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Food Security, Violent Conflict and Human Development: Causes and Consequences

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Abstract: This chapter argues that the effect of violent conflict on food security can best be understood by analysing how conflict affects the command over food of the average farm household. This occurs via its effect on the income sources of the farm household in combination with its effect on the local food chain and the political system. Policy makers should focus on vulnerability to food deprivation during conflict, on the long-term consequences of conflict for human development and on innovative insurance mechanisms to maintain adequate levels of food intake and to prevent violent conflict.

Key words: Violent conflict; food security; human development

JEL Classification: D74, O12, Q18

1. Food Insecurity during Violent Conflict

When communities in rural Africa are affected by violent conflict, the food security of their citizens is in jeopardy. One way to analyze the consequences of conflict is to consider the different sources of income at the level of the farm household. As most people in rural Africa are farmers this seems to be the right way to start. The sources of household income give command over the consumption of food and non-food items. In a food security framework, it is the command over the consumption of food that we are ultimately interested in. The five sources of income of the average farm household can be described as (i) production for own consumption, (ii) crop sales, (iii) livestock products, (iv) off-farm income and (v) transfers received from others. This micro-level approach should be integrated in or combined with an analysis of the local/regional food chain and the socio-political system. The former comprises, the production, the storage, the distribution and the prices of food items, while the latter determines whose entitlements to food are upheld and whose voices are heard. The socio-political system, the extent to which the conflict affects the local food chain and the income generation of the farm household will determine the food (in)security of the farmer. These three elements are also known as stability, food availability and food access in food security studies (see Figure 1).

Production for own consumption

For many African households, a substantial part of the production of crops occurs for own consumption. Hence, the disruption of the production process or the inability to cultivate directly affects the command over food of the household members. This could be the result of direct fighting that forces household members to abandon their farm and take refuge elsewhere. The decision to leave one's farm is probably the last one a farmer wants to make because it means that (s)he will loose control over the means of production, most importantly the land of the farm, the house and the tools to cultivate. From that point onward the members of the farm household are by and large at the mercy of others. They can stay with friends or family in a nearby village, but for the same token they may end up for years in a refugee camp 100 miles away from their village. When they or not displaced or when fighting does not occur in their village, the production of crops may still be imperilled by the placement of land mines, the burning of crops or the destruction of plots (Flores, 2004). During the decade-long civil war in Burundi, 50% of households reported having been displaced at least once with an average duration of displacement of just over one year, spanning three agricultural seasons (Bundervoet et al, 2009).

Crop sales

The sale of crops produced on the family farm is an important income source for the farm household. This could be a small part of income for some farmers consisting of one or two crops whose harvest was good enough to sell part of it on the market, to a large part of income whereby sales are the result of a strategy of specialisation. In the latter case the farm household only produces a limited number of crops which it sells in the market and whose earnings are used to buy the food needed for consumption. Cash crops often include coffee, tea, cacao, rice, maize and bananas. Violent conflict may disturb the marketing process of these crops be cutting off access to roads, disrupting transport, or in general

prohibiting market transactions to take place. Hence, the farm household becomes food insecure, not because its crop production capacity is imperilled but because it cannot command food in the market. Even when warring parties allow trade to take place, it may not be viable anymore for the traders to take part as a consequence of confiscation, theft or high taxes. Brück and Bozzolli (2009) find evidence that farmers retreated into subsistence activities during the civil war in Mozambique. Farmers may also be asked to provide warring factions with food supply in which case they make no profit at all and hence have less income to command food in the market.

