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The Economics of Cereal Banks in the Sahel

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PREFACE

Development Alternatives, Inc. (DAI) conducted this study for A.I.D.'s Office of Sahel and West Africa Affairs. Elliot Berg served as the Project Director; he prepared the study, developed the major theses, led the writing effort, and conducted three weeks of field research in Senegal, Burkina Faso, and Niger. Lawrence Kent served as the Principal Analyst. He carried out data analysis and writing tasks, and conducted 12 weeks of field research in Chad, Senegal, Burkina Faso, and Niger. Dowd Walker helped with the literature search in Washington. The following Local Associates assisted in field research: Kimssyinga Sawadogo (University of Ouagadougou, Burkina Faso); M. L. Bocoum (independent consultant, Senegal); Yousouf Maina (Bureau Interministériel d'Etudes et de Projets, Chad); and Seyni Harouna (independent consultant, Niger). USAID mission staff also provided assistance when appropriate, and Henri Josserand of the Club du Sahel provided helpful comments on the earlier draft.

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CHAPTER ONE

INTRODUCTION

Cereal banks (CBs) — village cooperative organizations that buy, store, and sell basic foodgrains — have become popular institutions in the Sahel, favored by Sahelian governments and donors alike. Over 3,300 such organizations were inventoried in 1990, about half of them in Burkina Faso, and 300 to 600 in each of the other states in the region. Mauritania, an exception, has only a handful of CBs.

Promoters of cereal banks list a wide variety of objectives for their interventions. At the round-table conference on cereal banks in Niamey in 1986, for example, at least eight different objectives were expressed:

- Assure food security at the village level;
- Make cereals affordable to rural consumers;
- Contribute to a cereals marketing system that benefits producers;
- Train and prepare the peasant-members and personnel of cereal banks for a system of self-management;
- Reinforce the cooperative spirit;
- Earn profits to be used to finance other collective development projects;
- Use food aid productively; and
- Slow population migration toward regions of cereals surplus.¹

Even more objectives are cited by other promoting agencies. Achieving food security is probably the most commonly expressed CB objective.

A systematic evaluation of cereal banks based on such a diverse variety of objectives is difficult to undertake. This is particularly true in regard to "food security" — a broad concept that involves not

¹ FAO, *Rapport Final de la Table Ronde sur la Promotion des Banques Céréalières*, Niamey, November 1986.

simply the physical presence of food at a given site, but also people's timely access to food at reasonable prices through production, purchases, or transfers. To facilitate the task of analyzing the cereal bank phenomenon, we have grouped the objectives of CBs into three major categories. The broad objective of food security does not constitute a category in itself, but the two components of food security that CB promoters tend to stress — grain availability at "reasonable prices" and emergency stocks — are covered in two of the three categories of objectives presented below. The three broad categories of objectives are:

- To provide better, cheaper, more equitable marketing services to villagers — services on more favorable terms than those offered in private markets (which are considered "unfair");
- To strengthen village-level organizational capacity, build more active cooperatives, and thereby increase farmer bargaining power and self-reliance; and
- To create village-level emergency food stocks.

These goals are so congenial to Sahelian policy makers and to donor agencies, especially nongovernmental organizations (NGOs), that CBs have multiplied and spread geographically in recent years. Until the mid-1980s, few could be found outside of Burkina; since 1985, over 1,500 have been created in the other Sahelian states. Expansion seems likely to continue. And there are proposals to expand the scope of CB activity — to have them engage in interregional, inter-CB trade, for example.

Despite the enthusiasm with which they are being created and the blossoming of proposals to expand their role, analysis of the economic foundations of CBs is sparse. The burgeoning literature on the subject contains few inquiries into the economic rationale of CBs or their institutional viability. The available studies and reports assume that CBs are good things, most then describe and analyze how many there are, how they operate, how well they are managed (mainly in financial terms), and how they might be made to work better.²

² See, for example, the following major reports on Sahelian CBs: Dennis Dolidon, *Evaluation du Programme de Banques de Céréales de la FOVODES*, Oxfam, Burkina Faso, 1980; Jan Kat, *Cereal Banks in Upper Volta — Review of Concepts, Performance, and Impact*, FAO/Rome, 1983; Guy Ledoux, *Stockage et Marché Céréalière Sahélien - Le Cas du Burkina Faso*, Doctoral Thesis, University of Montpellier I, April 1989; Guy Ledoux, *Inventaire et évaluation des banques de céréales au Burkina Faso*, FAO, 1986; Frank Casey, "La Contribution des Banques Céréalières à la Sécurité Alimentaire et la Stabilisation des Prix au Niger," Service d'Analyse de Politique Agricoles, Ministère de l'Agriculture et de l'Environnement, Niamey, November 1987; Ton de Klerk, *Document de Base: Projets Banques Céréalières NOVIB*, The Hague, 1988; Commissariat à la Sécurité Alimentaire (CSA), *Rapport sur le Recensement exhaustif des Banques Céréalières Villageoises*, Dakar, August 1990; and FAO, *Evaluation*

This neglect of the underlying economic issues surrounding CBs is surprising, since the questions that need attention are obvious. The first and most basic question is: Why not let private markets perform the functions that are delegated to CBs? There are a number of possible answers:

- Private markets may not be working well. First, "market failures" may be present. The grain markets may not be competitive; cartels or localized monopolies might be extracting excess profits from peasant growers and consumers. Or information failures and/or capital market imperfections may cause sluggish and inefficient trader responses to profitable opportunities.
- Second, there may be structural weaknesses in market performance. Small, unspecialized, undercapitalized, nonentrepreneurial trading sectors may pass on inefficiencies in the form of high trading margins. And in small, isolated villages, cereals markets may be so thin that they are neglected by traders;
- Grain markets may be competitive, but work to the disadvantage of poorer farmers who may need cash so urgently that they sell at low postharvest prices only to buy later at seasonal highs;
- The CBs may provide channels not otherwise available for the funneling of foreign aid resources to poor villages and poor people. Given the absence of effective capital markets and the sparsity of organized rural financial institutions, such channels of small-scale credit can have high social returns. These resources probably have low opportunity costs because of limited alternative project possibilities and a supply of aid money that is highly responsive to project availability;
- Cereal banks may be a useful element in the development of (cooperative) organizational capacity at the village level, and stronger cooperatives have potential sociopolitical benefits: the building of community, and the evening out of the playing field by increasing peasant bargaining power with respect to traders and government officials; and
- Private markets may not provide adequate protection against transitory food insecurity arising from crop shortfalls, and the shrinking role of public grain storage agencies may make a bigger role for village-level institutions in emergency storage desirable.

To the extent that these answers are valid, they provide analytic justification for the introduction of cereal banks. But even if any or all exist in any given place, a second question has to be addressed

des Banques de Céréales au Sahel (draft report), G.L.G. Consultants (Nicolas Gergely), Rome, April 1990. Many analysts do raise issues relevant to the economics of CBs — for example, when they consider questions of desirable CB locations. But it appears that the most systematic discussion remains a small section in J. Houghton, *Cereals Policy Reform in the Sahel — Burkina Faso*, CILSS — Club de Sahel (Elliot Berg Associates), 1985.

before public policy encouragement of CBs is justified: can cooperative institutions perform the desired functions better than profit-seeking individuals under an open market arrangement? This is a question that the experience of the last 30 years has taught us to ask. It is not enough to simply point out the flaws of private markets; we have to ask also whether proposed remedies are appropriate. For example, cooperative or collective-approach arrangements should be encouraged only if there is empirical or analytic reason to believe that they would be superior to market-based arrangements.

Experience suggests a related lesson: institutional innovation that is not compatible with underlying forces in private markets is likely to have poor prospects for survival. If, for example, private operators find grain storage unprofitable because of high costs and risks, cooperative agencies are unlikely to be able to carry out this function in a sustainable fashion without ongoing subsidies.

This leads to a final well-known point. If a particular program intervention is not likely to be a long-term remedy to the deficiencies of private markets, or if its unintended consequences are significant, it is important to ask what policies and programs promise greater success. It may be that better information flows, removal of restrictive movement controls, reduction of protective barriers to cross-border trade, programs of rural road construction aimed at *désenclavement* and similar programs are better ways to improve marketing systems and reduce food insecurity than the introduction of CBs.

In this report we concentrate on this set of issues in addressing the question of what economic analysis and available evidence tell us about the validity or invalidity of the rationales for cereal banks. Chapter Two sets the stage by laying out the numbers and describing the basic features of cereal banks. The remaining chapters are organized around CBs' three major objectives:

To provide improved marketing services. Chapter Three analyzes the most common rationales for CB involvement in the cereals marketing business. Chapter Four then asks, "Can CBs offer cheaper or better services than private traders?" and presents analysis and empirical evidence that is relevant to answering this question.

To strengthen village organization. In Chapter Five we assess, in considerably less detail, the organizational rationale and the role of CBs in building cooperative village institutions.

To serve as emergency food stocks. Chapter Six addresses, in summary fashion, the grain storage and food security aspect of CBs, in the context of national grain storage policies.

Our main conclusion is that cereal banks are being oversold. The assumption of widespread grain market failures, which is a central rationale for the creation of CBs, is not confirmed in most of the literature, and the ability of CBs to outperform the private trading sector on a sustainable basis is extremely unlikely. There are some market failures and structural weaknesses that CBs might address, notably in credit markets and in isolated areas where traders fail to serve thin markets. But in both cases subsidies are required to sustain CB activity. These subsidies involve opportunity costs, and they potentially can hinder the growth of the private, profit-seeking commercial sector, although probably not significantly in most markets. The subsidies also promise little in the way of building viable institutions, because the cereal bank incentive structure is flawed, and the failure rate is high. For these reasons, the promotion of CBs by donor agencies should be reconsidered.

CHAPTER TWO

CEREAL BANKS: WHAT THEY ARE AND WHAT THEY DO

Cereal banks are village organizations that buy, store, and sell basic food grains. They usually are managed by a local village committee with the assistance of an international, government, or private voluntary agency. Some cereal banks maintain memberships of as few as 20 people, while other CBs serve groups of villages with a total of 4,000 inhabitants.

The basic cereal bank model is as follows. A sponsoring agency — usually a nongovernmental organization (NGO) — helps finance construction of a small warehouse (15- to 50-ton capacity) to be used for grain storage. Typically, the outside sponsor provides construction materials (at an average cost of about \$6,000) while villagers provide unskilled labor. The sponsoring agency also gives a grant or loan (usually around \$4,000) to start operations. The cereal bank's management committee uses the money to purchase millet or sorghum at the time of year when prices tend to be lowest (October-December) and then stores the grain in sacks in a village warehouse. During the "hungry season" (June-August), when cereals become scarce and prices tend to be at their highest, the cereal bank sells its grain stock in the village. The price is usually set at a level that is above the price at which the grain was originally purchased but below the current free market price. Revenues are used as a revolving fund to refinance the operation the following year.

Many variations exist on this basic model. It is not uncommon for CBs to be more active, shorter-term traders, buying and selling throughout the year.¹ And in Chad, the initial credit to the CB has been mainly seasonal, with loan repayment required after each year's harvest; good payers are granted new seasonal loans.²

¹ This is the case, for example, in northern regions of Mali. See Mme. Keita, Rapport de Mission, "Situation des Banques de Céréales dans les Régions de Segou et Mopti," Ministère de l'Administration Territoriale, August 1988.

² See Annex 4.

GRAIN PURCHASES AND SALES

From whom cereal banks purchase at harvest time and to whom they sell in the hungry season vary from one agroclimatic zone to another.

In moderately food-deficit, moderately surplus, and roughly self-sufficient agricultural zones, cereal banks usually buy, store, and sell grain in the village itself. This is the classic cereal bank model and it is probably the most common. These CBs occasionally try to benefit local producers by purchasing their grain at slightly above-market prices at harvest time. More commonly, they attempt to benefit local consumers by selling grain at slightly below-market prices during the lean season.³

In villages that suffer from chronic cereals deficits, most cereal banks purchase grain outside of the village, transport it in, and store it until the hungry season when it is sold to the inhabitants, ideally at below-market prices. These grain-importing CBs are common in the most arid parts of Senegal, Burkina Faso, Mali, and Niger. A small number of these cereal banks are able to carry out purchase and sales operations two or more times per year, (reducing storage time and rotating their stocks more quickly).

In villages that normally produce significant cereal surpluses, CBs purchase grain in their own village right after the harvest, store it, and sell it to outsiders later in the year when market prices have risen. The resulting profit can either serve for community investments or it can be distributed to the participants. Functioning grain-exporting CBs are rare.

Because annual rainfall and cereals production levels are so variable in the Sahel, many CBs must modify their purchasing strategies from year to year. If the local harvest is above average, for example, a CB may be able to purchase its grain stock directly in the village or in neighboring village markets. If the local harvest is below average, however, the CB may have to send a purchasing team to another region of the country to obtain the desired quantities of cereals.

