies intended to reduce the incidence of conflict or to prevent it from becoming violent—that is, the option of funding international public goods in peace and security.

Empirical studies on the costs of armed conflict are still scarce. Recent years have seen a few major studies, but they are different in focus and therefore difficult to compare. They differ in the types of conflict examined and types of costs included and in whether they examine the costs to the countries in conflict, to neighbouring states or to a broader international community. The purpose of this chapter is to review existing studies of the costs of armed conflict. It covers studies on internal (intrastate) and international (interstate) armed conflicts and looks at the estimates provided for the costs of conflicts to the parties of conflict and for external costs beyond the parties—to the neighbouring countries or even globally.

The studies reviewed show that it is difficult to identify and quantify the costs of armed conflict, particularly their external costs. Cost estimates vary widely. According to one study, the external costs of internal armed conflicts during the post-cold war period range from \$4.5 billion to \$54 billion. Another study has produced an average estimate for the costs of internal armed conflict in low-income countries to the country in conflict and to its neighbour states. This estimate is based on cost estimates calculated as a share of GDP during an average conflict period of 7 years and an additional 14-year average post-conflict period. This share is then applied to the average GDP of low-income conflict-affected countries, resulting in an average cost of \$64 billion. The costs of international (interstate) armed conflicts are generally much higher, particularly if a developed country is involved in the conflict, as in the US-led war in Iraq.

It is difficult to generalize about the average costs of armed conflict, but it is possible to generalize about the dynamics of armed conflict and the overall structure of costs. Three conclusions applying to internal armed conflicts in low-income countries during the post-cold war period can be drawn from the studies reviewed.

First, the indirect costs of conflict are important, although the complex economic dynamics of conflict make them more difficult to understand. It is also difficult to distinguish empirically between developments that result from war and those that would have happened anyway.

Second, the costs to external parties are often greater than the costs to the country in conflict. Neighbouring countries suffer significantly, but there are also major global costs of internal armed conflicts in poor countries.

Third, the costs after the end of violence are often as great as the costs during conflict. They are particularly significant if the definition of post-conflict costs includes external assistance to the country, such as peace operations and foreign aid for post-conflict reconstruction.

The estimates produced by the studies examined are conservative approximations, representing the lower limits of the overall costs of different types of armed conflict. In the absence of data required for empirical estimation, they are based on innovative conceptual approaches, consisting of a set of assumptions applied to the scarce data available. As such, they are only crude estimates. For example, the average costs of a typical post-cold war conflict in a low-income country are difficult to estimate, since there is great variation in the types of conflict and thus their costs. To arrive at improved cost estimates more knowledge is needed about individual conflicts. Estimates of the average costs should be supplemented with detailed empirical cost assessments based on case studies for each major armed conflict. This would be a major task, though still manageable considering that the number of major armed conflicts was only 19 in 2003 and only 59 during the entire post-cold war period (1990–2003). Studies could be commissioned to researchers with expert knowledge in the specific conflict, and the cost estimates could be updated at regular intervals. The data bank of knowledge thus created would be of great use for future studies of the cost of armed conflict.

Most studies have produced estimates for the cost of conflict to countries in conflict and to their neighbours. Much less is known about the global costs. This area most urgently needs to be addressed, since knowledge in this area is needed to analyse the relative costs and benefits of external action to reduce the incidence of conflict. More knowledge—both conceptual and empirical studies—is needed about the

specific links between internal armed conflict in low-income countries and the security of the developed world. Current research may benefit from more qualitative studies on the specific links between armed conflict in low-income countries and the well-being of the high-income industrial countries, what these links entail and how they work. Such studies could contribute to cost-benefit analyses of policies to reduce the incidence of such conflicts.

This paper describes and analyses the cost components of armed conflict and war and provides, to the extent possible, an order of magnitude for each. This task falls in the broader context of the final objective of the work of the Task Force's Secretariat, which is to determine the benefits to the international community of providing peace and security-related international public goods—or the costs of underproviding such international public goods. The external costs of armed conflicts can be seen as one estimate of the costs of underprovision.

Armed conflicts impose enormous costs of many different types on individuals, societies and states. First are the direct costs of warfare, funded by military expenditure. Second are the costs of the consequences of warfare during the conflict period—loss of life, injury, human suffering, destruction of infrastructure and economic and social disruptions. Third are the costs after the conflict has ended.

