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Measuring the Economic Costs of Internal Armed Conflict – A Review of Empirical Estimates

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1. Why measure costs of conflicts?

Most people are well aware of the huge costs for society and individuals of war. There is also many that believe the costs of prevention to be substantially smaller than the costs of armed conflict.

This paper review empirical studies of the economic costs of internal armed conflicts. There are many different sorts of costs associated with conflict. A large part of costs are falling on the country where the conflict is taking place but there are also costs for other countries. "Surprisingly one of the least studied aspects concerns the economic consequences of war" write Fischer & Brauer (2003, p. 229) in an research agenda with twenty important questions for peace economics.

An attempt at analyzing the cost-effectiveness for outside powers of conflict prevention has been made by a number of researchers in Brown & Rosecrance 1999. Their conclusion is quite clear: "in every case we studied ... conflict prevention actually cost or would have cost the international community much less than the conflicts themselves." (p. 221) A problem is that this is not enough since decisions on intervention are not taken only by weighing economic costs. Another complicating factor is that the economic burdens for prevention and the economic costs for conflict might be differently shared.

This is even more pertinent if we look at the costs inside a country. Those who will pay the price for armed conflict are not the decision makers who start the violence. Most people lose but some groups in society can benefit from war, such as weapon sellers and black market operators and others.

If we study the economic costs of armed conflict to compare them with the costs for conflict prevention in order to chose the best solution after a cost benefit analysis it is a major obstacle for a rational decision if the costs are paid by different groups in society. A risk for sub-optimization where decision makers chose according to the costs and benefits they see falling on themselves and not based on the costs and benefits falling on the whole society. A broader perspective taking into account all costs and benefits in the whole society should be made if a social cost-benefit analysis is made.

Even if there is no difference between who will pay for conflict and for prevention one cannot assume that all actors are rational economical beings that will always chose economically. National pride, ideology, mistrust and incomplete information might make some people prefer uneconomical choices. War is not easily explained only by rational choices.

More knowledge about the economic costs of armed conflict will at least increase the opportunity that more decisions are made in a way that avoid violence.

Many peace agreements that have been concluded have paid too little attention to economic dimensions and consequences of the conflict and have therefore diminished the chance for a lasting peace. If the costs of conflict are better known this could improve.

All empirical studies made show that internal armed conflicts have far-reaching and long-lasting economic consequences. More detailed estimates of these effects can improve our understanding of them and make it easier to handle them in a post-conflict situation.

The estimates made so far have widely different results which make it important to explain the differences. An obvious reason is that data from countries in conflict is hard to get even if they exist and often is incomplete and unreliable. Another reason is that all methods, partly because of the lack of data, is significantly affected by the assumptions that must be made to produce the estimates.

Stewart & FitzGerald state three reasons for assessing the costs of war. First, because conflict is a major source of poverty and underdevelopment. Second, since policies for reducing the economic costs of conflicts can only be devised if we know how economies operate during conflict. Third, because understanding of economic behaviour and

motivation during conflict is essential for forming policies to end or reduce war. (2000, p. 3)

Humphreys states that “[b]etter estimates of costs [of war] is needed in order to produce estimates of the economic value of conflict preventions” (2003, p. 21).

Some peace agreements fail. “Experience in the area of peace implementation in the 1990s suggests that economic factors have far more to do with the failure, or severe retardation of the peace process, than they do with the success of such initiatives.” (Woodward 2003, p. 4) To facilitate the peace process it is thus important to assess the economic dimensions and the economic cost of conflict is a central dimension.

This paper hopes to help this important but rather limited field of research by presenting the different methods used so far and comparing their methods and results.

One reason for measuring the economic costs of internal conflict is to present facts in order to influence decision makers to intensify their efforts to end the conflict. A study commissioned by civil society organisations in Uganda was made because the organisations suspected that the costs to the region was substantial and also was affecting the Ugandan economy as a whole. If this was proven to be correct “this might influence policy makers and donors to put more resources into the search for sustainable end to the conflict” (Dorsey & Opeitum 2002, p. 1).

2. Selection of studies

This review study empirical works on the economic effects of internal armed conflicts, sometimes called civil wars (even though there is little civil in them). Economic costs are here taken rather narrow, meaning costs expressed in monetary terms and in the studies mostly presented as percentages of GDP.