Although some cereal banks sell grain on a strict cash basis, others sell grain to their members on credit (to be repaid in kind or with cash, with interest). Most CBs employ both sales methods.

³ Typically a CB's sales price is 5-15 percent below the market rate (based on Kat, 1983; FAO, *Evaluation des Banques . . .*, 1990; and our field interviews).

Social pressures encourage credit sales. During years of severe draught, some CBs distribute their grain on credit to poor villagers who are unlikely ever to repay, effectively giving the stocks away.

CB MANAGEMENT

Almost all cereal banks are managed by village committees established expressly for this purpose. Typically, each committee is composed of an elected president, vice-president, and two or three other officers. The committee is responsible for routine management decisions; important decisions are occasionally made during "general assemblies" of all of a CB's members (often the entire village). Commonly, the management committee is dominated by two or three village "big men."

Occasionally, a CB will pay a manager or a guard to look after operations. More typically, a few committee members will volunteer their time to organize cereals purchases and to "mind the shop" — that is, retail the grain to village consumers.

When cereals must be purchased outside of the village, two or three men may be selected to travel to the area where grain is available to arrange for its purchase and transport back to the home village. These men normally are paid a small allowance for the days that they spend away making arrangements (one to fourteen days). Some CBs avoid trips outside of the village by contracting with private traders to deliver the grain.

MODES OF FINANCE

Working funds, the operating capital necessary for a cereal bank to begin operation, are almost always supplied by an outside sponsoring agency. Many agencies give the initial funds to the CB as a grant, either as cash or in kind (for example, 200 sacks of millet to be sold to generate funds). Many others provide the funds as a medium-term loan, typically to be repaid over five years, with a one-year grace period. Interest rates vary from 0-15 percent, and are always below informal market rates. A few agencies provide seasonal credits, to be used and repaid within one year.

OUTSIDE SUPPORT AND TRAINING

After a sponsoring agency provides a CB with the initial capital needed to begin operations, it usually continues to provide support services to the CB committee for an additional three to six years. These support services typically involve training sessions in literacy and basic bookkeeping, and regular visits by field agents to provide management and organizational guidance to the CB committee. Because most CBs were created within the past five years, most are still receiving this outside support.⁴

REGIONAL OVERVIEW

Over 3,300 cereal banks have been established in the Sahel. Despite these impressive numbers, CBs control less than 3 percent of all cereals commercialized in the region. Even in Burkina Faso, where they are the most numerous, CBs control less than 4 percent of the market. Their distribution in the Sahel is outlined below:

TABLE 1
DISTRIBUTION OF CBs IN THE SAHEL, 1990

	Estimated number of CBs established	Estimated tonnage marketed annually
Burkina Faso	1,500	6,000
Niger	530	5,500
Senegal	570	2,170
Mali	400	4,700
Chad	350	1,400
Mauritania	25	440
TOTAL	3,375	20,210

Sources: Estimates for Burkina Faso, Mali, and Mauritania are from FAO, *Evaluation . . .*, 1990; estimates for Senegal are from CSA, 1990; Niger is from Seyni Harouna, *Situation Actuelle de Banques Céréalières Implantée au Niger*, FAO, Niamey, 1990; and Chad estimates are our own.

⁴ We estimate that 85 percent of all Sahelian CBs were created since 1985.

Burkina Faso has the largest and longest cereal bank experience — its first program began in 1974. About half of its CBs were established by NGOs like Cofam, and half were established through large government projects with international assistance (for example, the Black Volta Agricultural Development Project). The CBs are distributed all over the country, but there is much turnover. Those in the south appear to be much less durable than those in the northern, arid regions. And although almost two-thirds of the country's cereal banks are no longer operational, donors continue to create new ones, and government policy is strongly supportive. The 1990 Cereal Plan calls for cereal banks to play a larger role in national storage policy and in interregional trade.

Niger has the second oldest CB experience in the Sahel; its involvement began in the early 1980s. Since that time, many of Niger's cereal bank programs have been operated through the official, government-decreed cooperative system. Thus, about 200 of the nation's CBs operate on the multivillage level favored by the government system. To an extent not found in the other states, most of Niger's cereal banks operate on an in-kind basis. They lend cereals to their members during the lean season and demand repayment in kind (with interest) after the annual harvest.

Senegal, Mali, Chad, and Mauritania, did not achieve any significant involvement in cereal banks until after 1985. Many of Senegal's cereal banks have diversified into selling other products like imported rice and oil. Several Malian cereal banks have benefitted from a national donor-sponsored credit program. Most of Chad's CBs are supported by Catholic NGOs and are very small in size. Mauritania's 25 CBs are clustered along the Senegal river.

The 1990 FAO report on CBs provides an excellent description of the programs in each of these countries and should be referred to by those interested in further detail.⁵ Complementary information on the situation in Senegal, Burkina, Chad, and Niger is given in Annexes 1-4.

⁵ FAO, *Evaluation . . .*, 1990.

CHAPTER THREE

RECONSIDERING THE RATIONALE FOR CEREAL BANK INVOLVEMENT IN GRAIN MARKETING: GRAIN MARKET DEFICIENCIES

The first objective of Sahelian CBs is to provide cheaper and more complete marketing services than those currently available at the village level. This objective rests on the rationale or assumption that present marketing arrangements are deficient, that some of these deficiencies can be remedied by the creation of cereal banks, and that CBs will have no unintended negative side-effects.

Two types of deficiencies are emphasized in the promotional or advocacy literature concerning CBs. The first is classic "market failures." Private grain markets are said to be characterized by noncompetitive trader behavior, which allows exploitation of farmers and consumers and the enjoyment of excess profits. Also, lack of information seems often to prevent trading sector responsiveness to profitable opportunities. These failures are linked to imperfections in ancillary markets, notably financial markets.

The second type of deficiency can be called structural. Private traders are said to respond sluggishly to opportunity not only because of lack of information but because of structural weaknesses within the trading sector — limited management skills of traders, inadequate capitalization, limited access to credit, limited specialization in trade, and pronounced risk aversion. These factors, combined with high capital and transport costs, are said to lead to high trading margins even where there is competition on the buying side. Moreover, in the poorer regions of the Sahel, population is sparse, villages dispersed, and incomes low. In some villages the low level of effective demand creates thin markets that are unprofitable for traders to serve.

Discussion of these two types of marketing deficiencies — their extent, their sources, their amenability to improvement via CB creation — are underlying themes in this chapter. We take up first the role of the cereals bank as a trader in grain over time. This is after all the main business of CBs — engaging in what economists call "temporal arbitrage" and others commonly call "speculation": the purchase and storage of grain to be sold at a higher price in future.

We then consider the role of the CBs in "spatial arbitrage" — buying in places where grain is cheap and selling where it is dear. In both cases, we describe the common economic rationales or justifications for CB intervention, and then assess their analytic and empirical validity.

TEMPORAL ARBITRAGE

Speculative Storage

It is widely believed in the Sahel that speculative storage is a common and serious problem; it allows private traders to garner enormous profits by paying unfairly low prices for cereals at harvest time and selling at inflated prices during the *soudure* or lean season.

Most promoters of cereal banks appear to share this conventional belief. At the 1983 Round Table meeting on cereal banks in Ouagadougou, for example, the FAO representative stated that one of the CBs' principal objectives is to "liberate peasants from the speculative pressures caused by big traders."¹ Other participants wrote in their position papers:

"Prices double or even triple due to merchant speculation." (FOVODES)

"Traders purchase cereals early, stock them locally, then resell at very high profit margins. Speculation is a phenomenon that impoverishes farmers." (ADRK)

"Cereals banks' objectives are to reduce the phenomenon of speculation in agricultural products." (ADRK)

"Cereal banks are to fight against price speculation." (FDR)²

It is no surprise that, almost from the beginning, CBs were seen as instruments to combat speculative excesses in grain markets. According to one observer in the early 1980s:

¹ Government of Upper Volta, *Table Ronde sur les Banques Céréalières*, Ouagadougou, October 1983.

² These quotes are from papers included in the final report of the round table discussion on cereal banks in Ouagadougou, 1983; FOVODES, ADRK, and FDR are local NGOs.

A cereals bank is defined as an organization . . . basically performing a marketing function in combatting local grain dealers who grossly take advantage of the financial vulnerability of the farmers.³

The winds of liberalization in the 1980s and the adoption under structural adjustment programs of more market-oriented policies have not much changed this perception of how grain markets work. Thus, in 1990, an evaluator for Church World Services gives as an objective of CBs in Senegal "to protect the purchasing power of peasants against the speculation of traders."⁴ During our interviews with the organizers of cereal banks throughout the Sahel, it became clear that this idea remains widespread — grain traders are considered as dishonest "speculators" and a menace from which peasants must be protected.

The mechanisms or marketing structures that explain this "speculative" behavior and "unfair" pricing are rarely spelled out. At least some of the discussion on speculation rests on a fundamental misunderstanding about the nature of temporal arbitrage. Speculative storage does not cause prices to increase over the season; in fact, it usually helps moderate price increases. When merchants buy cereals at harvest time for the purpose of storage, they add to the overall demand for cereals at that time and thus help support the price. When they sell the grain during the hungry season, they add to overall supply and thus help to moderate price increases. Thus speculation does not "cause prices to double or triple"; in most cases it actually helps moderate price swings and stabilize cereal prices over the year. It performs the important function of allocating cereal sales over time and assuring grain availability many months after the harvest is complete. This is why many analysts note that the problem in the Sahel is not that there is too much speculation in grain, but that there is not enough.⁵

This said, three kinds of marketing deficiencies are frequently mentioned as the source of speculative profits: trader collusion or localized monopsony, unequal market power between traders and

³ Suha Satana, *A Comparative Study of Cereal Banks in Upper Volta*, Development Alternatives, Inc., prepared for USAID/Upper Volta, 1981, p.1.

⁴ Church World Services, "Evaluation du Projet Banques de Céréales de Keur Momar Sarr par la Commission CER et Développement Social," Louga, Senegal, 1990.

⁵ Haughton, 1985. Gerard Gagnon, "La Commercialisation Privée des Céréales au Mali: Un Bilan Provisoire," ACIDI, Bamako, 1986. Alfred Waldstein, "Where is All that Food Storage We Hear So Much About Anyway?" Science and Technology Bureau, USAID, Washington, 1984 (Draft).

peasants, or differential access to credit. All of these are possible and undoubtedly exist here and there, but there are good analytic reasons to doubt their extent and significance.

The grain trade in West Africa, like any economic activity, can yield excess profits on a regular basis only if some monopoly (monopsony) power is durable, which means only where markets are uncontested — in other words, potential competitors are excluded from entry. This is not the case with grain storage, an activity in which millions of Sahelian farmers are already involved and in which any trader with a small amount of capital can also enter. If unusually high profits could be earned with normal risk by buying and holding grain, many people could expand their participation. Farmers could do so by selling a goat and investing in a few sacks of grain; officials, transporters, and urban businessmen could easily mobilize the small capital requirements and also benefit from buying and holding grain. This activity would eventually drive down profits through competition.

Even small returns should be sufficient to induce entry into the grain trade, given — at least in spatial arbitrage where labor costs predominate — the low average opportunity cost of labor in that activity. Costs would be higher for temporal arbitrage because of the need for capital inputs. Grain prices should increase gradually over the season as a function of the costs of storage — warehousing expenses, interest costs for the capital used in acquiring the grain, physical losses, handling costs, normal profits, and a premium for risk. These storage costs and hence seasonal price moves would often be substantial, due to the high cost of these inputs, especially interest. But there is no reason to expect that these price moves should be due to excess profits. Indeed, high capital costs, various risks such as unpredictable inflows of food aid, and — until recently, at least — an unfriendly regulatory environment suggest that speculative storage (temporal arbitrage) might be less profitable than other activities and hence limited in volume.

