



AcSSA - AMASSA - APROSSA - Afrique Verte
Members of Afrique Verte International

**Strengthening the capabilities
of agricultural organization networks
through analysis of the evolution
of local grain prices
in Burkina, Mali, and Niger,
during the period 2001-2010
...and its repercussions for warrantage in Niger.**

December 2010

**By Afrique Verte International:
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Inter-réseaux
Développement rural



In this document, the three countries focused their study on the following specific areas:

Burkina Faso studied the actual change of prices for mil and sorghum compared to the theoretical seasonal change as well as that of national markets.

Mali most notably studied the change in the price of rice (local and imported) and the most important factors that might influence the markets.

Niger carried out a study on warrantage.

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1. OUTLINE OF THE STUDY

In 2001, Afrique Verte took the initiative of recording and publishing monthly the price of cereals in the areas where the association was working because at that time it was difficult to obtain this information, which was nevertheless essential to agricultural producer organizations (OP) that wished to buy or sell grain.

Today, the situation has evolved considerably: national systems of market observation regularly produce detailed data about a large number of agricultural products. Nevertheless, Afrique Verte continues to collect data about prices, which allows the association to gather relatively complete sets of data and participate in the sharing of information.

These data about prices are published on a monthly basis in the bulletin "Point sur la Situation Alimentaire au Sahel" (focus on the food situation in the Sahel), which is accessible on the association website www.afriqueverte.org. The object of the current study is to gather together knowledge from 9 years of recording grain prices in Burkina, Mali and Niger.

Objective of the study •••

This study analyses the evolution of grain prices in Burkina, Mali and Niger in order to help identify certain warning point that can assist OP networks in decision-making.

More specifically, the document places into question certain commonly held ideas, notably the one currently used to manage the supply of grain in the Sahel: that prices will be lowest at harvest and increase until the planting season.

Working from this hypothesis, it is commonly recommended to OP to store their harvests and sell 6 or 8 months later, to profit from a period where sales might be more favorable. Thus, the system of warrantage which rests on this principle is often suggested to producers as an opportunity for improving their commercial success.

Methodology •••

Choice of products •••

In Burkina, Mali and Niger, the study is focused on the 4 most important cereals in terms of production, food supply, and also trade between or within countries. These are rice and three other dry cereals: mil, sorghum and corn.

The local price of rice was studied in Mali uniquely because the level of production is significant for the national market. In Burkina and Niger the production of rice is quite low; we therefore decided only to record the price of imported rice.

In Niger, the production of corn is low in volume; we therefore followed the price of imported corn.

Imported Mil and rice formed the basis for a comparative analysis between the 3 capitals, these two cereals being particularly important for the food supply.

The seasonality of dry Cereals •••

The market for agricultural products is linked to the cycle of agricultural production, itself linked to the rainy and dry seasons, with non-irrigated seasonal crops making up the majority of cereal production in the Sahel. Therefore, production generally takes place between May and September. Consequently, the commercial campaign usually starts at the end of October. The commercial activities can be subdivided into two main sub-periods:

- The period of collection for producers, from October to December;
- The planting period (or the period of market selling by merchants and stocking organizations) from May to August.

Period of the study •••

This study covers the period July 2001 to July 2010, or 9 consecutive agricultural campaigns. The major phenomena observed during this period are:

- 3 years of food supply crisis after an under-production of cereals (2001 and 2005 in the 3 countries and 2010 in Niger),
- 1 year of crisis following the rapid inflation of commodity prices (fuel in particular) in international markets (2008) and
- 2 years of crisis brought about by overproduction of cereals (2004 and 2007), in which highly successful crop yields led to deflation of prices.

The prices were recorded monthly by the staff of Afrique Verte and its partners; they are consumer market prices, by the bag of 100 kg, in individual towns; they are therefore not average regional prices.

- In Burkina, prices were recorded in 8 markets, for 4 products: imported rice, mil, sorghum, and local corn (3,456 data points)
- In Mali: prices were recorded in 7 markets, for 5 cereals: local rice, imported rice, mil, sorghum, and local corn (3,780 data points)
- In Niger, observations were made in 6 markets, for 4 cereals: imported rice, mil, sorghum, and imported corn (2,592 data points).

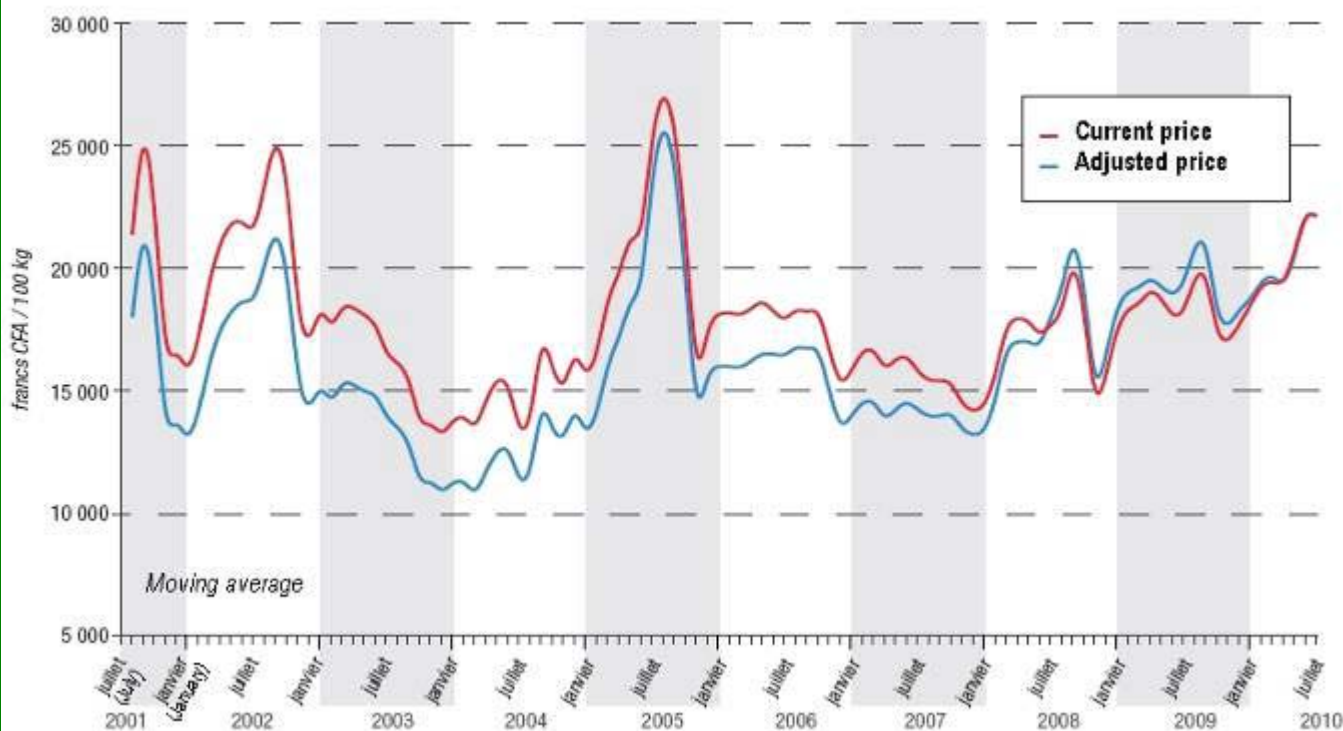
The analysis is primarily focused on national production (data supplied by national directors of agricultural statistics and the International Committee in the Fight Against Desertification in the Sahel (CILSS)). The study is also supported by a tentative inquiry carried out with principal actors: producers, merchants, and national services. On the subject of production, Afrique Verte uses the gross cereal product (demand - production + stocked supply), rather than the net cereal product (gross product + import/export sales) because the estimation of the import/export trade at the outset of the commercial campaign is highly unreliable¹.

Current or adjusted prices? •••

In this document, Afrique Verte International has used the prices actually measured on the ground (current price) rather than the adjusted or deflated real price (adjusted to the inflation index).

In fact, the adjusted price curve has the same general form as that of the measured actual prices, and the objective of this document is to analyze this dynamic pattern: the evolution of prices, and not their real value. Moreover, it appears to us that this calculation is insignificant at the level of the rural world because inflation indices are calculated most often on the basket of goods in urban settings and do not take into account certain products important for farmers (for example fertilizers).

Figure 1: Comparison of the evolution of mil in Niamey: current and adjusted price
(Source: Afrique Verte and national statistics)



We observe that on the curve of adjusted prices, older crises are more accentuated: the crises of 2001 and 2002 were nearly as accentuated as the crisis of 2005

¹ Cf. Publication of Afrique Verte « 2005 : Famine au Niger ? »

2. COMPARABLE NATIONAL CEREAL POLICIES

From regulation to liberalization of grain prices...

A few words about cereal policy in Mali •••

From the point of view of the organization of the agricultural sector, it is important to note that shortly after the independence of Mali in 1960, the cereals market was placed under the control of the Office of Agricultural Products of Mali (OPAM) which held its monopoly for more than two decades. In 1981, with the support of its primary food aid donors, the government of Mali decided to put in place an ambitious program to restructure the cereal market (PRMC), bringing together the ensemble of partners concerned about food security in Mali.

The principle hypotheses at the outset of the PRMC were the following:

- The provision of grain price information to producers should increase their purchasing power and over the long term enable them to increase production.
- Liberalization of trade in cereals should enable more rapid supply of markets.
- The repositioning of the role of the State should contribute to a reduction in public debt.

The PRMC opened the floodgates of liberalization of the market, to the retreat of the state from involvement in commercial affairs and a repositioning of the mission of the OPAM around management of the national security stock (SNS) and the implementation of a market information system (SIM).

In the context of a regional dynamic influenced by the CILSS in 2000, which gave the region a strategic food security framework as part of the fight against poverty, Mali in 2002 adopted a national strategy of food security whose implementation was coordinated by the Food Security Commission (CSA) created in 2004 and attached to the office of the President of the Republic. The CSA defined the national Food Security Program (PNSA) which extended the special food security program initiated by the FAO after the global summit on nutrition in 1996. It focused on the question of availability and concentrated in practice on the poorest 166 communities in the country (Initiative 166).

Mali, in conjunction with its partners, put into place large scale national programs (PNIR, PASAOP, PASE...) to strengthen organizations at the base level and to improve the income of poor populations.

In 2005, the 'Agricultural orientation law' (LOA) was approved by the government; this legislation is an agricultural policy framework in the broadest sense, which encompasses a number of aspects which determine the food security of the country, as well as its food sovereignty. It is intended as a direct and unifying instrument for the patchwork of regulatory and legislative directives that touch upon the agricultural, livestock, fishing and forestry sectors. It is also intended to promote and help render sustainable more modern agricultural methods, at the familial, commercial and industrial scales.

The government has approved a new strategic framework in the fight against poverty (2007-2011), serving as a reference guide for work in development policy. In the course of implementation, the PRMC has relied on data provided by the Early Alert system (SAP) and it leads, along with the CSA, activities aimed at the liberalization and modernization of the cereals market, as well as the management of food security crises, in collaboration with international and local partners.

In 2008, the State confirmed its interest in the promotion of cereal crops, by first launching a rice initiative and then similar Corn and wheat programs in 2009.

Thus, since 2004 the State has displayed an eagerness to develop the agricultural sector.

To combat against food shortage crises, Mali currently maintains two separate stocks:

- **The SNS** (National Security Stock) set up by the PRMC in the context of the process of liberalizing the cereals market. Its theoretical holdings level is 35,000 tons; it is managed by the OPAM and financed by the PRMC via matched funding. The operational business of the SNS is determined by the technical committee of the PRMC with recommendations from the SAP. The SNS holds mil and sorghum.

Usage of the SNS is decided by the technical committee of funding donors (PRMC).

- **The SIE** (State Intervention Stock) set up recently by the CSA, following the 2004-2005 campaign. During this year of crisis, the national authorities wished to distribute food aid and take the level of the SNS to 70,000 tons. However, the other partners were reticent to do so, since managing such a large stock would incur higher level of expenditures. At the end of 2005, the national authorities created the SIE with a theoretical holdings level equal to the 35,000 tons of the SNS and comprised of mil, sorghum, corn and rice.

Only the State can decide to use the SIE, which is why we use the language of "Sovereignty stock".

It is through the SIE that the CSA was able to set up cereal storage banks at the level of individual communes (provision of cereal stocks).

It is worth noting that in October 2010, the reserve level of the SNS was at 26,536 tons of mil/sorghum. The level was 40,489 tons for the SIE, of which 37,209 tons was rice.

A few words about cereal policy in Burkina Faso •••

In order to address the evolution of grain prices in Burkina Faso, it is important to cover to the recent changes in development activities in the sector since the 1970s, when the first drought and food crises occurred in Burkina and the Sahel region.

In the first period, during the middle of the 1970s, the State set up a system to regulate grain prices in order to discourage the activities of commercial speculators and predatory lenders. This mechanism of local grain regulation, designed to confront the dangers of private business had as its primary instrument the National Office of Cereal Commercialization (OFNACER), created in response to the famines, at the same time as the CILSS. The regulation consisted on one hand of setting a base price in cases of excessive supply and a ceiling price in cases of excessive demand, and on the other hand ensuring food security thanks to a large reserve stock.

This regulatory tool quickly ran into problems of management, which combined with the overly negative stance on the role of private commerce, led to its demise and dismantling during the Structural Adjustment Program which took place at the beginning of the 1990s. In the context of liberalization, it was actually difficult to defend guaranteed base and ceiling prices to guide producers and consumers, without financial support from the state in the form of subsidies.

During the conception of a mechanism to regulate prices, careful strategic planning was lacking: The creators of this program did not seek to fully understand the operation of the cereal market and did not place themselves in the position of any of the given actors. Nor did they consider the social and historical factors that sometimes work contrary to market forces.

In the middle of the 1990s, following the structural adjustment, the State saw its role reduced to the lone function of ensuring food security, with the implementation of the National Food Security Management Association (SONAGESS), created after the dismantling of OFNACER. From that point forward, the language changed to liberalization of the agricultural sector and the grain market, of free competition where price followed the laws of supply and demand, of the responsabilization of producers in various functions within the sector, and a strong implication of private actors (merchants) in the grain business. This reversal of policy was carried out without seeking the advice of the actors themselves, and without preparing them to fill these new functions.

The current phase of cereal development policy faces the problem of markets and prices, more in terms of efficiency than strategic approach: The strengthening of capabilities of actors at all levels is seen as an important prelude to the improvement of price transparency and the proper functioning of grain markets.

This institutional approach benefits from the support of the international community and development partners across the implementation of a wide range of programs such as sector-wide action plans for rice and grain, the creation of an Interprofessional grain committee in Burkina (CIC-B) and the Interprofessional rice committee of Burkina (CIR-B).

In Burkina Faso, the SNS holds a volume of approximately 35,000 tons. The State, like in Mali, has set up its own intervention reserve, however in Burkina the intervention reserve refers to a mechanism and not a physical supply. It confers upon the government the ability to take ownership of a portion of the National security stock (over which it has exclusive responsibility and discretionary power). This supply must then be reimbursed from later harvests.

A few words about cereal policy in Niger •••

The evolution of agricultural policy implemented in Niger has followed three main phases:

Starting from independence (1961) until the middle of the 1970s, the agricultural policy was based on intensification of cash crops, notably the peanut and cotton, because of their commercial and financial importance, and thus their impact on the export balance sheet.

Following the droughts at the beginning of the 1970s which took a major toll on populations and livestock, the agricultural policy was oriented towards attaining food autonomy via an increase in productivity. This was to be achieved by the elaboration and implementation of productivity projects in all regions

This new orientation of agricultural policy was supported by the boom in uranium (1976-1981) which replaced the peanut and cotton as the major export product. Following the interventionist policy of the state, the sectors were more or less integrated under the wing of public offices and associations which oversaw the ensemble of producers, the provision of fertilizers and the commercialization of agricultural products. The grain sector was managed by the ex Cooperative and Credit Union of Niger (UNCC) and the Office of Agricultural Products of Niger (OPVN). The UNCC managed the production through the enrolment of producers and the distribution of fertilizers, while the OPVN oversaw commercialization. Prices were set both for purchases by producers as well as the sale of products to consumers. The cereals market did not operate according to the classic principles of supply and demand.

