

MICRO  
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## POLICY BRIEFING

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A rural dwelling in Burundi

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## The Impact of Violent Conflict on Child Health: What Are the Channels?

•What are the main channels through which violent conflict impacts on child health?

•What is the gender bias in these impacts?

•What areas should policymakers prioritise to reduce this impact?

**Summary:** Child health during and after violent conflicts has been a priority for both policymakers and academics, as ill-health in early life can be impossible to make up for in later life, and has important effects on education and adult wages. In order for policy interventions to mitigate health impacts, it is essential to understand the channels through which conflict impacts on child health. This briefing uses empirical results of research in Burundi and Rwanda to identify these channels. It outlines the policy implications of these findings, arguing that policymakers should prioritise interventions to rebuild agricultural capacity and improve sanitation conditions and nutrition in displacement camps.

### 1. Introduction

In the past 30 years, civil conflict has affected almost three-quarters of all countries in sub-Saharan Africa. Recently, academics and policymakers have been focusing on this topic, trying to understand its role in reducing development and economic growth. However, there is a limited amount of work that systematically assesses the impact of civil wars on non-combatants, and the channels through which this impact operates. This is a serious problem for policy formulation, since without understanding these channels it is difficult to target policy interventions.

This briefing looks at the impact of violent conflicts on the health of a particularly vulnerable population group: young children. It discusses the results of MICROCON research in Burundi and Rwanda and sheds light on some of the mechanisms impacting on child health. It concludes with some reflections on the policy implications of these findings.

Childhood health status has multiple dimensions, making it difficult to capture with a single indicator. The relevant literature suggests that child height conditional on age and gender can be objectively measured

and is a good indicator of long-run nutritional status as height reflects the accumulation of past outcomes. Part of MICROCON's work in Burundi and Rwanda has aimed to estimate the impact of the civil war on children's health, and it uses the indicator of height-for-age to do this.

### 2. Civil war, child health and stunting

Civil wars often have immediate economic impacts through the destruction of productive capacity and the disruption of normal activity. There is growing concern among economists and practitioners that economic conditions prevailing in

early childhood may have a persistent effect on child health and socioeconomic outcomes later in life. The shock's effect may be such that children cannot catch up even if they experience subsequent good years at later ages. Policymakers are aware of the distressing link between early childhood and adult well-being, making it one reason why the World Bank and non-governmental organizations view improvements in child health as a top priority.

This concern and awareness from the side of policymakers is mirrored in the scientific literature. For example, a study on Zimbabwe has shown that preschool malnutrition has a negative impact on subsequent human capital formation, measured by the number of grades completed (Alderman, Hodinott, and Kinsey 2006). A study from South Africa shows that healthier children start school earlier, attain more grades, and repeat fewer classes (Yamauchi 2006). Similarly, a study from Indonesia finds that higher early-life rainfall leads to improved health, schooling, spousal quality, and socioeconomic status, but the impacts

1999).

Recent work questions the perceived view that gender bias is more of a problem in Asia than Africa. Verwimp and Van Bavel (2005) find evidence that the usual sex differential in child survival (more girls than boys survive infancy) observed in Africa as well as elsewhere changes under severe living conditions. They did not find the usual differential in child survival with children from mothers who lived in refugee camps after the Rwandan genocide. Dercon and Krishnan (2000) find that adults in poor Ethiopian households are unable to smooth their consumption and women bear the brunt of adverse shocks.

### **3. Civil conflict and child health in Burundi**

There have been several episodes of violent conflict in Burundi since 1965, which have all had an ethnic character, opposing Hutus and Tutsis. MICROCON's research in Burundi has focussed on the conflict which broke out following the assassination of Burundi's first democratically elected president, Melchior Ndaye, a Hutu, by Tutsi army

civilian property, particularly livestock; crops were stolen from fields and granaries; and coffee trees were targeted for burning. Moreover, international development assistance dropped sharply during the crisis, from almost \$320 million in 1993 to below \$100 million in 1999 (IMF 2007).

MICROCON's study combines analysis of two sets of data. The first is the 1998 Priority Survey carried out by the World Bank and Burundi Statistics Institute, which was nationally representative, covering the socioeconomic situation of 3,908 rural households, including anthropometric data on 1,442 children. This was combined with data on the timing and evolution of violence across the country in the 1994-1998 period to identify which cohorts of children were living in areas where violence occurred and for how long.

The study found that children living in areas of violence had a significantly lower height-for-age score than those who did not, and that the longer the 'exposure' to violence continued, the more severe the effect was. Importantly the study, combined with local studies conducted by NGOs during and immediately after the war, allows us to speculate on which mechanisms were more important in this context.

There has often been an assumption that rural households have been able to use livestock as a "buffer" to maintain consumption during times of crisis. However, recent research raises doubt about this, and it does not appear that theft of livestock was an important mechanism in the case of Burundi. Such a theft would affect the health status of all children in the household, not just those born before and during the conflict, because it takes time and money to rebuild herds. However, the study's

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## **Shocks to health in childhood can be such that children cannot catch up, even if they experience subsequent good years**

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are only for women (Maccini and Yang 2006).