Most field research confirms this expectation. Farmers perform most medium-term storage, and traders rarely engage in such activities. To cite a few examples:

- Waldstein (1984), writing on Niger, attacks the notion that traders can earn excessive profits on storage. He contends that traders stock very little because "a rapid turn-over of stocks serves their interests better than stock-piling over a period of time." He concludes that long-term

storage is not carried out by traders; it is "carried out mainly in small quantities in family granaries in villages."⁶

- Gagnon (1986), writing on Mali, calls merchant speculative storage a "widely held myth." "Many traders dream of doing [temporal arbitrage], but very few actually can, simply because they do not have sufficient operating funds to permit their immobilization in grain stocks."⁷
- Grasberg and Hassanein (1988), writing on Chad: "According to government officials, private sector traders purchase cereals at low prices at harvest-time in surplus areas such as Salamat and resell at higher prices during the lean period. None of the traders that the team met had the working capital to tie up funds in stock for ten months at a time. In addition they lacked storage capacity and techniques. Because of the lack of a long-term credit line, wholesalers must turn over their capital as fast as possible to be able to purchase other commodities after the short season of cereals. The team is quite sure that on a large scale, the myth of speculation is not true because if there were more wholesalers who could hold a large stock until the lean period, the cereal price would be more stable over the entire year."⁸
- Newman, Sow, and Ndoye (1988) say of Senegal: "most wholesalers (82 percent) attempt to turn over their stock in a period of one month after purchase in spite of the fact that they have at their disposal storage facilities which are not fully utilized. Apparently, the standard procedure followed by wholesalers involves turning stock over rapidly right after the harvest, when millet is plentiful, then building up stocks five to six months after the harvest when the availability is lower and the pre-harvest gap is approaching. However, some merchants say that uncertainty concerning the possible distribution of food assistance and its impact on prices serves to increase the risks of prolonged storage, which is intended to take advantage of the seasonal variations of prices during the period preceding the harvest. The speed with which wholesalers sell their products depends in part on the limited availability of capital, the high interest rate in the parallel market and the limited access to bank credit."⁹
- Sherman (1987) writes of Burkina Faso: "The storage function does not seem to yield excess profits. This conclusion from the quantitative data is further supported by the fact that traders seemed to be most concerned with quick turn-over and not with inter-seasonal storage."¹⁰

⁶ Waldstein, 1984, p. 16.

⁷ Gagnon, 1986, p. 29.

⁸ Eugene Grasberg and Adly Hassanein, *An Analysis of the Grain-Marketing System in Chad*. Development Alternatives, Inc., prepared for USAID/Chad, 1988, p. 34.

⁹ Mark Newman, Alassane Sow, Ousseynou Ndoye, "Regulatory Uncertainty and Government Objectives for the Organization and Performance of Cereal Markets: The Case of Senegal," ISRA, Dakar, Senegal, 1988, p. 13.

¹⁰ Jacqueline Sherman, Kenneth Shapiro, and Elon Gilbert, *The Dynamics of Grain Marketing in Burkina Faso*, Center for Research on Economic Development, The University of Michigan, prepared for USAID/Burkina Faso, 1987, p. 134.

- Haughton (1985), also referring to Burkina Faso, observes: "Merchants buy for rapid resale, and do not store large quantities of grain. Traders thus appear to speculate too little over time; prices would be more even if they were to buy more just after the harvest and store it for later resale. A possible reason for the inadequate speculation on seasonal price rises is that traders lack access to credit."¹¹

Thus typical evidence from five countries does not support the idea that private speculative storage is widespread and nefarious. Most traders, it seems, engage in very little medium-term storage.

There are two principal reasons for this reluctance to store — the high opportunity cost of capital in the Sahel, and the riskiness of investments in speculative storage. This is demonstrated by looking at seasonal price data and calculating the potential profits that could be earned by a trader investing in speculative storage. We have carried out this exercise under the following assumptions:

- Grain is purchased at its average price in the postharvest period (October, November, December);
- The grain is stored for six to eight months in a warehouse;
- The grain is resold at its average price in the *soudure* period (June, July, August);
- Physical storage costs include 50 FCFA/sac/month and a 5-percent physical loss over the entire storage period; and
- Three different rates are presented for the opportunity cost of capital: 0 percent, 15 percent, and 40 percent. (We consider 40 percent to be the most realistic estimate of the opportunity cost of capital to a private trader.)¹²

¹¹ Haughton, 1985, p. 32.

¹² CRED estimates for the cost of capital in Burkina range from 27-60 percent, while Matar Gaye estimates an average rate of 39 percent for Senegal. Informal estimates for the other countries fall in a similar range. Sherman *et al.*, 1987, vol. I, p. 134. Matar Gaye, "Le crédit informel en milieu rural Sénégalais : enquête dans les régions de Fatick et de Kaolack," ISRA, Dakar, Senegal, 1987.

The results are presented below for five capital cities:

TABLE 2
N'DJAMENA MILLET (8 MONTHS)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1973/74	54.0	62.3	8.3	6.6	5%	-10%	-35%
1974/75	27.7	29.0	1.3	5.0	-20%	-35%	-60%
1975/76	25.0	34.0	9.0	5.2	23%	8%	-17%
1982/83	130.0	110.0	-20.0	9.0	-33%	-48%	-73%
1984/85	177.7	236.3	58.7	15.3	37%	22%	-3%
1985/86	126.0	92.3	-33.7	8.1	-50%	-65%	-90%
1986/87	67.7	61.7	-6.0	6.6	-28%	-43%	-68%
1987/88	65.0	136.3	71.3	10.3	141%	126%	101%
1988/89	69.0	73.7	4.7	7.2	-5%	-20%	-45%
1989/90	68.0	73.7	5.7	7.2	-3%	-18%	-43%
AVERAGE	81.0	90.9	9.9	8.0	7%	-8%	-33%

Sources: N'Djamena data are from USAID/Chad 1979-87; 1973-77 are from Graetz and Maxon, Grain Marketing in Chad, Multinational Agribusiness Systems, Inc, 1977.

TABLE 3
OUGADOUYOU WHITE SORGHUM (6 MONTHS)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1979/80	72	82	10.0	7.6	7%	-8%	-33%
1980/81	75	100	25.0	8.5	44%	29%	4%
1981/82	66	77	11.0	7.4	11%	-4%	-29%
1982/83	78	111	33.0	9.1	61%	46%	21%
1983/84	108	148	40.0	10.9	54%	39%	14%
1984/85	105	119	14.0	9.5	9%	-6%	-31%
1985/86	63	65	2.0	6.8	-15%	-30%	-55%
1986/87	44	60	16.0	6.5	43%	28%	3%
1987/88	60	80	20.0	7.5	42%	27%	2%
AVERAGE	74.6	93.6	19.0	8.2	28%	13%	-12%

Source: Ougadougou data are from CRPA du Centre, given by G. Ledoux's thesis, "Stockage et Marché Céréalière Sahélien..." (1989). White Sorghum was the only coarse cereal for which data could be located; average harvest price is for January and average lean season price is for July.

TABLE 4
NIAMEY MILLET (8 MONTHS)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1970/71	23.3	32.3	9.0	5.1	25%	10%	-15%
1971/72	27.3	33.7	6.3	5.2	6%	-9%	-34%
1972/73	34.3	59.7	25.3	6.5	82%	67%	42%
1973/74	50.0	39.7	-10.3	5.5	-47%	-62%	-87%
1974/75	31.7	39.7	8.0	5.5	12%	-3%	-28%
1975/76	34.3	54.3	20.0	6.2	60%	45%	20%
1976/77	48.0	73.3	25.3	7.2	57%	42%	17%
1977/78	64.7	10.7	-54.0	4.0	-135%	-150%	-175%
1978/79	85.0	97.0	12.0	8.4	6%	-9%	-34%
1979/80	89.7	98.3	8.7	8.4	0%	-15%	-40%
1980/81	98.0	229.7	131.7	15.0	179%	164%	139%
1981/82	185.0	174.3	-10.7	12.2	-19%	-34%	-59%
1982/83	143.7	107.0	-36.7	8.9	-48%	-63%	-88%
1983/84	90.3	175.0	84.7	12.3	120%	105%	80%
1984/85	187.3	165.3	-22.0	11.8	-27%	-42%	-67%
1985/86	82.7	72.7	-10.0	7.1	-31%	-46%	-71%
Average	79.7	91.4	11.7	8.1	15%	0%	-25%

Sources: Niger data is from "Joint Program Assessment of Grain Marketing in Niger," prepared for USAID by Elliot Berg Associates, 1983, vol. 1, Table 21, and Statistical Table 15, vol. 2; updated with data from Ministry of Plan's Direction de la Statistique et la Demographie.

TABLE 5
BAMAKO MILLET (6 MONTHS)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1982/83	83.7	116.0	32.3	9.3	55%	40%	15%
1983/84	117.0	156.0	39.0	11.3	47%	32%	7%
1984/85	113.0	151.0	38.0	11.1	48%	33%	8%
1985/86	98.0	92.7	-5.3	8.1	-27%	-42%	-67%
1986/87	71.7	75.3	3.7	7.3	-10%	-25%	-50%
1987/88	82.3	140.3	58.0	10.5	115%	100%	75%
1988/89	76.0	71.3	-4.7	7.1	-31%	-46%	-71%
1989/90	63.0	92.3	29.3	8.1	67%	52%	27%
AVERAGE	88.1	111.9	23.8	9.1	33%	18%	-7%

Sources: Data from Ted Cook "Grain Marketing Credit Programs - Asset or Liability?" Development Alternatives, 1989; updated with data from OPAM's Systeme d'Information sur le Marche (S.I.M.). Harvest price is calculated as average for December, January, and February (lowest-price months).

TABLE 6
DAKAR MILLET (8 MONTHS)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1974/75	39.0	45.0	6.0	5.8	1%	-14%	-39%
1975/76	45.0	55.0	10.0	6.3	13%	-2%	-28%
1976/77	61.7	56.7	-5.0	6.3	-28%	-43%	-68%
1977/78	70.0	64.3	-5.7	6.7	-27%	-42%	-67%
1978/79	65.0	58.7	-6.3	6.4	-29%	-44%	-69%
1979/80	60.0	68.3	8.3	6.9	4%	-11%	-36%
1980/81	80.0	68.3	-11.7	6.9	-35%	-50%	-75%
1981/82	72.7	80.0	7.3	7.5	0%	-15%	-40%
1982/83	93.3	132.7	39.3	10.1	47%	32%	7%
1983/84	150.0	150.0	0.0	11.0	-11%	-26%	-51%
1984/85	140.0	170.0	30.0	12.0	19%	4%	-21%
1985/86	141.7	149.0	7.3	11.0	-4%	-19%	-44%
1986/87	133.3	115.0	-18.3	9.3	-31%	-46%	-71%
1987/88	95.3	94.3	-1.0	8.2	-15%	-30%	-55%
1988/89	95.0	125.0	30.0	9.8	32%	17%	-8%
1989/90	116.7	110.0	-6.7	9.0	-20%	-35%	-60%
AVERAGE	91.2	96.4	5.2	8.3	-5%	-20%	-45%

Source: Dakar data are from the Direction de la Statistique. This source appears to be less reliable than our other data sources, and should be viewed cautiously.

TABLE 7
SUMMARY BY COUNTRY

	Average price rise between harvest and soudure (6-8 mos.)	Average annual return at various costs of capital		
		0%	15%	40%
N'Djamena	12%	7%	-8%	-33%
Niamey	15%	15%	0%	-25%
Ouagadougou	25%	28%	13%	-12%
Bamako	27%	33%	18%	-7%
Dakar	9%	-5%	-20%	-45%
average	18%	16%	1%	-24%

It is more difficult to analyze monthly price data for rural markets because complete time series of any significant length are rare. Nonetheless, we were able to collect fairly complete price series of three years or more for 13 rural markets. We then calculated potential returns to storage using the same methodology as above. Complete results are presented in Annex 6, but a summary of the findings is presented below.

TABLE 8
SUMMARY BY RURAL MARKETS

Rural Market	Average price rise between harvest and <i>soudure</i> (6-8 mos)	Average annual return at various costs of capital		
		0%	15%	40%
Po, Burkina	33%	50%	35%	10%
Sanmatenga, Burk.	17%	11%	-4%	-29%
Ziniare, Burkina	13%	8%	-7%	-32%
Louga, Senegal	20%	13%	-2%	-27%
St. Louis, Sen.	12%	6%	-9%	-34%
Tamba, Sen.	47%	49%	34%	9%
Mao, Chad	56%	66%	51%	26%
Bouso, Chad	58%	72%	57%	32%
Bouza, Niger	45%	45%	30%	5%
Loga, Niger	46%	47%	32%	7%
Maine Soroa, Nig.	14%	5%	-10%	-35%
Matamaye, Niger	39%	29%	14%	-11%
Quallam, Niger	7%	0%	-15%	-40%
Average	31%	31%	16%	-9%

These urban and rural data yield several observations:

- Speculation in storage is extremely risky; annual rates of return can be high or strongly negative. It seems safe to assume that these high levels of risk are a major reason why so few traders engage in speculative storage;
- On average, the rate of return to speculative storage is not as high as is widely assumed;

- Returns to storage are frequently low or negative when one takes into account a reasonable estimate of the trader's opportunity cost of capital; this cost of capital is pivotal in determining the profitability of interseasonal speculation; and
- Returns to storage are usually higher in rural areas than in the capital cities; however, at a 40-percent cost of capital, returns to storage are still negative in 7 of the 13 rural markets for which we have data.