The decline in uranium prices after 1982 forced Niger to adopt a program of structural adjustment (SAP) at the end of the 1980s, which had the consequence of dismantling state structures and initiating an overall retreat of the state from the rural sector. The cereal market was then liberalized and the activities of the OPVN were re-centered around the management of the SNS. The liberalization of the market was intended to promote the emergence of new actors, including those with economic functions, but also from among peasant organizations. Nevertheless, the widespread retreat of the State and the lack of preparation for private actors

meant that this emergence did not take place. At the same time, the increase of regionalization and then globalization of the grain market over the past decade did little to diminish the place of the local market in the attainment of food security.

The National System for Prevention and Management of Food Crises (DNP-GCA) •••

Since 1998, the State of Niger and primary donors of food aid have managed in partnership a national system for the prevention and management of food crises, which seeks to contribute to the reduction of nutritional vulnerability of the Niger's population through better coordination and management of the activities of the various parties involved. The decision-making body for the system is the Combined Partnership Commission of State and donors (CMC).

The main operational structures of the system are:

The Food Crisis Group (CCA), which ensures the technical coordination of the system and the implementation of crisis relief activities.

The Early Warning System (SAP), which ensures the regular collection and compilation of information on the food security situation. The SAP relies on different information systems, of which one is the Agricultural Market Information System (SIMA).

The Office of Agricultural Products of Niger (OPVN) is responsible for the maintenance of the SNS and logistical support for aid. After the 2005 crisis, the level of the SNS was raised to 110,000 tons, comprised of a physical reserve of 80,000 tons and a food security reserve of 30,000 tons.

The Center for Information and Communication (CIC) is a shared service for the government and its partners. It shares information on food security and nutrition in Niger.

At the end of 2007, Niger conceived a National Contingency Plan. This is the strategic reference document for the DNP-GCA. It contains the organizational plan for the assistance of populations affected by food crises and other related emergencies.

... to the elaboration of sub-regional agricultural policies... which remain to be developed

The elaboration of sub-regional agricultural policies •••

The grain policies of the 3 countries have evolved in a similar fashion over time:

From 1960 to 1980: period of State regulation (dominant role with strong intervention);

From 1980 to 2000: period of market liberalization (disengagement of States).

After 2000: return of State interest in the grain and agricultural sectors.

This resurgence of interest by each of the States in their agriculture corresponds with the development of sub-regional policymaking. In 2000, in a context where a number of sub-regional institutions already coexisted, the 9 members states of the CILSS adopted a strategic framework for food security based on availability and accessibility of cereal products.

As part of the same dynamic, in 2001 the 8 member countries of the West African Economic and Monetary Union (UEMOA) adopted the Union Agricultural Policy (PAU), following a participatory process. This Policy union was based on cooperation between national and regional actors, which enabled the definition of objectives, guiding principles, directions and instruments of intervention that make up the policy. The implementation of the PAU is a long-term project with the overall goal of contributing meaningfully to the well-being and nutritional needs of populations, to the economic and social development of member states, and to the reduction of poverty in the rural milieu. The specific objectives of the policy are:

- Achieve food security, while reducing dependence on food aid and while improving the operation of markets for agricultural products.
- Grow the productivity of agriculture on a sustainable model.
- Improve the living conditions of producers, by developing the rural economy and raising their revenue and social status.

In addition, the leaders of the 15 member States of the CEDEAO agreed in 2005 to adopt a regional agricultural policy, the ECOWAP. This decision came about as a result of a detailed diagnostic study of regional agriculture, its potential for development, the strengths and weaknesses of national-level agriculture, and an analysis of the challenges and risks facing the region in terms of food security. The overall goal of the ECOWAP, which nearly completely absorbed the composite parts of the PAU and the UEMOA, is to develop family-based agriculture, to "contribute in a sustainable way to the wellbeing and nutritional needs of the population, to economic and social development, and to the reduction of poverty in the member states, as well as inequalities between territories, regions and countries." This objective is split into specific policy goals, which include:

- The food security of populations
- Reduction of food aid dependence from the perspective of food sovereignty
- Integration of producers into markets
- Sustainable improvement of production systems...

Following the adoption of the ECOWAP in 2005, the question arose about its integration with the Detailed Program for the Development of African Agriculture (PDDAA), approved in 2002 by the New Partnership for African Development (NEPAD). That is why, in its regional action plan for 2006-2010, the CEDEAO proposed to connect the main pillars of the PDDAA/NEPAD with the main areas of intervention of the ECOWAP to identify 6 overlapping priority areas for cooperation. As a result, the following activities were initiated, among others:

- Urgent action to include a risk analysis of the agricultural sector in the definition of the Common External Tarif (TEC) by the CEDEAO and in the free trade agreement with the European union in the context of the APE.
- Implementation of regulations (notably around fertilizers)
- Promotion of food security and health.
- Implementation of thematic regional programs: valorization of areas cleared of *Onchocerciasis*, fight against invasive water flora, irrigation, management of watersheds, adaptation to climate change, forestry resources, biosecurity.

Nevertheless, the implementation of sub-regional agricultural policies requires significant investment, which is often lacking. The development of the grain sector is not treated individually. Furthermore, the sub-regional market is plagued by problems of border fluidity, despite regulation by the UEMOA to require the free flow of people and goods between countries, established in 1994.

3. A CHANGE OF COURSE LINKED TO PRODUCTION, THE REGIONAL AND GLOBAL ENVIRONMENT

This study covers the period 2001-2010, in a liberalized market where we nevertheless observe certain State interventions, particularly during the crisis of 2005.

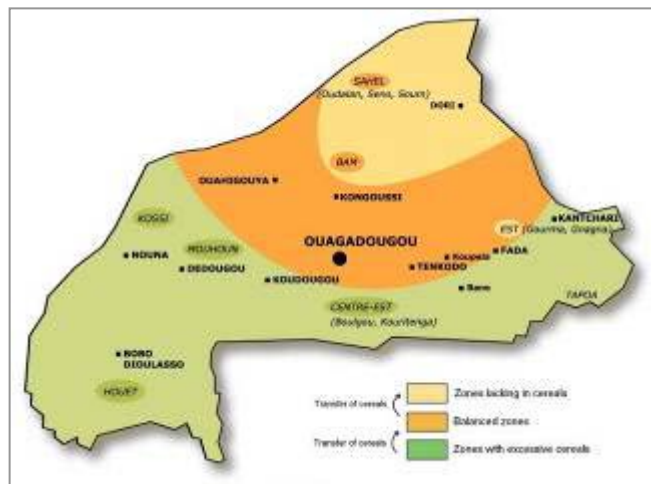
BURKINA FASO: Analysis of prices 2001-2010 •••

We will now turn our attention to an analysis of the price of sorghum and mil produced locally, which represent between them more than 70% of the grain consumption in Burkina Faso, with corn playing a marginal role, and rice largely imported from other countries. The field of analysis covers 3 areas of consumption:

Ouagadougou in the Kadiogo: Local consumer market with almost no grain production as it is located in an urban center.

Nouna in the Kossi: area of high production with a large number of buyers in the harvest period.

Dori in the Seno: An area low in cereal production, with high demand for stock grown in the production area: livestock is a major source of revenue which is used in large part to fund household purchases of grain.



From 'received idea' to theoretical seasonal change of prices •••

It is widely agreed that the price of grain follows the law of supply and demand, which is organized around a seasonal variation of price: lower prices during the harvest season when stock is abundant and then higher in the planting season when the product is less abundant on the market.

If this seems to be obvious for certain agricultural products such as niébé, which is grown to be sold at harvest, due to an inability to store it effectively, it is not always the case for mil and sorghum, of which 80% is destined for auto-consumption by the producers themselves (only 15-20% of grain produced is sold commercially). As a result, other parameters become important to help explain the variation of grain prices on the market.

Let's analyze the prices collected by Afrique Verte since 2001, on the mil in Burkina Faso (Cf. figure 2, next page)

Comment and analysis •••

The price curves show a larger variation between years than they do within a given yearly cycle of planting and harvest, for the duration of the study with the exception of 2004-2005.

Comparing the actual change in prices with the generally accepted seasonal theoretical model (pointed line at the top of the Figure), we see that the theoretical curve rarely corresponds to actual prices.

1. **For the 2001-2002 growing campaign**, the theoretical model is maintained:

In Ouaga a 100 kg bag of mil sold for 12,500 FCFA in December 2001 and for 18,500 FCFA in July 2002: representing a variation of +6,000 FCFA, on the commercial market.

In Nouna a 100 kg bag of mil sold for 9,000 FCFA in December 2001 compared with 16,000 FCFA in July 2002, resulting in a variation of +7,000 FCFA over the course of the growing campaign.

In Dori a 100 kg bag of grain sold for 13,500 FCFA in December 2001 compared with 17,500 FCFA in July 2002, for a variation of +4,000 FCFA.

2. **For the 2002-2003 campaign**, The theoretical model was not maintained:

In Ouaga a 100 kg bag of mil sold for 15,000 FCFA in December 2002 compared with 12,000 FCFA in July 2003: a variation of -3,000 FCFA over the course of the campaign.

In Nouna a 100 kg bag of grain sold for 12,500 FCFA in December 2002 compared with 13,500 FCFA in July 2003, resulting in a variation of +1,000 FCFA over the totality of the campaign.

In Dori a 100 kg bag of grain sold for 18,000 FCFA in December 2002 compared with 14,500 FCFA in July 2003, making a variation of -3,500 FCFA.

3. **Following the same analysis procedure**, for the same markets and the same time period, we note that:

For the 2003-2004 campaign, the analysis of actual prices does not follow the theoretical model. After the harvest in December 2003, the price dropped to attain its lowest point between February and April 2004 depending on the zone, with prices recorded below 10,000 FCFA.

For the 2004-2005 campaign, the theoretical curve was followed, even if there was not the attendant drop in prices following the harvest, which is explained by the poor harvests which were expected (insect attacks and poor rain levels). A low supply of grain on the markets results in highly uneven prices during the planting season, causing a widespread food security crisis in West African countries of the Sahel. In July 2005, grain prices reached their highest point on record: 23,000 FCFA for a 100 kg bag in Ouaga and Nounam and 25,000 FCFA in Dori.

In 2005-2006, the prices once again dropped at harvest, climbing again in April-May, before lightly descending and then dropping after September. The theoretical curve was therefore not followed.

For 2006-2007, the theoretical curve was also not obeyed: prices rose slightly after the harvest, and then stagnated.

➤ *No drop in prices was observed during harvest at the end of 2007, which is a potential warning sign.*

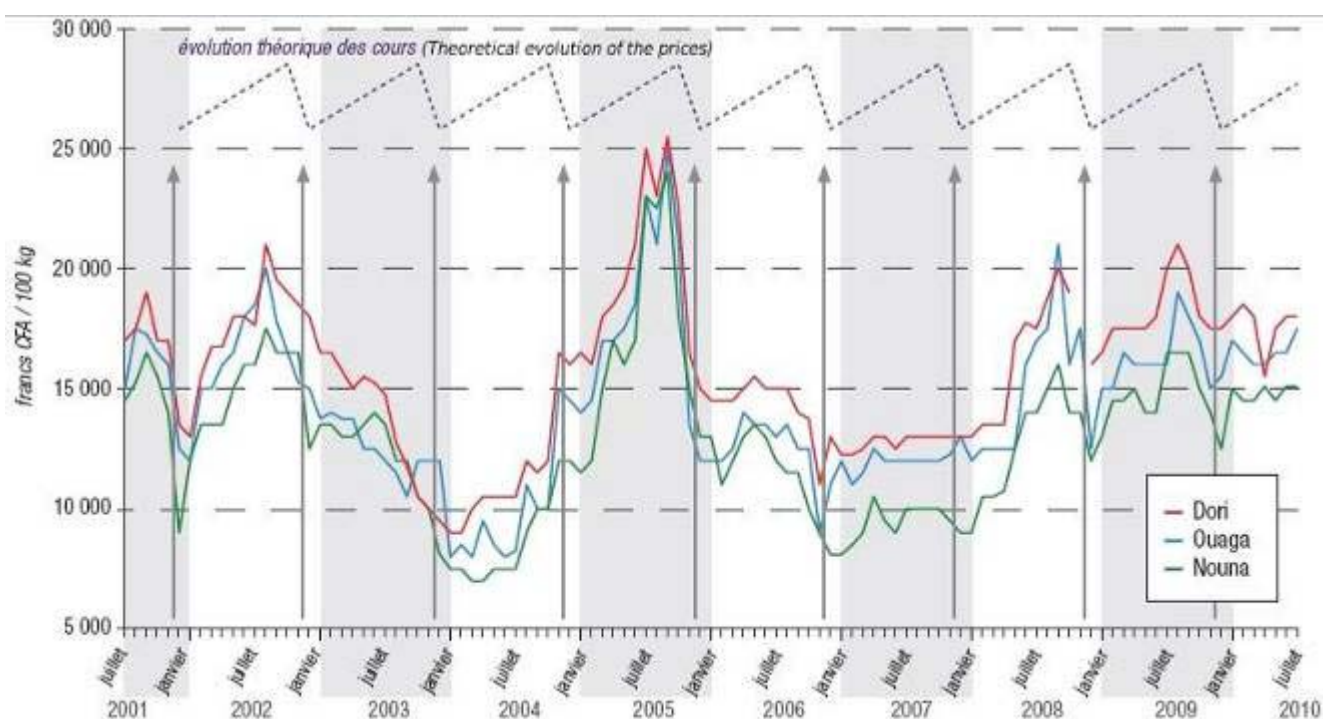
In 2007-2008, the fluctuation of prices followed the shape of the theoretical curve. After the stagnation of prices during the harvest at the end of 2007, increases began in April, reaching their highest point in July-August-September 2008 (peak at 21,000 FCFA for a 100 kg bag in Ouaga, 16,000 FCFA in Nouna and 20,000 FCFA in Dori).

In 2008-2009: With the onset of harvest, prices fell. They climbed again in July 2009. Then, despite two consecutive harvests of oversupply, the prices in July 2009 were almost at the same level as those of July 2008. The theoretical model was observed.

In 2009-2010: At harvest, prices dropped and then climbed slightly in July 2010. The amplitude of fluctuation was very weak during the campaign. The theoretical curve was somewhat obeyed.

Figure 2: Burkina: comparison of theoretical and actual price of mil, 2001-2010

(Source: Afrique Verte)



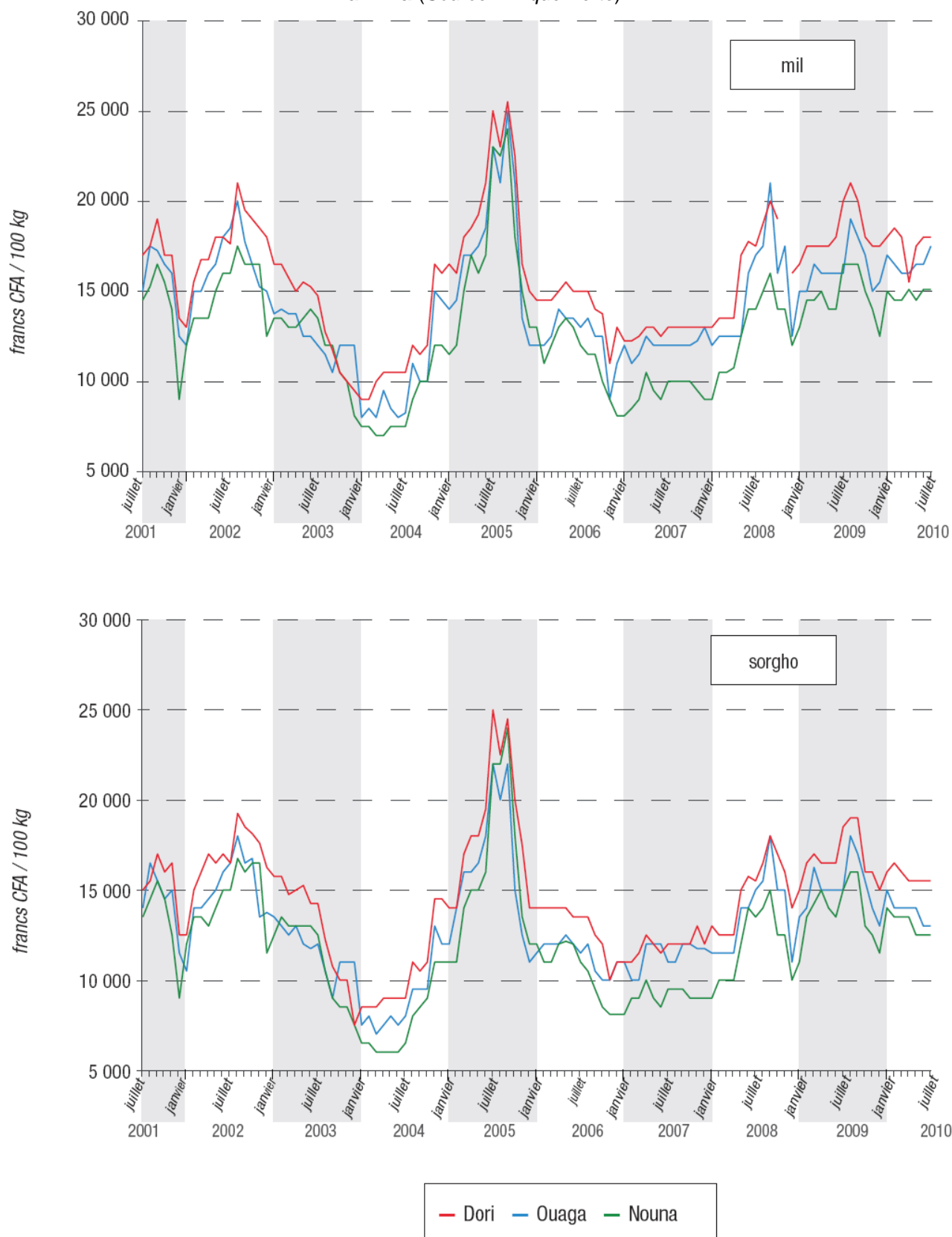
Reading aid: Figure 2 displays the evolution in the price of mil in Burkina, from 2001 to 2010, for 3 locations: Ouagadougou, Nouna and Dori.

