



WP/04/95

# IMF Working Paper

---

## Economic Performance Over the Conflict Cycle

*Nicholas Staines*

**IMF Working Paper**

Policy Development and Review Department

**Economic Performance Over the Conflict Cycle**

Prepared by Nicholas Staines<sup>1</sup>

Authorized for distribution by Andrew Berg

June 2004

**Abstract**

**This Working Paper should not be reported as representing the views of the IMF.**

The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the IMF or IMF policy. Working Papers describe research in progress by the author(s) and are published to elicit comments and to further debate.

The paper finds a significant shift in the economic characteristics of civil conflicts during the 1990s. Conflicts have become shorter but with more severe contractions and a stronger recovery of growth. The overall length and cost of the conflict cycle has probably declined. The stance of macroeconomic policy was an important factor while the underlying “conflict process” remained unchanged. This shift seems related to changes in aid flows since the Cold War: donors became disinclined to provide support during conflict, but more inclined after conflict. These findings are buttressed by the post-conflict experience of countries that received financial assistance from the IMF and of the Democratic Republic of Congo (DRC). These findings have implications for policy and aid priorities after conflict.

JEL Classification Numbers: E63, F35, H56, N40, O57

Keywords: Conflict; post-conflict; war; economic impact; macroeconomic stabilization; aid; cold war

Author's E-Mail Address: [nstaines@imf.org](mailto:nstaines@imf.org)

---

<sup>1</sup> This paper has benefited from extensive discussions with Peter Fallon and Nancy Happe and from comments by Donal Donovan, Mark Plant, Louis Valdivieso, Ragnar Gudmundsson, Anton Op de Beke, and Sonali Jain-Chandra. Any errors are the sole responsibility of the author.

	Contents	Page
I.	Introduction.....	4
	A. Main Findings .....	4
	B. Policy Implications .....	6
	C. Literature Review.....	6
	D. Data.....	9
II.	Economic Performance Over the Conflict Cycle.....	9
	A. Profile of the Conflict Cycle.....	9
	B. Economic Growth.....	11
	C. Length of the Overall Conflict Cycle.....	14
	D. Cost of Conflict.....	15
	E. Evolution of Macroeconomic Policy Indicators .....	16
III.	Impact of Conflict and Macroeconomic Policy .....	18
	A. Equations.....	19
	B. Impact of Conflict.....	23
	C. Impact of Macroeconomic Policy.....	24
	D. Robustness .....	26
IV.	Role of External Assistance .....	26
V.	Performance in the EPCAs and in the DRC .....	28
	A. Performance in the EPCAs .....	28
	B. Performance in the DRC.....	30
VI.	Conclusions.....	31
Text Tables		
1.	Length of Contraction and Recovery During Conflict Years .....	10
2.	Evolution of Real GDP and Real GDP per Capita .....	12
3.	Evolution of Output Over the Conflict Cycle.....	13
4.	Length of the Conflict Cycle Periods, Years .....	15
5.	The Economic Cost of Conflict .....	15
6.	Macroeconomic Policy Indicators .....	16
7.	Real GDP per Capita Growth During the Conflict Cycle (Regression Estimates for Equations 1-3 Using Dummy Variant A) .....	21
8.	Real GDP per Capita Growth During the Conflict Cycle (Regression Estimates for Equations 1-3 Using Dummy Variant B) .....	22
9.	Impact of Conflict on Real GDP per Capita Growth.....	23
10.	Policy Contribution to Per Capita Growth.....	25
11.	Net Official Resource Inflows .....	27
12.	Contribution of Policy to Per Capita Output Growth .....	29
13.	DRC: Decomposition of Output Growth.....	31

Figures

1.	Real GDP .....	10
2.	Real GDP per Capita.....	10

References.....	32
-----------------	----

Appendix Tables

1.	Conflict Dates and Length .....	36
2.	Macroeconomic Policy Indicators .....	37
3.	Decomposition of Real GDP per Capita Growth.....	38
4.	Real GDP per Capita Growth During the Conflict Cycle.....	39
5.	Net Official Resource Inflows .....	40
6.	Selected Economic Indicators in EPCA and Other Post-1990 Conflict Countries.....	41

## I. INTRODUCTION

Poverty and armed conflict are closely connected, and the poorest countries face the prospect of being caught in a “conflict trap” of poverty and recurring conflict.<sup>2</sup> One group of countries at risk are those that have recently emerged from conflict. For these countries, it is important to help ensure a quick recovery from conflict and a return to sustainable development. This effort requires an understanding of the economic features of the conflict cycle, and this paper contributes to this topic. This paper specifically looks at the evolution of economic performance and the role of macroeconomic policy and aid in a selection of 24 low-income countries as they passed through civil conflict and the first few years of post-conflict recovery. This paper’s three main findings lead to three policy implications.

### A. Main Findings

**Shift in the key features of the conflict cycle.** The first finding, developed in Section II, is that, while the economic performance of countries affected by conflict share many features in common, the data point to a discernible and statistically significant shift in the key economic characteristics of the conflict cycle occurring around the start of the 1990s. Compared to earlier conflicts, those of the 1990s were shorter and associated with deeper economic contractions. In addition, while countries emerged from earlier conflicts following a prolonged period of recovery, they emerged from conflicts in the 1990s at a much earlier stage of the conflict cycle and faced significantly worse conditions. At the same time, compared to earlier conflicts, countries also generally came out of later conflicts with modestly higher growth in the first few years after conflict. This represented a significantly stronger rebound in growth from the low (negative) levels prevailing during conflict. In many cases, the conflict cycle to the recovery of output to pre-conflict levels remains incomplete. This paper provides projections that suggest that the shift tended to reduce the overall length of the conflict cycle while redistributing the time spent in conflict in favor of the time spent in recovery. At the same time, it has probably tended to reduce the overall economic cost of output foregone over the conflict cycle.

**Role of macroeconomic policy.** The second finding, discussed in Section III, relates to the linkages between the evolution of economic activity and macroeconomic policy. Conflict was typically accompanied by a deterioration and recovery in key macroeconomic policy variables that was much more pronounced in the conflicts of the 1990s. The changes observed over the past decade suggest that the stance of macroeconomic policy has also had a more discernible and statistically significant impact on economic activity in recent conflicts than was earlier the case.<sup>3</sup> This paper provides estimates that the policy stance moderated the decline and also the initial recovery in output growth in earlier conflict cycles, but accentuated it in the more recent episodes. In the later conflicts, the damage to growth caused

---

<sup>2</sup> Collier and others (2003).

<sup>3</sup> Throughout the paper, the policy stance is evaluated solely in terms of its estimated impact on growth and not relative to some benchmark.

by poor policy was nearly as great as the direct impact of conflict. Conversely, the stronger macroeconomic stabilization effort, especially with respect to inflation, has been an important factor underlying the stronger post-conflict recovery of growth observed in the 1990s. Another perhaps rather surprising result also emerges. Once other factors, including policy, are taken into account, the initial impact of the start and end of hostilities on output growth was very similar for the two sets of conflict—suggesting that, despite the very different economic profiles, the same underlying conflict process was at work.

**The role of external assistance.** The third finding, discussed in Section IV, is that these changes in part reflected a shift in donor practices following the end of the Cold War that resulted in donors being less inclined to support countries during conflict, but also more willing to provide assistance after conflict. Establishing linkages statistically is beyond the scope of this paper, so the argument is only suggestive. Donors tended to increase financial assistance during pre-1990 conflicts, but reduced assistance once conflict ended. In the conflicts of the 1990s, donors generally reduced assistance sharply during conflict, but also tended to increase assistance equally sharply after conflict. This may have contributed to more severe economic contractions and imbalances experienced by countries in these later conflicts and plausibly also contributed to their shorter duration. The greater donor willingness to provide support after recent conflicts has also contributed to stronger post-conflict recoveries, which points to the potentially high productivity of aid targeted towards macroeconomic stabilization in the early post-conflict recovery period.

**Experience in the countries receiving emergency post-conflict assistance (EPCA).** These findings are buttressed by the experience, discussed in Section V, of six countries that received emergency post-conflict financial assistance from the IMF since 1995.<sup>4</sup> The experience of these countries was broadly similar to other countries in the 1990s, but their performance in the first two years after conflict was generally stronger. This was arguably because their stronger commitment to sound macroeconomic policies in turn provided the basis for the international community to provide financial support soon after conflict. In this respect, there was an important virtuous circle in operation: sound policy attracted external assistance, which made these policies easier to implement and more fruitful.

**Experience in the Democratic Republic of Congo (DRC).** These findings are again buttressed by the experience, also discussed in Section V, of the DRC (which did not receive EPCA from the IMF) where stabilization and the start of economic recovery was made more difficult by delays in official external assistance. However, although the DRC's initial post-conflict growth performance was very unfavorable, the government's firm commitment to good policies was rewarded by an improvement in performance that was one of the strongest in the 1990s.

---

<sup>4</sup> The IMF's experience in post-conflict countries since the introduction of its emergency post-conflict assistance policy in 1995 and especially in the six countries that received this financial assistance is discussed in Fallon, Staines and others (2004).

## B. Policy Implications

The findings of this paper point to three policy implications.

**Post-conflict policy priorities.** First, countries emerging from conflict face competing political pressures on government priorities. For example, compared to countries at peace, they face a more urgent need for increased government spending on social priorities, which can also be important to help cement the peace. At the same time, if civil conflicts in the 1990s are representative, then compared to their earlier counterparts, countries emerging from recent conflicts also face a more urgent need to restore macroeconomic stability, and that the economic benefits of stabilization are also correspondingly larger. Consequently, there appears to be the need to assign a higher priority to stabilization than in the past.

**Post-conflict aid.** There are possible implications for the timing and type of post-conflict aid. Aid tends to peak immediately after conflict, but the ability of a country emerging from conflict to make use of aid is constrained by its political and administrative capacity. It has therefore been suggested that aid might be more effectively used if delayed until capacity was restored. This is perhaps especially the case for project aid. In addition, donors are generally reluctant to provide direct budgetary support, mainly due to concerns over governance. In contrast, the evidence on recent conflict cases presented in this paper indicates that the productivity of external assistance can be high in the initial post-conflict period when the government is committed to following a sound macroeconomic strategy, particularly if assistance is provided to the budget in support of stabilization.<sup>5</sup>

**Aid during conflict.** Finally, the findings suggest the intriguing possibility that the international community may be able, through its aid policies, to influence the economic profile of the conflict cycle, especially the trade-off between the duration and the economic severity of conflict. However, it is not clear what portion of the trade-off is preferable since, at first glance, the shift observed in the 1990s appears to have been accompanied by only a modest reduction in the short term economic cost of conflict. Also, any evaluation would need to take into account the longer term human and economic costs involved. This is obviously a complex issue that needs further attention.

## C. Literature Review

Five areas of the literature relate to the causes of conflict, the length of conflict, the economic impact of conflict, the role of aid flows, and the impact of macroeconomic policy, especially stabilization, on growth.<sup>6</sup>

**Causes of conflict.** Recent analyses have tended to downplay the traditional explanations of civil conflict revolving around the politics of grievance and have instead tended to highlight

---

<sup>5</sup> Direct budgetary assistance could be provided while meeting concerns over governance, through donor trust funds to help pay, for example, external debt service or the civil service wage bill.

<sup>6</sup> Humphreys (2002) provides a comprehensive survey of the literature on the economics of conflict.

economic factors: Bloomberg and Hess (2002); Collier (2000); Collier and Hoeffler (1998, 2000, 2002a); Fearon and Laitin (2002); Nafrziger (2002). In particular, the propensity to civil conflict has been closely linked to economic stagnation and poverty, although the direction of causality is not altogether clear.

**Length of conflict.** The shortening of conflicts in the 1990s has been noted by Fearon (2002). No clear consensus has emerged on the factors underlying the length of conflict. It has been persuasively argued by Collier, Hoeffler, and Söderbom (2001) that the sort of factors typically used to explain the initiation of conflict have generally had little bearing on the duration of conflict. One regular feature is that, as well as being more prone to conflict, poorer countries also typically endure longer conflicts arguably because of their lower capacity to inflict damage. Fearon (2002) has also linked the length of conflict to the political nature of the conflict. For example, civil conflicts arising from coup attempts or popular revolutions or involving successful peripheral secessions have tended to be relatively brief while conflicts revolving around land claims or natural resources tend to be relatively prolonged.. Collier and Hoeffler (2000) have sought to explain the length of conflict by focusing on sources of financing for conflict, especially natural resources, as well as the balance of benefits to the parties involved, once conflict has started, to perpetuate conflict. The role of external assistance, especially related to military spending, in sustaining conflict has been noted in Michailof and others (2002) and Elbadawi (2000) has also looked at the role of foreign interventions, especially in terminating conflicts.