Our conclusion from this data analysis is that speculative storage is a very risky investment. At a realistically high opportunity cost of capital, speculative storage leads to losses more often than profits. Occasionally, speculative storage can be quite profitable, but, on average, returns are negative. These results provide a good explanation of why most traders prefer other investments over storage.

Forced Sales

Unequal market power can arise in several ways. Traders may, for example, have better knowledge of the shifting conditions in grain markets than do peasants. This asymmetry of access to information could lead to systematic gains for traders at peasant expense. But the most significant and frequently cited example focuses on something else — different intensities of demand for cash income. Farmers, especially poor farmers, have more urgent demand for cash at harvest time, and therefore are forced to sell at seasonal lows or to borrow at "usurious" interest rates.

For many Sahelian officials, donor representatives, and others, this is a major justification for CBs — the hypothesis that Sahelian cereals farmers are "forced" into selling a large portion of their cereal production right after the harvest when prices are low, later to repurchase these cereals at much higher prices during the *soudure* for consumption purposes. It is believed that many farmers cannot store their own grain until the *soudure*, because of pressing financial needs such as taxes, debt repayments, or clothing. According to the 1990 FAO report,

[Peasants] are often obliged to sell . . . cereals [in excess of] their true surplus (the overselling phenomenon), and then repurchase cereals during the *soudure* when prices are highest. Overselling at harvest time often causes cereals to be transferred from the village to consumption centers.¹⁸

¹⁸ FAO, *Evaluation . . .*, 1990.

According to Cereal Bank evaluator Suha Satana,

The farmers' . . . vulnerability is due to the grim fact that these farmers almost invariably sell most of their produce (mostly millet and sorghum) just after harvest time (October, November) to meet financial obligations (taxes, debts, ceremonies, etc.) with the knowledge that they would be repurchasing the same grain at exorbitant prices, usually 150 to 250 percent above the sale price, before or during the hungry season to subsist until the next harvest time comes to bring relief.¹⁹

Cereal banks aim to mitigate the problem of "forced sales" by purchasing locally, retaining grain in the village, and reducing the margins between postharvest and *soudure* prices. Both analytic and empirical reasons exist, however, to question this "forced sales" hypothesis.

From an analytical point of view, it is not necessarily a poor economic strategy to sell grain early and buy grain later — the relative prices of grain and other farmer assets such as small ruminants and poultry must be taken into account. As noted in a 1987 University of Michigan study in Burkina Faso, "even those households which sell grain just after the harvest may be behaving more rationally than it appears Farmers, of course, are acutely aware of relative price differences."²⁰ If the value of these livestock assets are expected to climb faster than grain prices after the harvest, it is perfectly rational for the farmer to retain livestock and sell grain. It is even possible that some farmers sell grain to finance investment in animal fattening or petty trade, which yields higher rates of return than grain storage. These returns can, after all, finance later grain purchases.²¹

Assessment of farmer economic rationality in this matter of grain sales has to address the question of why farmers who purchase cereals for consumption would wait until the *soudure*, when prices are highest, to make those purchases, instead of purchasing grain earlier and storing it. Either way some asset (such as poultry or small ruminants) must be sold to buy the grain (assuming no additional indebtedness is possible). One resolution of the paradox is that animal weight gain and reproduction may yield a larger return than stored grain; in this case, selling grain to retain livestock makes sense. Some

¹⁹ Satana, 1981, p. 1.

²⁰ Sherman *et al.*, 1987, p. 159.

²¹ See Haughton, 1985, p. 10, where it is suggested that animals reproduce and hence may yield a higher rate of return than stored grain.

evidence suggests that this is indeed the case, at least sometimes. According to SAFGRAD research carried out in Burkina Faso, many farmers use the revenues from their grain sales after good years to purchase small livestock that can be used to finance food purchases in bad years.²² This does not directly bear on the intra-annual problem, but is suggestive nonetheless.

Many other empirical studies raise questions about the general applicability of the "forced sales" hypotheses.

- Research conducted by Goetz (1990) in eastern Senegal demonstrates that "forced sales" are very rare. Of 150 households surveyed, only 15 both bought and sold coarse grains. Of these, six were purchasing at low prices after harvest and selling at higher prices in the *soudure*, and only five were actually following the traditional "forced sales" pattern. Goetz concludes that "the hypothesis of "forced sales" after harvest and repurchases later on in the season at higher prices generally does not hold for this sample."²³
- An ORSTOM study in Burkina Faso (1973) yielded similar conclusions. Only 15% of households surveyed both bought and sold grain during the year, and the data in this study do not support the image of the poor farmer selling early and buying later.²⁴
- Ouedraogo's 1983 study of marketing in eastern Burkina Faso observes that "there is no indication that the poorest and smallest grain producing farmers are the ones that are forced into sales and then repurchases."²⁵ His data also indicate that sales occur all year long, and farmers who only sell tend to sell during the hungry season. This defies the traditional view, because it suggests that some farmers are both willing and able to profit from seasonal price movements.²⁶
- Sherman's 1984 study of grain marketing in the Manga area of Burkina Faso produced similar conclusions. She finds that farmers buy and sell grain throughout the year, with a third of total purchases and sales occurring in October-December. She also finds that

²² Semi-Arid Food Grain Research and Development Program, "Farming Systems Research Unit in Upper Volta: 1982 Annual Report," Ougadougou, Burkina Faso, May 1983, pp. 10-11.

²³ Stephan Goetz, *Market Reforms, Food Security, and the Cash Crop-Food Crop Debate in Southeastern Senegal*, Ph.D. dissertation for Michigan State University, 1990.

²⁴ J. L. Boutillier, "Donnés Economiques Concernant Les Migrations de la Main D'oeuvre Voltaïque," ORSTROM, *Les Migrations de Travail*, 1975, p. 179, as found in Haughton, 1985, p. 9.

²⁵ Ismael Ouedraogo, *A Socioeconomic Analysis of Farmers' Food Grain Marketing Linkages and Behavior in Eastern Upper Volta*, Ph.D. Dissertation, Michigan State University, 1983, p. 152, quoted in Haughton, 1985, p. 9.

²⁶ Paraphrased from Haughton, 1985, p. 9.

wealthier farmers are slightly ". . . better able to take advantage of the grain price cycle in choosing when to sell grain."²⁷ But she points out that by and large the poor do have alternatives to selling grain, one important alternative being off-farm work.

- The University of Michigan's study of grain marketing in Burkina Faso notes that "large amounts [of grain] are sold and bought in all seasons," and that "the sales pattern appears more evenly distributed than is typically thought. The largest grain sales do not occur immediately post-harvest, but rather in the following quarter. No quarter has less than 17% of sales and none more than 33%." The study concludes, "Perhaps the major finding here is that 137 of the 220 households surveyed either do not interact significantly with the grain market or manage to avoid taking major losses from seasonal price movements. A very small group seems to benefit from those movements, and about 12% seem to be suffering from them. While the latter group are extremely poor in cattle and have a relatively small area under cultivation, they are slightly above average in value of durable goods, and they have more land in cash crops."²⁸
- Preliminary, unofficial findings emerging from IFPRI's recent village transaction studies in Niger indicate that farmers do not sell most of their grain right after harvest; some farmers play the market by waiting for prices to rise before selling, and some farmers buy grain at harvest time for immediate consumption, to save their own stocks until the lean season.²⁹
- Interviews conducted during this study with 83 grain merchants in Chad, Senegal, and Burkina suggest that merchants store relatively little grain; even during the *soudure* they continue to purchase from village farmers. It follows that many farmers are storing and selling grain throughout the year. The farmers who manage to make their sales during high price periods are probably the biggest beneficiaries of price seasonality.

In sum, it appears that distress sales are not so common as often stated, and where early sales exist they do not necessarily reflect a poor economic strategy. The problem of "overselling," stressed in some recent writing, does not seem to be a widespread problem. The "forced sales" hypothesis seems relevant to a minority of households, and it is unclear if these are the poorest.

Unequal Access to Capital Markets

Some have suggested that access to investment capital may serve as a barrier to entry into the storage market, which may impart some monopoly power to merchants who can afford this type of

²⁷ Jacqueline Sherman, *Grain Markets and Marketing Behavior of Farmers: A Case Study of Manga, Upper Volta*, CRED, April 1984, p. 4. as quoted in and paraphrased from Haughton, 1985, p. 10.

²⁸ Sherman *et al.*, 1987, p. 161.

²⁹ Phone conversation with Jane Hopkins, Niamey, October 1990.

investment. This argument seems in some respects to accord with the facts; access to institutional credit (at relatively low rates) is restricted to a small group of wholesale traders. But this is not enough to allow conclusions about lack of effective competition. First, given the divisibility of the commodity, there is no "minimum amount" of money necessary to enter the storage market. Even tiny sums available to most people can be invested in the storage of one or two sacks. Second, the problem of capital scarcity affects all investments in the Sahel (like processing food, raising livestock, or trading tea). There is no reason to believe that the rate of return on storage could regularly exceed the returns on these alternative investments; if it did, money would be shifted out of these other activities and into storage until the rates of return were equalized. Theoretically, "excessive" returns are unsustainable.

Credit Sales and Trader Usury

Another assumption that lies behind the creation of cereal banks is that traders exploit villagers by charging "usurious" interest rates when they provide cereals on credit and demand in-kind repayment after harvest. It is said that when a villager borrows a sack of millet from a merchant in the hungry season, he or she must pay back two sacks, or even three sacks after the harvest. According to a CB document from Chad, villagers "are forced to deal with usurious merchants, who sell cereals on credit at prices three times higher than at harvest-time."³⁰ In Burkina, a CB supporter writes that "traders sell cereals at usurious interest rates of 100 to 200%."³¹ These practices are said to lead to a "vicious cycle of dependence" in which each year the villager falls deeper into the merchant's debt. Cereal banks are said to break this cycle by offering grain on more favorable credit terms. According to one evaluator, CBs serve for "the liberation of peasants from the claws of usurers."³²

Evidence concerning this "exploitation-through-credit" hypothesis is sparse. There are some a priori grounds to be skeptical. As mentioned earlier, excessive profits to an activity are only possible on a sustainable basis if there are significant barriers to entry to the activity and hence monopoly power.

³⁰ Abdoumbaye Allassiam, "Evaluation des Banques de Céréales de Kelo," Ministry of Agriculture, ONDR, N'Djamena, Chad, August 1990, p. 1.

³¹ Mousa Ouedraogo, *Les Banques de Céréales*, Mémoire de fin d'Etudes, ENAM, Ouagadougou, Burkina Faso, 1988, p. 35.

³² Lucien de Lardemelle, *La Commercialisation des Céréales au Niger (2ème Partie)*, FAO, Niamey, Niger, 1989, p. 97.

This situation does not apply to the lending of grain, because entry is easy. Theoretically, anyone who purchases or harvests extra grain can lend it out. If it were really possible to make a 200-percent profit by lending out cereals, many people would shift capital from other investments (livestock, for example) and get involved in grain lending activities. This would eventually drive down the interest rate and the profit margin.

Empirical literature on credit practices at the village level is not abundant. Ouedraogo's 1983 study in eastern Burkina Faso provides the most hard evidence.³³ His interviews with 103 farmers revealed that for grain loans from traders, one kilogram borrowed usually is to be repaid with two kilograms. These types of grain loans, however, are relatively uncommon. Of 196 heads of households surveyed in 1980, only 7 percent had purchased grain on credit that year. Of 460 farmers interviewed in market places in 1980, only 8 percent had purchased grain on credit at some time during the previous three seasons. Typically loans of this type also were small — borrowers surveyed in 1978/79 repaid an average of less than one sack of grain each. Ouedraogo's grain flow analysis shows that the amount of grain used to pay back loans is smaller than that given away as gifts.

Haughton (1985) draws these conclusions from his review of the evidence in Burkina:

- Advance sales [in-kind loans] are fairly rare, accounting for perhaps 5 percent of grain sold (by volume);
- Farmers borrow relatively small amounts;
- Borrowers do not appear to get caught in a vicious circle of indebtedness; and
- Lending is risky because default is common, which helps explain the [need for] high interest rates.³⁴

This last point is relevant to the idea of excessive returns to grain lending; profits are only realized when borrowed grain is repaid. This, of course, is not always the case. Ouedraogo cites an example in which a merchant lent grain to 12 farmers in 1979 but only 6 of them paid back and the trader suffered losses. According to Ouedraogo, many producers have learned to play tricks with grain

³³ Ismail Ouedraogo, 1983, pp. 211-215, cover the topics in this paragraph.

