

How Can We Avoid Another Food Crisis in Niger?

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With increasing concerns over the impact of higher global food prices on poor countries, lessons learned from previous food crises can be instructive. This research analyzes grain market performance in Niger during its 2005 food crisis. The research provides evidence that local grain markets are highly responsive to national and sub-regional production and price shocks. This suggests local early warning systems should monitor the spatial impact of drought and prices in key national and sub-regional markets. In addition, policies regarding the impact of local purchases and regional trade need to be carefully examined and discussed.

Since early 2008, a variety of international actors have expressed concern over higher global and regional food prices. The average world price for rice has risen by 217 percent since 2006, with wheat and maize prices increasing by 136 percent and 125 percent, respectively. Food price increases have also been associated with violence; since January 2008, riots and demonstrations protesting higher food prices have taken place in numerous countries in West Africa.

Will higher global food prices translate into a regional food crisis in West Africa? As governments and international organizations prepare for a potential food crisis, it is important to review the lessons learned from previous food crises. This research focuses on the case of Niger, a landlocked country in West Africa that was affected by a severe food crisis in 2005. As Niger's rainfall patterns, agro-pastoral systems and history of food crises are similar to that of other Sahelian countries in West

Africa, the Niger case study is instructive for donors, international organizations, and host country governments who are preparing to face possible food crises.

Drought and Food Crises in Niger

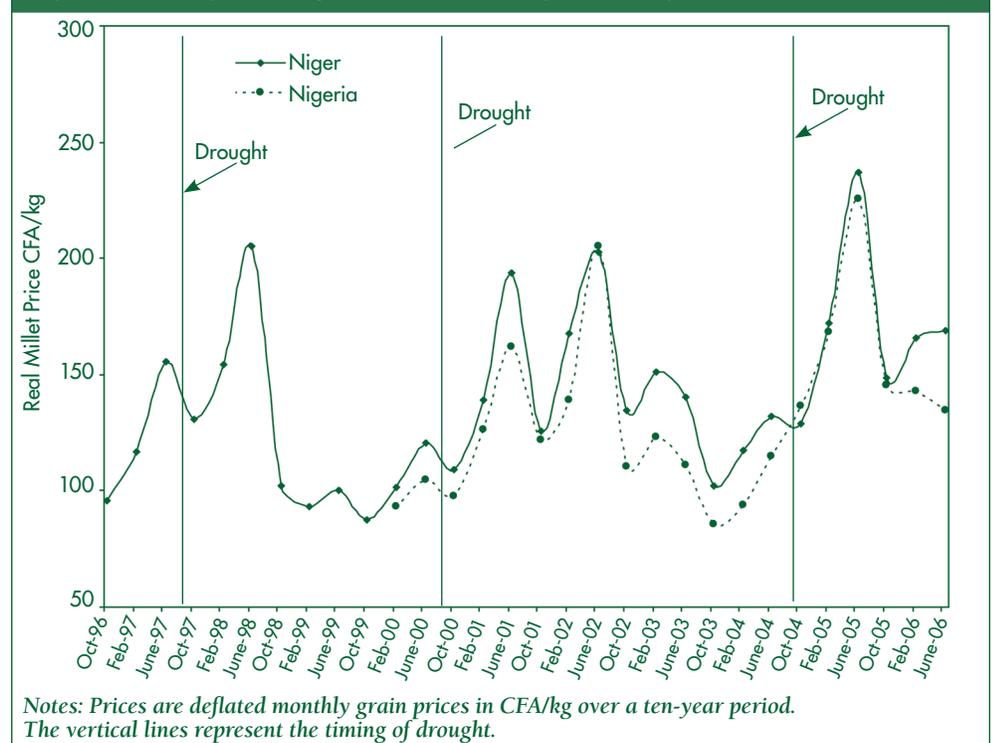
With a per capita GNP of US\$230 and an estimated 62 percent of the population living below the poverty line, Niger is one of the lowest-ranked countries on the United Nations' Human Development Index. Grains represent approximately 75 percent of per capita caloric consumption. Annual rainfall ranges from 200-800 mm, with strong inter-annual fluctuations. While drought often coincides with lower levels of production and higher grain prices, drought does not always result in famine.