**Impact of conflict.** A number of authors have looked at the cause of output losses in conflict, including Knight and others (1996), Collier (1999), Imai and Weinstein (2000), Caplan (2001), and Arunatilake and others (2001). A broad consensus has emerged that civil conflict reduces annual real GDP growth by about 2 percentage points. Collier (1999) also found that the negative impact of conflict persisted long after conflict. As might be expected, this work links output losses to the geographical extent of the conflict and the destruction of the human and capital stock; the disruption of government capacity to collect revenues and provide essential services; and the general disruption of commerce. A promising line of inquiry pursued by Murdoch and Sandler (2001a and 2001b) focuses on the spillover effects from conflicts in neighboring countries and the compounding of the damage when they are part of a broader set of regional conflicts. There has been limited work on the impact of conflict on other key macroeconomic indicators. Caplan (2001) found no discernible effect of civil conflict on inflation and only a limited tendency for government spending to increase relative to GDP. Gupta (2002b) provides more conclusive evidence that conflict led to higher inflation, higher government spending and higher fiscal deficits.

**Impact of policy.** The impact of macroeconomic policy on output during conflict has received very limited attention. Gupta and others (2002b), looking at experience in the 1990s, found that growth was affected by changes in the composition of government spending and the reduction in social spending in favor of military spending. Helpfully, there are a number of studies across a broad spectrum of developing countries (not necessarily in conflict) with results that can also shed light on conflict situations, especially concerning post-conflict macroeconomic stabilization.

There is now a consensus that healthy fiscal balances are generally good for economic growth, but there is less agreement on the short term impact of fiscal consolidation. The standard Keynesian conclusion that fiscal consolidation reduces growth relies on the multiplier for government spending exceeding that for tax revenues. This conclusion finds support in a survey of the empirical literature on multipliers for government spending and factor input taxes by Gerson (1998). However, Gupta and others (2002a) has shown that fiscal consolidations in the 1990s have had a positive short term impact on growth: a reduction of one percentage point in the fiscal deficit-to-GDP ratio led to a short term increase in per capita output growth of up ½ a percentage points. The impact was larger when consolidation was based on current spending cuts rather than on revenue increases or capital spending cuts and when offset by reduced domestic rather than external financing.

The linkage between fiscal deficits and inflation also remains contested, but both Cateo and Terrones (2001) and Fischer and others (2002) found strong support for a linkage when inflation is high. A one percentage point reduction in the fiscal deficit to GDP ratio reduces inflation by up to 6 percentage points. There is now strong support that even moderate inflation can damage economic growth (Brauman, 2000; Ghosh and Philips, 1998) above a threshold in developing countries of about 10 percent (Khan and Senhadji, 2000). There is less agreement on the impact of disinflation. Disinflation has a positive impact on growth when inflation is very high (Fischer and others 2002), but may have a contractionary effect if the inflation rate is already low or if the disinflation is too severe (Ghosh and Philips, 1998).

**External assistance.** Michailof and others (2002) noted the role of aid in sustaining conflict during the Cold War and the changes in aid patterns since the Cold War. Otherwise, discussions of the role of aid have tended to focus on the post-conflict recovery period. An important strand in the literature relate to the timing and type of aid. Collier and others (2002b and 2003) noted that aid tends to peak immediately after conflict and argue that aid would instead be more effective if it peaked about 3-5 years after the end of conflict when absorptive capacity is at its highest. These papers also provided evidence that relative to other countries, aid to conflict-affected countries in support of social priorities is relatively more effective than aid in support of economic reconstruction and macroeconomic stabilization, in part because of its impact in reducing the probability of renewed hostilities. Demekas and others (2002) has also argued that compared to humanitarian assistance, reconstruction aid supports longer term capital accumulation and growth, but at the expense of lower current consumption.

**This paper within the literature.** The paper seeks to extend the conflict-related literature in three directions. The literature has tended to focus on the bulk of civil conflicts that started before 1990 while this paper argues that there are important features that do not carry over to the more recent conflicts. A second feature of the literature is its tendency to treat conflict as a single event while the current paper argues that the economic phase at which a country comes out of conflict has important implications for the nature of the post-conflict recovery. Finally, this paper emphasizes the role of macroeconomic policy, and indirectly of aid, as a determinant of growth during the conflict cycle.

In this context, the paper's findings on the economic impact of conflict are broadly consistent with the literature for the pre-1990 conflicts, but not for the more recent conflicts. The paper also moderates the conclusions about post-conflict policy and aid priorities drawn by Collier and others (2002b and 2003).

#### **D. Data**

This paper looks at economic developments in 24 civil conflicts in 23 countries that have taken place since 1970 (Appendix Table 1). This set has been pared down from a much larger set, according to data availability and whether the conflict had a discernible macroeconomic impact.<sup>7</sup> For example, the conflict in Vietnam was not included due to the lack of data, while India's regional conflict in Kashmir was excluded due a lack of a discernible economic impact on India as a whole. The 24 conflicts are divided by starting date into two groups: 10 that began before 1990 and 14 that commenced after 1990.<sup>8</sup> In addition, performance was markedly different in four conflicts in the 1990s, which were compounded by the political dissolution of federal entities (DFEs), such as the Soviet Union and the Republic of Yugoslavia.

Setting beginning and end dates of conflict often requires judgment. This is especially true for internal conflicts, where the descent into and emergence from conflict is often gradual and intermittent. For example, Sierra Leone experienced internal disturbances for several years before the coup in 1997—the date used here for this conflict. Decisions on the dates to use for analytical purposes are based on information from the Swedish International Peace Research Institute (SIPRI) and IMF staff reports.<sup>9</sup> The paper uses data up to 2002 from the IMF's WEO database.<sup>10</sup> As might be expected, the quality of the data during and after conflict is very weak. Data for several conflict cases are limited and are available for up to 2 years for 24 countries, but are available up to 5 years for only 17.

## **II. ECONOMIC PERFORMANCE OVER THE CONFLICT CYCLE**

### **A. Profile of the Conflict Cycle**

The economic cycle related to conflict is normally divided into three distinct phases that correspond to its political phases: a pre-conflict phase of economic deterioration, the period during conflict of reduced growth or contraction, and a post-conflict phase of economic

---

<sup>7</sup> Collier (1999) as well as Sambanis (2001) have listed almost 60 conflicts that have started since 1970. Fearon (2002) listed almost 90 conflicts since 1970 with 44 civil wars outstanding in 1994.

<sup>8</sup> While dividing the sample in this way creates a risk of sample selection bias, as lengthy conflicts are more likely to be excluded from the 1990s subgroups, this problem does not arise here as all conflicts that began in the 1990s had ended by 2000. Conflicts excluded from the sample because they had outlasted the 1990s, i.e., Angola and Sudan, were lengthy confrontations that commenced in earlier decades.

<sup>9</sup> SIPRI defines a country to be in conflict in any single year if there are more than 1,000 casualties with at least 5 percent of casualties on either side.

<sup>10</sup> *World Economic Outlook*, Winter 2003.

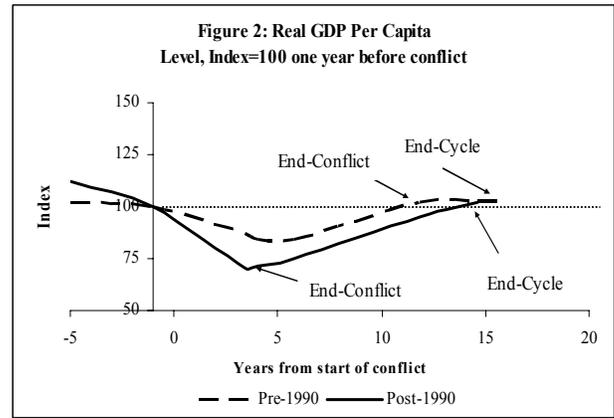
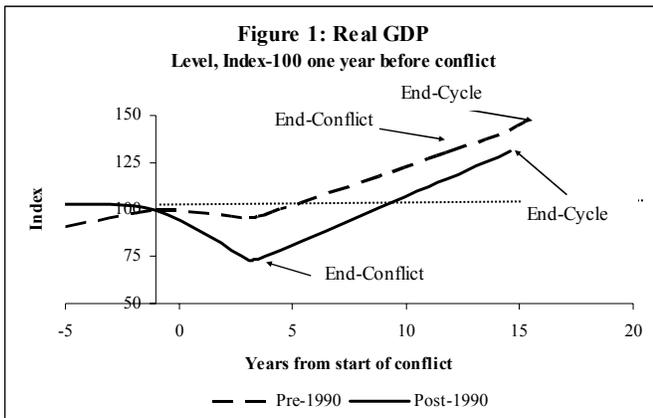
However, this perspective can be misleading if the political and economic phases of conflict are not in fact synchronized, or if there is a change in how they are synchronized. Precisely such a shift appears to have occurred in the 1990s, with important implications for the stage of the economic cycle at which countries emerged from conflict (Table 1, Figures 1 and 2).

Table 1. Length of Contraction and Recovery During Conflict, Years 1/

	Total Conflict	Real GDP		Real GDP per Capita	
		Contraction	In-conflict recovery	Contraction	In-conflict recovery
Pre-1990	11.8	3.2	8.6	5.2	6.6
Post-1990	3.5	2.7	0.8	3.2	0.3

Source: *World Economic Outlook*.

1/ Only includes contraction during conflict.



**Contraction.** A distinguishing feature of civil conflicts, unlike cross border conflicts, is that their onset is typically associated with a decline in economic performance.<sup>11</sup> However, in many instances, this deterioration pre-dated the conflict: real GDP growth began to fall as much as five years before conflict and more than half the countries (mostly in post-1990 conflicts) entered conflict with reduced GDP per capita. With the onset of conflict, most countries experienced a contraction in output that averaged about 3 years for all conflicts, but which was generally longer for the pre-1990 conflicts. In terms of output per capita, the contractions tended to last about a year longer. More importantly, the end of the contraction and the start of the economic recovery did not necessarily coincide with the end of conflict.

**Recovery.** A major change in the 1990s was a sharp decline in the length of the conflicts, organized by starting date, which fell from an average of about 12 years for the pre-1990

<sup>11</sup> Caplan (2001) looked at conflicts over 1950-1992 and concluded that while civil conflicts have on average *reduced* annual real GDP growth by 2 percent, international conflicts have *increased* growth by 2 percent.

conflicts to less than 4 years for those of the 1990s.<sup>12</sup> In the pre-1990 conflicts, hostilities tended to end well after the start of the recovery so that there was a prolonged period of ‘in-conflict’ recovery. In the shorter post-1990 conflicts, hostilities tended to end at about the same time as the end of the contraction (and occasionally before) and in these cases an ‘in-conflict’ recovery period was typically absent.<sup>13</sup> As a result, countries emerged from these conflicts at a much earlier phase of the economic cycle than did their earlier counterparts.

**Phases of recovery.** Where along the economic cycle the country emerged from conflict had an important bearing on the economic conditions it faced. It is useful to distinguish three phases: a stabilization phase in which major macroeconomic imbalances were corrected along with positive output growth; a reconstruction phase, during which the security and policy environment was normalized and recovery fully supported by donor funded reconstruction programs; and a final development phase leading to a return to normal growth. The timing of these phases relative to the end of conflict depended, in part, on the overall length of conflict and on whether there was a period of in-conflict recovery. In the pre-1990 conflicts, which typically included a lengthy in-conflict recovery period, the modest stabilization required was mostly in place by the end of conflict. In the post-1990 conflicts, where the contraction typically continued to the end of conflict, the stabilization phase only began once conflict ended and in some cases was delayed for several years after conflict.

## B. Economic Growth

The shortening of conflicts in the 1990s was also accompanied by a marked worsening of economic performance during conflict and consequently in the conditions that countries faced as they emerged from conflict. At the same time, there was a broad improvement in economic performance in the initial years after conflict (Table 2). For each set of conflicts, Table 3 shows regression results testing the statistical significance of the difference between growth during a period extending 5 years before and after conflict and growth in all other periods (i.e., under ‘normal’ circumstances) as well as the statistical significance of the difference in growth between the two sets of conflicts.<sup>14</sup>

---

<sup>12</sup> The conflicts are here arranged by *starting date*. By way of comparison, Fearon (2002) looked at the 122 civil wars from 1945 to the mid-1990s and estimated that the average length of civil conflict was 9 years but with a high variance so that about half in equal numbers were either less than 2 years or more than 12 years. He also noted the shortening of conflicts in the 1990s but concluded that the average length of *outstanding* civil conflict has been steadily increasing since 1945 and reached 15 years by the mid-1990s.

<sup>13</sup> For the 14 post-1990 conflicts, the contractions in real GDP and real GDP per capita ended before the end of conflict in 5 and 3 countries, respectively, and both ended after conflict in 3 countries.

<sup>14</sup> These regression results are derived using equations (2) and (3) specified in Section III below, but including only the period dummies and excluding the policy and other variables.