At the top of the figure, we have used a dotted line to trace the theoretical evolution of prices (without relation to the actual price). Prices are expected to be lowest at harvest (end of the year) and rise steadily during the planting season, before falling sharply after harvest. The vertical arrows represent the harvest period

In conclusion, across 9 campaigns •••

- **4 (or 44%) followed more or less the theoretical model of price fluctuation,**
- **4 did not follow the theoretical model:** instead the prices fell (2002-2003 and 2003-2004) or remained static (2005-2006 and 2006-2007),
- **1 campaign was indeterminate, 2009-2010,** prices stagnated or dropped in April-May.

Figure 3: Comparison of trends in the fluctuation of the price of mil and sorghum, 2001-2010, Burkina (Source: Afrique Verte)



Here we are interested in the general shape of the curves, from which we can gather that:

- The fluctuation of prices of both mil and sorghum in Burkina Faso is similar for the observation period
- Mil is on average slightly more expensive than sorghum,
- Prices are logically higher in Dori (area of high demand) than in Nouna (area of high supply)
- The amplitudes of variation are somewhat different depending on the area measured. For example in Dori, the height of price increases is generally higher for mil than for sorghum, since mil is more prized due to its place in the daily consumption habits of the population.

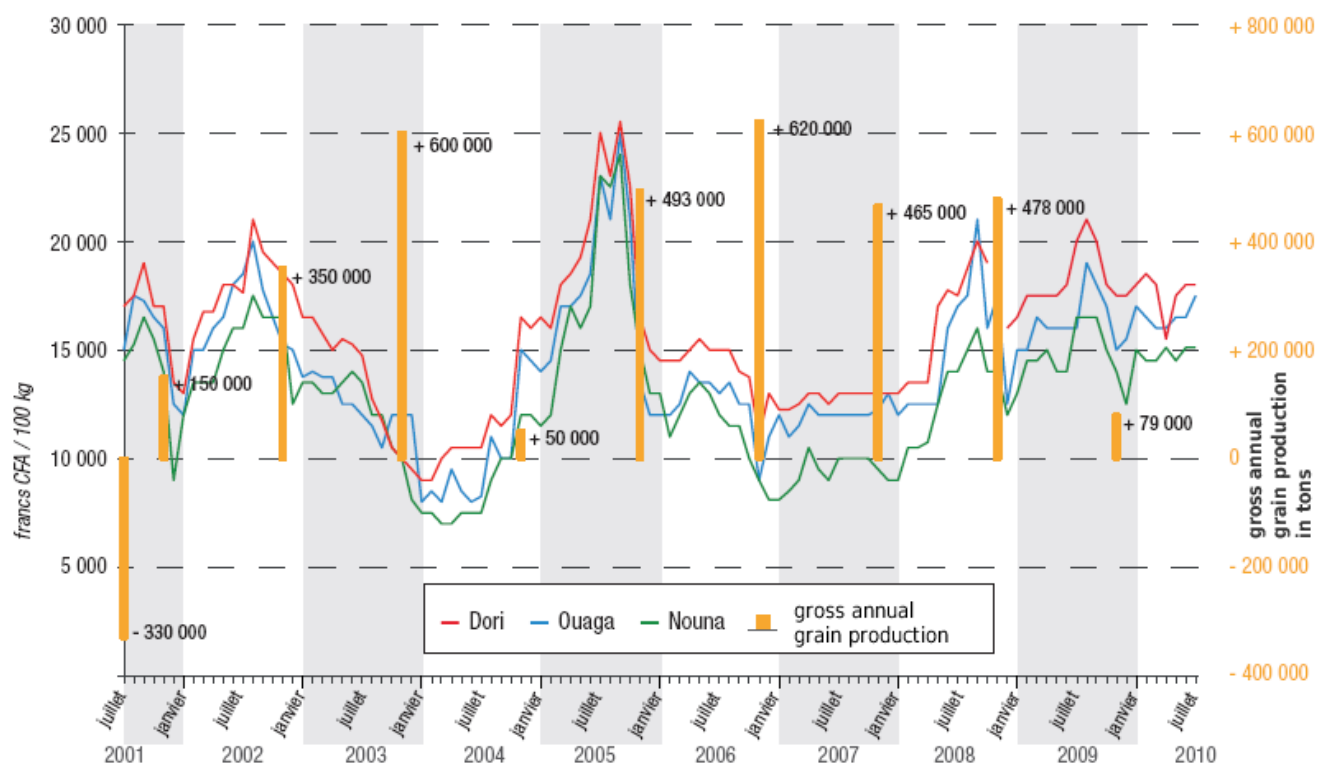
Because this study deals with agricultural products, one of the major hypotheses is that the primary determinant of price should be the total available volume, measured by the national grain output. Thus, we would expect to see relatively low prices during years of high production and higher prices during periods of poor harvest.

One should not also that commonly held knowledge would suggest the portion of grain supply sold on the commercial market is that which comes from excess production.

Below we can observe the price curve for mil superimposed with the gross annual grain production figures, in order to derive some conclusions

Figure 4: Comparison of the price of mil and cereal indices, 2001-2010, Burkina

(Source: Afrique Verte)



Reading Aid: In Figure 4 below, the gross annual grain production figures are represented above yellow histograms, while the volume is given for each campaign.

Comment and analysis •••

By comparing the change in the price curve (Dori, Ouaga, Nouna,) with the national grain production figures, we can make the following observations:

1. **The 2001-2001 campaign** posted a gross grain surplus of more than 150.000 tons, but followed a year of deficit: prices saw a reasonable increase. Thus, the grain surplus did not suffice to produce a reduction in prices: the demand generated by the need to refill household and institutional reserves was greater than the production surplus. The **crisis of shortage** of 2000-2001 persisted.
2. **The 2002-2003 campaign** generated a significant surplus of +350.000 tons. Two successive surplus years were required to produce a corresponding drop in prices.
3. **The 2003-2004 campaign** was reported to be a surplus of +600.000 tons in Burkina. Three successive bounty harvests produced a marked decline in prices. This was a **crisis of oversupply**.
4. **The 2004-2005 season** was balanced (small surplus of +50.000 tons). However, prices shot upwards. It was a return to **crisis of shortage**. Why did this occur? Two hypothesis are possible:
 - a) The gross product numbers were overestimated: The estimated gross product of farmers (from a surplus of 600,000 tons the previous year). But did farmers conserve their supplies? Were they perhaps obligated to sell more, in order to compensate for weaker prices? These are reasonable assumptions to make...
 - b) the under-production reported in the sub-region, notably in Mali and Niger, motivated merchants looking to purchase in Burkina, and produced an effect on the local market. The decision to close the borders and measures taken by the State and its partners did little to reduce the spike in prices. We might call this a **price spike by contagion**.

5. **In 2005-2006**, the gross surplus was +493.000 tons, helped by post-crisis measures put in place by the State and its partners, prices returned to a reasonable level and were stable throughout the growing campaign.
6. **For 2006-2007**, the gross cereal product was reported as a surplus of +620,000 tons. The abundance of supply on the market (2 campaigns, successive surplus years) can explain the stagnation of prices. In the production zone, prices were particularly low, approaching a crisis of oversupply.
7. **In 2007-2008**: with a gross surplus estimated at +465,000 tons, (third successive surplus year), we might have expected to see a drop in prices. However, we observed the reverse: despite the high level of production, the year 2008 suffered the 'hunger pangs' related to a **global crisis** on multiple fronts (energy, finance and food commodities). If it is accepted that the rise in prices was the result of contagion from global grain prices, it is then also true that this had a devastating effect on the purchasing power problem in the Sahel.
8. **In 2008-2009**: the gross product is estimated to be a surplus of +478,000 tons. It is the fourth successive surplus year of note. However, after the fall of prices directly following harvest, prices rose again rapidly. The demand is therefore strong suggesting that farmers, looking to refill their reserves, had been forced to sell in 2008 to confront the price increases. They may also have sold off stock to provide space for the new harvest, their storage capacity being small. The question of estimating reserves in the calculation of the gross product thus arises again.
9. **In 2009-2010**: at harvest, prices dive and then slowly rise in July 2010. The amplitude of fluctuation is very small during the growing campaign. Prices stagnate even though harvests were not particularly strong: The gross product is nearly balanced, and the border region of Niger is severely undersupplied. Measures taken by the State and its partners allowed it to contain a potential crisis.

In conclusion • • •

The evolution of grain production saw 4 different phases during the study period:

1. Continuous progression over three successive agricultural campaigns: 2001-2002 to 2003-2004,
2. Overall deficit during the 2004-2005 campaign,
3. Four successive surplus harvests: 2005-2006 to 2008-2009,
4. Drop in production in 2009-2010.

Cross tabulation of the data also supports the correlation between the fluctuation of prices and surplus production. Effectively, if several surplus campaigns follow one another (phase 1 and phase 3), the result is a crisis of oversupply and prices fall (2003, 2004 and 2007).

This is a simple and logical observation, but it hides some interesting explanations:

- The storage capacity is too small to ensure an inter-seasonal storage of grain. A portion of the surplus is therefore put on the market, which accentuates a drop in prices (2004 and 2007).
- Grain producers are economic actors: they live in a monetized economy. They can be compelled to sell more than their surplus to settle other financial problems (inelastic or exceptional needs). Thus, coming out of a period of reduced stock, they become net purchasers. This augments pressure on prices, which then spike (case of 2005, a year marked by a gross deficit in production and 2008, a year of global economic crisis and higher prices).
- Other than variation in the production of grain, which is essentially dependent on precipitation levels, the fluctuation of prices can be explained by secondary factors, notably (*continued on next page*):

WORDS OF PRODUCERS

« Institutional buyers generally offer good prices. That encourages producers to propose higher prices and offer their reserves, even when production is not very good. Effectively, it's during years of undersupply and the following year that institutions purchase the most amount of stock ».

« The campaigns of 2003 and 2004 led to massive shortfalls in the grain banks of Burkina, when they contributed – although modestly – to the regulation of prices ».

« The drop in prices in 2003 and 2004 led to a shortage of capital and rampant poverty ».

« This was also the beginning of the rise of cotton in surplus regions where production achieved levels never before seen (700,000 tons in 2005-2006), while farmers didn't have anything to eat. But the mirage of 'white gold' was not long-lived, as prices quickly plummeted ».

« The existence of family reserves at the moment of harvest and supplementary sources of revenue (cotton, sesame, peanuts, niébe, shea nut, cheptel, poultry) guide their decision to sell their grain or not. When sales are deferred over time, this drives up prices ».

WORDS OF TECHNICAL SERVICES

« The purchasing power crisis of 2008 is the visible face of poverty among the vulnerable layers of the population. It is revealed by the extreme poverty whose depth and duration have grown since the economic reforms. The fundamental reason can be found, among other things, in the continual weakening, over twenty-odd years, of agricultural revenue following the mirage of the devaluation of the FCFA in January 1994 ».

« The Ivory Coast crisis and the massive return of the Burkinabè (17,000 Burkinabè were exiled in November 1999, and 80.000 in 2001), also contributed to the slowing of Financial transfers in favor of Burkina, which weakened already mediocre revenues ».

« Reserve storage (public and private) is insufficient, which shows the weak financial and logistical capacity of private operators and OP. At the level of SONAGESS, the low capacity of inter-seasonal Storage is clear, and this does not allow the carrying-over of surpluses from one year to the next. In fact, the volume of physical Storage is maxed out at 35,000 tons, which barely represents 10% of the surplus of an average campaign. Additionally, in the case of shortages on the market, the difficult processes to mobilize the national reserve do not allow quick reaction. The conditions of funding partners are even more draconian when it comes to the mobilization of finance capital, which remains immobilized for several years ».

- Geographic, with nearby border to several large grain markets, such as Djibasso on the border with Mali (not far from Nouna) and Salmossi on the Nigerian border (not far from Dori), that allow trade with countries bordering Burkina, there is the potential for contagion of higher or lower prices.
- Political, with the official prohibition on grain exports, despite the rules set by UEMOA, which affect prices, especially after harvest. This leads to lower revenues for producers.
- Social, with massive local purchases by the State (re-filling national reserves), institutions and aid organizations which influence prices. In general, prices return quickly to their initial level, once the purchases have been made.
- Economic, in the macro sense, with globalization and the contagion of international crises (end 2007-2008)

MALI: Analysis of prices 2001-2010

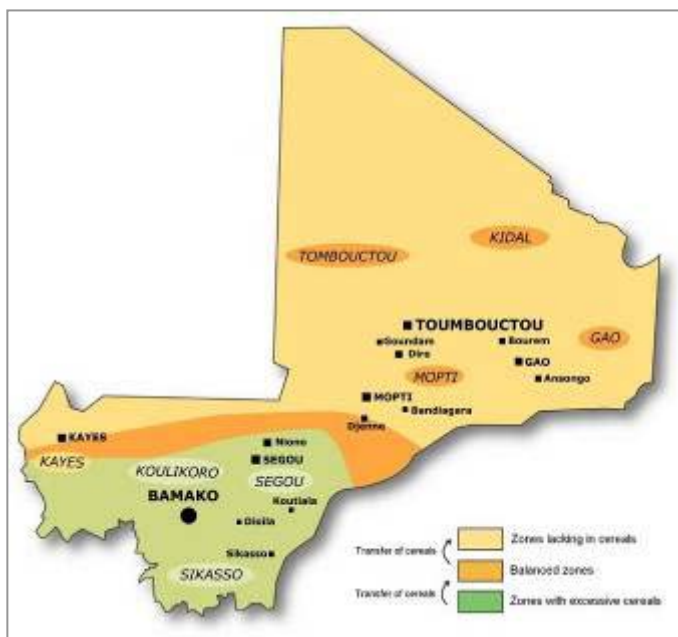
As we saw during the analysis of prices in Burkina, changes are a function of a multiplicity of factors, in addition to production.

Evolution of the price of rice in Mali

During the past several years, the annual rice paddy production of Mali has oscillated between 1,000,000 and 1,300,000 tons, notably thanks to production by the Office of Niger, around Niono (90,000 ha irrigated). The annual grain production on average totals 4,000,000 tons, with rice therefore representing about 30% of the national grain supply and covering 80% of the national requirements.

With the rice initiative launched by the State in 2008, investments seeking to develop rice production have been numerous, and the numbers reported above are changing rapidly toward the high end (160,000 ha currently being developed).