³⁴ Haughton, 1985, p. 30.

merchants by (1) delaying the repayment; (2) repaying only the capital of the loan; or (3) defaulting on the loan altogether.³⁵ McCorkle's field work in Burkina describes "dishonest farmers who pay back in cash instead of in kind, saying that they didn't harvest anything sometimes trying to avoid paying interests."³⁶ If default rates are high, "then high implicit interest rates do not yield high profits, but help to cover high costs."³⁷

High default costs (and associated low profits) are probably the major reason that traders generally are unenthusiastic about selling grain on credit. According to Ouedraogo "the possible high default rate does not encourage merchants to practice the arrangement on a large scale;...the arrangement has become a somewhat costly and risky way for merchants to secure grain supplies."³⁸ According to the University of Michigan study, merchants in Burkina Faso are increasingly disinterested in selling grain on credit, in fact, many merchants prefer not to sell cereals at all "because they are often asked to sell on credit, which for social reasons is difficult to refuse, while the risk of default is very high."³⁹ Informal interviews carried out in the framework of the present study with traders in Chad and Senegal reveal similar attitudes — lending grain is considered a risky, often troublesome practice. Given traders' preference to avoid lending grain, it seems unlikely that excess profits are consistently associated with the practice.

SPATIAL ARBITRAGE

Although "classic" cereal banks focus on temporal arbitrage through storage, a significant number of cereal banks in chronically deficit areas also carry out spatial arbitrage — the transfer of grain from parts of the country where it is relatively cheap to their home villages where it is relatively costly. Sponsoring agencies encourage these CBs to send two or three committee members to surplus areas to make the grain purchases and arrange for transportation to the home village. Two rationales are given for this involvement:

³⁵ Ismail Ouedraogo, 1983, p. 223.

³⁶ Sherman *et al.*, 1987.

³⁷ Ismail Ouedraogo, 1983, p. 223.

³⁸ *Ibid.*, p. 224.

³⁹ Sherman *et al.*, 1987, p. 188.

- It is felt that private traders transferring grain into the area are charging excessive prices and earning excess profits; or
- It is felt that private traders are inadequately supplying certain villages, particularly during the *soudure*.

These rationales need to be considered before looking at cereal banks' records in spatial arbitrage activities.

Do Traders Earn Excessive Profits From Spatial Arbitrage?

Cases can be cited of traders making sizeable profits through grain sales to villagers, but a number of analytical reasons exist to doubt the extent and durability of such situations. As mentioned earlier, an economic activity can yield excess profits on a regular basis only if some monopoly power exists, and potential competitors are excluded from entry. These conditions rarely appear to apply to the grain trade in the Sahel, because so many traders are involved at most levels. As long as these traders are in competition with each other, or the market is contestable by other potential traders, profit margins should remain (or be driven down to) "normal." As in all cartels, if traders collude to fix higher prices, the incentives exist for individual traders to cheat (and they are likely to do so in the absence of public policy encouragement). Outside traders also tend to enter the market and break the cartel. The Sahelian grain trade is not noncontestable — an exclusive club; even a farmer with a small amount of money can buy a few sacks of grain, rent space in a pickup truck, and transport them to a market where "excess profits" are alleged to exist.⁴⁰ Insofar as there is competition between traders, price differentials between connected markets should only be as great as the costs of marketing; analytically, excess profits are unlikely to be sustainable.

Most empirical evidence seems to bear out the a priori expectation that the structural characteristics of Sahelian grain markets should assure reasonable competition. Recent field studies of cereals marketing in the Sahel suggest that traders' net margins are usually quite thin and that spatial

⁴⁰ Occasionally, a small isolated rural market appears to be dominated by a single cereals merchant. Very rarely, however, will this trader be in a real monopoly situation; individual farmers and petty traders on bicycles, donkeys, or horse carts sell grain in even the most remote regions of the Sahel, and consumers are capable of making purchases in neighboring villages if they feel that cereals prices are too high in their own hamlet. Cereals trading is an open and contestable business and it is rare that a trader can maintain "unfair" prices and still remain competitive in the market.

arbitrage is generally very competitive.⁴¹ Large differences in the price paid for cereals in surplus zones and the sales price in deficit areas are explained principally by high transportation costs and high risks, not by excess profits. In Senegal, for example, GFA Consultants draw three important conclusions from their recent empirical study:

- Private traders allocate grain competitively and efficiently in Senegal, to a large degree as a result of the country's good road network;
- Commercial margins between rural producer prices and urban consumer prices are stable and homogenous, reflecting mainly transport costs; and
- Intense competition between traders rules out excessive profits.

GFA concludes:

These empirical results lead us to conclude that traders, because of the competitiveness and transparency of the market, cannot realize excess profits. It is advisable, therefore, to challenge the unfavorable prejudice that is so widespread among government officials and politicians, according to which traders exploit the peasants. These beliefs are totally contrary to the realities of Senegal's cereals market.⁴²

Thus structural factors and much empirical evidence raise strong doubts about the validity of one of the two rationales for CB involvement in spatial arbitrage.

Are Some Villages Inadequately Served by Cereals Traders?

Some promoters of cereal banks claim that the villages in which they work are not supplied by private traders and therefore CBs must take on the task of transferring in grain. Field visits carried out by this team, however, suggest that this is only occasionally the case. Most villages are served by private

⁴¹ See, for example, Gesellschaft für Agrarprojekte in Übersee (GFA), *L'Amélioration du Système d'Information sur les Prix des Céréales du CSA*, prepared for GTZ, Dakar, Senegal, December 1989; Sherman et al., 1987 (Burkina); Bureau Interministériel d'Études et de Projets, *Étude de la Formation des Prix des Céréales*, République du Tchad, Ministère de l'Agriculture, June 1990; Berg Associates, *Joint Program Assessment of Grain Marketing in Niger*, 1983; and N. Dembele and J. Dione, *Description des Circuits Céréalières au Mali et Analyse de Données Secondaires de Prix des Céréales*, Projet de Sécurité Alimentaire MSU-CESA, Bamako, Mali, 1986.

⁴² GFA, 1989, p. 27.

cereals trade, but this trading activity is often overlooked by outsiders because it functions on a small scale adapted to the size of the village. That is, the trade is carried out using bicycle or animal transportation, or may involve a pickup truck that delivers cereals to a resident seller who retails the grain from his home.

A 1990 survey revealed that on average there are 6 traders in Burkinabe villages equipped with cereal banks, 3 traders in Senegalese villages with CBs, and 8 in Nigerien villages with CBs (roughly 50 percent of these traders sell cereals).⁴³ The author of the survey writes, "Contrary to the allegations of certain extension agents, the Senegalese villages [where CBs are located] also have private traders; these need not have formal shops; the transactions may occur in private homes."⁴⁴

Although grain merchants of varying sizes exist in most villages, our field visits and interviews made clear that there are nonetheless some small villages in rural regions of the Sahel that are not directly served by private traders. Traders do not import grain on a regular basis into these villages, and the inhabitants must travel to markets in other villages or towns when they need to purchase a significant quantity of cereals (quantities under 5 kg can usually be purchased from neighbors). Promoters of cereal banks assert that the creation of a CB in such villages allows the inhabitants to make purchases locally and avoid the time and transport costs involved in traveling to outside markets.

The existence of these unserved markets raises the question: If there is a market to be exploited, why aren't private traders selling cereals in these villages? Three alternative explanations are possible:

- There is a market failure. It is possible to organize grain sales in the village at a price that covers all associated costs, but no one is taking advantage of this possibility because of a lack of information;
- There is a policy failure. Artificial barriers have been erected that discourage entry into this market. These barriers may be due to harassment of traders by local officials, the existence of (or legacy of) official panterritorial prices that make trading in remote areas unprofitable, or the presence of food aid or subsidized grain sales (by cereals offices or CBs) in the region, which increase the risk of not covering costs; or

⁴³ International Labor Bureau/ACOPAM, *Infrastructures Communautaires de Stockage Agricole — L'Experience d'ACOPAM dans le domaine des Banques Céréalières au Burkina Faso, Niger, Sénégal*, Dakar, Senegal, 1990.

⁴⁴ *Ibid.*

- There are structural factors that make it nearly impossible to sell grain in the village at a price that covers all associated costs. This may be due to the inhabitants' insufficient purchasing power, the high cost of credit defaults, the dispersed nature of the market (too thin to justify the transaction costs involved in sales operations), or people's preference to purchase at regional periodic markets and thus unwillingness to pay any premium for local service.

All three of these explanations are plausible. A priori, the first explanation (market failure) seems possible but unlikely, given the general transparency of grain markets, easy entry, and the large numbers of Sahelian grain traders eager to seize opportunities for even low profits.

The second explanation (policy failure) may hold for some northern regions of Burkina, Niger, and Mali that have benefited regularly from subsidized sales by cereals offices. In Mali, these sales have been identified as "a brake on the development of private cereals commerce in deficit zones."⁴⁵ The University of Michigan study in Burkina also identifies government restrictions on trade as a factor discouraging traders from serving certain remote villages.⁴⁶

The third explanation (structural factors) is the most probable in most unserved villages. Traders generally prefer to sell at periodic rural markets (every 3, 5, or 7 days) where clients are concentrated and fixed costs (licenses, personal travel and per diem expenses, assistants' wages, and so forth) can be spread over larger sales volumes. Unit costs would rise if these traders were to sell in certain low-volume villages (thin markets). Higher prices would be necessary, but villagers with limited purchasing power might be unwilling to pay any "convenience premium" and they would continue to purchase at outside markets, especially if they are frequenting these markets for other reasons. Also, villagers with very little purchasing power might simply be unable to pay market prices for grain, and certainly are not attractive clients for a potential village grain trader. Serving these consumers is a matter for social policy, and is not related to marketing deficiencies.

⁴⁵ Gerard Gagnon, "L'Evolution du Commerce Privé des Céréales au Mali, l'OPAM, et l'Approvisionnement des Zones Déficitaires," World Bank, 1988, p. 14.

⁴⁶ Sherman *et al.*, 1987, p. 190.

CHAPTER FOUR

CAN CEREAL BANKS OFFER CHEAPER OR BETTER SERVICES THAN PRIVATE TRADERS?

As shown in Chapter Three, many of the rationales for the creation of cereal banks are based on myths or misunderstandings about the functioning of Sahelian cereal markets. A priori analysis and much empirical evidence suggests that these markets operate in conditions of effective or reasonable competition. Pools of excess profit are few and usually temporary, which means there are not many profitable opportunities to be tapped by new trading entities like cereal banks.

Because profit margins are normally thin, CBs can offer better services or prices on a sustainable basis only if they are lower-cost service-providers. This they can be only if they are more efficient — in other words, deliver services at lower real costs. If they are not more efficient, then they can outcompete private traders only with subsidies or special protection and privileges which are harmful to growth and socially inequitable.

"Cost" is the central issue here so it is essential to be clear about definitions. Two kinds of cost comparisons are made in the following analysis. "Economic" or "real" cost refers to opportunity cost, the value of the resources used up in production of the good or service in question; it is measured by the value of sacrificed production. "Financial" or "nominal" cost is the actual money payment made for inputs — purchase price of grain, wages for labor engaged to handle the stock, interest on borrowed capital, rent (or amortization) of warehouse facilities, and so forth.

In this chapter we compare both financial and economic cost of operations of CBs and of private trade. We show that CBs have lower costs, both real (economic) and financial, than private traders. To impute to CBs lower real costs is something of an artificial construct; CBs are channels for inflows of foreign aid resources, most of which are probably not diverted from other uses within the economy in question. In this special (and debateable) sense, the domestic opportunity costs of these aid resources can be said to be low. (It is not low if defined as its yield in alternative uses.)

The relative financial cost advantages of CBs are more easily defined and measured; given the high level of subsidization that characterizes CB activities, their financial costs are much lower than those

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of private traders, especially for temporal arbitrage. Despite heavy subsidies, however, we show in the second part of the chapter that the performance record of CBs is poor, and their sustainability doubtful. Deficiencies in management and problems of control that contribute to these results are outlined in Chapter Five.

RELATIVE COSTS OF CBS AND PRIVATE TRADERS

Cost Components

The elements of cost that enter into CB operations are the same for each of their three major activities — temporal arbitrage, spatial arbitrage, and lending grain to villagers. These elements are grain acquisition; working capital (interest and amortization); warehouse investment (interest and amortization) or rent; wages for management and for labor engaged in grain handling, protection, and supervision; physical losses; transport; and minor inputs like sacks and pesticides.

While the elements are general, their weight varies a great deal between the different trading activities. It is obvious, for example, that the costs of capital are much more important in temporal arbitrage than are transport costs; money is tied up for many months but the grain may not leave the village. It is quite the opposite with spatial arbitrage, which entails much more physical movement of grain but over a relatively short period of time.

Economic or Real Cost Comparisons

The presumption is strong that private traders are more efficient providers of trading services, in the sense that they use fewer inputs to provide the same service, or better services with the same inputs. But CBs have two advantages — a small one in labor use (by drawing on voluntary, presumably underemployed, village labor) and a large one in access to low-cost capital. The latter is so important that it gives the CBs lower real cost than private operators. But this conclusion rests on special and debateable assumptions about the opportunity costs of donor-provided capital.