Table 2. Evolution of Real GDP and Real GDP per Capita

	Before Conflict		During Conflict				After Conflict									
	1-5 yrs Before	1 year Before	Whole Conflict	During 1/ Contract	At 1/ Trough	During 2/ Recovery	End Year	1 year		2 years		3-5 yrs.		1-5 yrs.		
								After	After	After	After	After	After	After	After	
<b>Real GDP, index</b>																
Pre-1990	96	100	111	96	94	115	130	134	139	137	153	146				
Post-1990s	103	100	83	81	74	85	75	80	82	81	85	85				
Non-DFE	98	100	92	90	84	93	86	93	97	95	102	99				
DFE	117	100	62	62	49	42	49	47	47	47	54	51				
<b>Real GDP, percent change</b>																
Pre-1990	2.9	1.8	2.0	-3.4	-0.6	3.5	1.6	2.7	3.7	3.2	4.3	3.9				
Post-1990s	1.1	-1.0	-8.3	-11.5	-13.0	3.1	-9.3	5.0	3.2	4.1	5.2	4.8				
Non-DFE	2.2	1.7	-4.1	-7.8	-11.7	3.4	-7.1	8.9	4.3	6.6	4.3	5.5				
DFE	-1.5	-8.0	-18.9	-19.6	-16.2	1.7	-14.7	-4.7	0.3	-2.2	6.9	3.2				
<b>Real GDP per capita, index</b>																
Pre-1990	101	100	98	88	84	100	102	102	102	102	104	103				
Post-1990s	108	100	79	79	71	71	71	74	75	74	74	76				
Non-DFE	103	100	86	86	80	87	81	85	86	85	87	87				
DFE	121	100	61	62	48	39	48	45	47	46	53	50				
<b>Real GDP per capita, percent change</b>																
Pre-1990	0.1	-1.0	-0.4	-4.0	-3.0	2.3	-1.2	0.9	-0.2	0.4	1.3	0.9				
Post-1990s	-1.0	-2.9	-10.7	-12.5	-13.6	3.1	-10.2	2.0	1.1	1.6	3.0	2.4				
Non-DFE	-0.4	-0.4	-7.3	-9.6	-12.5	4.2	-8.3	5.2	1.2	3.2	1.2	2.3				
DFE	-2.6	-9.1	-19.1	-19.9	-16.6	0.7	-15.0	-5.9	0.9	-2.5	6.2	2.7				

Source: *World Economic Outlook*.

1/ The contraction period and trough are defined in terms of real GDP and real GDP per capita, respectively.

2/ Not all post-1990 conflicts experienced an in-conflict recovery.

3/ Data for 3, 4 and 5 years after conflict are available for 11, 7, and 7 out of 14 post-1990 conflicts, respectively.

Table 3: Evolution of Output Over the Conflict Cycle  
(Differences in growth during and outside conflict cycle and between conflicts)

	Before	During Conflict			After		
	1-5 yrs	Total	Contract	Recovery	1-2 Yrs.	3-5 Yrs.	1-5 Yrs.
<b>Real GDP</b>							
Difference from outside conflict cycle							
Pre-1990	-0.8	-1.7 ***	-7.1 ***	-0.2 ***	-0.5	0.6	0.2
Post-1990	-2.9 ***	-12.3 ***	-15.5 ***	-0.9 ***	0.1	1.2 **	0.8
Difference between conflicts	-1.8 ***	-10.3 ***	-8.1 ***	-0.4 *	0.9	0.9 *	0.9
<b>Real GDP per capita</b>							
Difference from outside conflict cycle							
Pre-1990	-0.8 *	-1.3 ***	-4.9 ***	1.4	-0.5	0.4	0.0
Post-1990	-2.9 **	-12.6 ***	-14.4 ***	1.2	-0.3	1.1	0.5
Difference between conflicts	-1.1	-10.3 ***	-8.5 ***	0.8	1.2	1.7	1.5

Data source: *World Economic Outlook*.

Differences evaluated using regressions allowing for serial correlation.

Levels of significance at the 1 percent, 5 percent, and 10 percent levels are indicated by \*\*\*, \*\*, and \*.

**Pre-1990 conflicts.** In these conflicts, the pace and depth of the contractions tended to be relatively modest with an average annual decline in real GDP per capita of 4 percent—or 4.9 percentage points (statistically significant) below normal—and a cumulative decline in real GDP per capita at its trough to about 84 percent of its pre-conflict level. However, since their contractions were also typically followed by lengthy recovery periods during the conflict itself, these countries emerged from conflict with a level of real GDP per capita not far below the pre-conflict level and real GDP significantly higher than before the conflict. Consequently, over the whole conflict, although real GDP growth was reduced by 1.7 percentage points below normal (statistically significant and in line with the findings of other researchers), real GDP actually *increased* by an annual average of 2 percent. Moreover, in these countries, the end of hostilities had no immediately discernible impact on growth.

**Post-1990 conflicts.** The experience in the far shorter conflicts during the 1990s was altogether different. In these conflicts, the pace and depth of the contractions were much more severe: real GDP per capita declined by about 12.5 percent each year—or 14.4 percentage points (statistically significant) below normal—to around 71 percent of its pre-conflict level, though this was biased downwards by the particularly sharp contractions in the DFEs.<sup>15</sup> Moreover, the contractions in the post-1990 conflicts typically continued to the

<sup>15</sup> Output in the DFEs fell to 49 percent of its pre-conflict level during conflict and further after conflict but much of this reflected external factors that were unrelated to conflict and also possibly related to changes in

(continued...)

end of conflict and most emerged from conflict with output still far below the pre-conflict level. Over the whole conflict, real GDP growth was reduced by 12.3 percentage points below normal, considerably more than in the earlier conflicts.

Once conflict ended, per capita output growth in the first five years was modestly higher for the later than for the earlier conflict countries, but this difference was not statistically significant. However, it is important to keep in mind that, for the later conflicts, growth after conflict was recovering from deep contractions during conflict and the rebound was large and statistically significant. Moreover, performance in these later conflicts varied considerably because of the delayed recovery in some countries, especially in two DFEs.<sup>16</sup> Once the DFEs are excluded, the superior performance of the remaining post-1990s conflict countries was particularly pronounced in the initial two years after conflict when average per capita output growth in these countries was *several times* higher than in the pre-1990 conflict countries.

### C. Length of the Overall Conflict Cycle

In order to assess the impact of the shifts in the 1990s, it is assumed that the return of real GDP per capita to its level the year before conflict marks the point of recovery.<sup>17</sup> By this measure, the recovery period after conflict was often longer than the time spent in conflict. In many instances, recovery remains incomplete. Recovery is even more prolonged, especially for conflicts in the 1990s, if the level of GDP per capita that prevailed before the pre-conflict deterioration is used as the benchmark. Of the 17 countries in the sample with sufficient data, only 5 had regained their pre-conflict level of GDP per capita within the first 5 years after conflict. From a different perspective, GDP per capita, which averaged 84 percent of its pre-conflict level at the end of the conflict, had risen to only 93 percent after 5 years.

Although the conflict cycles for most countries remain incomplete, WEO projections can be used to get some sense of their likely length. (Table 4). Using these projections, the recent developments have most probably lengthened the post-conflict recovery, especially in the DFEs. For the most part, this is because the shift in the 1990s has redistributed the time spent in recovery from during conflict to after conflict, leaving the overall length of the conflict cycle broadly unchanged. However, once the idiosyncratic DFEs are excluded, the shift in the 1990s has probably tended to reduce the overall length of recovery, including the in-conflict recovery, and has consequently reduced the length of the conflict cycle from about 15 years to about 11 years.

---

national accounting methodology. Once these factors are accounted for, the depth of the contractions in the DFEs and the post-1990 conflicts were broadly similar. By way of comparison, output for the former Soviet block countries (CIS) as a whole contracted to 62 percent of its pre-conflict level, suggesting that the additional impact of conflict was moderate. Also, de Melo and others (1996) investigated the effect of civil wars in the transition economies of Eastern Europe on the average growth rate over the period 1989-94 and found that civil conflict reduced the annual average growth rate during the five years by 9 percent.

<sup>16</sup> Contractions continued after conflict in Azerbaijan, Georgia and the DRC and was particularly strong in Azerbaijan.

<sup>17</sup> The return of real growth to 'normal' is an alternative candidate employed, for example, by Collier (1999).

Table 4. Length of the Conflict Cycle Periods, Years

	Conflict Contraction A 1/	In- Conflict Recovery B	Post- Conflict Recovery C 2/	Total Conflict A+B	Total Recovery B+C	Total Cycle A+B+C
Pre-1990s	5.2	6.6	3.8	11.8	12.4	15.6
Post-1990s	3.2	0.3	11.1	3.5	11.9	14.6
Non-DFE	3.0	0.3	7.8	3.3	8.8	11.1
DFE	3.8	0.3	19.5	4.0	19.8	23.5

Source: *World Economic Outlook*.

Estimates are based on WEO projections up to 2008 extrapolated beyond.

1/ The contraction of per capita output, excluding contractions after conflict.

2/ The conflict cycle ends when real GDP per capita recovers to its pre-conflict level.

#### D. Cost of Conflict

These projections can be used to estimate the overall economic cost of conflict. This can be measured by the net present value of the output foregone, again taking the pre-conflict level of output per capita as the benchmark (Table 5). These estimates are sensitive to the discount rate and also understate the cost to the extent that, in the absence of conflict, per capita output growth would have been positive, and also because the estimates do not capture the potentially large longer term human and economic costs.

Table 5. The Economic Cost of Conflict  
(NPV in months of pre-conflict output per capita)

	During Conflict	After Conflict	Total
5 percent discount rate			
Pre-1990s	11	4	15
Post-1990s	8	18	27
Non-DFE	6	8	14
DFE	16	43	59
3 percent discount rate			
Pre-1990s	13	5	18
Post-1990s	9	22	31
Non-DFE	6	9	15
DFE	17	53	70

Sources: *World Economic Outlook*; and estimates.

The conflict is defined to end when real GDP per capita recovers to its pre-conflict level.

Estimates are based on *WEO* projections up to 2008 extrapolated beyond.

Subject to this qualification, the developments observed in the 1990s have reduced the average cost of the conflict period alone—the cost of the deeper contractions of the post-1990 conflicts have been more than offset by their greater brevity. However, these

developments have also been accompanied by higher costs associated with the elongation of the post-conflict recovery period noted above. Nevertheless, excluding the idiosyncratic DFEs, there has probably been a tendency for the overall cost for the whole conflict cycle to decline. Assuming a discount rate of 3 percent, the cost of conflict alone has declined from 11 to 6 months of pre-conflict economic activity while the cost of the whole conflict cycle has declined from 18 to 15 months.<sup>18</sup>

### E. Evolution of Macroeconomic Policy Indicators

The above developments have also been reflected in the evolution of policy indicators (Table 6 and Appendix Table 2).

Table 6. Macroeconomic Policy Indicators  
(Period average, unless otherwise indicated)

	Before		During		After			
	1-5 Yrs.	1 Year	Conflict	End	1 Year	2 Yrs.	1-2 Yrs.	3-5 Yrs. 1/
<b>Fiscal balances (including grants), percent of revenues</b>								
Pre-1990	-25	-40	-50	-56	-46	-38	-42	-30
Post-1990s	-53	-37	-84	-83	-50	-33	-41	-27
<b>Fiscal revenues (including grants), real per capita index</b>								
Pre-1990	102	100	101	102	104	102	103	110
Post-1990s	111	100	75	72	93	109	101	116
<b>Fiscal expenditures, real per capita index</b>								
Pre-1990	91	100	108	107	102	97	100	101
Post-1990s	114	100	92	86	93	105	99	107
<b>Domestic financing, percent of GDP</b>								
Pre-1990	6	0	-1	-2	0	-1	-1	-2
Post-1990s	5	6	8	6	4	3	4	-2
<b>CPI inflation, percent change, median</b>								
Pre-1990	8	12	16	12	20	17	18	9
Post-1990s	21	18	30	41	32	8	24	5

Source: *World Economic Outlook*.

1/ Data for 3, 4 and 5 years after conflict, are available for 11, 7, and 7 out of 14 post-1990 conflicts, respectively.

**Fiscal balances.** Countries typically ran fiscal deficits (including grants) before conflict that deteriorated and then recovered as they passed through the conflict cycle. These fluctuations tended to be modest relative to GDP, but were much more severe relative to revenues

<sup>18</sup> By way of comparison, Collier and others (2003) estimated that the cost of conflict to be about seven months' output.

(including grants).<sup>19</sup> Because of their deeper economic contractions, lower levels of external assistance, and absence of a prolonged recovery period during conflict, countries generally emerged from post-1990 conflicts with much larger fiscal deficits than earlier conflicts.<sup>20</sup> However, in the initial post-conflict period, the post-1990 conflict countries benefited from stronger economic growth as well as greater external assistance, so that the improvement in their fiscal balances was generally more pronounced.

**Revenues and expenditures.** Both revenues as well as expenditures were initially compressed during conflict but, while revenues tended to remain low or decline, there were strong pressures to maintain or increase expenditures.<sup>21</sup> In the pre-1990 countries, increased fiscal deficits during conflict were generally accompanied by increased revenues and expenditures whether in real terms or relative to GDP. After conflict, fiscal consolidation tended to rely more on an adjustment in expenditures than in revenues and real spending per capita tended to decline. In the post-1990 conflicts, however, both revenues and expenditures generally remained compressed in real terms during conflict but the compression of revenues tended to be larger. After conflict, the fiscal adjustment tended to rely more on increased revenues to accommodate increased expenditures.

**Inflation.** Changes in the level and composition of assistance caused inflation to evolve differently from the fiscal balances.<sup>22</sup> In the pre-1990 conflicts domestic financing during conflict actually declined relative to GDP but increased following conflict. In the 1990s, domestic financing increased more sharply than the fiscal deficits during conflict but also improved more sharply following conflict. The evolution of domestic financing was reflected in CPI inflation.<sup>23</sup> The increase in inflation was more pronounced in the conflicts of the 1990s and, by the end of conflict, median inflation in the post-1990 conflicts (41 percent)

---

<sup>19</sup> Revenues include grants since data on tax revenues is only available for about half the countries.