Imports of rice to Mali currently total around 150,000 tons per year.



Gross annual grain productions

National datas, CILSS datas: definitives gross datas diffused each year between february and april)

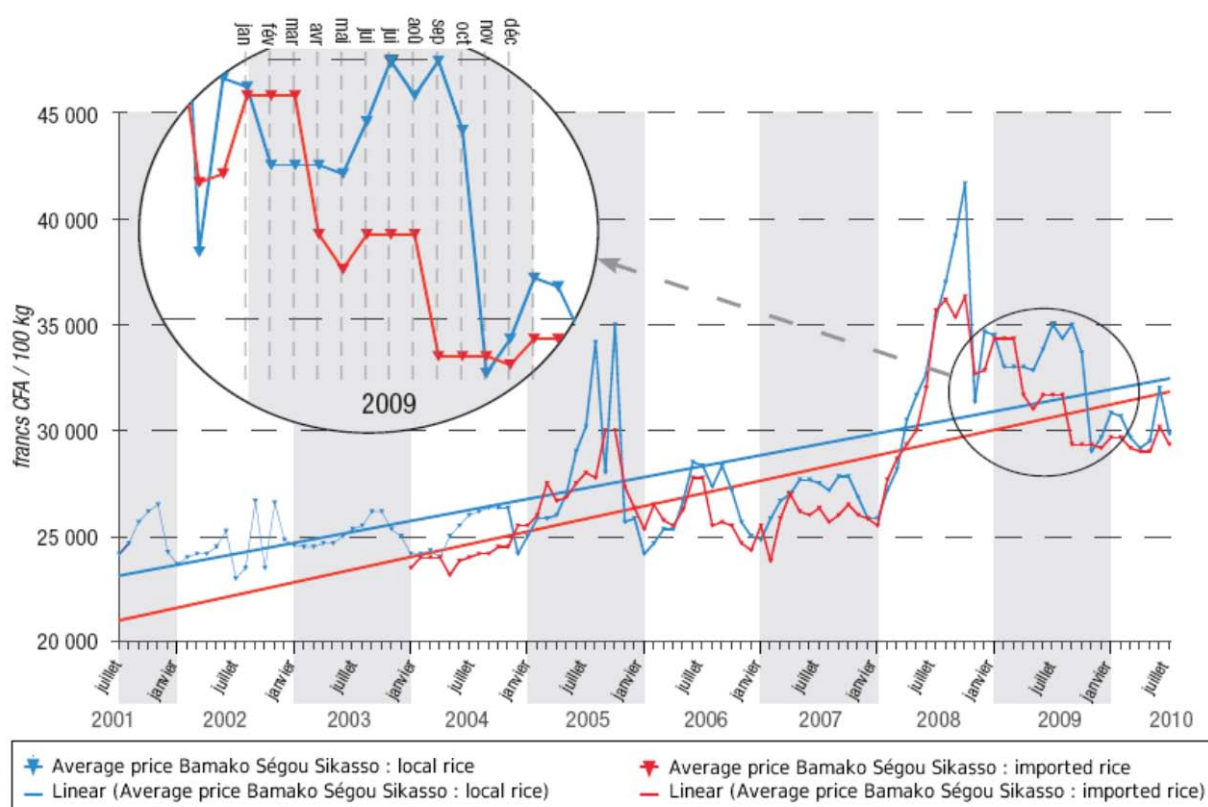
in tons	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Mali	- 172 000	+ 62 000	- 442 000	+ 83 000	- 626 000	+ 293 000	+ 330 000	+ 325 000	+ 481 000	+ 500 000

• under-production campaign

• overproduction campaign (more than 10% of national needs)

NB : Afrique Verte international chose to reason from the gross balance, without the estimates of the balance of import/export (Cf. Publication of Afrique Verte « 2005 : Famine au Niger ? »)

Figure 5: Comparison of the average price of local and imported rice in Mali, 2001-2010
(Source: Afrique Verte)

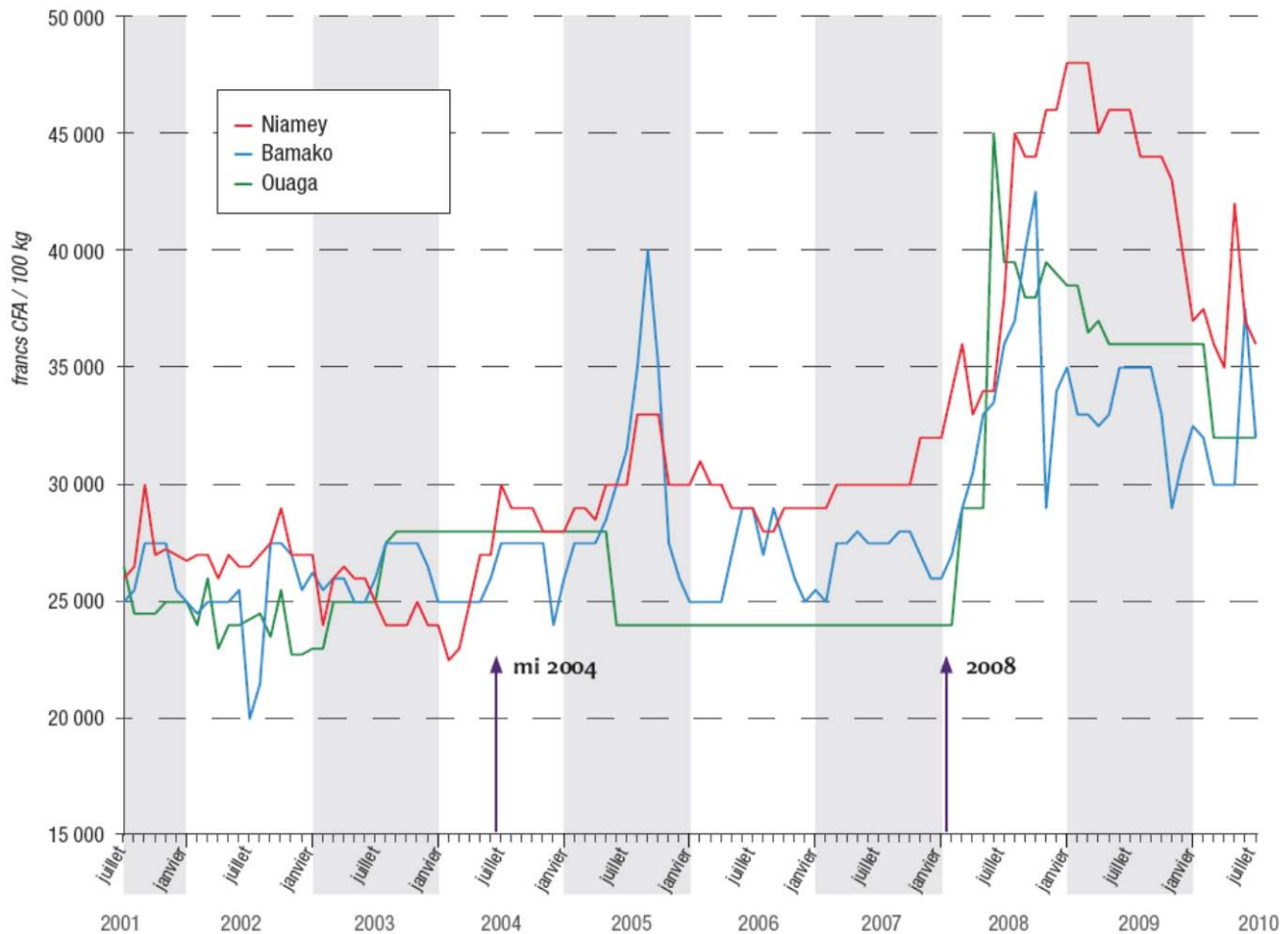


In Figure 5, we can observe that:

- The overall change in the price of local rice and imported rice (recorded since 2004) is similar,
- Fluctuations in the price of local rice are higher (crisis of 2005, crisis of 2008 with inflation of fuel and fertilizer costs) than those observed for imported rice,
- **The distance between the two curves follows a diminishing trend: the competitiveness of local rice is improving, even if tariffs were removed on imported rice in 2003, 2005 and 2009 to mitigate crises** (40,000 tons in 2003, 210,000 non-tariff tons in 2005, and then 400,000 tons in 2009 to which was added 79,500 tons of rice at the end of the year, due to persistently high prices at market). The impact is visible on the 2009 curve: drop in price for imported rice.

Figure 6: Comparison of the price of local rice in Mali with imported rice in Burkina and Niger, 2001-2010

(Source: Afrique Verte)



Comparing the price of rice in the three capitals, we see that after mid-2004, local rice in Mali was less expensive than that imported in Niger (with the exception of the 2005 crisis). This trend is also observed in Burkina after 2008.

This confirms that local rice from Mali should be competitive on the sub-regional market.

WORDS OF PRODUCERS

« The rise in prices is due to the considerable increase in the population (50% over the course of the past 10 years), to the existence of a rapidly growing urban market (particularly in Bamako), to the inadequacies of import and export policies compared to the fluctuation of demand at the national level, to the limited access to credit for production and commercialization (interest rates), to the growth of the use of agricultural fertilizers, fossil fuels and the instability of the global economy ».

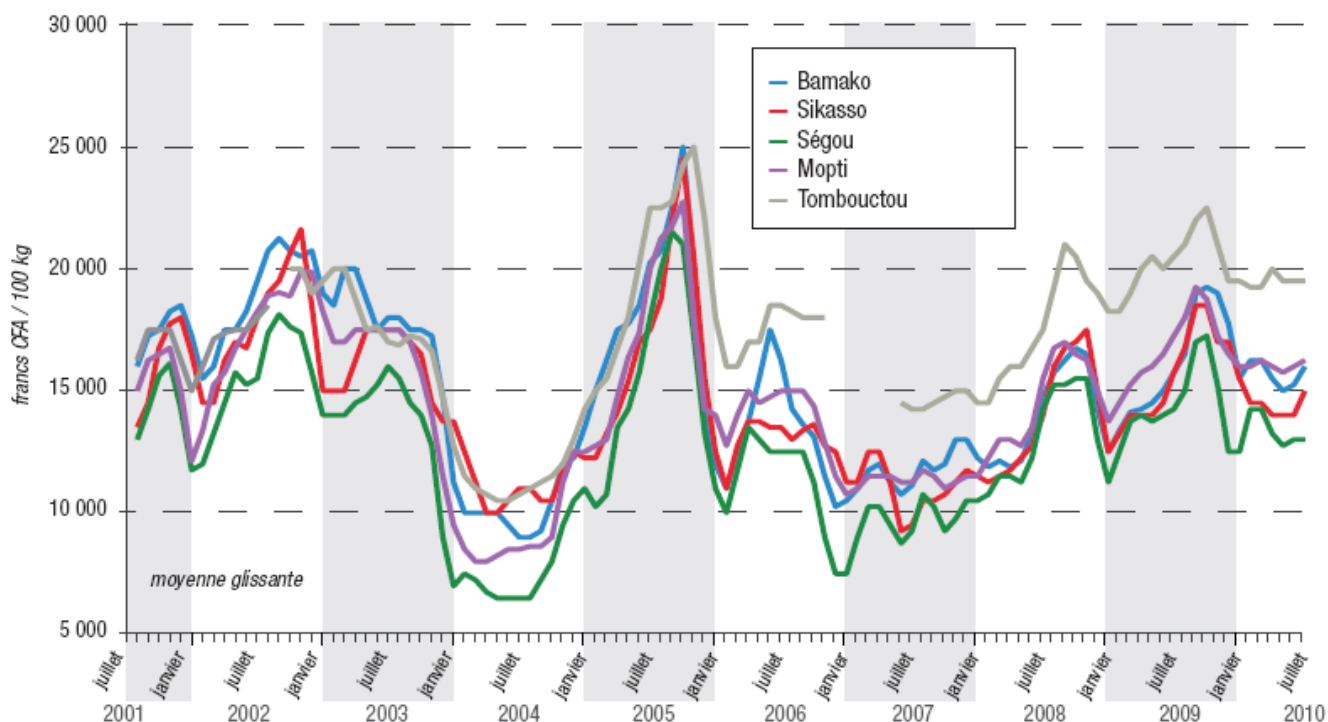
« Commercialization is limited by a lack of respect for commercial contracts (delays in delivery, payment, poor quality of grains and problems of sack...) and by the customs fees, despite the rules set by the UEMOA ».

WORDS OF TRADERS

« The rise in prices can be explained by production and political decisions, notably the export of grain. If large exports are authorized, this can accentuate the rise in prices ».

« Theoretically, within the UEMOA, there is a free circulation of people and goods. But, without it being admitted publicly and officially, we know that protectionist measures have been taken, since 2008 ».

Figure 7: Evolution of the price of mil in Mali for five cities, 2001-2010
(Source: Afrique Verte)

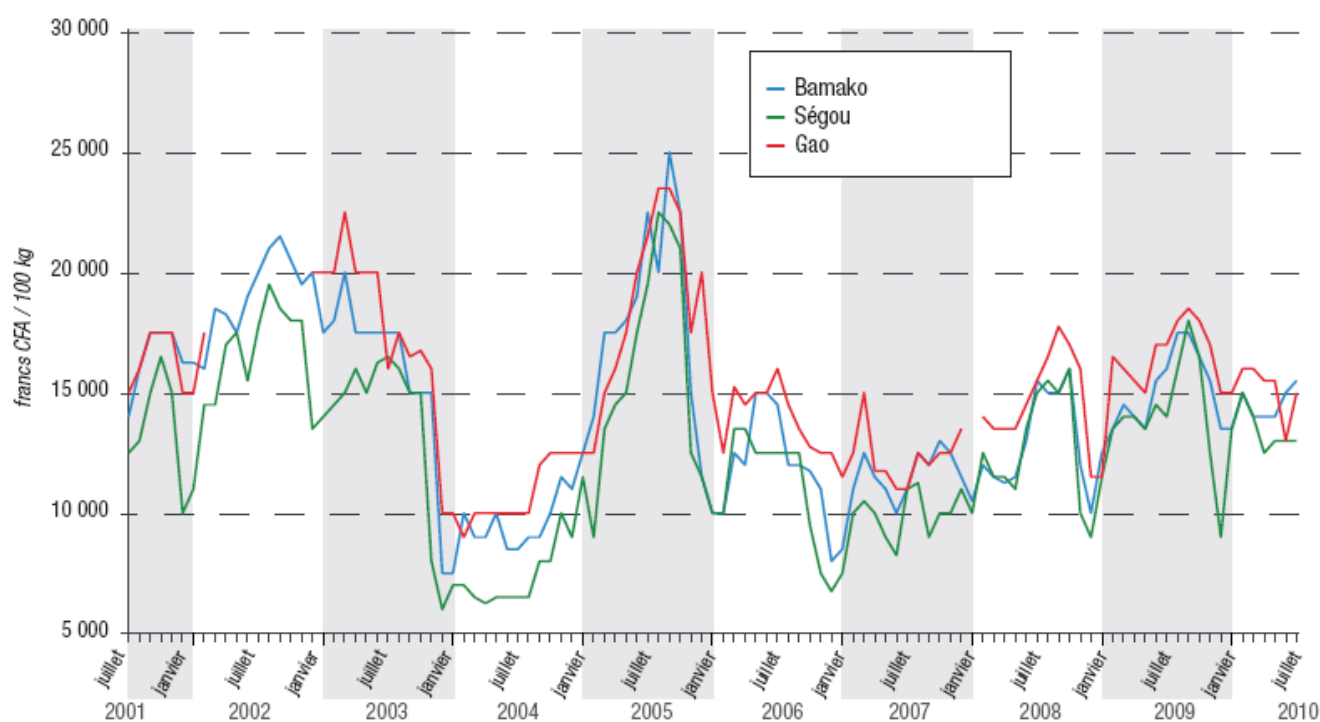


The price curve for mil in Mali generally follows the same changes as those in Burkina, so it is not analysed in great detail. This is the same case for that of sorghum (Figure 8).

Across 9 agricultural campaigns:

- 5 followed the theoretical price model;
- 3 campaigns did not obey the model (2002-2003, 2004-2005 and 2006-2007);
- 1 campaign was indeterminate (2009-2010).