In 2004, Niger experienced a drought, followed by a reduction of its per capita staple grain (millet and sorghum) production of 12 percent as compared to the ten-year average. Millet prices were 25 percent higher than

the ten-year average. By June 2005, an estimated 2.4 million Nigerians were affected by severe food shortages, with more than 800,000 of these classified as critically food insecure. In 2000 a drought also occurred, with per capita grain production 21 percent lower than the ten-year average. Yet, according to the local early warning systems, a severe food crisis did not occur in 2001.

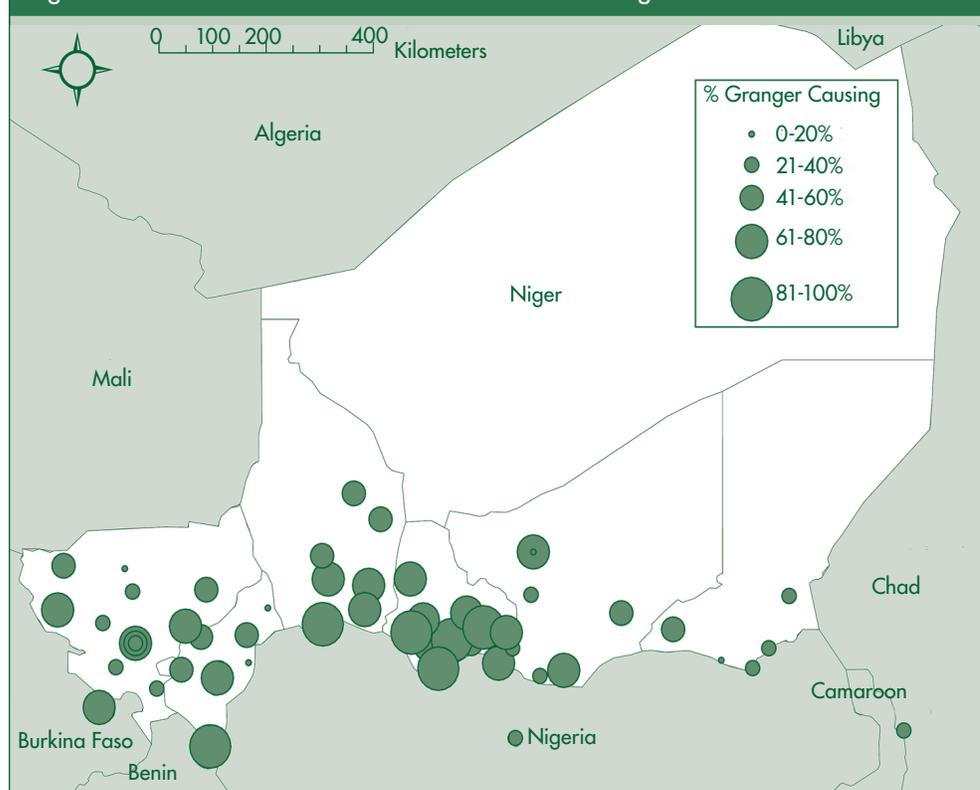
Several sources blamed grain traders for the 2005 crisis. The *Washington Post*, for example, stated that "In (Niger)... the suffering caused by a poor harvest has been dramatically compounded by a surge in food prices and... profiteering by a burgeoning community of traders...". Similarly, the Oakland Institute stated that the 2005 food crisis was a "free-market famine," blaming higher prices on trader hoarding and lower national reserves. While these factors can contribute to higher prices, they do not explain why a food crisis occurred in 2005 and not in 2001. In addition,

Figure 1. Average Monthly Grain Prices in Niger and Nigeria, 1996-2006



Notes: Prices are deflated monthly grain prices in CFA/kg over a ten-year period. The vertical lines represent the timing of drought.