From a global perspective a rational calculus based on a cost-benefit analysis would favour expenditures on measures and policies to reduce the risk of conflict. One major reason such expenditures are not made is that from other perspectives warfare may be a rational choice, albeit an egoistic one that occurs at the expense of others. So it is the actors external to the armed conflict—not the warring parties—that may be persuaded by a cost-benefit analysis. In a globalized, increasingly interdependent world, armed conflicts have significant external negative effects. This is the essence of the concept of global public goods applied to peace and security. The hypothesis is that it is more cost-effective for external actors at the regional and global levels to engage in policies to reduce the risk of conflict than to let conflicts break out. However no cost-benefit analyses are available to inform such decisions. Despite the enormous conceptual, methodological and empirical difficulties of producing such a cost-benefit analysis, doing so is an important task, and any input that can be provided as a basis for decisions is a contribution to accomplishing it.

This chapter begins with a conceptual overview of what an assessment of the costs of armed conflict involves. The overview discusses

different types of conflict, levels of costs incurred and types of cost components. It attempts to clarify what types of data are relevant for estimating the costs of underproviding peace and security-related international public goods. It reviews and evaluates some of the few major studies on the costs of armed conflict and the methodologies used for the cost assessment in them. The few available quantitative estimates of the costs of armed conflicts are presented. The conclusion discusses the value of the studies for assessments of the magnitude of the benefits to external actors of a reduction in the incidence of internal armed conflicts in low-income countries.

Assessing the costs of armed conflict

Only a few studies are available on the costs of armed conflict, and even fewer have been conducted systematically and comprehensively. A systematic review of this field of studies states: “The costs of warfare have rarely been studied systematically, and those studies that have addressed the costs have often simply drawn up a ‘list’ of these costs—without either establishing clear analytical categories or analysing the likely impact of these costs on the future direction of conflict” (Keen 2001, p. 45). Only recently, with the increased focus of the international community on the incidence of major armed conflict in low-income countries, has the research community begun to address costs more systematically.

The reason for the dearth of cost studies is that they are hard to do because there are no statistics. There are no accountants registering the consumption and destruction of resources during wars. Therefore assessing the costs of conflict is by necessity a process of estimation. Many types of cost do not easily translate into monetary units: it is difficult to set economic values on numbers of casualties, refugees and displaced persons. It is even more difficult to set values on the more diffuse consequences of war, such as the breakdown of infrastructure, social chaos and loss of political authority. Even if data were available, there is the conceptual problem of what to include in estimates of costs. Choosing which items to include involves several methodological decisions. For example, which costs are due to the war and which costs would have been incurred anyway? What is the time frame for the indirect consequences of war? How far into the post-war period should the costing exercise reach? How should one determine the scope of consequences

to include? For some purposes net costs rather than gross costs may be of most interest; should the benefits of war be deducted from the gross costs of war? Wars may have short- and long-term benefits for some groups. How should these be defined and identified?

There are also some more basic methodological issues. First, what types of conflicts should be chosen? There are many types of conflicts, and their costs vary enormously. Second, a distinction needs to be made between the different levels at which costs are incurred—the national (domestic) level (countries involved in the conflict), the regional level (neighbouring countries) and the global level (the international community or subsections thereof). Third, what types of cost components are relevant for studies on peace and security—related international public goods?

Types of armed conflict

Armed conflict is not a homogeneous phenomenon. Armed conflicts vary in magnitude (scale, duration and intensity), in geographical scope—international (interstate) or internal (intrastate, domestic, civil)—in the extent and nature of foreign intervention and in the level of military technology used.

For our purposes there are two important considerations: which types of armed conflict are most common in the current security environment and likely to be most common in the near future, and what types of armed conflict can be reduced or prevented by peace and security—related international public goods?

Internal conflicts are the most common type of armed conflict in terms of geographical scope. Since the end of the cold war most major armed conflicts have been internal. During 1990–2003 there were 59 major armed conflicts in 48 locations (Eriksson and Wallensteen 2004b, p. 132). All but four were internal conflicts. The four interstate conflicts were Iraq versus Kuwait, Ethiopia versus Eritrea, India versus Pakistan and the conflict between Iraq and the United States, United Kingdom, Australia and others. In 2003 there were 19 major armed conflicts—two were interstate conflicts. In terms of costs the US-led war in Iraq dominated. The costs of this war to the parties were estimated to be higher than the combined sum of all other wars in 2003.

There are major differences between internal (intrastate) and international (interstate) conflict, and they should therefore be analysed separately. A fundamental difference is that in traditional international wars, the power of the state tends to increase as a result of war, and

nationalism can contribute to greater social cohesion. In contrast, civil wars tend to reduce the control of the state over national territory and lead to societal disintegration (Stewart and FitzGerald 2001, p. 3), implying additional types of costs.

The majority of armed conflicts take place in low-income developing countries. Only a few internal armed conflicts have occurred in industrial countries. Industrial countries have been involved primarily in interstate wars with developing countries.