Private traders probably do better on grain acquisition, unless countered by discriminatory public policies. This is so because they have better information networks and hence better knowledge of prices in different surplus zones; they can perform spatial arbitrage more effectively. They also can exploit

some economies of scale in buying. And they are more sensitive to quality differences and market premia for quality.

They are probably also more efficient users of transport inputs. Knowledge of the market, information about prices and availability of grain and transport, and information about the condition of roads and about the reliability of various market actors — all of this is much greater among private traders than among the necessarily amateurish CB managers who engage sporadically and temporarily in spatial grain marketing. In moving grain to and from regional trading points, private buyers and sellers seek back-haul possibilities and other sources of scale economies from their trade in items other than cereals. They have experience in dealing with transporters; some are indeed transporters themselves. They can bargain better.

Private traders also seem to be more efficient in use of warehousing space and protection against spoilage. The typical CB receives a warehouse as a gift that, in the late 1980s, cost about \$6,000 to construct. On average it stores 100 sacks (10 tons) per year. (Capacity is generally underutilized.) If the building is depreciated over 20 years at a zero interest rate, storage costs per sack approximate \$3.00 (750 CFAF) per season. This plus the imputed rate of interest on the warehouse investment cost is the economic or real cost of storage.

Private traders' warehousing costs vary greatly. For merchants who rent space, a typical charge is 50 CFAF per month, or 350 CFAF for a typical seven-month storage period. Many merchants use cheaper space — the back part of their shops or a room in their homes. Investment cost per stored sack is thus much lower in the private trade than it is for CBs. But the CB investment is mostly financed as a grant from a sponsoring aid organization, and this raises some thorny conceptual problems. From the national economic perspective, and in terms of real resources used, costs of warehousing are higher for CBs than for private traders. However, from the villagers' perspective, they are consuming a gift and not depreciating an asset. So it would be wrong to include amortization and interest on the capital embodied in the warehouse as part of the CB's real cost of operations. We return to this analytically difficult issue later.

It is not likely that physical losses from spoilage are lower in CBs than in private commercial storage. It is true that some CBs have access to subsidized credit and inputs (pesticides and fungicides), which tends to increase the relative intensity of their use among CBs. And most have *en dur* warehouses. But these pluses are almost certainly outweighed by the much more careful stock management that is likely to prevail among private storers.

The reason for more careful stock management has to do with concentration of risk of loss and differences in incentive structures. The trader who does not properly place, rotate, and protect his grain risks direct personal financial loss. This is not the case for the manager(s) of CB stocks; the costs in these cases of poor stock management are spread among the community. Nor is the manager rewarded or punished financially for his performance.

The private trader, moreover, can act more quickly and decisively than the collective leadership of the cereal bank. He can destroy or sell contaminated grain, seek out secondary markets for its disposal, and make decisions to take necessary losses. The management of CBs moves slowly and gingerly in such matters.

Both CBs and private traders incur labor costs; they need workers to collect and carry grain, oversee stocks, and sell at retail. Both require critical management inputs. Cereal banks have a strong apparent advantage in this respect: they rely heavily on voluntary labor. Villagers do the necessary physical labor. The management committee, often composed of village notables, is responsible for accounting and management tasks, also largely on a voluntary, unpaid basis. Many accounting and supervisory functions are performed by sponsoring agency staff provided without charge.

Whether the result is lower real labor costs for CB than for private traders is not clear. To the extent that village volunteers work during periods of seasonal or daily slack time, the opportunity cost of their labor is low. But whatever labor savings arise from this tapping of underemployed time are almost surely outweighed by heavy training, accounting, and managerial labor inputs provided by the sponsoring agencies. The fact that volunteers may not provide intense or high-quality labor inputs also should be considered, as should the fact that turnover of CB management tends to be high, which dilutes on-the-job learning and has other negative effects on the quality of management.

Also, real cost advantages in terms of labor are likely to be especially low in the case of spatial arbitrage. CB buyers have to be absent for relatively long periods on buying trips, so it is less acceptable to assume that they perform their management functions during otherwise nonproductive time. Their opportunity costs are thus higher than in temporal arbitrage.

There is, finally, the important matter of capital. CBs are either granted funds from a donor/sponsoring agency, or the funds are lent at much below market rates of interest. What is the opportunity cost of these resources? It is high, if defined as yield in alternative uses in the rural economy and roughly measured by interest rates in the informal credit market. This is indicated by the observable attempts of many CB committees to get around the prescriptions of donor agencies that they only invest in cereals.¹

Most of these aid-provided capital resources, however, are probably not available for other uses. Put differently, not much of the foreign aid that goes to CBs is diverted from other programs in the same country. The aid is attracted to the country in question by the existence of a project (encouragement of CBs) that satisfies the humanitarian objectives of private voluntary organizations and the social policy objectives of all the donors. If CB projects did not exist, aid inflows would be smaller. In this sense, the opportunity cost of the capital grants to CBs is low to the domestic economy.

This analysis of the comparative economic efficiency of the two types of trading entities suggests that CBs have an overall advantage. The fact that they are channels for inflows of cheap capital — for warehouse construction and especially for operating capital — is the decisive factor. Use of voluntary labor creates an additional real cost advantage, probably small. The private sector is almost certainly more efficient in grain acquisition, in transport, and in protection against spoilage. Were there no access, or equal access, to low-opportunity-cost capital, or if the judgement is wrong that opportunity costs of this capital are in fact low, then the efficiency advantages would be almost all on the side of private actors.

¹ Recognizing that other types of investment may be more profitable, they surreptitiously lend out their revolving funds to traders or farmers interested in animal fattening. According to those involved, the typical rate of interest on this lending is 10 percent for three months.

Financial Costs

The analysis of comparative economic costs of CBs and private traders helps clarify long-run institutional policy but its significance is limited by lack of good empirical information and by ambiguities in treatment of foreign aid. The analysis of financial costs is more straightforward. The CBs receive large subsidies, which give them substantial financial cost advantages over private traders.

Their biggest subsidy is in capital costs, a major component of CB costs, especially for their chief activity — temporal arbitrage. Storage ties up capital, whether it is done by CBs or by traders. For a private trader, capital costs normally constitute about two-thirds of the financial cost of storage.²

As noted earlier, costs of funds to private traders are very high; in informal markets, interest rates average in the neighborhood of 25-60 percent annually in this region, and are sometimes higher. When traders self-finance their own operations, we have to assume that the opportunity cost (profitability in alternative uses) is equally high. These high rates reflect the general capital scarcity in the Sahel and weak financial market institutions, notably the inability of the banking system to service traders' credit needs.³ The high opportunity cost of investible funds thus incites private traders to seek only high-return investments. They are uninterested in tying up their financial resources in speculative storage unless the return is as high as in alternative uses of equal risk.

The financial cost of funds to cereal banks is much lower. Unlike traders, CBs do not have to turn to the informal market for loans. Nor do they constitute their working capital through personal saving or borrowing. CBs are either granted funds from a donor/sponsoring agency, or they borrow from the donor at interest rates — normally ranging from 0-15 percent — that are very much below market rates or, in other words, heavily subsidized.

² This estimate is based on seven months of storage at a 40 percent annual interest rate, with a cost of 50 CFAF a month for warehousing and physical losses of 5 percent. If millet is purchased at 60 CFAF/kg, capital costs come to 14 CFAF/kg out of total storage costs of 21 CFAF/kg.

³ According to an ISRA survey in Senegal, only 6 percent of wholesalers and a negligible number of itinerant traders are able to borrow from banks (Newman, et al., 1988, p. 13.)

These low interest rates confer a sizeable financial cost advantage for CB operations in temporal arbitrage. In principle, they should be able to carry out profitable storage operations where private traders cannot. For example, a private trader financing a \$4,000, eight-month investment in millet storage might face interest costs of over \$1,000, while a CB borrowing from a donor at 8.5 percent would bear interest payments of only \$230. Access to low-interest loans obviously endows CBs with tremendous cost advantages and hence a strong competitive position against private traders. They can buy dear after the harvest and sell cheap in the lean season and still accumulate profits.

Obvious problems are posed by this capital provision at low interest rates. First, it makes capital available to CBs at a price that is much less than CBs would have to pay alternative suppliers. But its continuing supply depends on decisions made by international aid donors. The CBs therefore are highly dependent on external sources with all that this implies in terms of uncertainty, loss of national autonomy, and diminished villager self-reliance.

Moreover, the fact that subsidized capital is available to CBs and not to private traders falsifies competition between the two market actors, may risk displacing private traders from some markets, and slows the emergence of a more efficient private trading sector. This is, of course, pertinent for all subsidies, and for general public policy as well.

The discussion of capital subsidies has thus far not considered the standard practice of external financing of most warehouse construction costs. The subsidy here arises from the fact that CBs regard this as a gift and do not make provision for amortization or interest. This "free" warehousing gives an additional financial cost advantage to CBs, though a small one, since, as noted above, private traders use modest storage facilities and storage costs are a small share of total costs of temporal arbitrage and an even smaller share of costs of spatial arbitrage and credit operations.

Subsidies are frequent also in grain acquisition. National grain agencies sell at official prices to CBs, when actual market prices are higher. This has been more common in recent years in Burkina, where the grain agency has had a larger role than elsewhere in the region.

Subsidies are also common in transport. Local officials make trucks available in crises or even for more banal needs. Most important are the transport facilities and services that sponsoring agencies sometimes provide. In cases of regional purchases by one CB from another the sponsoring agencies

sometimes manage the entire transaction. This is important because transport costs are the principal component of the cost of spatial arbitrage. Thus in Senegal, for example, where distances are relatively small and road transport good, a recent study found that transport costs account for 75 percent of total marketing costs in the groundnut basin.⁴

The financial advantage in labor costs due to the use of volunteers is probably not significant. There may in fact be no financial advantage for a number of reasons. The unpaid workers often offer labor of low quality; they tend to be less careful, less reliable and responsible, and more difficult to manage. Unpaid CB leaders and managers are supposed to serve only for limited time periods. In fact, many express the desire to quit when interviewed. The skills acquired through training and experience are thus lost to the CB. That financial cost reductions from voluntary labor are not substantial is suggested by the fact that CB managers frequently contract out to private traders when they seek to buy grain beyond local markets.

In summary, then, cereal banks are highly subsidized organizations: physical facilities (warehouses) are usually provided free — brick and mortar by aid agencies, labor by village volunteers; working capital is highly subsidized; volunteer labor is used for routine tasks and managers are usually unpaid or paid very little; acquisition of grain is sometimes provided by grain agencies or other official bodies at below-market prices, as are inputs like insecticides; and services, especially transport, are commonly given to them without charge.

In addition, foreign aid donors and some governments provide without charge the set-up costs, including "free" training in literacy and elementary accounting. Monitoring, financial management, and other technical assistance is provided by sponsoring agencies for years after CBs are created.

The resulting operating cost advantages over private traders are substantial, particularly in temporal arbitrage and credit operations, since these activities are the most capital intensive and the biggest subsidies are in capital costs.

⁴ I. Ouedraogo and O. Ndoye, "Les marges et coûts de commercialisation des céréales dans le bassin arachidier," ISRSA/BAME, Dakar, Senegal, 1988, p. 194.

It is hard to make general estimates of the magnitude of subsidization in the region. Partly this is because the cost data are soft and highly variable from place to place, and partly because of conceptual difficulties in valuing the foreign assistance inputs. But there can be little doubt that the subsidies are large.

Some data from Senegal are illustrative. If a CB in 1990 purchased 10 tons of millet at 70 CFAF/kg and stored it for 7 months before selling, its costs would have looked something like the following:

grain acquisition	700,000 CFAF
handling	8,000
empty sacks	30,000
warehousing (amortization)	50,000
interest on capital (15.5 percent for 8 months plus fee)	86,000
management	60,000
Total	934,000 CFAF

If the CB had to pay all of these charges, it would have to sell its millet at 93.4 CFAF/kg to cover its costs. In reality, most CBs do not face all of these charges — management is usually unpaid and the warehouse amortization is ignored. Under these conditions, the CB can afford to sell its millet at 83 CFAF/kg. Also, most aid agency sponsors do not require interest payments on the money they give for operating capital (revolving funds). If the CB does not have to pay interest, it could sell millet at 74 CFAF/kg and maintain its capital intact.