Figure 2. Markets That Forecast Price Movements in Niger



these claims could lead to well-intentioned but potentially harmful policies for responding to future food crises.

Facts about Grain Markets in Niger

Fact 1. Grain prices in Niger fluctuate on an intra- and inter-annual basis.

Grain prices in Niger are subject to a high degree of inter- and intra-annual variation. Figure 1 shows deflated average monthly grain prices in Niger and Nigeria between 1996–2006. High-production years in Niger are followed by relatively lower prices, and low-production years are followed by relatively higher prices. The seasonal variation of prices is also important. While the average intra-seasonal price difference for millet is 44 percent, millet prices increased by 89 percent between October 2004 and August 2005, and by 75 percent between October 2000 and August 2001. One of the key reasons for high price instability in Niger is the fairly inelastic regional supply of food, as climatic shocks in the sub-region are not easily complemented by extra-regional imports.

Fact 2. Grain markets in Niger are well-integrated with markets in northern Nigeria and Benin. Staple food crop markets in Niger are relatively well-integrated, with an average correlation coefficient of .55. On average, grain markets in Niger are more integrated during low production years, as traders, farmers, and consumers buy and sell from more markets. The degree of integration between markets in Niger and border countries follows a similar pattern: markets in Niger are highly integrated with those in Benin and Nigeria, and are more integrated during drought years. This suggests that grain markets in Benin and Nigeria have important implications for grain market performance in Niger.

Fact 3. Grain prices in Niger respond to supply shocks in the Niger-Nigeria production basin. Price movements within Niger follow well-defined paths: they start in production centers (the southeast) and spread across the country. This implies that grain prices in Niger respond to supply shocks, rather than demand shocks. Figure 2 shows the percentage of times that a market

is useful for forecasting price changes, using Granger causality tests for all market pairs. Markets located in surplus regions of the country are useful for predicting price changes in a high number of markets in the country. In addition, markets in Benin and northern Nigeria forecast price changes in over 75 percent of the markets in Niger.

Fact 4. Niger needs to import, yet marketable surpluses depend heavily upon Nigeria.

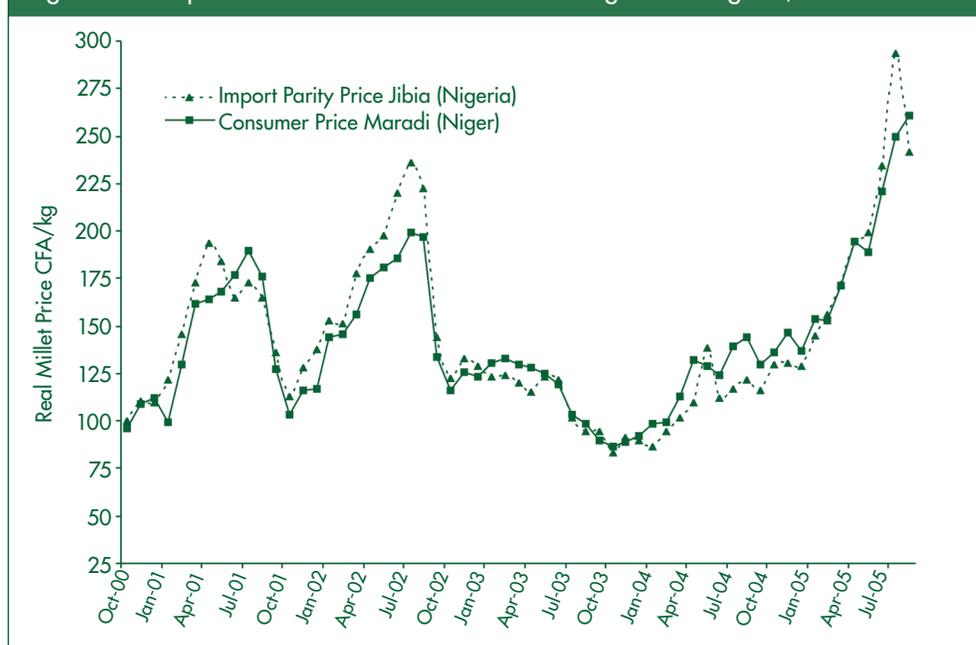
In light of the strong intra-annual variation in staple food crop production, total food supply in Niger depends upon commercial imports, imported food aid, and public stocks. However, unlike other countries in Sub-Saharan Africa, imported food aid has not played an important role in Niger's total food availability since the mid-1990s. While Niger imports grains from its neighboring countries, Nigeria plays a dominant role: on average, Nigeria supplies 75 percent of Niger's millet and sorghum imports and 35 percent of total maize imports. Consequently, potential and actual imports from Nigeria play an important role in grain market performance in Niger.