The current pattern of armed conflict is likely to continue. However there may be more cases of military intervention by industrial countries in developing countries, whether as a result of US pre-emptive strategy, as in Iraq, or within the framework of military intervention for humanitarian purposes. The international debate about such interventions during the first decade of the post-cold war period became politically problematic after the Iraq war began. Even if it is not a common type of conflict now, it may have its followers in the near or medium-term future.

Armed conflicts are commonly divided into major and minor ones by size. Limiting the discussion to major armed conflict narrows the scope of the examination substantially. The number of major armed conflicts is relatively small compared with the number of minor armed conflicts—116 in 78 locations during 1989–2003 (Eriksson and Wallenstein 2004a). However most studies on costs examine a mix of conflicts of different sizes.

Current work on proposals for peace and security-related international public goods focuses primarily on internal armed conflicts in low-income developing countries, because that type is most common. It is also easier to develop proposals for risk reduction and conflict prevention for this type of conflict than for major international conflicts involving developed countries.

Levels of costs

The most important distinction regarding level of costs is between national, regional and global, where “national” refers to the costs incurred by the country or countries in conflict, “regional” refers to the costs incurred by neighbouring countries, and “global” refers to the costs to the international community.

The global level is most relevant to this review because the objective is to explore the net benefits to the global community of engaging in conflict prevention and risk reduction. However there are also links between the costs to the parties in conflict and the external costs of

conflict. Global interdependence is becoming more recognized. To the extent that armed conflict slows development, it also affects the development policies of donor countries. The costs to the parties can also have more serious long-term effects for the developed world. For example, countries in conflict may become safe havens for terrorism or the source of refugee flows. Interdependence is a complex relationship that cannot easily be broken down into a cause-effect relationship and can even less easily be costed. Suffice it to say that national and regional costs of conflict are also likely to have some external impact, although impossible to quantify. This section addresses costs at all three levels, although to the extent the literature allows an effort is made to separate the three.

Cost dimensions

Cost components of armed conflict are usually categorized in three basic dimensions: military versus civil costs, costs during conflict versus after conflict and costs to the party or parties in conflict versus costs to external parties (see table 5.1). Another less precise distinction is between direct and indirect costs. Stewart (1993) draws this distinction between the direct effects of violence (deaths and injuries) and the indirect effects on human welfare of war-induced changes in economic, social and political life.

Studies on the costs of armed conflict

The five studies selected for this review are those that are most comprehensive and most relevant for the international public goods ap-

Table 5.1 Cost dimensions of armed conflict

	Military costs during conflict	Civil costs during conflict	Military costs after conflict	Civil costs after conflict
Costs to the parties of the conflict	Military expenditure Military casualties	Economic and social impact Civilian casualties	Military expenditure	Economic and social impact Post-conflict reconstruction
Costs to external parties (regional and global)	Military expenditure in neighbouring countries	Refugees Humanitarian aid Aid for reconstruction	International or regional peace operations	Humanitarian aid Aid for reconstruction

Table 5.2 Selected studies on the costs of armed conflict

Scope of the study	Brown and Rosecrance (1999)	Stewart and FitzGerald (2001)	Collier and others (2003); Collier and Hoeffler (2004)	Nordhaus (2002)	Bennis and the IPS Iraq Task Force (2004)
Type of conflict					
Internal conflicts	X	X	X		
International conflicts	X			The Iraq war	The Iraq war
Type of costs					
Military costs	X		X	X	X
Other direct costs	X	X	X	X	X
Indirect costs	X	X	X	X	X
Level of costs incurred					
National costs		X	X	X	X
Regional costs			X		X
Global costs	X		X		X

proach (see table 5.2). Brown and Rosecrance (1999) analyse the direct and indirect costs of both internal and international armed conflicts during the post-cold war period. It is the only study focused exclusively on the external costs of conflict (regional and global) and is thus the most relevant study for the international public goods approach. Stewart and FitzGerald (2001) cover only the costs of internal armed conflicts, focusing on the post-cold war period but not exclusively. This study covers primarily the indirect costs of conflict to the parties. Its strength is in conceptualizing the indirect costs of conflict. Collier and others (2003) and Collier and Hoeffler (2004) cover the costs to neighbouring countries and the world of internal armed conflicts during the post-cold war period.

The costs of the Iraq war have been the subject of many more or less comprehensive studies. Two are included in this review. Nordhaus (2002) offers a detailed and methodologically interesting account of the potential costs of the Iraq war. It covers both direct and indirect costs over a 10-year period after the end of the war but is limited to the costs to the United States. Bennis and the IPS Iraq Task Force (2004) is a less rigorous study on the actual costs of the Iraq war. It covers all types of costs, direct as well as indirect, to the country in conflict and to others. These five studies provide a broad range of approaches and types of analysis of the costs of armed conflict.