Livestock products

While on average smaller then income derived from crops, a non-negligable part of farm income is derived from products emanating from livestock such as meat, eggs, milk, wool and skins. Big livestock such as cows also provide manure for the farm and represent an important asset for the household. It can be sold in times of distress to prevent hunger and starvation, an act of what economists call consumption smoothing. In times of conflict however, livestock may be stolen or killed by warring parties. In times of distress, market prices may be low as the supply of animals increases or farmers may be unable to get to market, as demonstrated by Verpoorten (2006) in a case study on Rwanda. In a specific type of conflict, which opposes cultivators and pastoralists, entire livelihoods may be at stake, in particular over the contest of scarce land. As livestock may serve as insurance for risky investments, the loss of this key asset may push households to low-risk, low-return economic activities, thereby setting a poverty trap (Dercon, 2004)

Box 1: Loss of Livestock during civil war in Burundi

During the civil war in Burundi, the average number of tropical livestock units per household fell from 2.37 before the crisis, to 0.42 in 2001 Looting, forced migration, disease and distress sales contributed to this unprecedented loss in asset holdings.

(UNFPA, 2002, Health and Demographic Survey)

One of the consequences of this loss was that Burundese farmers invested less in high-risk, high yielding crops, thereby falling into a poverty trap.

(Bundervoet, Tom, 2010, *World Development*)

Off-farm income

Members of farm households bring in income from sources not related to the farming activities of the other household members. This can be a non-married son or daughter who is a teacher in the local school, or a household member who exploits a small shop. In the event of external shocks such as a drought, this source of income may become crucial for household survival. In reference to violent conflict, three points need to be made here (i) the availability of jobs generating this kind of income may diminish as investors leave and the economy contracts, (ii) certain kinds of off-farm jobs may become liabilities as warring parties may target intellectuals or shop keepers and (iii) new opportunities arise as warring

parties may enlist people to work for them or reward them for their cooperation (Justino, 2009).

Transfers received from others

African households are part of extensive social networks including extended family, friends and relatives (Fafchamps, 2003). This resource can be tapped into in times of distress. In times of conflict the support may have to come from further away since nearby network members may have been affected too. Important is that the transfer can actually reach the household. This can be facilitated when the household has a bank account, or, as available in some African countries, money can be transferred via mobile phones. Large-scale transfers such as food aid by an NGO, international donor or the government may help to prevent starvation, but by the very nature of the operation can also exacerbate the conflict when the food aid is captured by one of the warring parties. In section 3 we will sketch an innovative mechanism to deliver assistance in times of need that avoids these pitfalls.

The *food chain* perspective and the *socio-political system*

IFPRI (1998) studied per capita food production for 14 countries, comparing years with and without violent conflict. The study found that in 13 countries, food production was lower in war years, with declines ranging from 3.4 percent in Kenya to over 44 percent in Angola, with a mean reduction of 12.3%. Teodosijevic (2003), using a sample of 38 countries experiencing conflict between 1961 and 2000, puts this figure at 10% and adds that the impact of conflict on food production translates into a lower daily energy supply. The Food and Agriculture Organisation of the United Nations adopted a similar methodology to calculate conflict-induced losses of agricultural output in the developing world as a whole over 1970-97. In Sub-Saharan Africa the study found that agricultural losses accounted for 75 percent of all aid received by conflict-affected countries and far exceeded the level of foreign direct investment.