Costs of donor-provided training, supervision, accounting help, and emergency support are not included here. These are not universal and are supposed to be temporary only, but they are widespread and seem to persist even among relatively mature CBs. And they are costly to donors — approximately \$1,000 (250,000 CFAF) a year. For a 10-ton operation, this comes to 25 CFAF/kg.⁵ One donor, the FAO in Niger, actually appoints and pays villagers to perform the CBs' bookkeeping.⁶

⁵ Monitoring costs are estimated to be \$92 per month in a draft manual on CBs called *Manuel Sur l'implantation, le fonctionnement et le suivi d'une BC; le cas de la SODEVA/ACOPAM dans la région de Louga*, Dakar, July 1990.

⁶ Serge Mihailov, "Evaluation des Banques de Céréales du Projet," Draft report, April 1990, Niamey, Niger, p. 33.

To turn now to the private trader, what are the costs that he (or she) would face to undertake a similar grain storage operation? If we assume that the trader is not subsidized and must face all of the costs presented above, and that he or she has an actual or imputed interest charge twice that of the CB — 31 percent a year — costs would total over 1 million CFAF and the trader must sell at over 100 CFAF/kg to avoid incurring losses. Even if the private trader is able to cut management and warehousing costs in half, he or she still faces costs of 95 CFAF/kg.

The subsidies thus confer a substantial competitive advantage on the CB. Fully subsidized, it can sell millet at a rate as low as 74 CFAF/kg and leave its capital intact, while a private trader must charge 95-100 CFAF/kg just to cover costs.

The subsidies received by CBs are substantial, and the assumptions underlying their calculation are not rigged to produce such results. To the contrary, the actual interest costs facing private traders are probably more than twice those faced by CBs.

The analysis thus far concerns storage or spatial arbitrage. The subsidies on CB credit operations are also large. The CB can, as a result, afford to charge much lower interest rates or tolerate much higher rates of nonrepayment than private traders. The subsidies on spatial arbitrage activities are smaller, except where the donor-sponsor organizes and pays for the inter-regional transport of cereals.

Cereal banks, then, enjoy enormous competitive advantages over private traders. They should be able to be all things to all men (and women): high-price buyers at harvest time, low-price sellers at the *soudure*, and profit makers and subsidizers of other cooperative village activities all the year round. Has this in fact happened? How have CBs fared in practice?

THE CEREAL BANK TRACK RECORD

Because of their privileged access to subsidized capital, and the heavy weight of capital costs in temporal arbitrage, the CBs should be most "successful" in this activity, in the sense of earning wide-enough margins on their storage operations to cover their financial costs and generate a surplus or profit. The extent to which this has been happening is hard to know, if individual CB financial records are the source of data for evaluation. CBs keep sparse records on their transactions and market price series are rare. Most functioning CBs engage in some form of temporal arbitrage, and most seem to sell their

cereal stocks during the lean season at 5-15 percent below market prices.⁷ This kind of information of course does not indicate that the CBs in question are covering their operating costs; they may simply be eating away their operating capital each time they sell. This appears often to be the case, judging from longer-term financial data and survival experience, which we consider later.

Cereal banks' spatial arbitrage operations are of two types: those carried out by the sponsoring agency and those carried out by individual CBs. Examples of the first category of operation are found in Burkina Faso. Two NGOs — La Fédération de Groupements Naam and the Union des Groupements Villageois de l'Oudalan — carry out large-scale grain transfers for their associated CBs. Using their own trucks, they travel to surplus zones, purchase cereals, transport them to central depots, then distribute them to individual CBs for sale. These operations entail heavy subsidization. Empty trucks travel long distances to surplus zones and incur significant additional expenses before returning with grain to the target zone. The full financial cost of the delivered grain has often exceeded the price at which it could be sold in the villages. Because of this experience, both of these organizations have confessed to a serious underestimation of acquisition costs. They currently contract with private traders for the majority of their grain deliveries.

The record of individual CB involvement in long-distance grain transport is not much different. In chronically grain-deficit areas, CBs that wish to purchase grain have two options. They can appoint members to travel to surplus zones for direct purchases, or they can contract with private traders. The first option was originally promoted by many programs as a way to "eliminate the middleman." They encouraged CB committee members to travel to surplus areas, with the sponsoring agencies often organizing the excursion and subsidizing transport costs. It is not surprising that in many cases these

⁷ Jan Kat's 1983 study of cereal banks in Burkina Faso indicates that the average discount between the hungry season prices offered by CBs and those available on the open market is 14 percent (FOVODES program only, Kat, 1983:17). When cereal banks made purchases locally, they typically paid market or only marginally above-market prices. Kat adds that the consumer price discounts "were only possible to the extent that part of the financial, let alone economic costs were not accounted for." (p.17). In 1990, Kat's observations appear to remain valid. The 1990 FAO cereal banks study found that most CBs that buy locally do so at market or slightly above-market prices, and local CB sales are typically at slightly below-market prices (about 5-10 CFAF/kg of difference or 8-15 percent). Whether or not these discounts allow even nominal costs to be covered is unclear.

adventures were "successful," in the sense that financial outlays were covered and the CB could sell below private trader prices in the lean season.⁸

Anecdotes about less happy experiences abound. The CB agents often do not manage to buy on favorable terms, or experience unexpectedly high transport costs, or spoilage en route. The Djoulouna CB in Mali, for example, bought grain in surplus areas but could not deliver to the village at a competitive price; its outlays averaged 42 CFAF/kg in a year when local market prices fell to around 38 francs.⁹ Sometimes CB agents are not informed about regulatory requirements and roadblocks, and find they must make unexpected and costly "side payments." Accounts exist of several excursions by Burkinabe CBs that were frustrated because the villagers did not have the right government permits allowing transfer of grain between regions. Villagers sent to southern zones to purchase grain for the Cbs of Kabe in Niger and Goubre in Burkina Faso simply embezzled the funds entrusted to them and continued on to the Côte d'Ivoire.

In face of the difficulty of transporting cereals over long distances, an increasing number of cereal banks are negotiating contracts with private traders to do the job for them. This is especially true in Senegal and Burkina Faso, where many of the more experienced CBs have been unable to sustain enthusiasm over several years for voluntary excursions to surplus provinces. They have concluded that it is better to negotiate a delivered price with a professional trader than to travel south themselves. Many other CBs, however, continue to travel to surplus regions themselves, frequently armed with a government-supplied laissez-passer that allows them to bypass the many administrative barriers that are still faced by private traders. According to the 1990 FAO cereal bank study, operating costs incurred by CB purchasers and private traders are very similar and the final cost-price of buying directly or through traders is "about the same."¹⁰

⁸ Many evaluation reports contain stories like the one from Near East Foundation, *Cereal Banks in Douentza 1986-1990, A Review*, Douentza, Mali, 1990: The cereal bank of Poye, in a deficit region of Mali, sent two members out on a buying trip in 1986. They brought grain to the village for a total outlay of 65 CFAF/kg, 10 francs below local market prices.

⁹ Ibid., p. 16.

¹⁰ FAO, *Evaluation . . .*, 1990, p. 29.

Cereal banks in surplus areas are almost never directly involved in spatial arbitrage. Their locally purchased stocks are sometimes sold in the village during the lean season, or are sold to traders. It is not uncommon to hear stories about CBs that cannot sell stocks except at deep losses, stocks that no one else wants and are beginning to rot.

The record on CB management of credit sales of grain is dismal. Cereal banks that provide grain on credit have had enormous problems in recuperating their loans to villagers. High default rates are driving hundreds of CBs out of existence throughout the Sahel and leading to serious financial problems for hundreds more. Cereal bank expert Guy Ledoux refers to credit as the "achilles heel" of CBs, that is, the most important threat to their sustainability.¹¹ During field visits conducted for this study, we heard of scores of cereal banks that had gone out of business because they could not recover their loans. The principal CB reports all identify credit sales as a major area of cereal bank failure.

After years of bad experience with internal credit, most CB programs, which initially denounced private "usurious lenders," have discovered that it is very difficult to provide cereals on credit at "below usurious" rates and still cover costs, principally high default costs. Thus, many programs that initially encouraged their CBs to provide grain on credit have failed completely (PPIK Burkina), experienced serious losses (World Vision Chad, ACOPAM Senegal), or been forced to change from a credit to cash payment policy (ACOPAM Maradi). Currently, almost all CB programs discourage their cereal banks from lending out cereals at all. The risks of nonrepayment are considered too high.¹²

Even when the sponsoring agency discourages or forbids its cereal banks from lending grain on credit, village social pressures frequently force committee members to continue to loan to people who are not likely to pay back. The beneficiaries includes those who are so destitute that they will not be able to repay a loan, and villagers so powerful that they feel that they have nothing to fear by defaulting. Generosity and social pressure do not lead to good banking decisions. Generous instincts, slight resistance to social pressures, and exposure to political influence are not good ingredients for making

¹¹ Ledoux, *Inventaire et évaluation . . .*, 1986, p. 46.

¹² The abandonment of credit sales has led to a paradoxical situation in many villages: the poorest consumers frequently are unable to buy grain from the CB; they continue to obtain cereals on credit from merchants with whom they have longstanding relationships. The move to cash sales thus involves a partial retreat from the equity-raising objectives of CBs.

sound banking decisions — in the Sahel or anywhere. Of course, during emergency situations, CBs have to provide cereals on credit, in most cases fully aware that the chances of such loans being repaid are small. Here sustainability is sacrificed for food security in the sense of famine prevention, an unexceptionable trade-off. In these cases the CB fills a "social" or emergency reserve function. (See Chapter Six for further discussion.)

The Financial Record

Despite heavy subsidization, CBs seem to have an uncertain financial record in temporal and spatial arbitrage and a very poor record in grain lending. Lack of appropriate data makes it difficult to evaluate separately CB performance in each of these domains. An examination of CBs' financial evolution over the years can only give us an idea about whether or not the combination of a CB's activities is generating enough revenue to cover financial or operating costs and allow business to continue.

Any evaluation of effort along these lines runs into several difficulties:

- Data are difficult to collect; CB committees generally keep loose accounts (if they keep them at all), and the information is rarely centralized in any coherent form;
- Most CBs are less than three years old and do not have a long enough history to reveal organizational flexibility and the presence or growth of management skills. Data on older CBs is difficult to find, because so many of them have gone out of business;
- After several years of operation, many CBs have received additional grants of cereals, which much reduces the value of one common marker of success and sustainability — a high ratio of current to initial revolving fund amounts; and
- Financial accounts established by sympathetic evaluators often count old, unlikely-to-be-repaid internal debts as assets instead of writing them off as losses.

Despite all of these problems, several evaluators have attempted to gather information allowing an assessment of the financial situation of cereal banks. The first to attempt to do so was Dolidon, who in 1980 visited a sample of 33 CBs in Burkina Faso and examined their accounts. Unable to reconstruct full financial records, Dolidon proxied financial health with quantity of grain commercialized. His pessimistic results are presented in Table 9 below:

TABLE 9
CORRELATION BETWEEN CB AGE AND LEVEL OF OPERATION

Years of operation	CBs in the sample	Average Sales/CB (tons)
1	8	22.6
2	8	12.2
3	4	11.5
4	3	4.2
5	3	1.6
6	1	0

Initial grain grant per CB: 30 tons

Source: Dolidon, 1980, p. 75

From these data, Dolidon concludes that "the system deteriorates over time; the older the CB gets, the less it sells."

Data published in the *Plan Céréalier du Burkina Faso* (1990) provide some later confirmation of Dolidon's conclusion. Pre-1985 FONADES CBs were originally granted 30 tons of grain each; in 1990 they were down to handling only 3.5 tons each, on average.

The *Plan* concludes that "only nine of the 65 CBs supervised in 1987 have a revolving fund superior to the initial grant." In fact, this data overstates the true value of the revolving funds, because it considers old internal debts as assets instead of writing them off. If one writes off old debts, 62 of the 65 CBs have lost money through their operations.

TABLE 10
SITUATION OF PRE-1985 FONADES CEREAL BANKS

Year of creation	CBs in sample	Average level of revolving fund (FCFA)	Average sales per CB (tons)
1974	3	413,000	4.9
1975	3	346,000	0.2
1976	3	433,000	3.2
1977	10	921,000	3.1
1978	6	702,000	2.6
1979	9	599,000	4.5
1980	10	1,057,000	4.9
1981	6	1,183,000	3.2
1982	1	2,051,000	2.0
1983	1	1,540,000	0
1984	3	836,000	0.5

Original endowment: 1,500,000 FCFA or 30 tons of cereal

Source: CILSS (Coordinator), *Plan Céréaliier du Burkina Faso*, July 1990.

The *Plan* also presents the financial situation of 29 pre-1985 cereal banks associated with an International Labor Bureau project (BIT/ACOPAM/CRPA). This picture is much brighter, with 1987 sales per CB equal to 14 tons and the revolving fund averaging 1.17 million FCFA. However, it is difficult to determine if these figures represent an increase or an erosion in the total capital provided to these banks because the baseline for comparison is unclear; the CBs received initial loans of unspecified, varying amounts and were granted additional free cereal stocks in 1985 and 1986 for which no data are available.