The costs to external parties: Brown and Rosecrance

The Brown and Rosecrance (1999) study was conducted in the late 1990s by a group of researchers for the Carnegie Commission on Preventing Deadly Conflict. The purpose was to investigate whether “an ounce of prevention is worth a pound of cure” from the standpoint of parties external to the conflict. More specifically, it aimed to determine whether conflict prevention makes sense in selfish cost-benefit terms to neighbouring states, regional powers and the international community. Thus it examined the costs to external parties and excluded the costs to the parties themselves.

The study identifies a broad array of costs of armed conflicts on external parties (see table 5.3). The military costs to external parties can include the costs to neighbouring countries of strengthened border controls, additional troop deployments in troubled regions and generally higher defence budgets to prepare for potential stability problems. The refugee costs refer first to the economic burden for neighbouring states caused by the influx of tens or hundreds of thousands of refugees. There can also be costs due to political and social problems created by refugees in the host countries and costs due to the use of refugee camps as military bases by fighters from the country in conflict. Other direct economic costs and instability costs also affect primarily the neighbour-

Table 5.3 Types of external costs of armed conflict

Type of cost	Content
Military costs to neighbouring states	Territorial infringements Military skirmishes Higher defence budgets
Refugee costs	Economic burdens Political and social problems Military complications
Other direct economic costs and economic opportunity costs	Lost investments Lost imports Lost export markets Disruptions to labour supply Regional burdens
Instability costs	Ethnic radicalization Drug trafficking Nationalistic and diversionary campaigns Opportunistic interventions and invasions
Costs of international peace operations	Humanitarian relief efforts Multifunctional conflict resolution operations

Source: Brown and Rosecrance (1999, p. 18).

ing countries, although the costs of drug trafficking eventually may affect countries further. The cost of peace operations, which is sometimes treated as part of the costs of providing peace and security, is included in the costs of conflict in this study. The argument for their inclusion is that “it is reasonable to include the costs of all the things that neighbouring states, distant powers, international organizations and NGOs eventually do because they failed to prevent conflicts from breaking out in the first place” (Brown and Rosecrance 1999, p. 20).

Economic consequences of major internal armed conflicts: Stewart and FitzGerald

The two-volume publication edited by Stewart and FitzGerald (2001) presents a set of studies for a broad research project on internal armed conflict. The authors emphasize, however, that most internal armed conflicts involve significant foreign intervention. They conclude that the degree and type of foreign intervention is an important differentiating characteristic among internal conflicts.

The project is concerned with major armed conflict, those involving deaths of at least 1,000 per year. It does not produce cost estimates but aims to contribute to an improved understanding of economies at war and thus to the identification of appropriate policies to reduce human hardship. One study identifies 10 types of economic behaviour in times of internal armed conflict (see table 5.4). A major finding of this study is that the greater part of the human costs of armed conflict results not directly from battle deaths and injuries but indirectly from the loss of livelihoods caused by the disruption of economy and society. Indirect human costs by far exceed the deaths and injuries from war itself.

This project has provided valuable conceptual contributions to the identification of the indirect costs of armed conflict. It discusses the distinction between short-term and long-term costs, the utility of the entitlement perspective, the use of different indicators of human well-being (such as health, nutrition and psychological damage), and the distinction between war's impact on capital and investment and its impact on labour, capital and markets. The authors acknowledge that it is difficult to determine whether such indirect economic and social developments are due to the armed conflict and that similar economic developments have taken place in many other poor countries that did not undergo the additional shock of open war. However they conclude that while caution is needed before attributing all these observed effects

Table 5.4 **Types of economic consequences of armed conflicts**

Economic dimension	Effect
Economic growth	Negative, sometimes dramatically
Exports	Negative, due to production fall, shift to domestic sales and disruptions in international markets
Sectoral distribution	Shift from tradable to non-tradable sectors, because of disruptions such as the undermining of banks and failure of transport systems
Consumption	Negative, despite reduced domestic savings and increased foreign borrowing and aid
Investment	Sharp fall in government capital formation and private investment, due to budgetary restrictions and increased uncertainty
Budget deficit	Increase, due to increased spending
Distribution of government spending	Increased share allocated to the military, making it difficult to sustain social and economic expenditure
Civic entitlements	Non-governmental organization efforts to provide food and services could in some cases partially compensate for lost public entitlements, while in other cases non-governmental organizations could do little as communities disintegrated
Human costs	Heavy human costs—increased infant mortality rates and deteriorating nutrition, health and educational standards—as a result of falling entitlements and war-induced famines
Development costs	Heavy development costs due to destruction of capital and reduced investment

Source: Stewart and FitzGerald (2001, pp. 230–32).

to conflict, comparisons made for the study show that on many counts the experience of the conflict-affected countries was worse than the average economic performance of their regions.