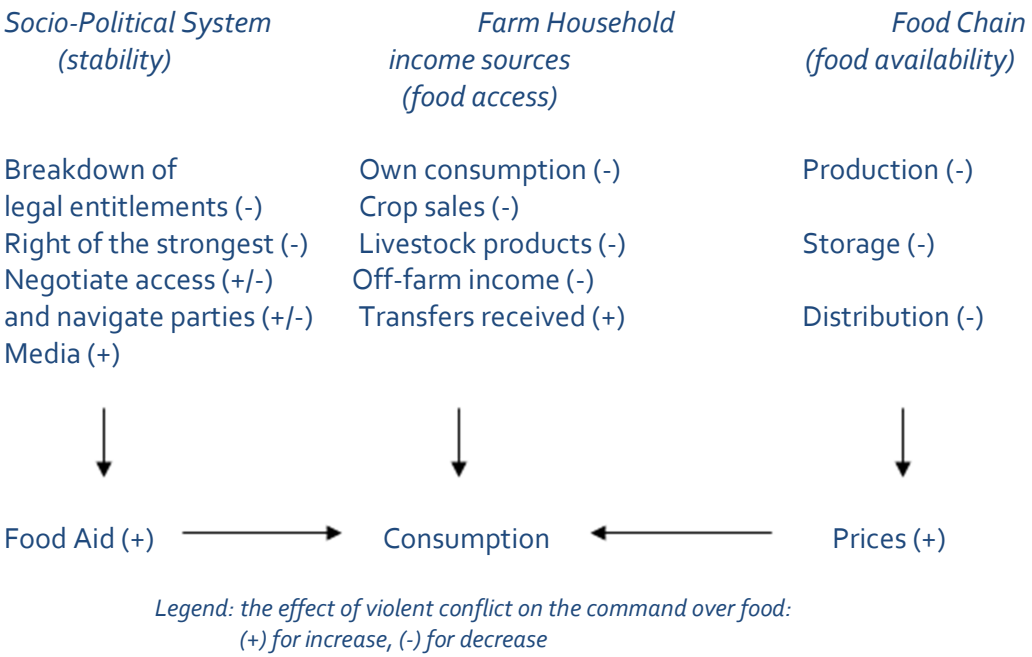
When food production, storage and distribution are imperilled, the supply of food to local markets will decrease while the demand for food increases. This will push prices upward: more people need to rely on the market, while the latter receives less food to be sold. If the local markets are able to receive supplies from markets further away, the upward pressure on prices may be tempered. This will depend in its turn on (i) the extent of the conflict and (ii) non-conflict features of the region/country such as its transport and road infrastructure. If the conflicting parties cut-off local communities from the supply of food and non-food items from other areas, local food insecurity will aggravate, potentially leading to famine (De Soysa et al, 1999). When local communities are remote and transport infrastructure underdeveloped or in itself degraded as a result of the conflict, warring parties do not have to do much effort to block food supplies, the economic incentives are working against any trader or truck company to venture into the area.

Box 2: The causes of food insecurity during civil strife in Liberia

> Difficulty in accessing markets, poor infrastructure and the lack of income earning opportunities, rather than a land shortage or a shortage of food, are effectively the main barriers to food security in Liberia and general agricultural development and growth.
>
> (Margarita Flores, analyst for FAO, 2004)

Such a situation is ripe for external intervention, either by brokering a deal between warring parties allowing market activities to take place without being disrupted (e.g. one day per week) or allowing international agencies to bring food aid into the area. The speed with which food aid is allowed to enter the area, or the de facto recognition that there is a problem of food security depends on the political system. As Drèze and Sen (1989) observed for the democracy-dictatorship pair, the freedom of media to report on pending food crisis will determine the extent to which entitlements are preserved. Devereux (2001) criticises the entitlement approach as an analytical tool for its failure to characterise the political nature of certain types of famines, in particular when caused by conflict or war. Even when most deaths are caused by diahreea, typhus or other diseases common in refugee camps and conflict emergencies (De Waal, 1990), the entitlement approach remains valid as several authors point at the close link between undernutrition and susceptibility to disease (Young and Jaspers, (1995); Ravaillion (1996)). A stronger criticism of the entitlements approach however

Figure 1: the Command over Food during Violent Conflict



Legend: the effect of violent conflict on the command over food:
(+) for increase, (-) for decrease

is its neglect of social norms, power relations and claims on resources at the local level that are dynamic and fluid, in particular during violent conflict. Leach (1997) therefore pleads for an extended entitlements approach which sees entitlements as the outcome of negotiations among social actors, involving power relationships and debates over meaning, rather than as simply the result of fixed, moral rules encoded in law. When we observe that individuals and households have to negotiate access to resources and navigate between warring parties to secure food than such an extended approach who takes such power relations into account is called for.