Figure 8: Evolution of the price of sorghum in Mali for 3 cities, 2001-2010
(Source: Afrique Verte)



Important issues which influence the grain markets in Mali • • •

1. At the level of production:

- 2 under-performing campaigns out of 9, according to the gross cereal product: 2002-2003 and 2004-2005. It is also worth noting that the year 2000-2001, was also a deficit season.

- A suite of 5 successive surplus seasons (from 2005-2006 to 2009-2010).

2. At the political level:

- The Ivory Coast crisis which began in September 2002 had a major impact on the flow of imports (coming via the port of Abidjan) as well as on exports of products like livestock and cotton, in addition to the management of repatriated populations. Very quickly, land-locked countries of the Sahel developed relations with ports in Dakar, Accra, Cotonou and Lomé, in order to compensate.²

- In 2003, the State put into place various measures to limit the increase of prices: removal of tariffs from imported rice and free distribution centers in the hardest-hit communities

- Following its creation in 2004, the Food Security Commission initiated a program of grain allocation for 703 rural communities in Mali: 1st phase: distribution of 9.146 tons of grain in 83 communities at the end of 2004; 2nd phase, beginning of 2005: distribution of free food (1,414 tons) to 101 communities the most affected by the crisis and allocation of 20 tons of grain to each of the community reserves.

- To combat the ongoing increase in prices, the state decided to remove the tariffs on imported rice in 2005 and 2009, as well as for other staple foodstuffs.

- The State re-affirmed its commitment to rural areas by adopting the Agricultural Orientation Law in 2005.³

- Operation Sanji (artificial rain seeding) was initiated by the State in 2006 to confront precipitation shortfalls; it was continued for the following 5 years.

- The rice initiative, started in 2008 was extended to corn and wheat in 2009: it was a structural response to high grain prices, and the hypothesis that the trend was expected to continue in future years. This initiative was the most important feature of the 2008-2009 agricultural campaign: mainly oriented around subsidies for investment, in equipment or technical consulting, the operation was expected to enable a 50% improvement over the previous campaign. The initiative should produce rice production destined for market of 1,000,000 tons – thus also ensuring the needs of the country – and producing an export surplus of 100,000 tons.

3. At the economic level:

- At the end of 2001, the market in Mali became a source of stock for bordering countries, which drew prices higher: from November 2001 to January 2002, more than 11,000 tons of grain were exported (source: OMA).

- In 2008, the global crisis produced higher prices for staple foodstuffs, petrol, primary materials, agricultural inputs... which made purchasing goods like fertilizer and distribution costs that much more prohibitive.

4. At the social level:

- Almost every year, institutional purchases to re-fill reserves produce a more or less fleeting effect on market.

- The increasing ability of farmer operators to extract the maximum profit possible from commercial selling: thanks to information on markets, training and access to credit, some operators have learned to stagger their sales to take advantage of price spikes.

- Interest by aid organizations to develop the local market: example of Purchase for Progress (P4P) by the UN WFP, which purchases and agglomerates stock from smallhold farmers to access larger markets.

Actors in Mali themselves conclude • • •

WORDS OF PRODUCERS

« To limit fluctuations in prices, the OP propose to set up a system of collaboration between producers, managers of grain reserves, and grain merchants. Collective purchases for OP in zones of undersupply should be encouraged. Thus we have to develop Tools for access to finance which are adapted to commercialization. The state must regulate the grain market in cases of price inflation. ».

WORDS OF TRADERS

« The state is playing a full rôle in the arbitration of the grain business. But OPAM should develop its regulatory power in the market by a larger purchasing and sales capacity at the right moment (purchases during periods of High production, the holding back of reserves from the market and the selling of stock during times of crisis to lower prices) ».

WORDS OF PRODUCERS

« The rise in prices is due to the considerable increase in the population (50% over the course of the past 10 years), to the existence of a rapidly growing urban market (particularly in Bamako), to the inadequacies of import and export policies compared to the fluctuation of demand at the national level, to the limited access to credit for production and commercialization (interest rates), to the growth of the use of agricultural fertilizers, fossil fuels and the instability of the global economy ».

« Commercialization is limited by the holding back of reserves and the low amount of product available in surplus areas – despite the sometimes enormous surpluses that are sometimes announced – by the lack of financial resources to collect larger reserves through transactions and by the high cost of transport ».

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« Inside the country, it is the problem of transport (fuel) and the state of the road network. The toll road is a new phenomenon which greatly impacts the cost of transport and increases prices ».

² See Afrique Verte 2002 publication: 'Consequences of the Ivory Coast crisis for enclave countries of the Sahel'.

³ See section on agricultural policy, page 5

NIGER: Analysis of prices 2001-2010 •••

Characteristics of the areas covered by the study in Niger •••

The study covers 6 regional markets: Agadez, Dosso, Maradi, Niamey, Tillabery and Zinder.

Agadez: a pastoral herding area, agricultural activities are essentially limited to growing vegetables. Grain consumed in this region comes from the southern part of the country but also from bordering countries in the north, particularly Algeria. The market in Agadez is a **consumer market**.

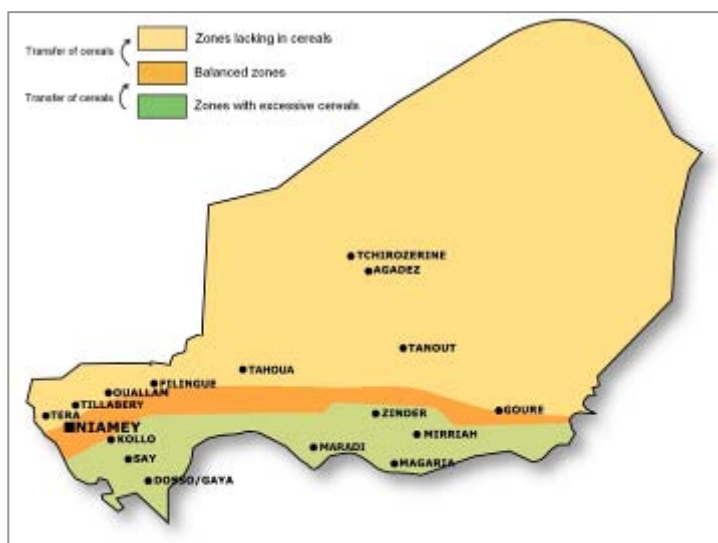
Dosso: One of the primary agricultural regions in the country. The area generally produces a surplus. Due to its geographical situation in the region in relation to the capital Niamey, the market in Dosso is both a **consumer market but also a secondary collection market**.

Maradi: The region is part of the grain producing basin of Niger, by virtue of its local production and the existence of commercial links with neighboring Nigeria. Maradi market is a **secondary collection market** used by operators from Niamey, Tahoua and Agadez.

Niamey: An urban area with commercial and administrative functions, Niamey is positioned as an important **consumer market** for the urban community of Niamey but also as a **collection market** for the 6 departments (administrative areas) of the Tillabery region, particularly those in the north.

Tillabery: This region is one of the top rice producing areas in the country. For dry crops (mil, sorghum), the region hangs in delicate balance (good years alternate with poor ones). The main market in the region is primarily a **consumer market**. It is differentiated by markets in the other regions by the strong presence of local rice in the form of stewed or white rice.

Zinder: The Zinder market possesses the same characteristics as those of Maradi. The region generally delivers a surplus of production. This market, which regularly supplies the region of Agadez, is also strongly linked to the Kano region in Nigeria.



Analysis of price fluctuation •••

After observing the curves in Figure 9, we notice a seasonal variation between the period of harvest and the low season, for 6 campaigns out of 9. Meanwhile, this variation is more significant for 3 campaigns: 2001-2002, 2004-2005 and 2007-2008. The largest seasonal fluctuations were recorded between October 2004 and August 2005 with a rate of variation of 147% for the price of mil in Maradi.

Comparing with the results of the campaign, we note 2001-2002 and 2004-2005 that were recorded gross balances deficit. By cons, the significant development during the 2007-2008 campaign was influenced by rising global food prices and raw materials.

Also, we note that on three other campaigns: 2002-2003, 2005-2006 and 2006-2007, the evolution of prices between the harvest period and the wedding is stagnating, if not negative.

Total grain production for the 10 previous agricultural campaigns in Niger

(Sources : Direction of statistics - Ministry of Agricultural Development)

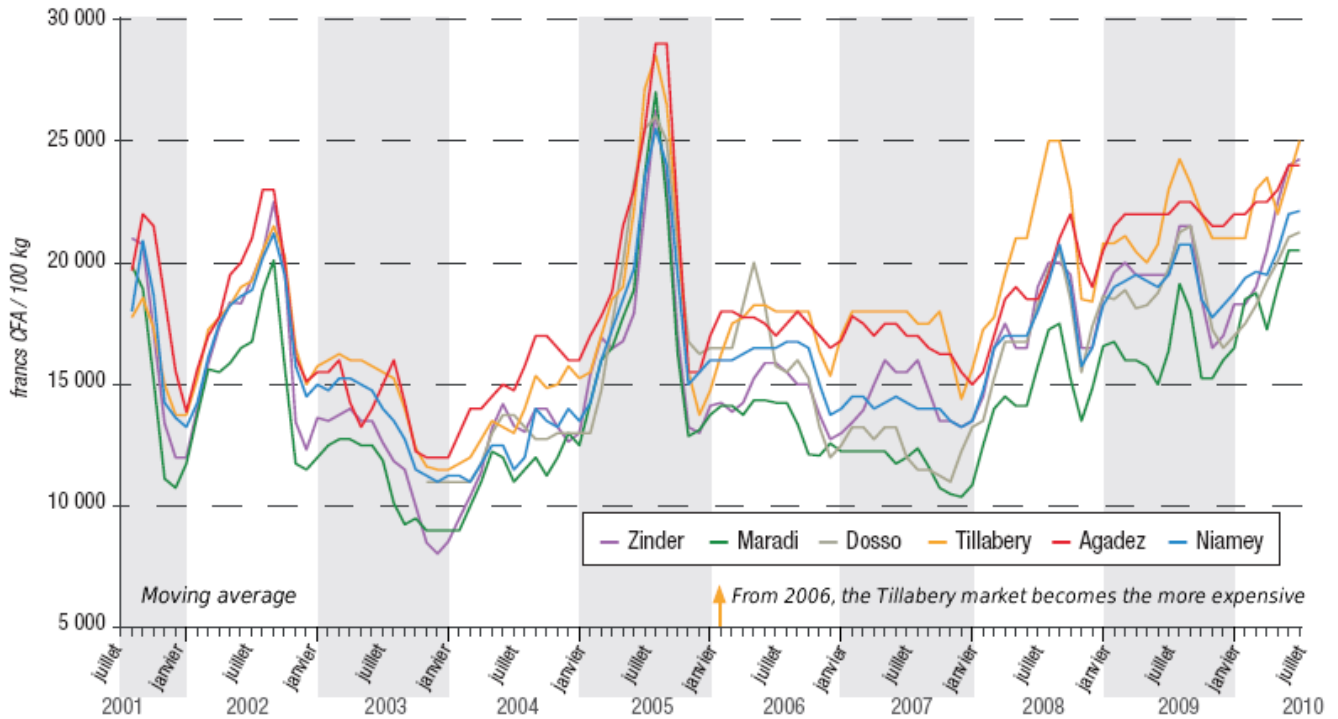
In tons	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Food needs	2 500 000	2 700 000	2 786 000	3 000 000	3 000 000	3 081 776	3 251 000	3 353 201	3 586 242	3 428 686
Available production	2 000 000	2 700 000	2 965 000	3 196 000	2 550 000	3 102 888	3 475 000	3 353 424	4 019 108	3 174 750
BC (Gross)	- 516 360	- 5 400	+ 179 000	+ 196 000	- 450 000	+ 21 112	+ 225 000	+ 101 000	+ 433 000	- 254 000
BC (Net)	- 163 000	+ 254 500	+ 389 500	+ 464 000	- 223 000	NC	+ 455 000	+ 303 000	+ 751 000	+ 37 000

• under-production campaign

• over-production campaign (more than 10% of national needs)

Figure 9: Evolution of the price of mil in Niger for 6 cities, 2001-2010

(Source: Afrique Verte)



Over 9 agricultural campaigns, only 3 (or 33% of cases) followed the overall “theoretical model” of seasonal price fluctuation: 2001-2002, 2004-2005 and 2007-2008

Figure 10: Evolution of the price of sorghum in Niger for 6 cities, 2001-2010

(Source: Afrique Verte)

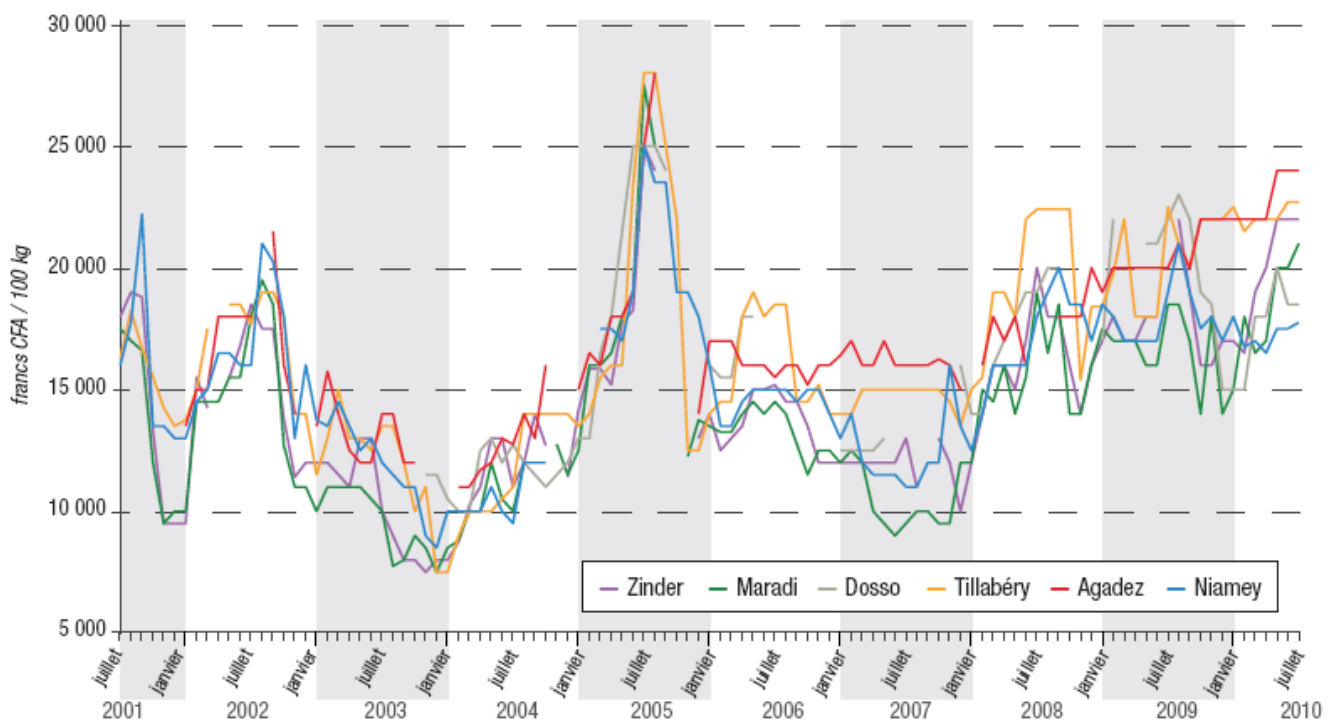
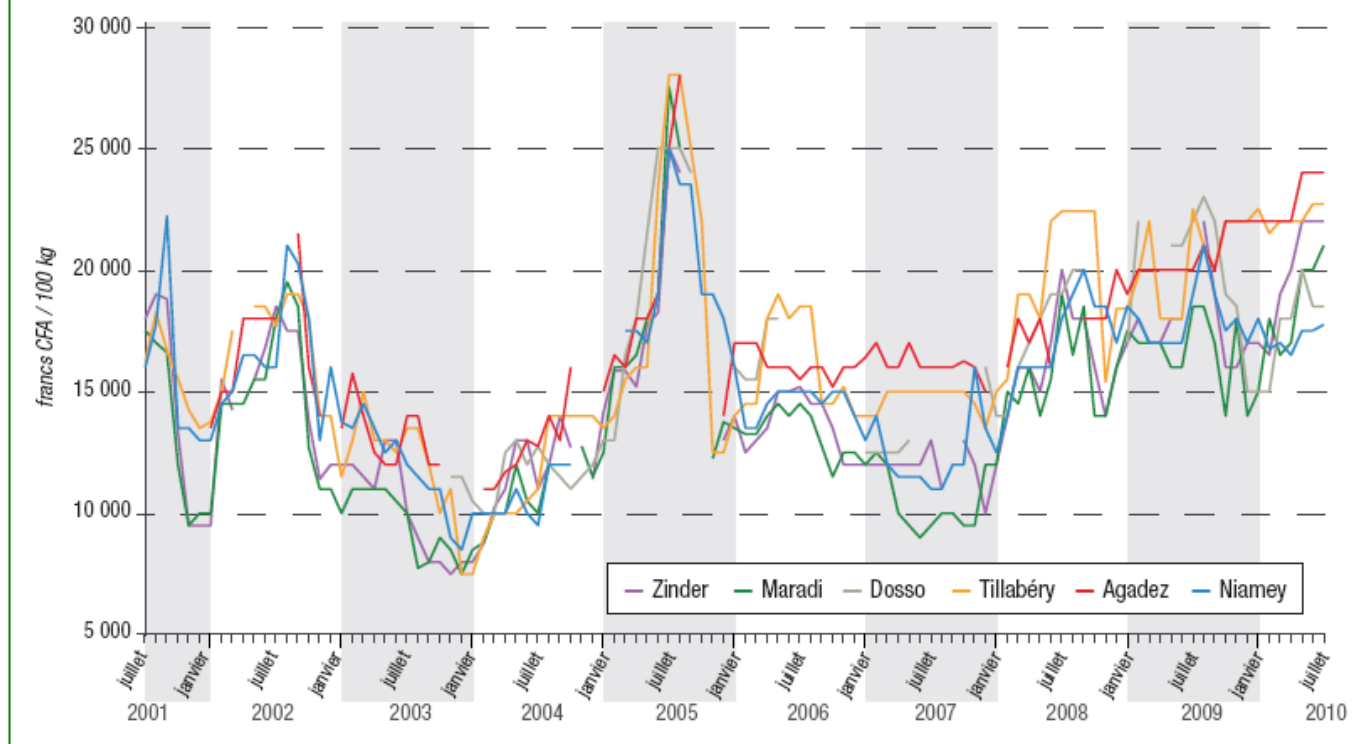