Most studies are careful to point out that their estimates are conservative and if better data were available the total cost would certainly be higher. Many important aspects of society with direct effects on economic life are affected by armed conflict but many of them are hard to measure because of the common lack of reliable data in war-torn countries. Some facets of economic activities such as the importance of trust, social capital and belief in the future are also very difficult to measure, especially in conflicts.

There are many other consequences of conflict that have far-reaching effects on the economic development of countries. With good reasons civil wars have been characterised as “development in reverse” (Collier et al. 2003. p. 13ff). Added to the measurable and un-measurable economic costs there are severe social, political and cultural effects that all can hinder economic development.

The most visible is the deterioration of health for everybody in the country which has a direct effect on production. This effect is to some degree included in some of the studies here in so far as they use economic models based on earlier periods, other countries, or regional averages to estimate potential production under peaceful conditions.

International conflicts are not included here even though some of the conflicts can have some foreign intervention. There is however reason to believe that inter-state conflicts have some different economic dimensions. International wars can have more positive effects than internal armed conflicts since better utilisation of capacity and technological progress can stimulate the economy in a way that is prevalent in internal conflicts. (Stewart, Huang & Wang, note, p. 67)

3. Typology of costs

The methods for measuring the economic costs of conflict can be divided into two major groups. They are here labelled the *accounting method* and the *modelling method*. The accounting method count the direct and indirect costs of conflict based on economic theory and earlier empirical work. Typically you list empirical estimates of how large these costs

are and sum them up. The indirect costs are sometimes based on simple or complex economic models. The modelling methods do not try to add up observed costs but rather to establish how the economy could have developed in the absence of conflict.

4. Accounting methods

Methods that here are called accounting methods have one major advantage over modelling methods. They are based on a bookkeeping approach and therefore give an impression of factuality that all sorts of models and estimates based on assumptions lack. They are not counterfactual which all estimates built on models can be said (or accused) to be.

But they might miss a major part of the costs if not some sort of model thinking is applied. Especially opportunity costs such as decreased tourist streams and non-realised foreign direct investment cannot be estimated without some sort assumptions which always can be debated and questioned.

4.1 Direct costs

Direct costs are those that can be observed and counted, at least in principle. As all data on countries in conflict usually are hard to collect and more or less unreliable if found this might be difficult in practice.

Destroyed infrastructure, factories, machinery and farmland have some sort of price tag and can be summed up. Another cost that is easily grasped and relatively easy to measure is the increased military expenditure.

One way of calculating the cost of destroyed capital is to calculate the net present value of the lost production that is the result of the destruction. To do that you need to decide which internal rate of return you chose. Different rates will yield large differences for returns, especially if long time periods are involved. Some researchers have presented several scenarios based on different rates of return to facilitate comparisons how the estimates were done.

Land mines are for some countries a grave obstacle which cause both accidents and underutilisation of existing productive capacity, especially in agriculture. They are costly to remove but were cheap to manufacture.

4.2 Indirect costs

A major problem with all estimates are that they are not entirely built on actual, observable costs. The direct costs are sometimes hard to measure and often difficult to find data for but they are easy to understand. The indirect costs are much more controversial since they cannot be directly seen but are estimated. These estimations can always be questioned and build on some assumptions that are debatable.

Most of them are undoubtedly existing for countries in conflict but how large they are is open to discussion. If they constitute a major part of costs (which they do in some estimates) it might be hard to convince sceptics that they really exist and should be taken into account. Political deliberations is perhaps more easily influenced by budgetary items and lists of destroyed property and injured and dead people.

Nevertheless they are quite large and is of crucial importance for estimating future production capacity and thereby future wealth of a country. We will look at indirect cost with foreign dimensions first and then primarily national and household dimensions.

Capital flight is a well documented problem for many LDCs and especially for those in conflict (Collier & Gunning 1995, Collier, Hoeffler & Pattillo 1999). Before a typical civil war a country held 8.6% of private wealth abroad but at the end of the war this had risen to 19.7% (Hoeffler & Reynal-Querol 2003, p. 6). This is a serious problem since capital flight is detrimental for capital formation which is of crucial importance for

economic growth. It is also negative because it shows that confidence in future economic growth is low. This applies for both domestic and foreign capital flight and both can be very hard to repair when investment patterns in other countries have been established.

The emigration of educated and skilled workforce is also a major problem. For most LDCs brain drain is a serious obstacle even in peacetime. If manpower educated in the country leave the country the cost for their education will be a unproductive sunk cost for the country.