<sup>20</sup> Important exceptions were the DFEs whose fiscal balances were stronger at the end of conflict than at the start. This was because these countries entered conflict with very little administrative capacity to raise revenues and this capacity had to be mobilized quickly once conflict started.

<sup>21</sup> Caplan (2001) looked at 66 conflicts from 1953 to 1992 and found that during civil conflicts in low-income countries higher military spending tended to crowd out other spending with little overall effect on total government spending. He also found that tax revenues tended to remain unchanged or declined as a share of GDP. Gupta and others (2002b) looked at 22 conflicts from 1985 to 1999 and also found evidence that military spending crowded out other spending. Smaldone (2003) looked at military spending in 42 sub-Saharan African countries in the 1990s. He found no clear difference in real military spending levels between countries that remained at peace and those affected by conflict but found that the military's share of total government spending tended to be higher in the latter. These findings are echoed here: in the 14 countries (10 of which are post-1990) which reported data to the IMF, average military spending increased during conflict as a share of both GDP and total fiscal expenditures but declined in real terms.

<sup>22</sup> Domestic financing is estimated by the financing balance after taking into account all external assistance. IMF net financing is included although it is typically routed through the Central Bank as balance of payments support. This is because IMF financing also provides the resources to permit the sterilization of the monetary expansion that accompanies domestic fiscal financing and is therefore implicitly budgetary financing.

<sup>23</sup> The linkage between domestic financing and CPI inflation is not direct but is likely to be more closely related in countries affected by conflict where access to indirect monetary instruments is often heavily curtailed.

was much higher than in the pre-1990 conflicts (12 percent).<sup>24</sup> Once conflict ended, inflation generally declined but the decline was uneven. In the pre-1990 conflict countries, where domestic financing initially increased, median inflation actually accelerated in the initial two years after conflict and only fell to single digits in the fourth year. In most of the post-1990 conflict countries, where domestic financing were sharply reduced, inflation declined to single digits within two years.

**External sector.** External current account balances (including transfers) generally deteriorated during the conflict mainly due to reduced official transfers. The role played by the trade balance during conflict was mixed, since there were several conflicting tendencies relating to trade volumes and on the effective terms of trade, but there was probably a larger tendency towards deterioration.<sup>25</sup> The performance of the current account balance after conflict tended to diverge between the two sets of conflicts. The end of the pre-1990 conflicts followed a prolonged recovery that was already supported by large aid flows and robust exports and was accompanied by a surge in imports that was not supported by either stronger aid flows or export receipts so that current account balances worsened. The end of the post-1990 conflicts was also accompanied by a surge in imports which, however, was supported by strong increases in aid transfers as well as export receipts so that current account balances in these countries initially improved.

**External debt.** Countries also emerged from conflict with increased external debt that averaged 117 percent of GDP and 743 percent of exports which was not sustainable.<sup>26</sup> Countries were therefore in urgent need of debt relief and two thirds of them subsequently became eligible for assistance under the HIPC Initiative. Debt service obligations were also very high and more than half the countries emerged from conflict with arrears which, in some instances, posed a major hurdle to the provision of external assistance.

### III. IMPACT OF CONFLICT AND MACROECONOMIC POLICY

The movements in output and economic indicators described above were a natural outcome of conflict. However, they were also responding to shifts in the stance of macroeconomic policy. For example, the tendency after pre-1990 conflicts for inflation to rise initially while fiscal balances were improved by reducing expenditures arguably reduced growth. Conversely, in the post-1990 conflicts, the tendency for inflation to fall while fiscal balances

---

<sup>24</sup> For 66 conflicts over 1953-92, Caplan (2001) found that civil conflicts had no discernible impact on inflation. Gupta (2002b) found that 22 episodes of armed conflict in the 1990s had a discernible impact on inflation.

<sup>25</sup> The World Bank commodity price index increased in the 1970s but dropped in the 1980s and 1990s. There were important conflicting tendencies on import unit prices. In the earlier conflicts, unit prices increased (volumes dropped while expenditures rose) probably reflected increased defense related imports. In the later conflicts, unit prices dropped (volumes increased while expenditures declined), probably reflecting a shift in the composition of imports towards basic staples.

<sup>26</sup> Even allowing for an average grant element of 65 percent (comparable to IDA terms), this implies an average NPV-of-debt to current exports ratio at the end of conflict of about 260 percent, well above the 150 percent threshold normally considered sustainable.

were improved by increasing revenues to accommodate increased expenditures may have supported growth.

### A. Equations

These issues are assessed using equations (1)-(3), each of which contains real GDP per capita growth as the dependent variable. Equation (1) and (2) are each estimated separately for each set of conflicts while equation (3) is estimated using a panel of all conflicts.

In these equations,  $Y_{it}$  is real GDP per capita growth in country  $i$  in year  $t$ ,  $Y_{i75}$  is the level of real GDP per capita in country  $i$  in 1975,  $X_{kit}$  is the value of explanatory variable  $k$  for country  $i$  in year  $t$  and  $\epsilon_{it}$  is the error term.  $c$  is the equation constant,  $d_o$  is the dummy for period outside the conflict cycle, the  $d_c$ 's are dummies for the subperiods during the conflict cycle,  $d_p$  is the dummy for post-1990 conflicts and the  $\beta$ 's are the coefficients to be estimated. There are no individual country specific dummies.

Eq. (1): The level of per capita real GDP growth

$$Y_{it} = \beta_{3,75} \cdot Y_{i75} + \beta_{3o} \cdot d_o + \sum_k \beta_{3ok} \cdot d_o \cdot X_{kit} + \sum_c \beta_{3c} \cdot d_c + \sum_k \sum_c \beta_{3ck} \cdot d_c \cdot X_{kit} + \epsilon_{it}$$

Eq. (2): Difference between growth during and outside the conflict cycle

$$Y_{it} = c + \beta_{4,75} \cdot Y_{i75} + \sum_k \beta_{4k} \cdot X_{kit} + \sum_c \beta_{4c} \cdot d_c + \sum_k \sum_c \beta_{4ck} \cdot d_c \cdot X_{kit} + \epsilon_{it}$$

Eq. (3): Difference between growth during the pre-1990 and post-1990 conflict cycles

$$Y_{it} = \beta_{5,75} \cdot Y_{i75} + \beta_{5o} \cdot d_o + \sum_k \beta_{5ok} \cdot d_o \cdot X_{kit} + \sum_c \beta_{5c} \cdot d_c + \sum_k \sum_c \beta_{5ck} \cdot d_c \cdot X_{kit} + \beta_{5po} \cdot d_p \cdot d_o + \sum_k \beta_{5pok} \cdot d_p \cdot d_o \cdot X_{kit} + \sum_c \beta_{5pc} \cdot d_p \cdot d_c + \sum_k \sum_c \beta_{5pck} \cdot d_p \cdot d_c \cdot X_{kit} + \epsilon_{it}$$

For each set of conflicts and for each period in the conflict cycle, equation (1) shows the estimated growth rate as a linear combination of an 'underlying' growth rate, captured by the coefficient on the dummy, plus the unit contributions of the other explanatory variables. Since there are no cross-period linkages, this equation generates the same results as would a separate equation estimated for each period.

Equation (2) compares growth during the conflict cycle with growth *outside* the conflict cycle under 'normal' circumstances. Growth is estimated as the normal growth outside the conflict cycle plus a difference attributable to conflict. For each set of conflicts, the difference between growth during the conflict cycle and normal is given by the variables cross-multiplied by the conflict cycle period dummies,  $d_c$ .

Equation (3) compares growth in the two sets of conflicts. For each period, growth is given by growth in the pre-1990 conflicts plus a difference attributable to the post-1990 conflicts. For each period, the difference between the two sets of conflicts is captured by the variables cross-multiplied by the dummy for the post-1990 conflicts,  $d_p$ .

*For estimation purposes only*, the conflict cycle is here defined, somewhat arbitrarily, to extend five years before and after conflict. All other periods are here taken to be outside the conflict cycle. The pre-conflict period is included to permit the estimates for the impact of conflict to take into account the deterioration in economic performance before conflict. Defining the conflict cycle to end after only five years is solely due to data availability.

To explore the evolution of output more closely, each equation is estimated with two variants of the dummies for the conflict cycle. Variant (A) divides the conflict cycle into the five-year period before conflict, the conflict itself and the five-year period after conflict. Variant (B) divides the conflict period into its contractionary and in-conflict recovery periods and divides the five-year post-conflict period into the initial two years and the subsequent three years.<sup>27</sup> This permits a closer look at the more immediate impact of the start and end of hostilities on growth. For the post-1990 conflicts, only a small number of countries went through an in-conflict recovery and data availability falls off significantly in the 3-5 year period after conflict so that the results for these periods need to be interpreted cautiously.

Efforts to model output growth have typically used multi-year averaging to smooth out short term fluctuations and have relied on a smorgasbord of explanatory variables, such as education rates, as proxies for supply side variables. Multi-year averaging is precluded here by the focus on the short subperiods during the conflict cycle. Nor is it possible to make use of supply side indicators which tend to be surveyed infrequently during conflict, if at all.

Instead, output growth is modeled on the demand side and as a function of the key policy and other variables. The indicators include the growth in real per capita government spending, the change in the fiscal balance, and the CPI inflation rate.<sup>28</sup> The fiscal balance is expressed as a ratio to revenues (both including grants), rather than as a ratio to GDP, so as to reduce the linkage to output. The change in the fiscal balance and government per capita spending are both included so as to differentiate between changes in the size of government and pure fiscal consolidation. The terms of trade are also included to capture external effects on the assumption that exporters are price takers. Finally, to capture possible convergence effects, due to different initial conditions, the equations also include per capita output in 1975.<sup>29</sup>

Estimation uses GLS with cross section weights and adjustments for serial correlation and heteroskedasticity. The results are shown in Tables 7 and 8. It is important to keep in mind that equations (2) and (3) refer to differences. To ease the presentation, the tables only show the coefficients for the difference components of these equations—tagged by the conflict cycle dummies  $d_c$  in equation (2) and by the post-1990 conflict dummy  $d_p$  in equation (3).

---

<sup>27</sup> The contractionary and in-conflict recovery periods are here defined in terms of real GDP per capita. Also, the contraction period only includes contractions during conflict and not after conflict.

<sup>28</sup> These indicators provide imperfect proxies for the policy stance. For example, assessing the fiscal policy stance would involve measurement of the structural fiscal balance for which, unfortunately, adequate data is lacking. CPI inflation is included instead of, for example, money growth since most of the literature focuses on the impact of inflation. Including money growth instead does not change the results significantly.

<sup>29</sup> There are non-linearities at work, especially for inflation, that are not here explored.

Table 7. Real GDP per Capita Growth During the Conflict Cycle  
 Results for Equations 1-3 using Variant (A) of dummies during the conflict cycle  
 For equations (2) and (3), only the coefficients on the difference terms are shown 1/

Sample Period: 1967-2002	Equation 1		Equation 2		Equation 3
	Pre-1990	Post-1990	Pre-1990	Post-1990	All conflicts
Real GDP p.c. in 1975, US\$	0.00	0.00			0.13
Outside the conflict cycle					
Dummy	2.66 **	2.12 ***			-1.75
Terms of trade, percent change	0.04 *	0.04 **			0.00
Gvt spending p.c., percent change	0.16 ***	0.09 ***			-0.08 **
Gvt. balance, percent of revenue, change	0.06 ***	-0.03 *			-0.10 ***
CPI, percent change	-0.18 **	-0.06 ***			0.12 *
Conflict cycle					
1-5 years before conflict					
Dummy	1.74 **	-0.63	-1.11	-2.57 ***	-2.96 *
Terms of trade, percent change	-0.04 **	0.03	-0.08 ***	-0.02	0.06
Gvt spending p.c., percent change	0.04	0.11 *	-0.12 ***	0.04	0.04
Gvt. balance, percent of revenue, change	0.06 ***	0.01	0.00	0.03 *	-0.07 ***
CPI, percent change	-0.02 ***	-0.01	0.17 *	0.05 **	0.01
During conflict					
Dummy	-1.09 *	-3.95 ***	-3.92 ***	-5.51 ***	-5.27 ***
Terms of trade, percent change	-0.03 **	0.00	-0.07 ***	-0.06 **	0.05 **
Gvt spending p.c., percent change	0.04 ***	0.05 ***	-0.12 ***	-0.02	0.00
Gvt. balance, percent of revenue, change	0.02 *	0.10 ***	-0.04	0.12 ***	0.07 ***
CPI, percent change	0.01	-0.05 ***	0.20 **	0.01	-0.05 ***
1-5 years after conflict					
Dummy	0.91	2.35 ***	-1.73 *	0.37	1.16
Terms of trade, percent change	-0.03	-0.11 ***	-0.08 **	-0.16 ***	-0.05
Gvt spending p.c., percent change	0.01	0.10 ***	-0.15 ***	0.03	0.07 ***
Gvt. balance, percent of revenue, change	-0.01	0.06 ***	-0.07 ***	0.09 ***	0.08 ***
CPI, percent change	-0.01	-0.07 ***	0.18 *	-0.01	-0.06 ***
AR(1)	0.33 ***	0.06	0.32 ***	0.07	0.19 ***
F-stat	8 ***	21 ***	8 ***	21 ***	14.3 ***

Data source: *World Economic Outlook*.