Figure 11: Evolution of the price of corn in Niger for 3 cities, 2001-2010

(Source: Afrique Verte)



Inter-year variation • • •

The inter-year variation of prices indicates that the lowest points were recorded at the end of 2003 (gross grain production: +179.000 tons), the beginning of 2004 (gross grain production: +196.000 tons), while the highest prices were observed in 2005 (gross grain production: -450.000 tons), then at the end of 2008 (gross grain product: +101.000 tons) and 2010. The strong increase in prices in 2005 was linked to a problem of scarcity on national and even sub-regional markets. In order to confront this, rural households and development partners substituted rice, which hadn't yet been affected by high prices, for mil.

Since January 2008, prices have maintained a relatively high level, and this has occurred despite significant surplus harvests recorded for the 2006-2007, 2007-2008 and 2008-2009 campaigns. The hike in prices on the international market is thus producing an impact on domestic prices.

Spatial variation • • •

Analysis of the fluctuation of prices by region has revealed that from 2001 to 2006, the Agadez market was the most expensive. It was followed by Tillabéry, which despite its agricultural character, often posted higher prices than Agadez. In fact, Agadez benefits from a trade route with Algeria, from which it imports rice and other food, which has enabled it to contain demand for local grain.

In general, over the entire study period, the Maradi market re-affirmed its position as a collection point and posted the lowest prices compared with other regions. It was followed by Zinder until the end of 2006, after which time Dosso took over the second rung position for the least expensive markets.

Overall the prices at the 3 markets (Maradi, Zinder et Dosso) confirmed their positions as collection markets. Niamey, the capital, which benefits from an influx of supply from Maradi, Burkina Faso and Mali, posted significantly lower prices than those in Tillabéry.

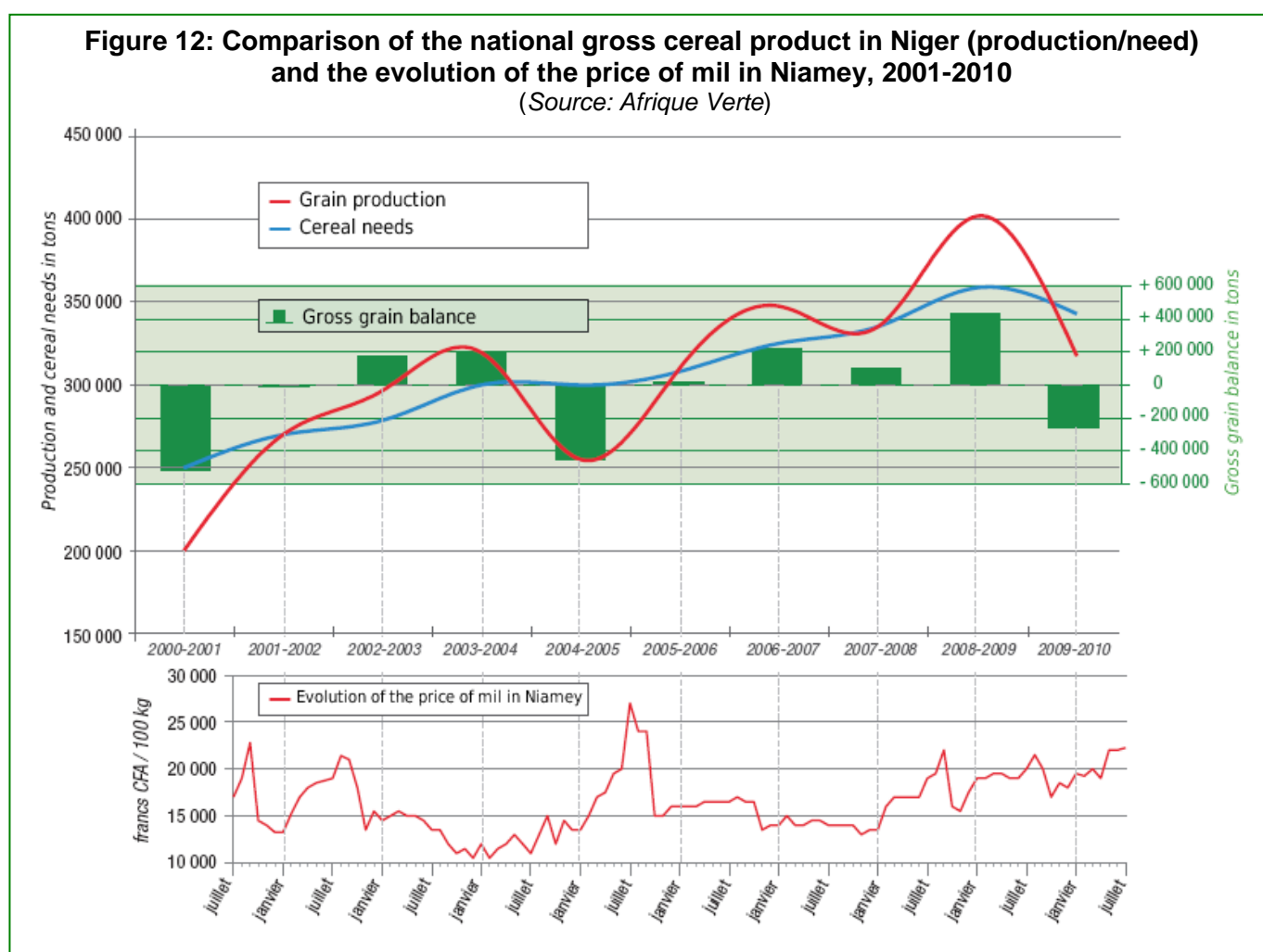
The fluctuation of the price of sorghum in Niger (Figure 10) is very similar to that of mil (Figure 9), even if sorghum is slightly less expensive. As far as imported corn (principally from Benin) is concerned, the overall change in price is similar (Figure 11). We note that the Agadez market is more expensive overall, which clearly demonstrates the impact of transportation costs.

Analysis of supply and demand • • •

- **The supply of grain:** cereals produced in Niger for the most part consist of mil and sorghum, which are basic staples for the population. They are cultivated over a surface of 9,000,000 ha per year. This regular supply feeds into the total national production, which fluctuates according to the success of campaigns. After mil and sorghum comes rice, which is cultivated over a surface of 14,000 ha and corn, which is grown on only 1,500 cultivated hectares. These last two products are mostly imported.
- **The demand for grain:** In Niger, the demand for cereals varies according to changes in demographics, since it is driven principally by human consumption. The demand is not diverse, although we do notice slight variations in consumption habits, particularly the growing importance of the consumption of corn, even while its production has remained marginal. Demand from the agro-industrial sector remains weak, particularly for mil and sorghum. Only rice grown in irrigated paddies has become the object of industrial processing. The livestock system in Niger is primarily free-range and the demand for grain as animal feed has remained at practically zero.

To analyze the fluctuation of prices on the national market, the gross cereal product seems appropriate since the supply of primary grains (mil and sorghum) depends more on national production than on the import/export balance. Actually, imports are not extensively used except during crisis years and exports are difficult to measure, particularly towards Nigeria since many transactions take place via more or less informal channels.⁴

A deficit gross cereal production year generally precedes a food security crisis in the months that follow (the case during the 2000-2001, 2004-2005 and 2009-2010 campaigns). When there is a strong surplus, this makes it difficult to sell the additional supply and for the farmer to earn money.



As it demonstrates in Figure 12, the demand for food is in constant evolution while the available production fluctuates only from one year to the next. The light decline in the needs curve for 2009-2010 results from a lower estimate of stock relative to calculations of preceding campaigns, and not from a decline in human consumption. In fact, the supplies counted in the grain balance were estimated at 260,000 tons in 2008-2009, when in fact they only came to 32,500 tons when evaluated in 2009-2010, a difference of 227,500 tons. For the same period, the human demand grew by 161,750 tons and passed from 2,865,900 tons in 2008-2009 to 3,027,650 tons in 2009-2010, from which comes a net drop of 65,750 tons.

⁴ Cf. Publication of Afrique Verte « 2005 : Famine au Niger ? »

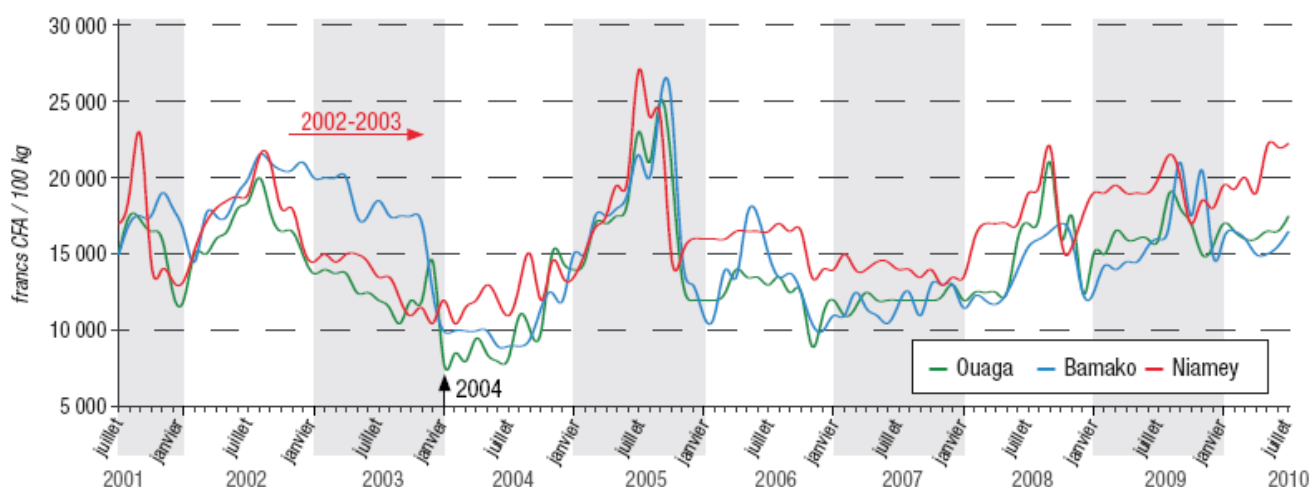
It is clearly apparent in Figure 12 that:

- The 3 crises of under-production led to a spike in prices (2002, 2005 et 2010): these are **crises of shortage**. The rise in prices in 2010 was not as spectacular as that in 2002 or 2005, which shows that the measures taken, notably those that were part of the contingency plan, had a beneficial impact. Although the crisis of 2005 was amplified by the poor availability of grain on the market in the Sahel (order for sorghum from India by the CCA), that of 2010 was accentuated by poverty: livestock, which forms the second pillar of the economy was equally hard hit due to shortages of foraging material.
- In 2005-2006, while the production level was balanced, the persistence of prices can be explained by numerous interventions by the State, development partners and international institutions, projects and NGOs (distribution of aid for free or at reduced prices, work-for-aid programs, subsidized prices...)
- The procession of years of oversupply led to a drop in prices (2002-2003, 2003-2004 then 2006-2009 following the balanced year of 2005-2006). These are **crises of abundance**. The commercialization of the surplus poses a problem: the producer is not adequately compensated.
- The rise in prices in 2007-2008 (surplus balance) can be explained by the global crisis (increase in grain prices on the global market) which persisted in 2008-2009 (generalized crisis in primary materials): these are **crises by contagion**.

4. A SUB-REGIONAL GRAIN MARKET, SENSITIVE TO GLOBAL SHOCKS

Let us examine the trends...

Figure 13: Comparison of the price of mil in 3 capitals, 2001-2010
(Source: Afrique Verte)



We note that in the three capitals, the evolution of the price of mil is very similar, while the national grain budgets were quite different over the observation period for each of the three countries.

Gross annual grain productions

National datas, CILSS datas: definitives gross datas diffused each year between february and april)

en tonnes	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Burkina	- 330 000	+ 150 000	+ 350 000	+ 600 000	+ 50 000	+ 493 000	+ 620 000	+ 465 000	+ 478 000	+ 79 000
Mali	- 172 000	+ 62 000	- 442 000	+ 83 000	- 625 000	+ 293 000	+ 330 000	+ 325 000	+ 481 000	+ 500 000
Niger	- 516 360	- 5 400	+ 179 000	+ 196 000	- 450 000	+ 21 000	+ 225 000	+ 101 000	+ 433 000	- 254 000

• under-production campaign

• overproduction campaign (more than 10% of national needs)

NB : Afrique Verte international chose to reason from the gross balance.

Prior to January 2004, mil was often most expensive in Bamako, while after January 2004, the price of mil was almost always more expensive in Niamey.

In 2002-2003, the gross budget in Burkina was a strong surplus, that in Mali was a strong deficit and Niger was running a slight surplus.

Despite very different levels of production, the prices of mil generally dropped in the 3 countries; there is therefore movement of grain between the countries.