The national, regional and global costs of internal armed conflict: Collier and others

In a research project for the World Bank, Collier and others (2003) used a large set of data on armed conflicts in low-income developing countries—which coincides to a great extent with countries receiving development aid from the World Bank and its partners.

Their research yields three main findings. First, civil wars have highly adverse ripple effects, which are obviously not taken into account by those who decide to start or end the wars. Second, the risks of civil war differ massively according to a country's characteristics, including its economic conditions, and consequently civil war has become more concentrated in relatively few developing countries, particularly in marginalized countries and countries that have recently been engaged in

Table 5.5 Types of cost for civil wars in poor developing countries

	Economic costs	Social costs	Political costs
During conflict	Increased military expenditure Destruction of infrastructure Looting and destruction by soldiers Loss of private capital Increased criminality	Fatalities Population displacements	—
After conflict	Continued high military expenditure Capital flight	Mortality rates Health	“Conflict trap”

— is not available.

Source: Collier and others (2003); Collier and Hoeffler (2004).

conflict. Third, feasible international action could substantially reduce the global incidence of civil war. The finding about the ripple effects of conflicts is further developed in Collier and Hoeffler (2004), in which an effort is made to quantify these effects in monetary terms.

Collier and others identify the cost components of internal armed conflict (minor and major). Their study does this along three dimensions: during and after conflict, type of costs (economic, social and political) and level of costs incurred (national, regional and global) (see table 5.5). The costs during conflict are limited to economic and social costs, and the costs after conflict include the political costs.

The economic cost of war is defined as the negative effect of war on GDP. The economic cost during conflict arises from five effects of civil war:

- Increased military expenditure, which crowds out productive expenditures.
- Destruction of infrastructure.
- Looting and destruction by soldiers.
- Loss of private capital as a result of population flight.
- Reduced constraints on criminal behaviour.

The social costs of war during conflict consist primarily of the costs of fatalities and population displacements. After conflicts many economic and social effects continue for several years—and new ones are added. The study finds that military expenditure does not return to prewar levels, capital flight continues, the mortality rate increases and the physical and psychological health of the population remains negatively affected. The study includes political costs among the legacies of armed conflict. Once a country has had a civil war, it is far more at risk of further war. This is partly because war leaves the society divided and embittered and partly because war creates

interests that favour continued violence and criminality (Collier and others 2003, p. 22). The authors call this the “conflict trap” effect, defined as the cost of the risk of resumption of civil war in post-conflict situations.

The potential costs of the Iraq war: Nordhaus

Before the beginning of the war in Iraq in March 2003 several estimates were made of the likely costs. These forecasts were based on US experience with interstate wars and on assumptions regarding the duration and consequences of a war. While most estimates included only the direct military costs, a study by Nordhaus (2002), sponsored by the American Academy of Arts and Sciences, made a more comprehensive effort to estimate the total costs of war by including the non-military costs and the longer term indirect costs. Estimates were made for two scenarios: a short and favourable war and a protracted and unfavourable war.

The types of indirect post-conflict cost components identified by Nordhaus (see table 5.6, listed as follow-on costs) differ from those identified in the studies on internal armed conflict in poor countries. They reflect the costs of a superpower going to war against a developing country. They include costs for US military and police engaged in postwar security activities, the primarily non-military costs of reconstruction and nation building and two types of long-term indirect costs—the impact on the US economy from the effect on international oil markets and the overall macroeconomic impact on the US economy. These two types of indirect costs also have a broader international economic impact.

The costs of the Iraq war: Bennis and the IPS Iraq Task Force

Another study of the costs of the Iraq war has analysed the actual and potential costs of the Iraq war and the ensuing occupation (Bennis and the

Table 5.6 Types of costs to the United States of a potential war in Iraq

Direct military expenditure

Follow-on costs

Occupation and peacekeeping

Reconstruction and nation building

Humanitarian assistance

Impact on oil markets

Macroeconomic impact

Source: Nordhaus (2002).

IPS Iraq Task Force 2004). It analyses the human, economic, social, security, environmental and human rights costs. It covers both the costs to the two main parties, the United States and Iraq (see table 5.7a), and the external costs (see table 5.7b). This study has a somewhat less rigorous conceptual approach than the other studies in this review, particularly to external costs. Whether these are seen as costs depends to some extent on political perspective. Nonetheless, its list of external costs of the war provides an interesting input into any efforts to develop a conceptual model for assessing external costs of armed conflict (see table 5.7b).