Levels of significance at the 1 percent, 5 percent and 10 percent levels are indicated by \*\*\*, \*\*, and \*, respectively. All estimates done by GLS with cross section weights and adjustments for serial correlation and heteroskedasticity.

1/ These coefficients in equations (2) and (3) are tagged by  $d_c$  and  $d_p$  respectively.

Table 8. Real GDP per Capita Growth During the Conflict Cycle  
 Results for Equations 1-3 using Variant (B) of dummies during the conflict cycle  
 For equations (2) and (3), only the coefficients on the difference terms are shown 1/

Sample Period: 1967-2002	Equation 1		Equation 2		Equation 3
	Pre-1990	Post-1990	Pre-1990	Post-1990	All conflicts
Real GDP p.c. in 1975, US\$	0.00	0.00 *			0.15
Outside the conflict cycle					
Dummy	1.13	1.47 **			-2.12
Terms of trade, percent change	0.03	0.06 ***			-0.01
Gvt spending p.c., percent change	0.18 ***	0.09 ***			-0.08 **
Gvt. balance, percent of revenue, change	0.08 ***	-0.02 *			-0.10 ***
CPI, percent change	-0.16 **	-0.06 ***			0.11 *
Conflict cycle					
1-5 years before conflict					
Dummy	0.37	-1.23 *	-0.76	-2.51 ***	-3.32 **
Terms of trade, percent change	-0.03	0.03	-0.07 *	-0.03	0.06
Gvt spending p.c., percent change	0.07 ***	0.13 **	-0.10 **	0.06	0.05
Gvt. balance, percent of revenue, change	0.09 ***	0.01	0.01	0.04 **	-0.09 ***
CPI, percent change	-0.02 ***	-0.01	0.13 **	0.05 **	0.01
Conflict contraction 2/					
Dummy	-5.19 ***	-5.28 ***	-6.32 ***	-6.53 ***	-2.44
Terms of trade, percent change	-0.01	0.01	-0.04	-0.05 *	0.03
Gvt spending p.c., percent change	0.06 **	0.05 ***	-0.12 **	-0.02	-0.01
Gvt. balance, percent of revenue, change	0.02	0.11 ***	-0.06	0.13 ***	0.09 ***
CPI, percent change	0.02	-0.04 ***	0.17 ***	0.01	-0.06 ***
In-conflict recovery					
Dummy	0.76	0.38	-0.37	0.62	1.95
Terms of trade, percent change	0.01	-0.08 ***	-0.02	-0.06 **	...
Gvt spending p.c., percent change	0.01	0.13 ***	-0.17 ***	0.17 ***	...
Gvt. balance, percent of revenue, change	0.05 ***	0.02	-0.03	0.00	...
CPI, percent change	-0.01	-0.01	0.15 **	0.01	...
1-2 years after conflict					
Dummy	0.08	0.65	-1.05	-1.05	0.72
Terms of trade, percent change	-0.05	-0.11 ***	-0.08	-0.17 ***	-0.03 **
Gvt spending p.c., percent change	0.06	0.10 ***	-0.12 *	0.02	0.03
Gvt. balance, percent of revenue, change	-0.03	0.07 ***	-0.10 ***	0.09 ***	0.09
CPI, percent change	-0.02 **	-0.06 ***	0.14 **	0.00	-0.06 ***
3-5 years after conflict					
Dummy	-0.54	1.45	-1.66 **	0.20	1.19 ***
Terms of trade, percent change	-0.01	-0.10 ***	-0.04	-0.14 ***	-0.07 **
Gvt spending p.c., percent change	0.07	0.11 **	-0.11	0.06	0.13 ***
Gvt. balance, percent of revenue, change	0.01	0.06	-0.07	0.06	0.00 ***
CPI, percent change	0.02	0.04	0.18 **	0.08	-0.06 ***
AR(1)					0.12 ***
F-stat	7 ***	16 ***	7 ***	15 ***	13.1 ***

Data source: *World Economic Outlook*.

Levels of significance at the 1 percent, 5 percent and 10 percent levels are indicated by \*\*\*, \*\*, and \*, respectively. All estimates done by GLS with cross section weights and adjustments for serial correlation and heteroskedasticity.

1/ These coefficients in equations (2) and (3) are tagged by  $d_c$  and  $d_p$  respectively.

2/ The contraction period is defined in terms of real GDP per capita.

## B. Impact of Conflict

The period dummy variables give an indication of the direct or underlying effect of the various episodes of the conflict cycle, abstracting from the impact of the policy and other variables. Table 9 extracts the regression results for the coefficients on these dummy variables and compares these against actual performance. For equations (2) and (3), the actual performance statistics correspond to the coefficients and therefore show the difference between growth during the conflict cycle and normal and the difference between the two sets of conflicts respectively.

Table 9. Impact of Conflict on Real GDP per capita Growth  
Actual growth and regression coefficients on period dummies only  
For equations (2) and (3), only the coefficients on the difference terms are shown

	Equation 1				Equation 2				Equation 3	
	Pre-1990		Post-1990		Pre-1990		Post-1990		All Conflicts	
	Act.	Coeff.	Act.	Coeff.	Act.	Coeff.	Act.	Coeff.	Act.	Coeff.
Variant (A)										
Outside Conflict Cycle	2.0	2.7 **	1.9	2.1 ***					-0.1	-1.7
Conflict Cycle										
1-5 yrs before conflict	0.1	1.7 **	-1.0	-0.6	-1.9	-1.1	-2.9 *	-2.6 ***	-1.1	-3.0 *
During conflict	-0.4	-1.1 *	-10.7	-3.9 ***	-2.4 ***	-3.9 ***	-12.6 ***	-5.5 ***	-10.3 ***	-5.3 ***
1-5 yrs after conflict	0.9	0.9	2.4	2.4 ***	-1.1	-1.7 *	0.5	0.4	1.5	1.2
Variant (B)										
Outside Conflict Cycle	2.0	1.1	1.9	1.5 ***					-0.1	-2.1
Conflict Cycle										
1-5 yrs before conflict	0.1	0.4	-1.0	-1.2 *	-1.9 *	-0.8	-2.9 **	-2.5 ***	-1.1	-3.3 ***
Contractionary	-4.0	-5.2 ***	-12.5	-5.3 ***	-6.0 ***	-6.3 ***	-14.4 ***	-6.5 ***	-8.5 ***	-2.4
In-conflict recovery	2.3	0.8	3.1	0.4	0.3	-0.4	1.2	0.6	0.8	2.0
1-2 yrs after conflict	0.4	0.1	1.6	0.7	-1.6	-1.1	-0.3	-1.1	1.2	0.7
3-5 yrs after conflict	1.3	-0.5	3.0	1.5	-0.7	-1.7 **	1.1	0.2	1.7	1.2 ***

Data source: *World Economic Outlook*.

Levels of significance at the 1 percent, 5 percent, and 10 percent levels are indicated by \*\*\*, \*\*, and \*, respectively.

The results support the conclusion that, compared to the earlier conflicts, countries passing through the later conflicts went through a deeper underlying deterioration before the conflict as well as a stronger underlying recovery 3-5 years after conflict. In addition, once allowance is made for other factors, the results for equation (2) point to a significant negative impact that persisted after the earlier, but not the later, conflicts.

The more interesting results relate to the impact of the start and end of conflict. Looking at the results for equations (1) and (2) using variant (A), the coefficients on the dummies for the conflict and for the 1-5 year post-conflict period as a whole suggest that the direct negative impact of conflict on growth as well as the direct positive impact of the end of conflict were more pronounced in the later conflicts. This conclusion, however, is modified by a closer

look at the subperiods of the conflict cycle using variant (B). The dummy coefficients for the contractionary period as well as for the first two years after conflict are close in magnitude for the two sets of conflicts (although, for the first two years after conflict, neither are statistically different from zero). Moreover, the results to equation (3) support the conclusion that these two coefficients are not statistically different between the two sets of conflicts.

These results using variant (B) are very much at odds with the very different actual growth rates experienced by these two sets of countries. This invites the important and perhaps surprising conclusion that, once ‘other factors’ are taken into account, the onset and ending of conflict had much the same impact on growth in both sets of conflicts. In other words, despite their very different economic profiles, much the same ‘conflict process’ was at work for both groups.

### C. Impact of Macroeconomic Policy

The conclusion that the direct impact of the onset and termination of conflict on growth was broadly similar in the two sets of conflicts leaves open the question why actual performance over the conflict cycle was so different. The results suggest that differences in macroeconomic policies may have been an important factor.

**The impact of policy.** Equation (1) shows how policy affected growth. The coefficients on government spending and inflation have the expected signs: higher government spending increases output growth and higher inflation reduces growth. Although at times negative, the effect of the fiscal balance was generally positive when also statistically significant. The results for equation (2) suggest that over the course of the earlier, but not the later, conflict cycles there was a decline in the magnitude and statistical significance of the impact of the policy variables.<sup>30</sup> The results for equation (3) suggest that once conflict started and into the post-conflict period, the impact of the three policy variables was significantly larger in the later than in the earlier conflicts.<sup>31</sup>

**Contribution to growth.** Table 10 shows the combined contribution made by the three policy variables to real GDP growth (a full decomposition of growth is shown in Appendix

---

<sup>30</sup> The shift in the earlier conflicts is difficult to explain but, for example, the reduced impact of government spending arguably reflects the shift in the composition of government spending towards unproductive and more import intensive military spending observed by Gupta and others (2002b). The only significant change in the later conflicts was for the impact of a change in the fiscal balance whose sign was reversed. This shift could also reflect the endogeneity of the policy variables. However, it is also consistent with the presence of non-linearities on the impact of the policy variables. Estimates including the square of both the change in the fiscal balance and inflation indicate that these non-linearities were significant, especially for inflation.

<sup>31</sup> The results provide no support for the presence of convergence effects. The effect of changes in the terms of trade was generally positive outside the conflict cycle, but negative during the conflict cycle. This result could reflect a shift in the structure of trade (especially imports) but is also consistent with the observation that, once conflict started, rents from natural resource exports tended to prolong and arguably accentuate the depth of conflict, Collier and others (2000b and 2001).

Table 3).<sup>32</sup> The policy stance was generally a detriment to growth under normal circumstances and remained a negative factor through the conflict and after conflict. However, there were important differences in the extent of the negative impact and the improvement after conflict.

Table 10. Policy Contribution to Per Capita Growth  
(Percentage points, average) 1/

	Pre-1990	Post-1990	
		All	Ex-DFE
Outside conflict cycle	-1.0	-0.5	-0.6
1-5 years before conflict	-0.8	-0.8	-0.8
Conflict contraction	0.3	-4.6	-2.7
In-conflict recovery	-0.1	1.5	1.5
1-2 years after conflict	-0.8	-2.3	0.5
3-5 years after conflict	0.6	0.9	0.3

1/ The sum of the contributions of the three policy variables is given by the GLS coefficients for equation 1 in Table 8 times the value of the variable.

In the pre-1990 conflict countries, the policy stance improved considerably with the onset of conflict—the impact turned mildly positive during the contractionary period—so that it helped moderate the reduction in growth. The policy stance deteriorated during the prolonged in-conflict recovery to become an important drag on growth in the initial two years after conflict. It was only 3-5 years after conflict that the policy stance was turned around to have a substantial positive impact on growth.

In the post-1990 conflicts countries, the policy stance deteriorated substantially once conflict started and its negative impact on growth was nearly as great as the direct impact of conflict. Although poor policy performance continued to diminish growth during the initial two years after conflict, its negative impact was considerably reduced from the level during conflict and this improvement was therefore supportive of the recovery. The pace of improvement was sustained so that by 3-5 years after conflict, the policy stance had a positive impact on growth that was also larger than in the earlier conflicts. However, policy performance in the post-1990 conflict countries was uneven and particularly poor in the idiosyncratic DFEs. Excluding the DFEs, the post-conflict improvement in the policy stance was much stronger and its contribution to growth turned positive in the first two years after conflict.<sup>33</sup>

<sup>32</sup> The contribution of a variable in any period is the actual value of the variable multiplied by the coefficient from the GLS regression for equation (1) in Table 8, taking serial correlation into account where relevant.

<sup>33</sup> This is done using the same coefficients from Table 8 as for the set of post-1990 conflicts as a whole.

#### D. Robustness

**Reverse causality.** As is often the case in regressions with output growth as the dependent variable, the estimates suffer from the endogeneity of the explanatory variables. This is particularly the case for inflation and government spending growth, but there is little evidence that output growth caused movements in either the growth in the terms of trade or in the change in the government balance as a percent of revenues. The seriousness of this problem depends on the dominant direction of causality between output growth and the explanatory variables.<sup>34</sup> To account for possible reverse causality, equations (1) and (2) are estimated by WTSLs using the lagged growth in government spending and the lagged inflation rate as instruments.<sup>35</sup> The results (Appendix Table 4) are broadly the same as before suggesting that reverse causality is not a significant concern. However, this conclusion needs to be taken with caution since it depends on the appropriateness of the instruments selected, which is notoriously difficult to determine, and may also reflect the influence of important excluded variables. To this extent, the possibility of reverse causality cannot be excluded.