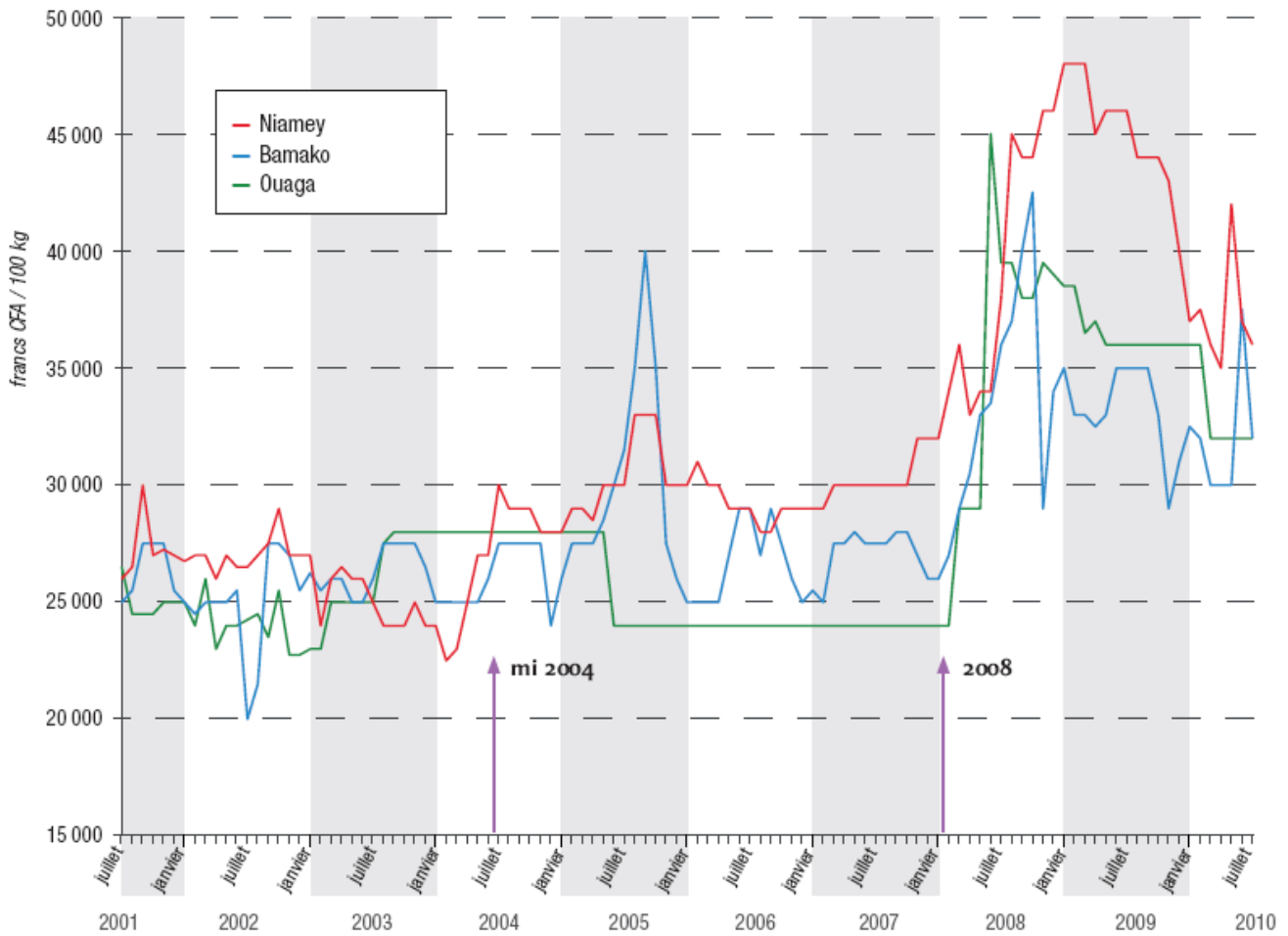
The following campaign, after Mali announced only a slight surplus, prices followed their decline, generating a crisis of abundance.

In 2007-2008 and in 2008-2009, the 3 countries all experienced good production seasons. The gross cereal products were all strongly positive.

The price of mil nevertheless saw large increases, influenced by the rise in prices at the global level, and notably the high cost of primary commodities.

- **The sub-regional character of the market is proven.**
- **The sub-regional market for local grain is influenced by the global context.**

Figure 14: Comparison of the price of local rice in Mali with imported rice in Burkina and Niger, 2001-2010
(Source: Afrique Verte)



The most expensive market over the observation period was Niamey.

Before the crisis of 2005, the price of rice was relatively stable and similar in the 3 countries. It has strongly fluctuated:

- Following the sub-regional crisis of 2005, particularly local rice in Mali and to a lesser degree imported rice in Niger,
- Then after 2008 (global crisis with generalized increase in prices): strong fluctuations in the 3 countries, for local rice in Mali and imported rice in Niger and Burkina.
- We note that after 2008, local rice in Mali gained in competitiveness compared to imported rice in Niger and Burkina.

Local rice in Mali gained competitiveness due to the global crisis.

5. PERSPECTIVE ON WARRANTAGE IN NIGER

Objective of this part of the study: based on the data collected on prices and the comments made by operators, what conclusions might we be able to pull out on the question of warrantage? We have chosen to study the case of mil in Niger, since this is the country that makes the most use of this particular system.

We observed in the study that:

The theoretical seasonal variation of prices is generally only followed once every two years, on average, on the 9 campaigns measured across 3 countries,

Operators, farmer organizations and merchants all complain about problems of storage and the difficulty of accessing finance capital, which limit the production or commercialization of grain.

Warrantage: an alternative for farmer organizations in the commercialization of their products? •••

Commercialization by definition is “*the collective operations which begin at the moment of extraction of the product and end at its use by the consumer.*” It therefore includes collection, distribution and sales.

As already indicated, the liberalization of the grain market was carried out without advance preparation of farmer organizations, which have not been able to occupy an important place within the sector, particularly at the level of commercialization. Today, we find all along the supply chain of agricultural products, different forms of negotiation of which many can be considered unfair for farmer organizations.

Why do producers encounter difficulties when trying to commercialize their products? •••

It is difficult to answer this question. Nevertheless, we can attempt to understand by exploring the principal characteristics of the grain market in the Sahel, which produce its complexity.

The seasonality of agricultural products

The commercialization of agricultural products is linked to the agricultural production cycle, which is itself linked to seasonal variations in precipitation. In Niger, the production cycle of dry grains takes place generally from May to September. As a consequence, the commercial campaign currently begins in October.

The cycle of commercialization generally takes place in two sub-phases:

- The period of collection by producers, from October to December,
- The planting season (or market delivery season for merchants and storage organizations), from May to August.

The atomic nature of supply

Supply of agricultural products in general and grains in the Sahel in particular, is atomized: we find a multitude of small producers from which the primary harvest is made, within which no individual producer, taken in isolation, can have any significant impact on pricing. This atomic character of supply weakens the bargaining position of producers in negotiations, particularly because they are not organized in structures that can have an economic influence.

The molecular nature of demand

Contrary to supply, the demand for local grain is molecular. The number of actors is relatively low and the presence or retreat of any of them (large grain merchants, the State, International institutions) from the market can have a major influence on the level of prices.

Additionally, at markets and weekly fairs, we often encounter informal agreements between buyers to fix the prices offered to producers.

The phenomenon of over-commercialization

According to standard commercial logic, producers never sell more than their surplus of grain, after taking care of domestic nutritional requirements. When a producer doesn't manage to sell all of his surplus, we call this “*under-commercialization*”. But today in the majority of cases, we actually observe the opposite effect. In reality, with the monetization of African economies and the strong need for finances, farmers are selling grain even if they are producing a seasonal deficit. We therefore refer to this as over-commercialization. This phenomenon of “*Over-commercialization*” places farmers in the position of net purchasers only a few months after harvest. This is potentially risky for them, since the flow of grain reverses during the planting season. Under-producing farmers (or those who have over-sold) find themselves in the position of demand. Suppliers are of course the merchants.

It is due to these particular characteristics of the grain market that development partners have redoubled their efforts to assist producers to better extract the highest profit from their labor. Among these initiatives, we find **warrantage**, or credit issued on harvested stock as collateral.

The concept of warrantage is based on the following principle: Farmers unload products during harvest at the lowest price point in order to settle debts or to cover other priority needs, while the price of these same products increases by more than 50% during the low season.

As we have shown in this document, the price of dry grain in the Sahel region fluctuates greatly; the projected seasonal movement of prices is more theoretical than practical.

Definition of warrantage . . .

Warrantage is a form of credit in which merchandise consigned to a shop guarantees the funding requested by the owner

The word "warrant" comes from the French term for consignment, and represents the certificate of deposit for the placement in storage of a quantity of merchandise of a specific quality. The warrant carries all of the necessary information to identify the owner of the deposited goods.

Warrantage thus enables the producer to defer the period of sale of his or her goods. The stock placed in storage constitutes collateral which allows him to obtain credit to satisfy his immediate needs of invest in economic activity.

The price differential between the period of harvest and the low season should enable the producer to amortize the interest on the loan and cover the costs of storage. The net sales earned by the producer determine the profitability of this scheme for them.

Who are the primary actors in the warrantage system?

Classic warrantage involves the presence of **3 actors**:

- **The producer** (or his organization),
- **The professional warehouse** (possessing the necessary storage infrastructure and enjoying the trust of the depositor and borrower).
- **The banker** (more generally in the case of Niger, a micro-finance organization)

Warrantage thus requires 2 pre-existing conditions: a storage capacity and a robust organization.

In Niger, there is no commonly identifiable professional warehouse. The warrantage experiments carried out here so far have involved 2 operators: a farmer organization and the IMF. The storage is carried out in community shops and placed under double seal: one padlock for the farmer organization and one for the micro-finance institution. The stock itself nevertheless remains the responsibility of the Farmer organization.

How does a typical warrantage scheme play out?

The warrantage operation takes place in 2 phases:

- **At the point of harvest**, the producer deposits a quantity of his choice of merchandise at the storage depot. The depot manager writes up a certificate of deposit (the warrant), which he provides to the depositor. With this certificate in hand, the producer presents himself to the micro-finance institution, which extends him credit corresponding to the maximum amount of 100% of the value of the merchandise on that day (but more commonly 80% of value, to limit risk). In exchange, the microfinance institution retains the certificate of deposit, which represents the guarantee. At that moment, **the process is said to be opened**.
- **During the low season** (or at the decided time) the producer identifies a buyer for his stock and together they present themselves at the IMF to pay for the merchandise and recuperate the certificate of deposit, which enables the buyer to take possession of the stock. The micro-finance institution handles payment of the producer, deducting the balance of interest on the loan and the storage fees, and turning over the final payment to the producer. **The process is then said to be closed**.

Does warrantage represent a commercial opportunity for farmer organizations?

To more accurately respond to this question, we should calculate the profitability of the process for the individual farmer. This profitability is measured by the level of final sale, which the finance institution pays to the producer.

To accomplish this we have compared (in relative terms) the costs and returns produced by participation in the scheme.

- The principle costs are: the interest rate charged by the micro-finance institution, the cost of storage and possible losses of merchandise.
- The return consists of the price differential between the harvest purchase price and the price of eventual sale.

This type of calculation requires quantifying the variables. For example, let us consider the rates and terms currently used in Niger.

In Niger, the interest rate generally applied by microfinance institutions is 2.5% per month (but it can also be lower). The length of the loan corresponds to the interval separating the beginning of the harvest period and the eventual point of sale (in general 6 months, but the producer can seek a buyer before this time).

Over this period, the interest accumulated is thus 15%. If we suppose that the storage and possible losses of stock do not exceed 2.5%, the threshold for profitability by the producer sits at 17.5%.

Thus, if the price of grain increases by 17.5% between harvest and sale, the producer neither profits nor loses from the process. Of course, for the process to be profitable for him, the variation in price must be higher than 17.5%. If the change is less than this amount, the process will result in an overall loss for the producer, since the loan and its interest must always be paid to the finance institution. In this case, the closure of the deal will be an unhappy one for the producer.

The following table provides the rate of variation in the price of mil between the period of harvest and the period of sale, out of the 9 campaigns covered by the study.

- The price at harvest was calculated by taking the average price for the 2 months during the peak period of harvest: November and December.
- The price during the period of sale, 6 months later, is equally calculated by taking the average of 2 months: April and May.

As the regions of Agadez and Niamey are not areas of grain production, we removed these two markets from the analysis. So, the study covered 4 agricultural regions: Zinder, Maradi, Dosso (from November 2003) and Tillabéry.

According to the data presented in the table below, we see that the price of mil generally rises during the period between harvest and sale: out of 34 data points, on 24 occasions the fluctuation was greater than 17.5% (in violet). Thus, in 71% of cases, warrantage appears to have been a positive opportunity for mil producers.

However...

**Table on mil warrantage in Niger,
cases where credit obtained represented 100% of the value of stock at harvest**

Markets	Prices at harvest			Prices 6 months later				Part of the actors				
	nov.-01	déc.-01	Average	avr.-02	mai-02	Average	Gap	variation	Banker	Services ext	Producer	
Zinder	12 000	12 000	12 000	19 000	17 750	18 375	6 375	53 %	15 %	2,5 %	36 %	
Maradi	10 000	11 500	10 750	15 250	16 500	15 875	5 125	48 %	15 %	2,5 %	30 %	
Dosso												
Tillabéry	14 000	13 500	13 750	17 500	19 000	18 250	4 500	33 %	15 %	2,5 %	15 %	
Markets	nov.-02	déc.-02	Average	avr.-03	mai-03	Average	Gap	variation	Banker	Services ext.	Producer	
Zinder	11 400	13 250	12 325	13 500	13 500	13 500	1 175	10 %	15 %	2,5 %	- 8 %	
Maradi	11 500	11 500	11 500	12 500	12 500	12 500	1 000	9 %	15 %	2,5 %	- 9 %	
Dosso												
Tillabéry	14 000	16 000	15 000	16 000	16 000	16 000	1 000	7 %	15 %	2,5 %	- 11 %	
Markets	nov.-03	déc.-03	Average	avr.-04	mai-04	Average	Gap	variation	Banker	Services ext.	Producer	
Zinder	8 000	8 100	8 050	12 000	14 400	13 200	5 150	64 %	15 %	2,5 %	46 %	
Maradi	8 500	9 500	9 000	11 500	13 000	12 250	3 250	36 %	15 %	2,5 %	19 %	
Dosso	11 000	11 000	11 000	12 500	13 500	13 000	2 000	18 %	15 %	2,5 %	1 %	
Tillabéry	11 500	11 500	11 500	13 500	13 500	13 500	2 000	17 %	15 %	2,5 %	0	
Markets	nov.-04	déc.-04	Average	avr.-05	mai-05	Average	Gap	variation	Banker	Services ext.	Producer	
Zinder	13 000	12 300	12 650	16 200	17 350	16 775	4 125	33 %	15 %	2,5 %	15 %	
Maradi	13 500	12 500	13 000	17 000	18 500	17 750	4 750	37 %	15 %	2,5 %	19 %	
Dosso	13 000	13 000	13 000	18 500	21 500	20 000	7 000	54 %	15 %	2,5 %	36 %	
Tillabéry	16 000	15 500	15 750	19 000	19 000	19 000	3 250	21 %	15 %	2,5 %	3 %	
Markets	nov.-05	déc.-05	Average	avr.-06	mai-06	Average	Gap	variation	Banker	Services ext.	Producer	
Zinder	12 500	13 500	13 000	14 500	16 000	15 250	2 250	17 %	15 %	2,5 %	0	
Maradi	12 250	14 000	13 125	14 000	14 700	14 350	1 225	9 %	15 %	2,5 %	- 8 %	
Dosso	16 000	16 500	16 250	20 000	20 000	20 000	3 750	23 %	15 %	2,5 %	6 %	
Tillabéry	13 000	14 500	13 750	18 000	18 500	18 250	4 500	33 %	15 %	2,5 %	15 %	
Markets	nov.-06	déc.-06	Average	avr.-07	mai-07	Average	Gap	variation	Banker	Services ext.	Producer	
Zinder	12 500	13 000	12 750	16 000	16 000	16 000	3 250	25 %	15 %	2,5 %	8 %	
Maradi	12 650	12 500	12 575	12 500	12 000	12 250	- 325	- 3 %	15 %	2,5 %	- 20 %	
Dosso	12 000	12 000	12 000	12 500	14 000	13 250	1 250	10 %	15 %	2,5 %	- 7 %	
Tillabéry	14 700	16 000	15 350	18 000	18 000	18 000	2 650	17 %	15 %	2,5 %	0	
Markets	nov.-07	déc.-07	Average	avr.-08	mai-08	Average	Gap	variation	Banker	Services ext.	Producteur	
Zinder	13 500	13 000	13 250	17 000	16 000	16 500	3 250	25 %	15 %	2,5 %	7 %	
Maradi	10 500	10 250	10 375	14 500	13 750	14 125	3 750	36 %	15 %	2,5 %	19 %	
Dosso	11 000	13 500	12 250	17 000	16 500	16 750	4 500	37 %	15 %	2,5 %	19 %	
Tillabéry	14 500	14 300	14 400	21 000	21 000	21 000	6 600	46 %	15 %	2,5 %	28 %	
Markets	nov.-08	déc.-08	Average	avr.-09	mai-09	Average	Gap	variation	Banker	Services ext.	Producer	
Zinder	15 000	18 000	16 500	19 000	20 000	19 500	3 000	18 %	15 %	2,5 %	1 %	
Maradi	14 000	15 650	14 825	16 000	15 500	15 750	925	6 %	15 %	2,5 %	- 11 %	
Dosso	15 000	19 750	17 375	18 000	18 500	18 250	875	5 %	15 %	2,5 %	- 12 %	
Tillabéry	16 000	20 800	18 400	19 500	20 500	20 000	1 600	9 %	15 %	2,5 %	- 9 %	
Markets	nov.-09	déc.-09	Average	avr.-10	mai-10	Average	Gap	variation	Banker	Services ext.	Producer	
Zinder	16 000	18 000	17 000	21 000	24 000	22 500	5 500	32 %	15 %	2,5 %	15 %	
Maradi	16 000	16 000	16 000	17 000	21 000	19 000	3 000	19 %	15 %	2,5 %	1 %	
Dosso	16 500	16 500	16 500	19 500	20 600	20 050	3 550	22 %	15 %	2,5 %	4 %	
Tillabéry	21 000	21 000	21 000	22 000	22 000	22 000	1 000	5 %	15 %	2,5 %	- 13 %	

Across 34 datas: 24 campaigns seem to favor OP for warrantage (71% of cases)

The banker earns more than the OP: 21 times (62% of cases)

OP and banker earn the same (15%): 4 times (12% of cases)

OP earns more than the banker (+ than 15%): 9 times (26% of cases)

The producer encounters a loss: 10 occasions (29% of cases)

The producer earns from 0 to 5%: 8 occasions (24% of cases)

The producer earns between 6-15%: 3 occasions (9% of cases)

Therefore to limit the risk to farmers, it is necessary to accord credit based on the value of the stock. In this example, if the credit is calculated as 80% of the value of the deposited stock, the risk drops to zero.