2. The Long-Term Consequences of Violent Conflict

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 (Strauss and Thomas, 1998; Verwimp et al, 2010). The effect of a negative shock on a child's physical growth trajectory may be such that children cannot catch up even if they receive adequate food at later ages. In a study on Zimbabwe, Alderman, Hoddinott and Kinsey (2006) show that preschool malnutrition has a negative impact on subsequent human capital formation - measured by the number of grades completed – and life-time earnings. 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 are only for women (Maccini and Yang 2006).

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. Recent work in Burundi 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 (Bundervoet et al, 2009). It combines analysis of two sets of data: a nationally representative household survey, covering the socioeconomic situation of 1,064 rural households, including anthropometric data on 1,442 children, and a data set on the timing and evolution of violence across the country. This allows the authors 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 z-score than those who did not, and that the longer the 'exposure' to violence continued, the more severe the effect was. A follow-up study (Verwimp, 2011) using a sub-sample of the above found that undernourished children in Burundi had a higher probability to die in the years following the initial measurement of their health status.

Box 3: The effect of Conflict on Child Nutrition in Rwanda

> We find that girls from poor households are stunted as a result of crop failure, but we do not find the same effect for civil war. The latter seems to affect children across wealth groups and gender.
>
> (Akresh et al, 2011, using height-for-age z-scores to measure the long-term effect of crop failure and civil war on child health in Rwanda)

As mentioned before, violent conflict negatively affects schooling outcomes. This occurs via different channels as school closure, the destruction of school buildings, the flight of teachers, forced migration of households and ramping insecurity which makes parents keep their children at home. The magnitude of the effect as well as the characteristics of the affected population are highly context and country specific.

Shemyakina (2006) finds from her empirical work in Tajikistan, that girls suffer the greater loss in education compared to boys and she attributes this to concerns over safety and low returns to girls' education. In contrast, Akresh and de Walque (2008) find that, in Rwanda, it is amongst the male children in non-poor households that violent shocks have the strongest effect. Evans and Miguel (2004) find that young children in rural Kenya are more likely to drop out of school after the parent's death and that effect is particularly strong for children who lost their mothers. While Kenya was not the scene of violent conflict during the observed period, the finding is relevant because violent conflict produces many orphans, which may have a similar effect on their schooling.

Combining a household panel with detailed data on allied bombings of German cities during WW II, Akbulut-Yuksel (2009) finds significant, long-lasting detrimental effects of bombing on human capital and labour market outcomes of individuals who were at school-age during WWII. These individuals had 0.4 fewer years of schooling on average in adulthood in comparison to those not affected by the bombings. Affected children experienced on average a reduction of 6 percent in labour market earnings in relation to those not affected. Merrouche (2006) arrives at similar results for Cambodia. She finds that land mine contamination has caused significant educational losses. A conservative estimate at the mean level of landmine exposure suggests a loss of about 0.4 years of education. This again represents an educational setback of 11% given a sample average number of years of education of about 4.5 years in 1997.

Next to this loss of educational attainment in general, Justino (2011) observes a second pattern in the results of emerging studies, to wit that secondary schooling seems to be disproportionally affected. Stewart et al. (2001) find that primary school enrolments decreased in only three out of eighteen countries in their sample of countries affected by civil wars. Swee (2009) provides evidence on the effects of the civil war in Bosnia (1992-1995). He finds that individuals in cohorts affected by the civil war are less likely to complete secondary schooling if they resided in municipalities which experienced higher levels of war intensity. He finds no noticeable effects on primary schooling.