**Fixed effects.** Another potential problem is the presence of unobserved country-specific effects. Depending on whether or not these effects are correlated with the explanatory variables, they can be estimated using a fixed effects or a random effects estimator. Only fixed effects can be addressed here since estimating random effects requires that the number of countries in the panel is larger than the number of coefficients, which is not the case. Since the fixed effects are not time specific and so replace the equation constant, they can only be estimated using equation (2). The results (Appendix Table 4) suggest little reason to conclude that the results are affected by significant unobserved country-specific effects.

#### IV. ROLE OF EXTERNAL ASSISTANCE

The lines of inquiry pursued by the conflict-related literature have been very useful in accounting for key features of specific groups of conflicts. For example, the focus on the role of natural resources provides valuable insights into the conflicts in countries such as Sierra Leone and the DRC where illicit diamonds have been an important factor. Similarly, the role of spillover effects is particularly pertinent to the set of regional conflicts in West Africa and the Great Lakes region. However, they do not adequately address the sort of systemic changes in the economic profile of conflicts observed in the 1990s as outlined above.

---

<sup>34</sup> With respect to inflation, Fischer (1993) has argued that causality is more likely to run from inflation to growth and studies of the impact of inflation on growth have tend to downplay the endogeneity of inflation: Catao and Terrones (2001), Fischer (2002), Ghosh and Phillips (1998), Khan and others (2000). However, in countries affected by conflict, the large swings in output could be expected to have a more discernible impact on inflation. The endogeneity of government expenditures is also difficult to ignore because of the impact of conflict on the tax revenue base. However, looking at fiscal adjustment and growth in a selection of low-income countries (not necessarily affected by conflict), Gupta and others (2002a) found little evidence of significant reverse causality between output and government expenditure growth.

<sup>35</sup> The set of  $i$  country equations are estimated as a set of system equations with the coefficients constrained to be the same across the country equations. No single equation statistics can therefore be calculated.

The timing of the developments described above obviously suggests a linkage to the end of the Cold War and to changes in the role played by the international community in low-income countries. However, establishing a statistical linkage is beyond the scope of this paper and the argument is therefore only suggestive.

From the early 1990s, external assistance flows to low-income countries as a whole, and to sub-Saharan African countries in particular, declined significantly.<sup>36</sup> This was accompanied by a significant change in the profile of assistance to conflict affected countries. On balance, the role played by the international community in the 1990s was less encumbered by geopolitical considerations and moved towards being less supportive of countries in conflict in favor of being more supportive of the post-conflict recovery effort (Table 11 and Appendix Table 5).

Table 11. Net Official Resource Inflows  
(Percent of GDP)

	1-5 Yrs. Before	Conflict During	1-2 Yrs. After	3-5 Yrs. After
Pre-1990	16	19	11	6
Post-1990	12	9	13	7

Source: *World Economic Outlook*.

Once conflict started there were important differences in the level and phasing of assistance, measured by net official resource inflows.<sup>37</sup> For the pre-1990 conflict countries, assistance increased in both real terms and relative to GDP (but not relative to population) and also tended to be front-loaded, frequently spiking upwards just before the conflict. The reverse occurred in the 1990s and once conflict started the level of assistance declined and also tended to be back-loaded, frequently spiking up towards the end of conflict.

This change in the profile of assistance arguably affected both the duration and economic impact of conflict either directly through the level of material assistance provided or indirectly through the impact on macroeconomic stability.<sup>38</sup> By this account, the higher level and front-loading of assistance during the earlier conflicts provided governments with material support to conduct hostilities, as well as support for economic activity, and helped support macroeconomic stability (including low inflation). This arguably also mitigated the

<sup>36</sup> O'Connell and Soludo (2001).

<sup>37</sup> Net official external resource inflows are equal to official transfers plus loans less debt service paid (after debt relief and the accumulation of arrears).

<sup>38</sup> The link between net resource inflows and inflation is not direct. Unless sterilized, external aid inflows can lead to higher monetary growth and consequently inflation. However, by providing a source of foreign currency, the provision of external assistance also makes it easier for the central bank to sterilize domestic credit to the central government, especially when the availability of other monetary instruments has been curtailed by conflict.

extent of the economic contraction—but at the expense of prolonging the conflict. Conversely, the reduced assistance during conflict in the 1990s may have accentuated the severity of the economic contraction and, together with the back-loading of assistance to the end of conflict, also helped bring about a quicker termination of conflict.<sup>39</sup>

Once conflict ended, the pattern of assistance again differed between the two sets of conflicts. In the earlier conflicts, resource flows declined compared to their conflict levels whether in real terms or adjusted for population and GDP. Countries emerging from conflict were therefore under pressure to restrain and reduce government spending and to resort to inflationary financing, with negative implications for the recovery. In more recent conflicts, resource flows have tended to increase substantially from conflict levels, again whether in real terms or adjusted for population and GDP. Moreover, at least once adjusted for population or GDP, aid levels to these countries surpassed those to countries coming out of earlier conflicts. The higher assistance to these countries in the 1990s provided support for their stabilization efforts and permitted them to increase government spending while reducing their reliance on inflationary financing with positive implications for growth.

## **V. PERFORMANCE IN THE EPCAS AND IN THE DRC**

### **A. Performance in the EPCAs<sup>40</sup>**

The arguments of the preceding sections are buttressed by the experience of six post-1990 conflict countries that received external financial assistance, including emergency post-conflict financial assistance (EPCA) from the IMF, soon after the end of their conflicts.<sup>41,42</sup>

The performance of these six EPCAs during the conflict period had many similarities to that of other post-1990 countries (Appendix Table 6). Like the other post-1990s conflicts, the EPCAs' conflicts were generally short and accompanied by sharp contractions so that they also emerged from conflict with severe economic imbalances and needing macroeconomic stabilization. In the initial two years after conflict, the overall performance of the EPCAs was generally stronger than in other countries though performance was varied and particularly

---

<sup>39</sup> It is difficult to distinguish whether assistance was increased at the end of the conflicts in the 1990s in anticipation of the end of conflict or whether this increased involvement itself helped bring about an earlier termination of conflict than might have otherwise occurred. However, the experience in some countries suggests that earlier and well-timed involvement of the international community can help provide the impetus for parties in conflict to reach a resolution.

<sup>40</sup> “Fallon, Staines and others (2004).

<sup>41</sup> These six countries are: Albania, Republic of Congo, Guinea-Bissau, Rwanda, Sierra Leone, and Tajikistan. Tajikistan is also a DFE. Three other countries have also received EPCA from the IMF and are not included here—Burundi, the Federal Republic of Yugoslavia and Bosnia-Herzegovina. Burundi emerged from conflict in 2000 and only received EPCA in late 2002; Bosnia-Herzegovina is a new country so that no data is available before and during conflict; and the FRY is not a low-income country.

<sup>42</sup> The IMF introduced a new policy to assist post-conflict countries in 1995 and one of the policy changes was to enable the IMF to provide financial assistance to post-conflict countries soon after the end of conflict and before they are ready to move to a comprehensive IMF program that could garner broader support from donors.

weak in the Republic of Congo. Overall, real GDP per capita growth averaged 4 percent and the inflation rate declined to single digits in all the EPCAs (except Tajikistan). Their recovery effort in this initial period was supported by large increases in net resource inflows that exceeded inflows to other countries.

The eight other conflict countries in the 1990s (non-EPCAs) also generally emerged from conflict with a more urgent need for macroeconomic stabilization, especially with respect to inflation. These countries also received external financial assistance after conflict, but total external assistance was generally less than to the EPCAs.<sup>43</sup> Despite substantial progress, stabilization was not reached in these countries within two years after conflict. For example, the median inflation remained high at about 50 percent while average per capita real GDP declined 1 percent.<sup>44</sup> It was not until 3-5 years after conflict that these countries were able to reduce inflation and increase output growth to a level comparable to the EPCAs.

Table 12 shows how the post-conflict stabilization efforts in these countries affected growth (a full decomposition of growth is provided in Appendix Table 3).<sup>45</sup> In both sets of countries, policy deteriorated during conflict accentuating the negative impact of conflict. However, after conflict, the EPCAs' policy performance improved sufficiently to make a *positive* 2.5 percentage point contribution to growth. In the non-EPCAs, policy performance *deteriorated further* and diminished growth by -5.6 in the first two years after conflict.

Table 12. Contribution of Policy to Per Capita Output Growth  
(Percentage points, average) 1/

	Post-1990			
	SSA	EPCA	Non-EPCA	DRC
Outside conflict cycle	-0.7	-0.6	-0.5	-1.6
1-5 years before conflict	-0.6	-0.9	-0.8	-6.2
Conflict contraction	-2.6	-6.0	-3.9	-6.8
In-conflict recovery	1.5	6.9	0.7	...
1-2 years after conflict	0.1	2.5	-5.6	-9.5
3-5 years after conflict	0.3	0.2	1.4	3.5

1/ The sum of the contributions of the three policy variables given by the GLS coefficient equation 1 in Table 8 times the value of the variable.

<sup>43</sup> Seven of these also received financial assistance from the IMF through vehicles other than EPCA, five of them soon after conflict.

<sup>44</sup> Average growth is skewed down by the particularly poor performance in Azerbaijan, Georgia and the DRC, where output continued to contract after conflict and where inflation remained in triple digits. The median real GDP per capita growth of about 2 percent is perhaps more indicative.

<sup>45</sup> The results in Table 12 and in Appendix Table 3 for these countries are derived using the same set of coefficients in Table 8 as for the set of post-1990 conflicts as a whole.

The relatively good performance in the EPCAs was likely the result a combination of factors. The circumstances of these six countries permitted the authorities to address their difficulties with greater commitment to sound macroeconomic policies. This in turn provided the basis for the international community to provide financial support to help these countries meet their policy objectives. In this respect, there was an important virtuous cycle in operation: sound policy attracted external assistance soon after conflict which made these policies easier to implement and more fruitful and therefore also more politically acceptable.<sup>46</sup>

## **B. Performance in the DRC**

The arguments of the preceding sections are also buttressed by the experience of the Democratic Republic of Congo (DRC) where stabilization and the start of economic recovery was made more difficult by delays in official external assistance. The DRC emerged from conflict in 1999, but the provision of external assistance to the government, including a comprehensive financial arrangement with the IMF, was delayed until mid-2002 following the conclusion of a peace agreement and until the DRC could clear external arrears.

The DRC emerged from conflict with real GDP per capita reduced to 80 percent of its pre-conflict level and hyperinflation that approached 500 percent. In 2000, inflation remained high and the economy continued to contract. In mid-2001, the new Kabila government introduced its Interim Program to stabilize the economy. Despite the lack of external financial support, end-year inflation was reduced to about 135 percent in 2001, but output continued to contract. It was only in 2002 that end-year inflation was reduced to the moderate level of 16 percent and that output growth resumed.

Estimates of policy's contribution to per capita growth over DRC's conflict cycle are provided in Table 12 while Table 13 provides greater detail for 1999-2002.<sup>47</sup> The policy stance (especially inflation) detracted significantly from growth until 2002, but the negative impact was significantly reduced by the adjustment efforts initiated under the Interim Program. The improvement in the policy stance added over 15 percentage points to growth from 2000 to 2002. However, the full impact of these efforts was not felt until 2002 when policy started to make a large positive contribution to growth.

The DRC's output performance in the first few post-conflict years was one of the weakest in the 1990s. Conversely, compared to the conflict period, the DRC government's commitment

---

<sup>46</sup> The IMF arguably helped play a role in this virtuous cycle. On the one hand, the main role of the IMF was to help formulate a macroeconomic strategy for recovery and rebuild administrative capacity for its implementation. On the other hand, the EPCA-supported programs played an important catalytic role in mobilizing this donor support at an early stage after conflict by signaling that the strategy was being implemented.

<sup>47</sup> The results in Table 13 are derived using the same set of coefficients in Table 8 as for the set of post-1990 conflicts as a whole.

to good policies after conflict was rewarded by an improvement in performance that was also one of the strongest and also significantly stronger than for the post-1990 conflict or sub-Saharan Africa (SSA) countries as a whole. Moreover, by the end of the post-conflict period, the contribution made by policy in the DRC was significantly larger than in these other groups of countries. The policy stance added 3.5 percentage points to growth in the DRC in its third year after conflict versus not more than 1 percentage point in the post-1990 conflict countries or the SSA conflict countries (see Tables 10 and 12).

Table 13. DRC: Decomposition of Output Growth  
(Percentage point contribution to per capita growth) 1/

	1999	2000	2001	2002
Actual	-4.5	-9.5	-7.5	0.0
Dummy	-5.3	0.6	0.6	1.4
Real GDP, p.c. in 1975, level	-0.2	-0.2	-0.2	-0.2
Terms of trade, percent change	0.0	-2.2	-1.3	0.0
Policy	-8.0	-11.9	-7.1	3.5
Gvt spending p.c., percent change	-1.7	0.6	-4.0	2.0
Gvt. balance, percent of revenue, change	-0.3	-0.5	6.6	0.6
CPI, percent change	-5.9	-12.0	-9.7	0.9
Residual	9.0	4.1	0.4	-4.8

Data source: *World Economic Outlook*.