Estimated costs of armed conflict

While studies on the cost of conflict focus on the conceptual issue of how to identify the impact of armed conflict, most studies also tried to quantify the effects of conflict and produce estimates in monetary

Table 5.7a Types of costs to the parties of the Iraq war and occupation

Type of costs	Costs to the United States	Costs to Iraq
Human	Military deaths and injuries Private military company staff and journalist deaths and injuries	Civilian deaths Civilians wounded Insurgents killed Effects of depleted uranium used on coalition missiles
Security	Rise in terrorist recruitment Loss of US credibility	Rise in violence and crime Failure to train Iraqi police and army Smuggling Psychological impact
Economic	Military expenditure Long-term impact on the US economy Oil prices Impact on military families	Rise in unemployment Effects on Iraq's oil economy
Social	Impact of increased military expenditure on US budget and government social expenditure Social costs of the military Cost of healthcare for veterans Mental health costs	Health infrastructure Education Environment Electricity
Human rights	Impact on constitutional right to assembly and free speech Government surveillance of anti-war activity	Impact of war on treatment of prisoners and on violations of human rights more generally
Sovereignty	n.a.	Iraq remains an occupied country Limited economic independence

n.a. is not applicable.

Source: Bennis and the IPS Iraq Task Force (2004).

Table 5.7b **Types of external costs of the Iraq war and occupation**

Type of costs	External costs
Human	War casualties caused by US-allied coalition troops
Legal	The impact on international law of the unilateral US decision to launch the war
Political	The impact on the United Nations, especially on the notion of national sovereignty as the basis for the UN charter The impact on democracy in coalition countries where public opposition to the war was strong
Economic	The opportunity cost of US expenditure for military operations in Iraq The economic impact of oil price rises
Security and disarmament	The impact on international terrorist organizations
Environment	The environmental impact of US-fired depleted uranium on Iraq's land and water
Human rights	The impact on the use of torture and mistreatment of prisoners by governments around the world

Source: Bennis and the IPS Iraq Task Force (2004).

terms. This section reviews the results of the various studies in producing quantified estimates of the costs of conflict.

Estimates of the external costs of armed conflict

The Brown and Rosecrance study made a brave attempt to develop estimates of the cost to external parties for a number of armed conflicts. As noted by the authors, these estimates probably are the lower bounds of such costs. The study covers nine case studies, of which seven are cases of armed conflict and two are cases of conflict prevention (that is, cases where armed conflict did not break out, possibly as the result of conflict prevention). The seven cases are Bosnia, Haiti, the Persian Gulf (the 1991 war), Rwanda, Somalia, Cambodia and El Salvador. The first five are post-cold war conflicts, while the last two originated during the cold war but continued beyond its end. The two cases of conflict prevention are Macedonia and Slovakia, for which the actual costs of prevention are compared with the hypothetical costs of the armed conflicts that could have happened.

For the purposes of this chapter, the first five cases are most relevant, because we are interested in armed conflicts during the post-cold war period. The total minimum costs to external parties of each of these five conflicts show extremely high variation (see table 5.8), making it impossible to generate an average cost from these five cases. This would be true even if the average excluded the dominant case of the 1991 Persian Gulf War, a major international war fought by developed countries.

Table 5.8 **Estimated costs to external parties of five armed conflicts (US\$ billions)**

Type of cost	Bosnia	Haiti	Persian Gulf	Rwanda	Somalia
Military	19.06	..	45.10	0.45	3.90
Humanitarian	11.98	1.79	1.30
Economic, direct	6.36	..	161.95	1.53	..
Economic, indirect	10.00	..	2.50	..	2.1
Individual nations	6.28	0.73	..
Total	53.68	4.95	209.55	4.50	7.3

.. is not available

Source: Brown and Rosecrance (1999).

Estimates of the costs of internal armed conflict: national and regional

In a discussion paper Collier and Hoeffler (2004) attempt to develop rough estimates for the average costs of armed conflict in a low-income country. Estimates of regional costs are also made, but no attempt is made to arrive at global estimates. The calculations are based on a data set of conflicts developed for a study for the World Bank (Collier and Hoeffler 1999) and the Collier and Hoeffler data set (Collier and Hoeffler 2002), which covers 161 countries over the period 1960–99 and identifies 78 civil wars.

The economic costs during and after conflict are estimated in terms of effects on economic growth, as measured by GDP growth. The calculations are based on assumptions that a typical internal armed conflict in a low-income country lasts 7 years, and that it takes 14 post-conflict years for GDP to return to its pre-conflict level. This time span of 21 years is the period for which the cost estimates are made (see table 5.9).