Fact 5. Storage is necessary...but is it excessive? As Niger's agricultural system relies upon one agricultural season, storage is crucial for stabilizing domestic grain supply. As 20 percent of farmers sell their staple grain production after the harvest, traders either sell the product immediately or engage in storage. Nevertheless, traders store for a relatively short period in Niger, averaging 45 days during normal years and 30 days during the 2005 food crisis. This suggests that excessive hoarding was not a primary factor contributing to food price increases in 2005.

Why a Food Crisis in 2005?

While droughts are often associated with production shocks in Niger, the relationship between drought and food crises is not well-understood. During the previous drought year (2000) staple

Figure 3. Comparison of Deflated Millet Prices in Niger and Nigeria, 2000–2005



food crop production was lower than in 2004, yet a severe food crisis did not occur. Consequently, understanding the factors that contributed to the 2005 food crisis is important for preparing for and responding to future food crises in Niger and the Sahel.

Factor 1. A higher percentage of regions were affected by drought in 2004. Most early warning systems in Niger rely upon climatic indicators to predict potential food crises. Nevertheless, relying primarily upon national-level production indicators may not accurately indicate a potential food crisis. In 2000, only 15 percent of the departments in Niger experienced a per capita decrease of more than 50 percent. By contrast, in 2004, over 25 percent of departments suffered a per capita decrease in grain production of more than 50 percent. This suggests that the percentage of departments affected by production shocks—as opposed to national-level production—is more relevant for grain market performance in Niger.

Factor 2. Key production areas in Niger and Nigeria were affected by drought in 2004. Since prices in Niger respond to supply shocks, drought in forecasting markets will have a larger impact

on price levels. In 2004, the markets affected by drought were key forecasting markets in Niger and the sub-region. For example, average deflated millet prices in these markets were 17 percent higher in October 2004 as compared to October 2000. This suggests that monitoring prices on these markets during the harvest period could have served as an indication of a potential food crisis.

Factor 3. Prices were higher in northern Nigeria, making it unprofitable to import. On average, domestic millet prices in Niger are lower than prices in Nigeria from October until May. This pattern changes between June and August, when prices in Niger are higher than those in northern Nigeria, thereby making imports profitable. The situation in 2005, however, was markedly different. Figure 3 shows millet prices between Jibia (Nigeria) and Maradi (Niger) for several years. Millet prices in Nigeria were higher than domestic millet prices in Niger for the entire 2004–2005 marketing season, implying that it was unprofitable to import grains from Nigeria.

Factor 4. Grain prices reached record levels during the hungry season. Average grain prices in 2004–2005 were 25 percent higher than the ten-year

average, with grain prices representing more than 27 percent of per capita income by July 2005. This period also coincided with the height of the food crisis. Although grain prices in 2004–2005 followed a similar pattern to that of other drought years, prices increased significantly between June and August 2005. As markets in Niger were very thinly supplied during this period, it is likely that the expectations of local purchases of food aid in Niger and Nigeria may have exacerbated the situation.

What Does This Mean for Future Crises?