1/ The contribution of each variable given by the GLS coefficients for equation 1 in Table 8 times the value of the variable.

## VI. CONCLUSIONS

This paper argues that there has been a shift in the key economic characteristics of conflict during the 1990s. The underlying conflict process at work has remained much the same, and this shift has probably been reflective of differences in the stance of macroeconomic policy over the conflict cycle that appear to be related to changes in donor practices towards countries affected by conflict since the end of the Cold War. These findings would seem to have important implications for policy and aid priorities during and after conflict.

This paper leaves a number of important questions unanswered. The argument linking aid patterns to these shifts is suggestive only and needs to be explored more thoroughly. The paper also suggests an important role for direct budgetary support in the post-conflict recovery period, and further work needs to explore the effectiveness of such aid.

## References

- Arunatilake, Nisha, Sisura Jayasuriya and Saman Kelegama, 2001, "The Economic Cost of the War in Sri Lanka," *World Development*, Vol. 29, No. 9, pp. 1483.
- Brauman, Benedikt, 2000, "Real Effects of High Inflation," IMF Working Paper, 00/85 (Washington: International Monetary Fund).
- Blomberg, Brock and Gregory Hess, 2002, "The Temporal Links Between Conflict and Economic Activity" (Washington: World Bank).
- Caplan, B, 2001, "How Does War Shock the Economy?" *Journal of International Money and Finance*, Vol. 21, pp 145-162.
- Catao, Luis, and Marco Terrones, 2001, "Fiscal Deficits and Inflation: A new Look at Emerging Markets," IMF Working Paper 01/174 (Washington: International Monetary Fund).
- Collier, Paul, 1999, "On the Economic Consequences of Civil War," *Oxford Economic Papers*. Vol. 51, No.1, pp. 161-183.
- \_\_\_\_\_, 2000, "Economic Causes of Civil Conflict and Their Implications For Policy," (Washington: World Bank).
- Collier, Paul and Anke Hoeffler, 1998, "On Economic Causes of Civil War," *Oxford Economic Papers* No. 50.
- \_\_\_\_\_, 2000, "Greed and Grievance in Civil Wars," (Washington, World Bank)
- \_\_\_\_\_, 2002a, "On the Incidence of Civil War in Africa," *Journal of Conflict Resolution*, Vol. 46, No. 1.
- \_\_\_\_\_, 2002b, "Aid, Policy and Growth in Post-Conflict Countries," (Washington: World Bank).
- \_\_\_\_\_, 2002c, "Military Expenditure: Threats, Aid and Arms Races," (Washington: World Bank).
- Collier, Paul, Anke Hoeffler and Måns Söderbom, 2001, "On the Duration of Civil War," (Washington: World Bank).
- Collier, Paul, V.L. Elliot, Håvard Hegre, Anke Hoeffler, Marta Reynal-Querol, Nicholas Sambanis, May 2003, "Breaking the Conflict Trap: Civil War and Development Policy," (Washington: World Bank).

- Davoodi, Hamid, Benedict Clemens, Jerald Schiff and Peter Debaere, 1999, "Military Spending, the Peace Dividend, and Fiscal Adjustment," IMF Working Paper 99/87 (Washington: International Monetary Fund).
- de Melo M., C. Denizer and A. Gelb: "From Plan to Market," 1996, World Bank Policy Research Working Paper 1564 (Washington: World Bank).
- Demekas, Dimitri, James McHugh and Theodora Kosmax, 2002 "The Economics of Post-Conflict Aid," IMF Working Paper 02/198 (Washington: International Monetary Fund).
- Elbadawi, Ibrahim, March 2000, "External Interventions and the Duration of Civil Wars," (Washington: World Bank)
- Elbadawi, Ibrahim, and Nicholas Sambanis, December 2000, "Why Are There So Many Civil Wars in Africa? Understanding and Preventing Violent Conflict," *Journal of African Economies*, Vol. 9, No. 3 pp. 244-269.
- \_\_\_\_\_, January 2002, "How Much War Will We See? Explaining the Prevalence of Civil War," (Washington: World Bank).
- Fallon, Peter, Nicholas Staines and others, 2004, "*Review of Recent IMF Experience in Post-Conflict Countries*," IMF Occasional Paper No. \_\_, forthcoming (Washington: International Monetary Fund).
- Fearon, James, September 2002, "Why do Some Civil Wars Last so Much Longer Than Others?," (Washington: World Bank).
- Fearon, James and David Laitin, 2003, "Ethnicity, Insurgency and Civil Wars," *American Political Science Review*; Vol.97, No 1, pp.75-90.
- Fischer, Stanley, 1993, "The Role of Macroeconomic Factors in Growth," *Journal of Monetary Economics*, Vol. 32, pp. 485-512.
- Fischer, Stanley; Ratna Sahay, Carlos Vegh, 2002, "Modern Hyper and High Inflation," IMF Working Paper 02/197 (Washington: International Monetary Fund).
- Gerson, Philip, 1998, "The Impact of Fiscal Policy Variables on Output Growth," IMF Working Paper 98/1 (Washington: International Monetary Fund).
- Ghosh, Atish and Steven Philips, 1998, "Inflation, Disinflation and Growth," IMF Working Paper 98/68 (Washington: International Monetary Fund).
- Gupta, Sanjeev, Benedict Clemens, Emanuele Baldacci, and Carlos Mulas-Granados, 2002a, "Expenditure Composition, Fiscal Adjustment and Growth in Low-Income Countries," IMF Working Paper 02/77 (Washington: International Monetary Fund).

- Gupta, Sanjeev; Benedict Clemens, Rina Bhattacharya, and Shamit Chakravarti, 2002b, "Fiscal Consequences of Armed Conflict and Terrorism in Low- and Middle-Income Countries," IMF Working Paper 02/142, (Washington: International Monetary Fund).
- Hemming, Richard, Michael Kell and Selma Mahfouz, 2002, "The Effectiveness of Fiscal Policy in Stimulating Economic Activity—A Review of the Literature," IMF Working Paper 02/208 (Washington: International Monetary Fund).
- Humphreys, Macartan, August 2002, "*Economics and Violent Conflict*," Harvard University, Internet Essay for the Program on Humanitarian Policy and Conflict Research, Conflict Prevention Initiative (HPCR-CPI), [www.hsph.harvard.edu/hpcr/index.htm](http://www.hsph.harvard.edu/hpcr/index.htm).
- Imai, Kosuke and J.M. Weinstein, June 2000, "Measuring the Economic Impact of Civil War," Working Paper No 51, Centre for International Development, Harvard University.
- Khan, Mohsin, and Abdelhak Senhadji, 2000, "Threshold Effects in the Relationship Between Inflation and Growth," IMF Working Paper 00/110 (Washington: International Monetary Fund).
- Knight M., N. Loayza, and D. Villanueva, 1996, "The Peace Dividend: Military Spending Cuts and Economic Growth," *Staff Papers*, International Monetary Fund, Vol. 43, pp.1-37.
- Le Billon, Philippe, 2001, "The Political Ecology of War: Natural Resources and Armed Conflicts," *Political Geography* 20.
- Michailof, Serge, Markus Kostner and Xavier Devictor, April 2002, "Post-Conflict Recovery in Africa: An Agenda for the Africa Region," World Bank Africa Region Working Paper Series, No. 30 (Washington: World Bank).
- Murdoch, James C, and Todd Sandler, 2001a, "Civil Wars and Economic Growth: A Regional Comparison," (Washington: World Bank).
- Murdoch, James C., and Todd Sandler, 2001b, "Economic Growth, Civil Wars, and Spatial Spillovers," (Washington: World Bank).
- Nafziger, E. Wayne, and Juha Auvinen, 2002, "Economic Development, Inequality, War, and State Violence," *World Development* Vol. 30, No. 2, pp. 153–163.
- O'Connell, Stephen, and Charles Soludo, 2001, "Aid Intensity in Africa," *World Development*, Vol. 29, No. 9, pp 1527-1552.
- Ranveig, Gissinger, Petter Gleditsch Nils, and Håvard Hegre, 2002, "Globalization and Internal Conflict" in *Globalization and Conflict*, Boulder, Gerald Schneider, Katherine Barbieri and Nils Petter Gleditsch, eds, Rowman and Littlefield.

Ross, Michael L, June 2002, "Oil, Drugs, and Diamonds: How Do Natural Resources Vary in their Impact on Civil War?" International Peace Academy.

Sambanis, Nicholas, November 2001, "A Review of Recent Advances and Future Directions in the Quantitative Literature on Civil War," Yale University.

Smaldone, Joe, 2003, "War and Peace in Sub-Saharan Africa, 1989-1999: Does Military Spending Matter?," paper presented to 46th Annual Meeting of the African Studies Association.

Appendix Table 1. Conflict Dates and Length

	Start	End	Length Years
<b>Pre-1990 (average)</b>	1981	1991	12
Uganda	1971	1985	15
Cambodia	1975	1992	18
Ethiopia I	1975	1990	16
Mozambique	1976	1992	17
El Salvador	1979	1992	14
Zimbabwe	1980	1987	8
Guatemala	1982	1996	15
Chad	1989	1992	4
Liberia	1989	1997	9
Nicaragua	1989	1990	2
<b>Post-1990 (average)</b>	1994	1997	4
<b>Non-DFEs (average)</b>	1996	1998	3
Rwanda *	1990	1994	5
Burundi	1993	2000	8
Yemen, Rep. of	1994	1994	1
Congo, Dem. Rep. of	1996	1999	4
Albania *	1997	1997	1
Congo, Rep. of *	1997	1999	3
Sierra Leone *	1997	1999	3
Guinea-Bissau *	1998	1999	2
Eritrea	1998	2000	3
Ethiopia II	1998	2000	3
<b>DFEs (average) 1/</b>	1991	1994	4
Azerbaijan	1990	1993	4
Croatia	1990	1993	4
Georgia	1992	1993	2
Tajikistan *	1992	1997	6

Sources: SIPPRI; and IMF staff reports.

1/ DFE: Dissolution of federal entities.

\* Recipients of EPCA from the IMF before end-2002.

Appendix Table 2. Macroeconomic Policy Indicators  
(Period average, unless otherwise indicated)

	1-5 Years Before	1 Year Before	During Conflict	End Year	1 Year After	2 Years After	1-2 Years After	3-5 Years After 1/	1-5 Years After 1/
<b>Fiscal balances (including grants)</b>									
Percent of GDP									
Pre-1990	-5	-7	-6	-6	-6	-5	-6	-4	-5
Post-1990s	-7	-7	-14	-12	-9	-7	-8	-5	-7
Percent of revenues									
Pre-1990	-25	-40	-50	-56	-46	-38	-42	-30	-35
Post-1990s	-53	-37	-84	-83	-50	-33	-41	-27	-34
<b>Fiscal revenues (including grants)</b>									
Real, index									
Pre-1990	97	100	120	139	142	143	142	164	155
Post-1990s	106	100	83	76	100	118	109	129	118
Real, per capita, index									
Pre-1990	102	100	101	102	104	102	103	110	107
Post-1990s	111	100	75	72	93	109	101	116	107
Percent of GDP									
Pre-1990	16	16	15	15	16	16	16	17	17
Post-1990s	32	33	29	21	23	24	24	21	24
<b>Fiscal expenditures</b>									
Real, index									
Pre-1990	86	100	130	147	141	138	140	152	147
Post-1990s	109	100	96	89	99	113	106	116	113
Real, per capita, index									
Pre-1990	91	100	108	107	102	97	100	101	100
Post-1990s	114	100	92	86	93	105	99	107	104
Percent of GDP									
Pre-1990	21	23	21	21	22	22	22	22	22
Post-1990s	39	40	43	34	33	31	32	26	31
<b>Domestic financing, percent of GDP</b>									
Pre-1990	6	0	-1	-2	0	-1	-1	-2	-2
Post-1990s	5	6	8	6	4	3	4	-2	3
<b>Broad money, percent change, median</b>									
Pre-1990	14	14	17	31	26	24	24	17	18
Post-1990s	23	35	31	32	44	23	26	26	27
<b>CPI inflation, percent change, median</b>									
Pre-1990	8	12	16	12	20	17	18	9	17
Post-1990s	21	18	30	41	32	8	24	5	16
<b>Current account balance, percent of GDP</b>									
Pre-1990	-6	-8	-7	-6	-7	-8	-8	-8	-8
Post-1990s	-6	-5	-9	-9	-7	-8	-7	-8	-8
<b>Trade balance on goods and services, percent of GDP</b>									
Pre-1990	-12	-21	-18	-9	-11	-12	-11	-11	-11
Post-1990s	-12	-11	-15	-20	-15	-15	-15	-13	-16
<b>Terms of trade, goods, Index</b>									
Pre-1990	101	100	111	109	114	114	114	117	116
Post-1990s	120	100	79	89	88	84	86	89	88
<b>Gross reserve, months of imports of goods and services</b>									
Pre-1990	3.7	3.9	2.3	1.9	1.7	2.2	2.0	2.8	2.5
Post-1990s	2.2	2.1	2.4	2.0	2.5	2.9	2.7	3.1	2.9
<b>External debt, percent of current exports</b>									
Pre-1990	353	523	720	716	828	974	901	744	807
Post-1990s	613	465	669	769	713	799	756	489	711

Source: *World Economic Outlook*.