Tourists are an important income generating group for some countries. Sri Lanka had a fast growing tourist industry when the armed violence started. This was fatal for the industry but how should one estimate the losses made? One could assume that the expansion could have continued at the same rate as before or one could look at similar tourist destinations and use the same increase as they had.

The damage to production capacity coupled with uncertainty of future production lead to serious drawbacks in exports. Less exports mean less foreign currency inflow and less possibilities for import. Some imports are still deemed to be necessary and imports of weapons tend to increase. Larger foreign debt is probably the result even if sometimes military aid might increase.

Development aid is most often stopped because of uncertainty and security reasons. Humanitarian assistance diminish even though some new such assistance might come. Most of it first at the later part of conflict or after.

What and how much could have been produced if conflict had not occurred? The risk for manpower and facilities hinders production even where it is possible to produce. In conflict areas taxation and looting from both government and rebels make production risky. If possible, capital leave the country and investment decrease. Since investment is so important for enhancing the productive capacity this will have long term detrimental effects.

Investment in human capital in the form of expenditure on health and education also suffers and make people in their role as production factors less productive both on short and long term. The often low age of many soldiers and rebels make this especially grave since this can produce severe social problems after the conflict when many young men only know how to use weapons and are used to control power and money.

In this risky environment many entrepreneurs chose to engage in economic pursuits that yield fast and large returns. This is further aggravating the already bleak prospects for a conflict economy.

The table below lists the direct and indirect costs discussed above.

Table 1. Accounting method for estimating direct and indirect economic consequences of internal armed conflict

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

5. Modelling methods

5.1 Extrapolation

In extrapolation earlier economic trends are extrapolated. This can be done in different ways, with more or less account taken of changes in the world economy outside the country in conflict. If tourism everywhere is severely decreased because of terrorism and its consequences this can be handled by not simply extrapolating earlier trends but by introducing a reduction in the estimate based on the experience of other similar countries. One way of doing this is to take the average for other countries in the region.

5.2 Economic models

Actual production - counterfactual production = loss of production. This is the basic idea behind most of the modelling that have been made to estimate the economic costs of conflict. The interesting and difficult part is how to establish the counterfactual production. Many of the models used study the increase in military expenditure and compute the impact of military expenditure on investments. The computed change in investment is then used to estimate counterfactual economic production.

Another way to model is to estimate growth from regression based on time series of earlier development. This can be augmented with techniques that take the economic development in neighbouring or similar countries into account. An even more sophisticated

way is to construct a synthetic (or fictional) model of a country with characteristics that capture the essential traits in the economy. These different ways are discussed more below.

Military expenditure → investment → growth

The basic idea in these models is that increased military expenditure (miles) reduce investment which in turn decrease economic growth. That higher military expenditure reduces investment has empirically been established and is one of the few robust conclusions from research on the economic consequences of military expenditure (Smith 1977, Lindgren 1984, Chan 1985, Knight et al. 1996, Galvin 2003).

The smaller amount of investment will then reduce growth since investment is one of the key factors for producing economic growth. As Rodrik (2003 p. 4) describes it “The total output of an economy is a function of its resource endowments (labor, physical capital, human capital) and the productivity with which these endowments are deployed to produce a flow of goods and services (GDP).”

Many of the empirical works discussed in this paper base the estimate of how this link from investment to increased production functions on some version of the Harrod-Domar growth model which states that the rate of growth is a direct function of savings and an inverse function of the capital-output ratio or

$$growth = \frac{savings}{capital \square output \square ratio} \quad \text{or} \quad g = \frac{s}{k}$$

In economic theory savings and investment are identical *ex post*, so if investments increase growth will also increase according to the capital-output ratio. The national context in a country have often an empirical figure for how much more output that will result for one increased unit of capital, the incremental capital-output ratio (ICOR) (Todaro & Smith 2003, p. 113 ff).

How this chain of mechanisms is estimated can be based on regression analysis of the impact of military expenditure on investment. The increased miles which is usually quite substantial in armed conflicts is then used as input in an equation based on the regression. The resulting estimated investment is the investment that could have taken place in the absence of conflict and thereof following higher miles.

The estimated investment is then combined with an empirically based figure for ICOR for the country and this computation then result in an estimate of how large production would have been in peace. To give a clear picture of the magnitude the actual production in conflict is deducted from the estimated production for peace and the difference is then the cost of conflict. It is often presented as an percentage of actual production (percent of actual GDP in conflict).