According to these calculations, military spending increases by 1.8% of GDP during civil wars. During the first post-conflict decade governments tend to maintain military spending at much higher levels than before the conflict—they are reduced by only about 0.5%. For the period beyond the first post-conflict decade, there is no evidence on the trend in military spending, and the study therefore makes the conservative assumption that military spending falls back to pre-conflict levels after 10 years. Taking these trends into account, the study arrives at an average estimated cost of increased military expenditure over a 21-year period corresponding to 18% of the level of GDP just before the conflict began (initial GDP).

Table 5.9 Estimated average costs of armed conflicts in low-income countries

Type of cost	Approximate costs (share of initial GDP, percent) ^a	Approximate costs (US\$ billions)
Military expenditure (the diversion of government spending to the military) in the conflict country	18	
Economic costs (the loss of GDP) in the conflict country	105	
Military expenditure (the diversion of government spending into the military) in neighbouring countries	12	
Loss of GDP in neighbouring countries	115	
Total average military and economic costs to the region	250	49.0 ^b
Health costs to the conflict-affected country		5.0
Subtotal (military, economic and health cost)		54.0
Conflict trap effect		10.2
Total costs		64.2

a. Initial GDP is gross domestic product just before armed conflict.

b. This estimate is based on an average GDP of \$19.7 billion in conflict-affected low-income countries.

Source: Collier and Hoeffler (2004).

Regression analysis on the impact of civil wars on the rate of economic growth shows that each year of civil war reduces the growth rate by about 2.2% (Collier and Hoeffler 2004). Assuming that this rate of reduction continues during the average length of conflict, it results in 15% lower GDP at the end of the conflict. Based on the assumption of a cumulative recovery during a 14-year post-conflict period the total impact of war on economic growth is estimated at 105% of GDP.

Similarly, estimates are generated for average military and economic costs for neighbouring countries. The study finds that the economic costs to neighbouring countries are greater than the cost to the country in conflict. Similar conclusions have been drawn by Murdoch and Sandler (2002). Their empirical work shows that civil wars have significant negative influences on economic growth in neighbouring countries and that in some cases neighbourhood effects on growth are equal to or greater than those within a conflict-ridden country.

The social costs of armed conflict are estimated in terms of health effects and based on the assumption that these decline to zero 21 years after the outbreak of conflict (14 years after the end of a 7-year conflict). Based on the observation that most deterioration in the health of populations arises from forced population movements and the collapse of basic preventative health services, these costs are estimated primarily on the basis of studies of the effect on disability-adjusted

life years (DALYs). Using the results of World Health Organization (WHO) studies on the loss of DALYs as a direct effect of civil wars, the study arrives at an average loss of 5 million DALYs for a typical internal armed conflict in a low-income country. To assign a minimum value to these effects, a DALY for low-income countries is estimated at \$1,000—approximately the purchasing power parity level of per capita annual income in many of the countries at risk of conflict. This yields a health cost of the typical civil war of about \$5 billion (Collier and Hoeffler 2004).

An innovation of this study is the estimation of post-conflict political costs—the costs of the conflict trap effect, defined as the cost of the risk of resumption of civil war in post-conflict situations. It finds that there is an increased risk of armed conflict in countries that recently have had an armed conflict. This can be due to factors that caused the first conflict and thus not an effect of that conflict, but the authors reject that argument, arguing that “civil war is itself such a profound experience for a society that it is likely to dwarf other non-persistent events that precede it” (Collier and Hoeffler 2004, p. 9). The authors arrive at an increased risk of renewed armed conflict of 19%, which when applied to the sum of national and regional economic and health costs of \$54 billion produces an additional cost of \$10.2 billion.

The military and economic costs to the country in conflict and neighbouring states add up to 250% of GDP. They are related to the average GDP of conflict affected low-income countries just before conflict, amounting to \$19.7 billion. That calculation produces an estimate of the total average national and regional economic cost equal to \$49 billion. Adding to that some of the health costs (\$5 billion) as reflected in the reduction of DALYs, and the monetary evaluation of the conflict trap effect (\$10.2 billion), the study arrives at an estimated total cost of \$64.2 billion on average for a typical internal armed conflict in a low-income country over 7 years of conflict and 14 post-conflict years.

The authors emphasize that this is a conservative estimate. Each cost component is calculated as a conservative estimate, and the total includes only a few cost components. The only social costs included are those for reduction in DALYs. The study does not estimate the social costs of refugees and displaced persons. Adding these costs would increase the estimates significantly. In 2001 the UN High Commission on Refugees provided assistance to about 12 million refugees and 5.3 million internally displaced persons. The global costs of the three social evils that have been facilitated by civil wars—drugs, AIDS and interna-

tional terrorism—are clearly huge, but the authors refrain from estimating them because of the uncertainties involved.