1/ Data for 3, 4, and 5 years after conflict, are available for 11, 7, and 7 out of 14 post-1990 conflicts, respectively.

Appendix Table 3. Decomposition of Real GDP per Capita Growth  
(Contribution to real GDP per capita growth, percentage points, average) 1/

	Pre-1990	Post-1990 2/					
		All	Ex-DFE	SSA	EPCA	Non-EPCA	DRC
<b>Outside Conflict Cycle</b>							
Actual	0.9	1.9	0.9	0.6	1.4	2.3	-1.9
Dummy	1.1	1.5	1.5	1.5	1.5	1.5	1.5
Real GDP p.c. in 1975, level	1.1	0.8	0.7	0.7	0.9	0.7	-0.2
Terms of trade, percent change	-0.1	0.0	-0.1	-0.1	0.0	0.0	0.0
Policy	-1.0	-0.5	-0.6	-0.7	-0.6	-0.5	-1.6
Residual	-0.2	0.2	-0.6	-0.8	-0.4	0.6	-1.5
<b>Conflict Cycle</b>							
<b>1-5 years Before Conflict</b>							
Actual	0.0	-1.3	-0.5	-1.2	-3.0	-0.1	-10.8
Dummy	0.4	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2
Real GDP p.c. in 1975, level	1.1	0.8	0.7	0.7	0.9	0.7	-0.2
Terms of trade, percent change	0.0	-0.1	-0.1	-0.1	-0.1	0.0	0.2
Policy	-0.8	-0.8	-0.8	-0.6	-0.9	-0.8	-6.2
Residual	-0.7	0.1	0.9	0.1	-1.7	1.3	-3.4
<b>Conflict Contraction 3/</b>							
Actual	-3.7	-9.8	-6.2	-5.9	-12.1	-8.6	-5.6
Dummy	-5.2	-5.3	-5.3	-5.3	-5.3	-5.3	-5.3
Real GDP p.c. in 1975, level	1.1	0.8	0.7	0.7	0.9	0.7	-0.2
Terms of trade, percent change	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
Policy	0.3	-4.6	-2.7	-2.6	-6.0	-3.9	-6.8
Residual	0.1	-0.7	1.0	1.3	-1.7	-0.2	6.8
<b>In-Conflict Recovery</b>							
Actual	2.3	3.4	3.4	3.4	5.7	3.0	...
Dummy	0.8	0.4	0.4	0.4	0.4	0.4	...
Real GDP p.c. in 1975, level	1.1	0.8	0.7	0.7	0.9	0.7	...
Terms of trade, percent change	0.0	1.2	1.2	1.2	-0.9	1.5	...
Policy	-0.1	1.5	1.5	1.5	6.9	0.7	...
Residual	0.6	-0.5	-0.4	-0.4	-1.6	-0.2	...
<b>1-2 Years After Conflict</b>							
Actual	0.2	1.2	3.0	2.3	4.8	-1.4	-8.5
Dummy	0.1	0.6	0.6	0.6	0.6	0.6	0.6
Real GDP p.c. in 1975, level	1.1	0.8	0.7	0.7	0.9	0.7	-0.2
Terms of trade, percent change	-0.1	-0.1	-0.4	-0.5	0.2	-0.3	-1.7
Policy	-0.8	-2.3	0.5	0.1	2.5	-5.6	-9.5
Residual	-0.1	2.3	1.5	1.4	0.5	3.1	2.3
<b>3-5 Years After Conflict</b>							
Actual	1.2	3.8	1.8	0.0	3.1	4.5	0.0
Dummy	-0.5	1.4	1.4	1.4	1.4	1.4	1.4
Real GDP p.c. in 1975, level	1.1	0.8	0.7	0.7	0.9	0.7	-0.2
Terms of trade, percent change	0.0	0.2	-0.1	0.3	-0.7	0.9	0.0
Policy	0.6	0.9	0.3	0.3	0.2	1.4	3.5
Residual	0.0	0.5	-0.6	-2.6	1.2	0.1	-4.8

Data source: *World Economic Outlook*.

1/ For each variable, the contribution in each period is equal to the average of the WGLS regression coefficients for equation 1 (from Table 8) times the value of the policy variable.

2/ The results for all the post-1990 subgroups make use of the same common sample coefficient estimates for the full set of post-1990 conflicts.

3/ The contraction period is defined in terms of real GDP per capita.

Appendix Table 4. Real GDP per Capita Growth During the Conflict Cycle

(Equations 1 and 2, adjusting for reverse causality and fixed effects;

For equation (2), only the coefficients on the difference terms are shown) 1/

Sample Period: 1967-2002	Adjusting for Reverse Causality 2/				Adjusting for Fixed Effects 3/	
	Equation 1		Equation 2		Equation 2	
	Pre-1990	Post-1990	Pre-1990	Post-1990	Pre-1990	Post-1990
Real GDP p.c. in 1975 (US\$) 4/	0.00	0.00				
Outside the Conflict Cycle						
Dummy	1.72	2.58 ***				
Terms of trade, percent change	0.04	0.06 ***				
Gvt spending p.c., percent change	0.18 ***	0.03				
Gvt. balance, percent of revenue, change	0.07 ***	-0.01				
CPI, percent change	-0.17 ***	-0.10 ***				
Conflict Cycle						
1-5 years before conflict						
Dummy	0.75	-1.02	-0.97	-3.55 ***	-0.92	-2.34 ***
Terms of trade, percent change	-0.04	0.03	-0.08	-0.02	-0.04 *	0.02
Gvt spending p.c., percent change	0.06	0.12 ***	-0.12	0.13 **	0.08 ***	0.12 **
Gvt. balance, percent of revenue, change	0.08 *	0.01	0.01	0.02 *	0.10 ***	0.01
CPI, percent change	-0.02 *	-0.01 *	0.15 ***	0.09 ***	-0.02 **	-0.01
Conflict Contraction 3/						
Dummy	-4.72 ***	-4.72 ***	-6.43 ***	-7.89 ***	-7.13 ***	-6.17 ***
Terms of trade, percent change	-0.02	0.01	-0.05 *	-0.05 *	-0.01	0.01
Gvt spending p.c., percent change	0.05 *	0.05 ***	-0.13 ***	0.05	0.06 **	0.04 ***
Gvt. balance, percent of revenue, change	0.01	0.11 ***	-0.06 *	0.12 ***	0.02	0.11 ***
CPI, percent change	0.01	-0.04 ***	0.18 ***	0.06 **	0.02	-0.05 ***
In-conflict recovery						
Dummy	0.74	0.36	-0.97	-1.61	-0.74	-0.06
Terms of trade, percent change	0.00	-0.09 *	-0.04	-0.06	0.00	-0.07 **
Gvt spending p.c., percent change	0.00	0.21 ***	-0.18 ***	0.24 ***	0.02	0.13 **
Gvt. balance, percent of revenue, change	0.05 **	0.01	-0.02	0.01	0.05 ***	0.02
CPI, percent change	0.00	-0.15	0.17 ***	0.23	-0.01	0.02
1-2 years after conflict						
Dummy	0.48	0.72	-1.23	-1.97	-1.09	-0.62
Terms of trade, percent change	-0.04	-0.12 **	-0.07	-0.17 ***	-0.08	-0.11 ***
Gvt spending p.c., percent change	0.05	0.10 ***	-0.13 **	0.10 **	0.06	0.11 ***
Gvt. balance, percent of revenue, change	-0.02	0.07 ***	-0.09 ***	0.08 ***	-0.03	0.07 ***
CPI, percent change	-0.02	-0.06 ***	0.15 ***	0.04	-0.02 **	-0.06 ***
3-5 years after conflict						
Dummy	0.10	1.93	-1.62	-0.66	-1.59 **	-0.15
Terms of trade, percent change	-0.02	-0.10 **	-0.06	-0.15 ***	0.00	-0.08 ***
Gvt spending p.c., percent change	0.05	0.11	-0.13 *	0.12	0.05	0.09 *
Gvt. balance, percent of revenue, change	0.01	0.05	-0.06	0.06	0.01	0.01
CPI, percent change	0.02	0.03	0.18 ***	0.12	0.01	0.07
AR(1)	0.18 ***		0.18 ***			

Data source: *World Economic Outlook*.

Levels of significance at the 1 percent, 5 percent, and 10 percent levels are indicated by \*\*\*, \*\*, and \*, respectively.

1/ These coefficients in equations (2) and (3) are tagged by  $d_c$  and  $d_p$ , respectively.

2/ Estimates done by WTSLs using the lagged growth in government spending and lagged inflation as instruments.

3/ Estimates done by GLS with cross section weights and adjustments for serial correlation and heteroskedasticity.

4/ The contraction period is defined in terms of real GDP per capita.

Appendix Table 5. Net Official Resource Inflows  
(Period average)

	1-5 Yrs. Before	1 Year Before	During Conflict	End Year	1 Year After	2 Years After	1-2 Yrs. After	3-5 Yrs. After 1/ After	1-5 Yrs. After
<b>World Economic Outlook</b>									
<b>Constant USD (US\$mnn.)</b>									
Pre-1990	357	602	368	290	326	340	333	324	328
Post-1990s	334	35	142	148	121	229	175	62	92
<b>Constant USD, per capita</b>									
Pre-1990	74	123	46	33	34	37	35	22	27
Post-1990s	65	17	36	34	28	51	40	30	32
<b>Percent of GDP</b>									
Pre-1990	16	36	19	10	10	12	11	6	8
Post-1990s	12	7	9	13	12	13	13	7	9
<b>Global Development Finance</b>									
<b>Constant USD (US\$mnn.)</b>									
Pre-1990	272	312	430	420	496	482	489	...	...
Post-1990s	276	215	141	160	210	311	293	...	...
<b>Constant USD, per capita</b>									
Pre-1990	60	57	58	53	58	47	53	...	...
Post-1990s	44	36	22	25	40	55	52	...	...
<b>Percent of GDP</b>									
Pre-1990	8	11	16	16	14	14	14	...	...
Post-1990s	16	14	12	16	18	13	16	...	...

Sources: *World Economic Outlook*, Winter 2003; and *Global Development Finance* 2002.

1/ Data for 3, 4 and 5 years after conflict are available for 11, 7, and 7 out of 14 post-1990 conflicts, respectively.

Appendix Table 6. Selected Economic Indicators in EPCA and Other Post-1990 Conflict Countries  
(Period averages)

	1-5 Years Before	1 Year Before	During Conflict	End Conflict	1 Year After	2 Years After	1-2 Years After	3-5 Years After 1/	1-5 Years After 1/
<b>Real GDP, index</b>									
EPCA	107	100	81	72	80	84	82	91	87
Non-EPCA	101	100	84	78	79	81	80	76	83
<b>Real GDP, percent change</b>									
EPCA	-0.3	-1.3	-8.3	-9.8	11.7	5.4	8.5	5.2	6.9
Non-EPCA	2.2	-0.8	-8.4	-8.9	0.0	1.5	0.8	5.6	3.3
<b>Real GDP, per capita, index</b>									
EPCA	112	100	79	72	77	79	78	81	80
Non-EPCA	105	100	79	71	71	71	71	66	73
<b>Real GDP, per capita, percent change</b>									
EPCA	-2.4	-2.9	-9.4	-7.7	7.6	2.6	5.1	2.3	3.7
Non-EPCA	0.1	-2.8	-11.7	-12.1	-2.1	0.0	-1.1	4.0	1.4
<b>Net resource inflows, percent GDP</b>									
EPCA	17.1	9.3	10.6	16.8	10.8	19.5	15.1	13.4	14.4
Non-EPCA	7.0	5.3	7.9	10.6	13.7	8.0	10.8	0.2	5.8
<b>Fiscal balance (incl. grants), percent GDP</b>									
EPCA	-8.1	-10.1	-11.4	-8.8	-5.9	-6.8	-6.4	-6.9	-6.3
Non-EPCA	-6.6	-3.8	-15.2	-15.3	-11.7	-7.5	-9.6	-3.2	-8.3
<b>Domestic financing, percent GDP</b>									
EPCA	2.2	6.7	5.0	1.6	1.7	-1.2	0.3	-2.2	-0.9
Non-EPCA	6.9	4.4	11.2	9.5	6.1	6.3	6.2	-2.2	5.8
<b>CPI, percent change, median</b>									
EPCA	28	18	24	33	15	3	8	3	6
Non-EPCA	13	33	177	178	80	29	51	8	24
<b>Current account (incl. grants), percent GDP</b>									
EPCA	-12.4	-10.9	-11.7	-9.5	-5.4	-7.9	-6.7	-7.6	-7.2
Non-EPCA	-1.0	-1.9	-7.8	-9.9	-8.9	-8.6	-8.8	-9.6	-9.4
<b>Gross reserves, months of imports</b>									
EPCA	2.2	2.1	2.6	2.4	3.2	3.0	3.1	3.3	3.2
Non-EPCA	2.2	2.0	2.2	1.7	1.9	2.8	2.4	2.8	2.6

Source: *World Economic Outlook*.

1/ Data for 3, 4 and 5 years after conflict are only available for 11, 7, and 7 out of the 14 post-1990 conflicts, respectively.