Models from regression

One way of making an estimate of the cost is to make a regression. This can be done on the economy before conflict and then the results are used to estimate what could have happened. The regression can also be based on what took place in other countries in the region. One can also base an estimate on the ranking within the region of the conflict economy before conflict. Regression can also be based on time series and different statistical methods can be used.

Constructing synthetic regions

A synthetic region is a construct which incorporates essential characteristics of the economy in conflict. These characteristics are taken from other countries or parts of countries and together they determine how the synthetic region could have developed economically in peace.

6. Empirical estimates

6.1 Studies of one country

In this paper 14 studies are reviewed. Of those there are 9 that deal with only one country and of those 5 are dealing with Sri Lanka. This seems a bit surprising but might be explained by the fact that there has been more efforts at collecting pertinent data for economic reconstruction after conflict in Sri Lanka than in other countries. Lack of data is one of the major problems with producing estimates of the economic cost of conflicts. The other four countries are Nicaragua (2 studies), Uganda and Basque Country.

6.2 Studies of several countries

Studies of the costs for several countries have all used some sort of economic modelling for estimating the costs. Two of them have used the average growth of other countries in the same geographical region without conflict as a base for predicting what the growth of countries with conflicts would have been without these conflicts.

In addition to the studies reviewed here there are also studies investigating these questions on a more general level without giving estimates for specific countries. An early attempt at this was Collier 1999 who estimated that countries in civil war reduced their annual growth rate with 2.2% (p. 9). He studied 92 countries where 19 had civil wars and the period was 1960-89. A similar estimate is given by Hoeffler & Reynal-Querol 2003 who found that the average growth rate per annum would be reduced by 2.4% (p. 19). They studied 211 countries where 78 were in conflict during the period 1960-99.

6.3 Overview

Table 2. Empirical Studies of the Economic Costs of Internal Armed Conflict

<i>Author</i>	<i>Country</i>	<i>Period</i>	<i>Cost of conflict</i>	<i>Method</i>
Fitzgerald 1987	Nicaragua	1980-84	77% of GDP 1984*	Compared with earlier gov. projections
Richardson & Samarasinghe 1991	Sri Lanka	1983-88	68% of GDP 1988 (p. 213)	Direct and indirect costs built on assumptions
Grobar & Gnanaselvam 1993	Sri Lanka	1983-91	20% of GDP 1988 (p. 404)	Increased millex -> reduced investment -> reduced growth physical and human destruction not included
Stewart & Humphreys 1997	El Salvador Guatemala Nicaragua Ethiopia Uganda Somalia Sudan Liberia Mozambique 9 countries	1965-90 1965-90 1965-90 1965-90 1965-90 1965-90 1965-90 1965-88 1980-90	38.1% of GDP 1965 9.9 % of GDP 1965 113.4 % of GDP 1965 28.8 % of GDP 1965 58.6 % of GDP 1965 7.8 % of GDP 1965 +7.2 % of GDP 1965 35.1 % of GDP 1965 31.8 % of GDP 1965	Comparing with estimated growth based on average growth in region for countries not at war
DiAddario, Sabrina. 1997	Nicaragua	1980-87	17.3, 18.2, 19.6, 25.7% of GDP 1980-85	Based on model for assessing external financing
Harris 1997, 1999	Sri Lanka	1983-92	88% of GDP 1982 (p. 287, 23)	Increase of gov. millex -> less growth based on Harrod-Domar
Collier 1999	19 countries	1960-89	2.2% of growth rate/year and war overhang after	Regression
Kelegama 1999	Sri Lanka	1983-94	131% of GDP 1995 (p. 79)	Increased millex -> reduced investment -> reduced growth + damaged infrastructure
Stewart, Huang & Wang 2000	Angola Burundi Ethiopia Liberia Mozambique Sierra Leone Somalia Sudan Uganda El Salvador Guatemala Nicaragua 12 countries	1974-95 1987-95 1973-95 1984-95 1980-95 1990-95 1987-95 1983-95 1970-90 1978-95 1965-95 1977-93	1.48% of GDP 1995 +0.006% of GDP 1995 3.95% of GDP 1995 1.56% of GDP 1995 2.83% of GDP 1995 1.47% of GDP 1995 0.29% of GDP 1995 1.72% of GDP 1995 0.5% of GDP 1995 5.67% of GDP 1995 +0.006% of GDP 1995 13.5% of GDP 1995 (p. 96)	Comparing with estimated growth based on average growth in region for countries not at war
Arunatilake, Jayasuriya, & Kelegama 2001	Sri Lanka	1984-96	140%, 168%, 205% of GDP 1996 (different interest rates 0-5-10%)	Increase of gov. millex -> less growth based on Harrod-Domar + extrapolated lost FDI, all compounded
Lopez 2001	El Salvador Nicaragua Guatemala Panama 4 countries	1979-91 1978-79,81-88 1966-96 1989	1100% of GDP 2000 900% of GDP 2000 425% of GDP 2000 85% of GDP 2000	Regression based on time series
Dorsey & Opeitum 2002	Uganda	1995-2002	57% of GDP 2002	Direct and opportunity costs
Abadie & Gardeazabal 2003	Basque Country	1975-97	10 percentage points decline relative synthetic region (p. 7)	Estimates from synthetic region with essential characteristics
Hoeffler & Reynal-Querol 2003	78 countries	1960-99	2.4% of yearly growth rate	Regression