Chamarbagwala and Morán (2008) find that individuals who were at school age in areas more affected by the war (1979-1984) in Guatemala completed fewer years of schooling, and that this effect was stronger for girls. The authors find a significant positive correlation between conflict intensity and education at low levels of schooling. Girls exposed to the 1979-1984 war during their school-age years completed 0.44 years of school (or 12%) less than girls living in departments not affected by the fighting. Older female cohorts exposed to the war completed 0.64 years (17%) less schooling than those not affected by warfare. The effect for males is smaller. Female education continued to lag behind male education throughout the country, but especially so in the areas of high war intensity between 1979

and 1984, almost two decades after the worst conflict outbreak. The study suggests that loss of property and massive displacement led households to reallocate limited resources towards providing young boys and, to a lesser extent, young girls, with at least some primary education. While both boys and girls received less secondary education as a result of the civil war, the effects were more pronounced for girls. Girls in higher grades seem to be the main victims. Similarly to Akresh and de Walque (2008), Chamarbagwala and Morán find that a lower probability of progressing from one grade to another rather than not attaining any education appears to drive the results.

3. Food Insecurity as a Cause of Violent Conflict

A cursory look at the model of the agricultural household shows that price increases of basic food items has winners and losers (Singh, Squire and Strauss 1986). The winners are those farmers who are net-sellers of the crop and who have enough resources in terms of land, labour and other inputs to benefit from the price increase. The losers are the net-buyers of the crop who have to dig deeper in their pockets to afford the same level of food consumption. The latter are land-poor farmers and in particular urban dwellers. In urban areas, food riots symbolize the powerlessness of people reacting to price hikes. Liberia was a relatively calm country until 1980, when its' then president was overthrown after food price riots. While the coup marked the end of dominance by the minority Americo-Liberians, it marked the start of a chronic period of instability (Flores, 2004).

Box 4: the 2008 Food Crisis and Food Riots

> "Complex global food and health system risks can assume a variety of patterns, and can become catastrophic perfect storms.' "
>
> (Joachim von Braun, Head of IFPRI, responding to the 2008 food crisis in the organisations' annual report)
>
> In addition, societal and political risks—such as food riots, destabilization of governments, and domestic and transborder conflicts—can also result from these food system risks.

Recent research, by Edward Miguel et al. (2004, 2007, 2009, 2011) have found strong historical linkages between civil war and economic growth. In dealing with the issue of reverse causality, researchers have used rain shocks and temperature as proxies or instrumental variables for economic growth. This makes a lot of sense as most people in Africa make a living from agriculture and depend on the weather. Drier and warmer years lead to smaller and fewer crops, and in turn to a significant increase in the likelihood of violent conflict. In rural areas, not food riots, but the populatity of rebel mouvements increases in bad economic times. Justino (2010) presents a rich overview of the nexus between poverty and war. A particular type of violence, to wit the killing of so-called Witches deserves to be mentioned as it relates directly to bad weather, droughts and food insecurity. Miguel (2005) documents how the killing of witches occurs much more frequent in dryer years and how the victims are most often older women from poor families.

Insurance mechanisms (see Box 5) devised to maintain food intake of farmers affected by drought have at the same time a conflict prevention effect and my prevent attacks on vulnerable groups.

Box 5: Insurance against violence

> Innovative insurance mechanisms to protect farmers against weather-induced harvest failures have been developed, as e.g. in Botswana. Since income loss and resulting food insecurity contribute to violent conflict, such insurance mechanisms help to prevent violence. Governments, donors and insurance companies should develop and test the conditions under which insurance policies can best be offered and implemented.
>
> (Professor Edward Miguel , 2007, advocating Rapid Conflict Prevention Support in the form of weather-based insurance)

Food insecurity is not the only factor that is conducive to violent conflict, but may be part of a pattern whereby groups of people, be it for the ethnic or political affiliation, their regional alliance or their religious practices are treated differently than others. This treatment may vary from cover or overt discrimination in the job market to political marginalisation and even targeted extermination. In such a situation, the discriminating party may hide its non-assistance to people in peril under the veil of a natural disaster. As a result, the discriminated population may take up arms to make an end to years of humiliation and deprivation. When the wielding of a weapon promises food and income security to a poor, food deprived farmer, the step to be mobilised may not be difficult to make.

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