Based upon the lessons learned during the 2005 crisis, several factors should be considered when preparing for and responding to a potential food crisis in the future. This section provides some recommendations in the short and long-term.

Recommendation 1. Local early warning systems should look beyond national-level production indicators to analyze climatic shocks at the sub-national level. In early 2008, a mission to Benin, Niger and Nigeria noted that lower sorghum production and reduced stocks in Nigeria, combined with high global food prices, were factors of concern in the Sahel. In addition to national-level production, local early warning systems should assess the spatial distribution of regions in Niger and northern Nigeria affected by production shocks, with a particular focus on forecasting markets. Deflated prices on several forecasting markets in Niger and northern Nigeria in October 2007 were similar to the price levels of the 2004 harvest.

Recommendation 2. Local early warning systems should monitor prices in the sub-region between June–September 2008 in order to determine whether imports will be profitable. In 2005, grain prices in northern Nigeria were above those in Niger for the entire marketing season. In order to determine whether imports from Nigeria will be profitable,

local early warning systems should monitor grain prices on cross-border markets. If prices in northern Nigeria are higher than those in Niger, this suggests that Niger would need to import from other countries. Between October 2007 and May 2008, grain prices in Nigeria were relatively higher than those in Niger, but fell in June 2008.

Recommendation 3. Host country governments, international organizations, and bilateral donors should carefully consider whether local or triangular purchases are appropriate. In an effort to respond to a potential crisis, the government of Niger and international organizations have proposed a variety of interventions, many of which involve the use of food aid. While local purchases have been strongly supported by the international community, it is not clear that they are always a first-best option. If local food supplies are thin, then such purchases can increase prices. In light of relatively higher food prices in the sub-region, governmental and international organizations using food aid should strongly prioritize imported food aid. If this is not feasible, then such organizations should consider purchases from Benin, Mali, or Burkina Faso. If purchasing grains from these countries is not feasible, then local purchases should only occur in areas where production is significantly above average and should be limited in quantity (i.e., less than 5,000 MT). In all cases, grain prices should be monitored before and after the local purchase takes place.

Recommendation 4. The relative merits of food versus cash interventions should be evaluated. In recent years, cash-based interventions (cash transfers, cash vouchers, CFW) have been used with increasing frequency by international organizations in Niger and in other countries. Yet cash-based interventions can exacerbate an inflationary problem if sufficient goods are unavailable. In general, cash-based interventions are preferred if food is available on the local

markets, distribution channels and marketing systems are functioning well, and there is little inflationary pressure.

Recommendation 5. Donors should fund initiatives that protect productive assets in the short-term, while supporting longer-term strategies. Natural disasters, production shocks and low agricultural productivity are not new concerns in the Sahel. While short-term responses might be required to support food insecure populations in West Africa, they should not disrupt agricultural and marketing systems in the longer-term. For example, while marketing boards might stabilize prices in 2008, they could irrevocably affect the grain marketing system in the future.

And What about the Future?

Recommendation 6. Guidelines for local and regional purchases should be developed. These guidelines should provide criteria to determine whether local purchases are appropriate during a particular year, and if so, from where, at what price, and in what quantities. These guidelines should be adopted by governmental, international, and non-governmental actors operating in the Sahelian region.

Recommendation 7. Long-term and sustainable strategies for increased food production and marketing in the Sahel should be developed. In response to the global food crisis, donors and international organizations have supported initiatives to increase agricultural production in the Sahel (such as subsidized fertilizers). Such short-term interventions are needed. However, a focus on production—to the exclusion of marketing—will not resolve the Sahel's food security problem. Agro-food markets play a crucial role in producers' and consumers' welfare in Niger and West Africa. Increasing local and regional grain production will not result in higher incomes unless farmers can receive higher prices for their output. This not only means choosing the most

appropriate varieties to respond to local demand, but also ensuring that the commodity value chains for these crops are competitive and efficient.

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For additional information, the author recommends:

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