In fact much of the literature on child health finds a gender bias in the impacts of positive and negative changes in conditions for poor households. Research in India has found that in the lean season there is bias towards boys in the intra-household allocation of nutrition (Berman 1988). Conversely, other studies in South Asia show that gender bias towards boys narrows significantly in times of relative plenty – for example when there is higher rainfall gender bias in infant mortality has been found to fall (Rose

elements (see Bundervoet, Verwimp and Akresh 2008). Within days approximately 100,000 Burundians died as Hutu peasants committed large-scale massacres of Tutsis and 'Uprona Hutus', and the Tutsi army retaliated against the Hutu.

The war lasted until 2005, and violence was predominantly conducted against civilians. Between 1994 and 2001 around 200,000 people lost their lives and 50 per cent of the population had been displaced (UNFPA 2002). Both rebel and government armies engaged in looting of

results suggest that children born after the conflict were not affected.

Rather, it seems that in Burundi two other channels were important: forced displacement and theft and burning of crops. Both of these events affect children's nutrition, and displacement also makes children more vulnerable to water and vector-borne diseases. A child experiencing these shocks would be worse off compared to those who did not experience them, and the effect would be worse the longer the experience. Further, these mechanisms are consistent with the observations of human rights organizations that found that malnutrition was most prevalent among people who had been displaced and were therefore unable to farm (HRW 1998).

#### 4. Crop failure, civil war and child health in Rwanda

The authors' research in Rwanda focussed on two specific events to analyse the impact of different shocks on child health – local crop failure in southern Rwanda in

migrating in search of food, residents deconstructing their houses to sell the parts for food, and several suicides. There were large numbers of deaths due to starvation.

The civil war began in October 1990, when a group of rebels consisting of Tutsi refugees who left Rwanda during the 1959 to 1962 revolution and their offspring attacked Rwanda from Uganda. What followed was a civil war between the Rwandan armed forces (FAR) and the rebel army (Rwandan Patriotic Front or RPF) in which civilians in the northern provinces of Byumba and Ruhengeri were the main victims. Considerable disruption of agricultural production was a further consequence of the conflict.

The study used data from a nationally representative UNICEF survey carried out in 1992, which collected detailed information on the date of birth and height of every child under five in 1,248 rural households. This was linked to a prior national agricultural survey organised by

in rich households. This suggests that households were able to protect some of their children, and prioritised the protection of boys. By contrast, the height-for-age of all children in regions affected by the civil war was negatively affected, indicating that families were unable to protect any of their children from the effects of the conflict.

#### 5. Conclusions and policy recommendations

As noted earlier, it is often not possible to compensate later in life for child ill-health in early life. This impact also seems to have knock-on effects in many parts of the children's future lives. Estimates from the Burundi study indicate that the average impact on child health of the conflict there could translate into 0.678 fewer grades completed



A food market in Muramvya-Gitega, Burundi © Philip Verwimp

#### Impacts on child health have knock-on effects on school attendance and future adult wages

1989, and an outbreak of civil war in northern Rwanda in 1990 (see Akresh, Verwimp and Bundervoet 2007). In the late 1980s Rwanda entered a period of economic decline. The country experienced low coffee and tea prices, unfavourable weather conditions, demographic growth, and mounting corruption. There was also a dramatic drop in yields of all major crops between 1984 and 1991. This decline in yields, combined with population growth, led to an average decline in per capita food production of 25 percent.

Several NGOs documented the extent and severity of the crop failure in the south, which led to husbands

the Rwandan Department of Agricultural Statistics and Michigan State University. This collected agricultural and economic data on a number of characteristics, including household production, land holdings and labour inputs.

The results showed that households in areas affected by either civil conflict or crop failure were unable to protect their children from the impact of these shocks. The crop failure had a significant negative effect on the height-for-age of girls in the affected region, especially those in poor households. However, no evidence was found that boys were affected by the crop failure, or children

at school, and an increase of 4.8 months in the age at which children start school. This foregone education could translate into a 20.5 per cent reduction in expected adult wages. Although there is likely to be a health dividend associated with peace, the war will probably have adverse effects for the generation of children affected by it, long after it ends.

These results have a number of direct policy implications:

- They indicate the importance of a quick response to economic crises on the part of governments and non-governmental organizations. The severe impact of conflict shocks on outcomes in two areas traditionally prioritised by development agencies – education and employment – indicate that even if a large investment is needed in the short-run to protect non-combatant populations, it is likely to pay off in the long run.

- The identification of the channels of impact is important. Evidence from Burundi suggests that policy-makers should assist rural populations to recover their crops quickly through distribution of agricultural inputs and rebuilding of market infrastructure. They should also help farmers to reinvest in long-term crops, such as coffee trees, which may have been destroyed during conflict.

- The impacts of violence-induced displacement have long-term impacts on children's health through decreased nutrition and exposure to contagious diseases. This underlines the importance of investing in sanitation and adequate food supplies in displacement camps. Another recently-published MICROCON study from Darfur indicates the deleterious effects of reductions in the ratio of relief staff to camp population (Degomme and Guha-Sapir 2010).

- Girls are likely to be more vulnerable than boys, and should be prioritised by policymakers. However, gender differentials should not be assumed, and the gendered impacts of conflict the subject of careful analysis in each case.

#### Credits

This Policy Briefing was written by Philip Verwimp, University of Antwerp; Tom Bundervoet, Free University Brussels; and Richard Akresh, University of Illinois at Urbana-Champaign. The views expressed in this briefing are the authors' alone.

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## MICROCON

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