Part of the producer in shaping the result of warrantage

Let us evaluate the role played by the producer in affecting the outcome of the warrantage process, and the role played by the banker. In fact, it is important to identify, in terms of profitability, the actor which benefits the most from the system. This requires examination of the final result shared among the participants. We should underline that for a given period, the portion earned by the bank is **fixed, positive and constant**, no matter what the outcome of the process, while that of the producer is **proportional** to the commercial outcome of the process. The table provides the share in relative terms, of the gains earned by the two actors.

The numbers show that it is only in certain rare cases where the process is more profitable for the farmer than for the bank (9 occasions out of 34). This was the case for producers in the Zinder and Maradi regions in 2001-2002 and in 2003-2004, the Maradi and Dosso regions in 2004-2005 and for Maradi, Dosso and Tillabery in 2007-2008. For all of the other years and in all other locations, the banker profited more than the farmer (21 times out of 34). Worse, in 10 cases out of 34, the producer was forced to find other means to pay the banker and the fees. In these conditions, there is cause to question who really benefits from warrantage. **From our perspective, the amount that is earned by the producer is rarely proportional to the risk that he takes, while the banker or the microfinance institution bear none of the risk.**

Additionally, based on the amount of grain that an average producer in Niger can place in warrantage (we are only addressing family operations), the process may not be opportune for them. As we underlined above, grains are essentially destined for auto-consumption; the proportion that the producer sells at market is relatively small.

Let us make some purely theoretical calculations:

In a context where the average size of plot is approximately 3 ha and where the average yield rarely exceeds 500kg/ha, we can estimate production at 1,500 kg. On average, the producer could put 15% of stock or 220 kg into warrantage.

In this case, the producer would receive a credit of 24,111 FCFA (80% of 220 kg at the average estimated price of 700 FCFA per 100 kg bag, this value being the average price taken from the above table)⁵, the interest and fees to pay over 6 months come to 4,220 FCFA.

The average price of sale for the period (average from the table) is 16.845 FCFA per 100 kg bag. At sale, the producer receives, on an average of 9 years and 4 markets, 37.060 FCFA.

After reimbursing interest on the loan and storage fees, he will extract a **net margin of 8.730 FCFA**.

This amount is insufficient to whet the appetite of the producer to take on the risk of debt guaranteed by his stock. In their strategy of bringing products to market, producers first sell products which are difficult to conserve. Generally, the sale of grain comes after that of cash crops like niébé and mainly it is done in small quantities by weekly intervals. Outside of exceptional cases, the total supply of grain destined for commercialization is never sold on the market in one shot.

Finally, the most profitable years for warrantage are those when the price rose the most, therefore generally in cases of under-production, when the producer has very little to sell. In the case of overproduction, when all of the farmers are seeking to sell and prices drop, warrantage becomes a very risky strategy.

Without being overly critical of warrantage as a tool to support commercialization and provide profits to producers, it appears that warrantage of mil in Niger, and more generally dry grains in the Sahel region, is a highly risky endeavor for farmers.

This can be explained by the fact that mil production in Niger is mainly destined to auto-consumption and not for commercialization (which remains poorly organized) and that the rates offered by finance institutions are prohibitive in relation to this speculation.

We should remember that, according to estimates, only 15% of production is commercialized (85% being consumed). This imbalance between the portion that is used commercially and that which is consumed creates a perpetual tension. In a year of under-supply, we worry about a **crisis of shortage**; the survival of a large portion of the population is threatened. Conversely, during a year of over-supply, we worry about a **crisis of abundance** since the market is unable to absorb all of the surplus, demand being linked closely to human consumption and depending on the year, to exports, primarily to Nigeria. There is no diversity of internal demand (for example, an absence of agro-food industries to process the surplus).

As far as financing is concerned, up until now warrantage has not attracted the attention of local bankers. It is primarily a small number of local microfinance institutions that are engaged in providing this type of credit. That is because this type of finance is costly: the interest rates can reach as high as 30% per year⁶. In order to support these costs, the sector must be much more profitable and therefore less dependent on natural conditions, which is not the case for the dry grain trade in Niger.

⁵ In order to limit risk, many funding providers only give 50% of the value of the stock. This number is thus a variable to be determined with the microfinance institution or the banker, it can also be 100% of the value of the stock

⁶ A microfinance institution must also be able to function... which explains the high rates. Nevertheless, certain subsidized institutions apply much lower rates, which can also be negotiable.

The succession of crises of shortage or abundance also reveals a problem specific to the grain market in the Sahel. What is the right balance to strike between the social aspect of the activity (feeding poor populations at an affordable price) and the economic aspect (compensating the producer and allowing the market to play its part in regulating prices)?

All of this should be considered while recognizing the important role played by commerce in the food security of populations, but we note that a highly speculative grain market puts at risk a portion of the population and provides fertile terrain for protests like the “hunger uprisings” that took place in 2008.

In conclusion on warrantage •••

The very foundation of the warrantage system rests on the presence of an adequate system of storage to guarantee the quality and quantity of supplies, from the harvest period to the point of sale. It is a truism to say that quality storage requires adequate infrastructure which is lacking for farmer organizations, particularly in Niger, where traditional storage of grain is seen as more effective and efficient than storage in a granary.

The success of warrantage for the producer of mil in Niger rests on a necessary rise in grain prices, or speculation, which is not acceptable for the consumer. A good agricultural development policy should promote smoothing of the seasonal price variations, leading to crises, to arrive at a more regular price which rewards the producer while also being accessible to the consumer.

Nevertheless, this “*quantitative*” analysis of mil in Niger (and more generally for all dry grains in areas of seasonal precipitation) is not sufficient to determine the value of warrantage for the spectrum of agricultural products. Notably, it does not take into account positive aspects of warrantage such as the involvement of the producer in a system of “savings and credit”, nor the benefits that the farmer can extract from the credit obtained. Nevertheless, we should note that some farmer organizations in the Sahel region are able to obtain credit in commercial banks without engaging in warrantage.

An analysis of the profitability of the system for cash crops, such as niébé, could provide us with more information. However more importantly, an evaluation of the impact of this commercial activity on the producers themselves would enable us to identify the segments of the market and the types of agricultural products for which warrantage would present an opportunity to the producer.

CONCLUSIONS AND RECOMMENDATIONS

Across 9 agricultural campaigns in Burkina, Mali and Niger, we recorded 6 years of crisis:

- 3 years of **food security crises following under-production** essentially due to climatic and natural causes (2002 and 2005 for the 3 countries and 2010, particularly in Niger),
- 1 year of **crisis provoked by the significant rise in prices on the international market** (2008) and
- 2 years of **crisis of abundance** (2004 and 2007): a succession of surplus agricultural years produced a drop in prices, which was detrimental to producers (or approximately 75% of the population of the countries concerned, it is worth remembering).

Over the course of the study period, the price of mil saw significant fluctuation, going from 7,000 FCFA per 100 kg bag to 30.000 FCFA for the same amount, or an increase of 4 times! The analysis reveals **that the law of supply and demand is not the only principle which dictates changes in price at the market, other economic and even social factors influence the bottom line.**

One notes that crises of under-production are quickly followed by a spike in prices, not only in the country concerned, but also in neighboring countries, even when they have produced significant surpluses. The contagion of crises is very rapid.

The local grain market thus extends beyond the borders of the State and is even sensitive to shocks at the global scale. But on the other hand, it appears that local rice in Mali was able to profit from the crisis and that it gained in competitiveness as a result. Local grains such as mil, sorghum and fonio could also profit in this context and might be resuscitated by the development of an agro-food industry⁷. Agro-food processing absorbs surpluses; it improves the conservation of products and can attenuate the seasonal character of the majority of crops grown in the Sahel region. With the transformation of lifestyles, a demographic explosion and the growth of cities, the demand for processed foods is growing rapidly and in a permanent manner in the Sahel. The internal market thus exists and is developing rapidly. It is currently in the hands of the importers. The development of agricultural production undertaken by States must therefore be accompanied by investment in change to regulate and stimulate the market, to promote the addition of value, to assist operators at all nodes in the supply chain by better organizing it and also to help mitigate market shocks.

The analysis of the change of prices during campaigns that were deemed to be surplus years is more difficult to carry out. As everyone recognizes, the calculation of yearly grain budgets poses difficulties⁸. The estimate of harvests is already difficult to carry out, and added to that is the estimate of reserves, particularly those held by farmers, and the estimate of imports and exports. Each of these variables is uncertain. The cumulative outcome of these uncertainties results in a number that must be used with caution. Other than these estimates which enter into the calculation are a number of qualitative factors which are difficult to account for in a mathematical formula: the influence of border markets, the margins achieved on cash crops (thus the purchasing power of producers or their need to over-sell), the storage capabilities of operators, international prices, measures taken by States and their partners....

All of these questions are regularly raised at meetings attended by those seeking to predict or improve the management of food crises.

The idea of calculation national food budgets and not only grain budgets is interesting, but it seems even more difficult to put into practice.

Farmers (and by consequence 75% of the population of the Sahel) are confronted with 3 important constraints: other than natural or climatic events over which the farmers of the Sahel have little control, they complain about **problems of storage and access to credit, which slow the growth of the sector.**

In general, credit for agriculture raises questions. Certain specific systems such as warrantage for dry grains are not always satisfactory.

⁷ See Afrique Verte publication '2008, global food crisis or drop in purchasing power?' and specifically its conclusions about the transformation of the agro-food industry in the Sahel.

⁸ see Afrique Verte publication '2005: crisis in Niger ?'

Nevertheless, we note that the crises of the past few years have been better managed, that states are better implicated in the activities to promote food security and are more strongly imposing their sovereignty. The operators themselves are organizing and structuring themselves, and above all are acquiring training and information. Of course, this process deserves to be strongly supported over the long term.

Can we identify a warning trigger for farmers, to assist them in selling or buying?

Can we identify a warning trigger for the State and other actors? Can we more rapidly implement activities designed to contain an anticipated crisis, notably those of over-production, since famine crises are already the target of a variety of more or less effective forms of interventions, depending on the case and context?

Afrique Verte International does not pretend to be able to define such warning signals. However, it seems to us that certain forms of advice should be quickly revised. We sometimes read that the warning sign is a variation of +/- 30% of the price compared to the average of the previous five years. In that case, the crisis is already underway! It is however possible to anticipate: we suggest that the simple stability of prices during harvest can indicate an upcoming crisis in the months to come. For example at the end of 2004 in 3 countries and the end of 2007, particularly in Burkina and Mali which posted strong surpluses, for the third consecutive year.

Acronyms (French Abbreviations)

APE:	Economic Partnership Agreement
CEDEAO:	The Economic Community of West African States
CILSS:	Permanent International Committee in the Fight Against Desertification in the Sahel
ECOWAP:	Agricultural Policy Framework for West Africa
FAO:	Food and Agriculture Organization of the United Nations
IMF:	Micro-finance institution
NEPAD:	New Partnership for African Development
OP:	Farmer Organization
P4P:	Purchase for progress
PAS:	Structural Adjustment Program
PAU:	Union Agricultural Policy
PSA:	Point sur la situation alimentaire (Food Situation in the Sahel, monthly bulletin from Afrique Verte)
PDDAA:	Detailed Program for the Development of African Agriculture
SNS:	National Security Stock
TEC:	Common External Tariff
TVA:	Value Added Tax
UEMOA:	West African Economic and Monetary Union
EU:	European Union

MALI

AMASSA:	Mali Association For Food Security and Sovereignty (Afrique Verte Mali)
APROFA:	Agricultural Sector Promotion Agency
BNDA:	National Bank of Agricultural Development
CSA:	Food Security Commission
LOA:	Agricultural Orientation Law
OMA:	Agricultural Market Observatory
OPAM:	Mali Office of Agricultural Products
PASAOP:	Support Program for Agricultural Service and Peasant Organizations
PASE:	Program to Improve Production Systems in Cotton Growing Areas
PNIR:	National Program of Rural Infrastructure
PNSA:	National Program of Food Security
PRMC:	Program to Restructure the Grain Market
SIM:	Market Information System
SAP:	Early Warning System
SIE:	State Intervention Reserve

BURKINA FASO

APROSSA:	Association for the promotion of food security and sovereignty (Afrique Verte Burkina)
CIC-B:	Interprofessional Committee on Grain in Burkina
CIR-B:	Interprofessional Committee on Rice in Burkina
OFNACER:	National Office on the Commercialization of Grain
SONAGESS:	National Society to Manage Food Security Reserves

NIGER

AcSSA:	Action for food security and sovereignty (Afrique Verte Niger)
CCA:	Food Crisis Cell
CIC:	Information and Communication Center
CMC:	Combined Commission of State and Donors
OPVN:	Office of Agricultural Products of Niger
DNPGCA:	National System for the Prevention and Management of Food Crises
SAP:	Early Warning System
SIMA:	Agricultural Market Information System
UNCC:	Credit and Cooperation Union of Niger

Glossary

Gross grain product

Consumption need of populations – available national grain harvest (mil, sorghum, corn, rice, fonio, wheat) + estimate of stored reserves

Net grain product

Gross grain product + estimate of import/export sale

Sliding (or moving) Average

Is used to smooth out fluctuations. Each data point is replaced by the average of the two preceding ones.

Current price

Recorded price (not adjusted)

Adjusted or deflated price

Reported price balanced against the inflation index

Intra-year variation

Variation over the course of a market year, which can generally be divided into two distinct periods: the harvest and the planting season.

Inter-year variation

Variation between years

Atomic nature of grain supply

Highly distributed supply; a large number of suppliers with small quantities

Molecular demand

Very concentrated demand; a small number of buyers searching for large quantities.

Dry grains

Cereals produced from rainfall, without irrigation (mil, sorghum...)

To learn more

References of Afrique Verte:

- www.afriqueverte.org

PSA Bulletins:

- 115 monthly bulletins, from June 2001 to November 2010
- PSA special Bulletin No. 100, August 2009

Published documents (in French):

- 2008, global food security crisis or drop in purchasing power? (2008) and conclusions on agro-food processing in the Sahel
- Information guide on grain banks for partners in the sector (2008)
- 2005: famine in Niger? Food crisis in the Sahel, points of reflection(2005)
- Why hunger in the 21st century? (2004)
- Agriculture in the Sahel (2004)
- Grain banks (2003)
- Consequences of the Ivory Coast crisis for enclave countries of the Sahel (2002)

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Strengthening the capabilities of agricultural organization networks through analysis of the evolution of local grain prices in Burkina, Mali, and Niger, during the period 2001-2010 ...and its repercussions for warrantage in Niger.