Estimates of the potential costs of the Iraq war

Nordhaus (2002) provides estimates for the direct and indirect costs to the United States for 10 years following the war ranging between \$99 billion under the most favourable conditions and \$1.9 trillion under unfavourable conditions (see table 5.10). The high case is described as “a collage of potential unfavourable outcomes rather than a single scenario. It shows the array of costs that might be incurred if the war drags on, occupation is lengthy, nation building is costly, the war destroys a large part of Iraq’s oil infrastructure, there is lingering military and political resistance in the Islamic world to U.S. occupation, and there are major adverse psychological reactions to the conflict” (Nordhaus 2002, p. 77). The study estimates these potential costs to the United States at about \$1.9 trillion, most falling outside direct military costs.

Table 5.10 Estimates of 10-year costs to the United States of a potential war in Iraq
(US\$ billions at constant 2002 prices)

Type of costs	Costs of war	
	Low (short and favourable)	High (protracted ^a and unfavourable)
Direct military spending	50	140
Follow-on costs		
Occupation and peacekeeping ^b	75	500
Reconstruction and nation building ^c	30	105
Humanitarian assistance	1	10
Impact on oil markets ^d	−40	778
Macroeconomic impact ^e	−17	391
Total	99	1,924

Note: These costs are the total for the decade following the conflict (2003–12). Negative numbers are benefits.

a. Protracted conflict assumes that the monthly cost is 50% greater and that the conflict lasts eight months longer.

b. The low and high numbers assume, respectively, 75,000 and 200,000 peacekeepers, at costs of \$200,000 and \$250,000 per peacekeeper per year for periods of 5 and 10 years.

c. This includes, at the low end, reconstruction costs of \$30 billion and minimal nation building costs. At the high end, it adds a “Marshall Plan for Iraq”.

d. These estimates refer to a full-employment economy. The high estimate assumes a production decline of 7 million barrels per day offset by withdrawals from reserves of 2.5 million bpd. The low estimate assumes that OPEC increases production by 0.67 million barrels per day in the five years after the end of hostilities and that production stays at the higher level.

e. This excludes the full employment impacts and includes only the first two years of a cyclical impact.

Source: Nordhaus (2002, p. 77).

This pre-war estimate cannot be compared with actual outcomes until 2012. The war started on 19 March 2003 and was declared by President Bush to be completed on 1 May 2003, although the ensuing period has been marked by violent activities, resulting in a continued high rate of casualties. By mid-2004 it was already evident that the Nordhaus study grossly underestimated the military costs of the Iraq war, since the Bush administration had provided a total sum of \$151 billion in supplementary allocations for military operations in Iraq by that time. Subsequent developments have reinforced the gap between these estimates and reality.

The Bennis report lists many additional costs according to the cost structure in tables 7a and 7b, but they cannot be described because they are neither quantified nor costed.

Conclusion

The studies reviewed in this chapter are valuable and much needed contributions to our knowledge about the costs of armed conflict in the contemporary security environment. Costing armed conflicts is to a great extent a conceptual exercise. While it is difficult to find appropriate data and other empirical material, the most difficult task is determining what to cost. Such decisions rest on knowledge and perceptions about what armed conflicts entail. The studies reviewed in this chapter have made important contributions to that end.

But, being pioneer studies in a virtually unexplored field, the reviewed studies also have a number of limitations. The cost estimates produced by them are crude and incomplete. Breaking new and uncertain ground, the studies also opt for conservative estimates. In a global public goods perspective the most important limitation is that they provide little information on the costs to countries at a greater distance from the conflict. Even the Brown and Rosecrance study, which examines only external costs, covers primarily the costs to neighbouring states and only briefly explores costs to the international community—global costs.

To estimate the costs to the international community of internal armed conflict in developing countries, more conceptual knowledge is needed on how countries in the developed world are affected by these conflicts. More knowledge and experience are also required on how best to promote conflict and contribute to peaceful conditions

in conflict-prone countries. Collier and others have done some general work in this direction. But more studies—both conceptual and empirical—are needed to generate knowledge about the specific links between internal armed conflict in low-income countries and the security of the developed world. Other studies that have made contributions in this direction (for example, Rice 2004 on the implications for developed countries of poverty and income equality; Pieterse 2002 on global inequality) argue that the conditions leading to conflict in poor countries cannot be contained in these societies at the margins of the international system and therefore eventually also impose costs on the developed world. Thus current research on the costs to developed countries should be complemented with more qualitative studies on the specific links between armed conflict in low-income countries and the well-being of high-income industrial countries, what these links entail and how they work. Such studies could provide important contributions to cost-benefit analyses of global policies to reduce the incidence of armed conflict in these countries.

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