* computed from table 8, p. 208.

7. Comparing the results

In order to compare the estimates which have large differences a simple computation has been done. Most of studies have given an estimate in terms of percentage of GDP for the country in conflict. Either comparing the total costs of conflict for the whole conflict period or with the GDP for the starting or ending year. This total cost of conflict has here .been divided by the number of conflict years and thereby we get a yearly percent reduction of GDP for countries in conflict.

Table 3. Yearly reduction of GDP for countries in conflict

Author	Country	Conflict years	Number of conflict years	Cost of conflict	Yearly % reduction of GDP for countries in conflict
Fitzgerald 1987	Nicaragua	1980-84	5	77% of GDP 1980	15.4
Richardson & Samarasinghe 1991	Sri Lanka	1983-88	6	68% of GDP 1988	11.3
Grobar & Gnanaselvam 1993	Sri Lanka	1983-91	9	20% of GDP 1988	2.2
Stewart & Humphreys 1997	El Salvador	1965-90	26	38.1% of GDP 1965	1.5
	Guatemala	1965-90	26	9.9 % of GDP 1965	0.4
	Nicaragua	1965-90	26	113.4 % of GDP 1965	4.4
	Ethiopia	1965-90	26	28.8 % of GDP 1965	1.1
	Uganda	1965-90	26	58.6 % of GDP 1965	2.3
	Somalia	1965-90	26	7.8 % of GDP 1965	0.3
	Sudan	1965-90	26	+7.2 % of GDP 1965	+0.3
	Liberia	1965-88	24	35.1 % of GDP 1965	1.5
□	Mozambique	1980-90	11	31.8 % of GDP 1965	2.9
DiAddario 1997	Nicaragua	1980-87	8	17.3, (18.2, 19.6, 25.7)% of GDP 1980-85	17.3
DiAddario 1997	Nicaragua	1980-87	8	(17.3, 18.2, 19.6) 25.7% of GDP 1980-85	25.7
Harris 1997, 1999	Sri Lanka	1983-92	10	88% of GDP 1982	8.8
Kelegama 1999	Sri Lanka	1983-94	12	131% of GDP 1995	10.9
Stewart, Huang & Wang 2000	Angola	1974-95	22	1.48% of GDP 1995	0.1
	Burundi	1987-95	9	+0.006% of GDP 1995	0.0
	Ethiopia	1973-95	23	3.95% of GDP 1995	0.2
	Liberia	1984-95	12	1.56% of GDP 1995	0.3
	Mozambique	1980-95	16	2.83% of GDP 1995	0.2
	Sierra Leone	1990-95	6	1.47% of GDP 1995	0.2
	Somalia	1987-95	9	0.29% of GDP 1995	0.0
	Sudan	1983-95	13	1.72% of GDP 1995	0.1
	Uganda	1970-90	21	0.5% of GDP 1995	0.0
	El Salvador	1978-95	18	5.67% of GDP 1995	0.3
	Guatemala	1965-95	31	+0.006% of GDP 1995	0.0
□	Nicaragua	1979-91	17	13.5% of GDP 1995	0.8
Arunatilake, Jayasuriya & Kelegama 2001	Sri Lanka	1984-96	13	140% of GDP 1996	10.8
	Sri Lanka	1984-96	13	168% of GDP 1996	12.9
	Sri Lanka	1984-96	13	205% of GDP 1996	15.8
Lopez 2001	El Salvador	1979-91	13	1100% of GDP 2000	84.6
	Nicaragua	1978-79, 1981-88	10	900% of GDP 2000	90.0
	Guatemala	1961-96	31	425% of GDP 2000	13.7
	Panama	1989	1	85% of GDP 2000	85.0
Dorsey & Opeitum 2002	Uganda	1995-2002	8	57% of GDP 2002	7.1
□	□	□	□	Average	11.3
□	□	□	□	Max	90.0
□	□	□	□	Min	0.0

There are very large differences between the estimates ranging from a very small increase up to about 90% decrease per year. What can explain the variation?

The length of the conflict could be expected to be important. Changes in domestic and foreign investment and tourist patterns can be expected to be more firmly established after longer time. The same could be said about emigration of educated manpower.

Different sorts of conflicts would have different impacts. Secessionist movements in small areas of a large country would have different effects than large uprisings with great popular support.

The intensity of conflict could also be expected to influence the economic consequences. It seems that the length of the conflict has a large influence on the effects after the end of hostilities where there is a larger war overhang for shorter wars. Changes in economic behaviour, especially in portfolio management and education choices, need some time to influence the economy but will not change back very fast after a short war. (Collier 1999, Hoeffler & Reynal-Querol 2003)

If the same conflict is studied all these expected differences above would be irrelevant. But still we find large discrepancies between the most investigated conflict, the one in Sri Lanka. Figures range from 2.2 to 15.8, all percent per year. Some of these variations are explained by clearly stated scenarios with different internal rates of return. A major part of the deviation can be found in the assumptions of how the indirect costs for lost foreign direct investment and lost tourism should be treated.

The figures for Nicaragua are also widely diverse with the lowest at 0.8 and the highest 90. The methods used are very different but they all build on some sort of economic modelling. This can explain some of the variation but leaves many question marks for further investigation.

Table 4. Differing estimates for the same country

Country	Author	Conflict years	Number of years	Economic cost	Cost per year in %
Sri Lanka	Richardson & Samarasinghe 1991	1983-88	6	68% of GDP 1988	11.3
Sri Lanka	Grobar & Gnanaselvam 1993	1983-91	9	20% of GDP 1988	2.2
Sri Lanka	Harris 1997, 1999	1983-92	10	88% of GDP 1982	8.8
Sri Lanka	Kelegama 1999	1983-94	12	131% of GDP 1995	10.9
Sri Lanka	Arunatilake, Jayasuriya & Kelegama 2001	1984-96	13	140% of GDP 1996	10.8
Sri Lanka	Arunatilake, Jayasuriya & Kelegama 2001	1984-96	13	168% of GDP 1996	12.9
Sri Lanka	Arunatilake, Jayasuriya & Kelegama 2001	1984-96	13	205% of GDP 1996	15.8
Nicaragua	Fitzgerald 1987	1980-84	5	77% of GDP 1980	15.4
Nicaragua	Stewart & Humphreys 1997	1965-90	26	113.4 % of GDP 1965	4.4
Nicaragua	DiAddario 1997	1980-87	8	17.3, 18.2, 19.6, 25.7% of GDP 1980-85	17.3 25.7
Nicaragua	Stewart, Huang & Wang 2000	1977-93	17	13.5% of GDP 1995	0.8
Nicaragua	Lopez 2001	1978-79, 1981-88	10	900% of GDP 2000	90.0

8. Conclusions

All the empirical estimates discussed in this paper have some element of assumption in them. This is unavoidable since there is no method to use strictly bookkeeping methods and get a reasonable total. The estimates given here are mostly considered by the authors to be on the conservative side and thereby underestimating the true cost.

All estimates where a large part of the total cost consists of indirect assumed costs share the common weakness that most non-economists will look upon them with suspicion. The estimates building on economic models are probably even less convincing for politicians and other decision makers.

Forecasts of economic growth are not significantly better based than estimates of economic costs of conflict. Still they are widely cited and used as basis for economic policy. Estimated costs of conflict should also be used even if they are not fully accurate since they

might help decision makers finding more peaceful ways of solving conflicts. We know for sure that there are many other costs associated with conflicts than the economic costs.

Estimates of the economic cost of conflict in a country can be combined with case studies where more specific aspects of the economy in a country in conflict can be treated. Investigations on the consequences for health and education are also pertinent. Most of these things have also been done for a number of countries. More research on how the economic costs can be measured is still useful and needed.

Even if economic costs are not considered there are many human and moral arguments for peaceful conflict resolution. The estimates of the economic costs of conflict can show us that conflict resolution without violence in most cases also is a very good economic investment.

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