Financial evolution data are also available for CBs in Senegal. Catholic Relief Services, which runs the country's largest CB program, reports that, on average, its CBs have lost money through their marketing operations. Even though these CBs benefitted from interest-free grain loans on which the principal has not been repaid, the overall value of their revolving funds has eroded by 7 percent over the

past five years.¹³ Church World Services (CWS), which operates a CB program in the Keur Momar Sarr area, reports that its CBs have lost 25 percent of their capital over the past five years, mainly because of embezzlement and management problems.¹⁴ Project staff on the ILO's cereal bank program in Louga report "an enormous erosion of the CBs' original stocks," although quantitative data were not given.

A dearth of reliable data makes it hard to generalize about the financial evolution of cereal banks. Nonetheless, the available evidence appears to indicate that Sahelian CBs, on the whole, have tended to lose money on their marketing operations rather than increase or maintain their equity. This is despite substantial subsidization. Bad management decisions, bad debts, and embezzlement problems are usually the cause of financial decay.

Survival Rates and Sustainability

One of the most straightforward methods to evaluate the CB record in marketing is to look at the ability of the institutions to continue to carry out activities over a number of years. For a CB to outperform private traders in a sustainable way, it must first of all be able to survive.

Cereal bank survival rates give little room for optimism about their longevity. In Burkina Faso, an estimated 900 cereal banks are effectively out of business, 62 percent of the total.¹⁵ The Sahel's oldest CB program — FOVODES — reports that 86 percent of its 76 cereal banks are no longer operational. In Senegal, 205 CBs (36 percent) manage no commercial activity, 74 percent manage revolving funds worth less than 70 sacks of grain, and 90 percent of all CB storage capacity is unused.¹⁶ In Niger and Chad, scores of CBs are reportedly defunct, although figures for these countries are not available.

¹³ Based on CRS database printout of October 30, 1990, Dakar.

¹⁴ CWS data are based on representatives' 1990 memorandum, Dakar.

¹⁵ Basis for estimates are in Annex 2a on Burkina Faso.

¹⁶ CSA, *Rapport sur le Recensement . . .*, 1990, p.10.

When a cereal bank is newly created, it usually receives close donor supervision and management assistance that greatly increases its chances of success. After a number of years, however, donor supervision become looser, losses begin to mount, and the probability that a CB will cease operations seems to increase.¹⁷ This is confirmed by data on older cereal banks, most of which are found in Burkina. According to our nonrandom sample of 124 cereal banks that were created in Burkina before 1985, 72 percent are effectively out of business.¹⁸ Seyni Harouana, who carried out a 1990 census of CBs in Niger and visited over 80 of them, reports seeing dozens of nonfunctioning CBs in Niger, and "not even one CB that survived more than three years beyond the end of project support."¹⁹ While cases of well-functioning, older cereal banks certainly can be found in Burkina Faso and elsewhere, these are relatively rare.

Because of the magnitude of the resources that have been devoted to creating and nurturing CBs, these results have to be regarded as nothing less than disastrous. Cereal banks exhibit a quasi-general inability to cover operating costs, a rapid decline in activity as they mature, and a high mortality rate. And this is so despite the tremendous cost advantages they have in comparison with private traders due mainly to subsidization by external aid agencies. The record of experience thus far suggests that CBs are not able to compete with private traders in a sustainable way; they do so temporarily only because they enjoy huge subsidies and other public policy favoritism.

Promoters and defenders of CBs will surely find this too quick and harsh a judgement. They will point out that most CBs are, after all, new — most now active are less than four years old. The key problem, they insist, is poor CB management, which will get better with experience and with training.

¹⁷ During the course of this study, many cereal bank promoters expressed their skepticism about the chances of their CBs surviving after the retreat of project assistance. A 1990 International Labor Bureau/ACOPAM document expresses this sentiment about its CB programs in Senegal, Niger, and Burkina, "Cette fragilité ne relève pas uniquement de lacunes internes, mais s'inscrit dans la situation de précarité de l'économies générales Il s'agit d'une situation d'autant plus préoccupante, qu'elle coïncide avec le retrait des structures d'encadrement ACOPAM qui risque de laisser vacante une place difficile à occuper par les structures nationales." *Infrastructures Communautaires de Stockage Agricole - l'Expérience d'ACOPAM dans le domaine des Banques Céréalières au Burkina Faso, Niger, Senegal*; Dakar, Senegal, 1990.

¹⁸ Based on information gathered by the team during visits to Yatenga, Dedougou, Ouagadougou, Fada, and Kaya; see Annex 2a.

¹⁹ Interviewed by Kent in Niamey, October 4, 1990.

It is true that the CBs are new. It is also true that the proximate causes of poor performance lie in poor management — poor decision making, inability to manage credit sales of grain, and inability to prevent fast and loose use of money by CB officials. But these problems have deep roots, beyond resolution by simple aging or more training. The fact that financial performance worsens as CBs mature is one hint of this. Also, the kinds of management deficiencies that plague CBs clearly reflect more basic institutional problems, notably that cooperative management seems ill-suited to operations in grain markets. And this suggests the nature of the basic source of CB failures: that the cereals marketing functions that have been given to CBs are inappropriate for collective action. They are better left to private agents.

These are the issues we consider in the next chapter.

CHAPTER FIVE

CEREAL BANKS AND VILLAGE ORGANIZATION

A second often-expressed objective for CBs, in addition to improved marketing services, is the strengthening of village organizational capacity by building up cooperative activities and structures. This objective is not framed in economic terms — as a way to benefit from economies of scale, for example — but rather terms of sociopolitical objectives or preferences. It reflects an ideological conviction that cooperative provision of rural services is preferable to private or individual provision. According to this view, most villagers are ill prepared to defend themselves against outside actors, in particular traders and government officials. Cooperative or collective approaches will nurture the rural organizational capacities needed to remedy the fundamental imbalances in power that now prevail. Cooperative approaches are desirable also because they are believed to be more equitable, and will lead to a more humane society than one based on individualism and the reign of the market.

Not all advocates of cooperative development base their position on this social or ideological perspective. Some base it on more narrow economic advantages. Given the sparsity of institutional rural credit sources, for example, cooperatives may be considered as a useful mechanism through which to channel rural credit or group lending. Cooperatives may also have a role to play in input supply, particularly fertilizer distribution during the difficult transitional period when state systems are on the way out and new private networks are not yet developed.

Advocates of cooperative approaches tend to be strong partisans of cereal banks, which they see as potentially important instruments for strengthening of cooperative spirit and cooperative organization at the village level.

This second major objective of CBs then — the shaping of the *organisation du monde rural* along more cooperative lines — is partly instrumental; CBs are considered to be helpful in cooperative development. But it is partly aimed also at the equalizing of bargaining power with traders, a protective device against presumed exploitation. This aspect was discussed in Chapter Three. Here we note only that part of the popularity of CBs in the 1980s derives from the perception in official circles that they offer a way to moderate the impact of market liberalization; favoring CBs and cooperative organizations

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generally could prevent private, profit-seeking commerce from dominating in primary crop marketing and input supply.¹

In assessing the role of CBs in village institutional development, we have to distinguish the instrument (CBs) from the goal (cooperative development). Two separate questions are posed: first, are CBs likely to be effective instruments for the development of cooperative village activity; and, second, are cooperative forms of rural organization appropriate for the Sahel at its present stage of development. Here we concern ourselves only with the first question, but the analysis has many implications for the second question as well.

CEREAL BANKS' CONTRIBUTION TO STRONGER VILLAGE COOPERATIVES

How exactly can CBs contribute to the strengthening of village cooperatives? Four major possibilities are mentioned by CB advocates: providing an activity around which to organize, establishing an activity that can generate profits, serving as a forum for training, and transforming villagers' mentalities.

An activity around which to organize. Cereal banks give cooperatives something to do. Except in regions with established cash crops like groundnuts and cotton, management of the cereal bank is the main — often the sole — economic activity of the cooperatives. This follows historical patterns: cooperative organizations in Sahelian countries never had much presence outside of cash cropping areas, and this was particularly true for "genuine" cooperatives. Many donor staff and government officials believe that cereal banks offer great hopes for revitalizing officially sponsored cooperatives and for strengthening those that are authentic.

Generate profits. Related to the above, operations in cereals trading are seen as a means to generate income that can be used in other village cooperative activities like boutiques, village pharmacies, and grain mills. Profits are likely to strengthen cooperatives by allowing them to improve services to their members.

¹ This sentiment appears to be particularly strong in Niger and Burkina Faso, where many officials express strong concern about the *monopole des commerçants*. This comes through clearly during interviews, and in documents such as "Projet de Restructuration de l'Office National des Céréales — OFNACER," Ministère du Commerce et de l'Approvisionnement du Peuple, 1988, pp. 93-96.

Training. The existence of a CB also creates a focal point for training efforts. It gives impetus to expanded training in literacy. Those involved in management or supervision of CBs usually receive training in elementary bookkeeping and related skills. On the job, managers also learn a wide range of personal and organizational skills related to grain marketing operations. These skills may serve to make cooperative leaders more effective.

Mentality transformation. Finally, some observers argue that the CB will help transform villager habits of thought, making them more modern and socially aware. A more "cooperative spirit" is considered an asset to the organization. One writer, for example, says CBs will transform "individualistic mentalities" into cooperative ones.²

Assessment

These proposed or potential contributions of CBs to the reinforcement of cooperative village organization suffer from one fundamental problem. The basic activities of CBs — temporal arbitrage, spatial arbitrage, and credit sales of grain to villagers — are inappropriate for collective village organization.

This is so for two sets of reasons. First, these activities are either inherently so risky, or so much more efficiently done by private agents, that financial viability and even market survival is unlikely for most CBs. And second, cooperative cereals marketing involves problems of management and control that are overwhelming. These related factors explain why most CBs lose money rather than make profits for use elsewhere, despite large subsidies, continuing outside technical and financial support, and occasional antitrader measures by the authorities to protect the competitive positions of CBs.

² Serge Mihailov, who has written widely on cereals banks, argued as follows in a recent report: "While individual ownership of cereals is no guarantee of full freedom of their use, because of social and traditional pressures, . . . the CB substitutes collective decision-making, which is logical and coherent. . . . The CB thus contributes to the evolution of [villagers'] mentalities from a state of "magic" and adherence to traditions to a "logical" condition whereby decisions are taken in the light of the objective collective interests of the community." *Ière Rapport de Mission de l'Expert en Institutions Rurales, sur les Banques de Céréales*, Draft, FAO/Dakar, April 1987, p. 13.

For these reasons, the long-term viability of CBs is doubtful, except with ongoing dependence on outside money and other help. Because the economic foundations of CB activity are so weak, it is unlikely that CBs will be able to contribute to the long-run strengthening of village cooperatives.

High Risk and Lack of Competitiveness

We noted in Chapter Two that, by nearly universal testimony, private traders store relatively little grain. High capital costs and high risks were identified as the major causes for avoiding this investment. Cereal banks can overcome one of these barriers by accessing subsidized capital; however, subsidies cannot help CBs overcome the basic riskiness of speculating in grain. Some years, grain prices decline over the year instead of rising, and some years a local shipment of food aid can cause prices to plummet right before a CB is about to sell its stocks. In N'Djamena, Chad, for example, the average lean season price has been below the average harvest season price for three of the ten years for which data are available.³ At the rural Burkina market of Sanmatenga, speculative storage would have led to losses three of the six years for which data are available, even if the cost of capital were zero.⁴

The riskiness of grain storage is compounded by weather variations that cause sizeable fluctuations in annual grain harvests in the Sahel. Although the relationship is certainly more complex than suggested here, it appears that in "bad" years (years of below-average national grain harvests), cereals prices increase significantly between the harvest and lean seasons; but in "good" years (years of above-average harvests), cereals prices do not increase significantly between the two seasons. Thus the potential return to speculative storage is high in bad years, and low or negative in good years. This is shown below in two graphs based on price and production data for N'Djamena and Bamako. The vertical axes represent the potential return to speculative storage for a CB facing a 15 percent annual cost of capital. The horizontal axes represent the cereal production level for a number of different years, arranged from lowest harvest to highest (rather than chronologically by year).⁵

³ Data are in Chapter Three.

⁴ See Annex 6 for data on price fluctuations and returns to storage in 13 rural markets.

⁵ Rates of return are taken directly from calculations presented in Chapter Three; the grain production data are from CILSS. Bamako and N'Djamena were chosen because the data are most reliable for these two sites, although the civil war years are missing for N'Djamena. Pre-1977 Chad production data are from Multinational Agribusiness Systems Incorporated, USAID/Chad, 1977.

N'Djamena: Returns to Speculation

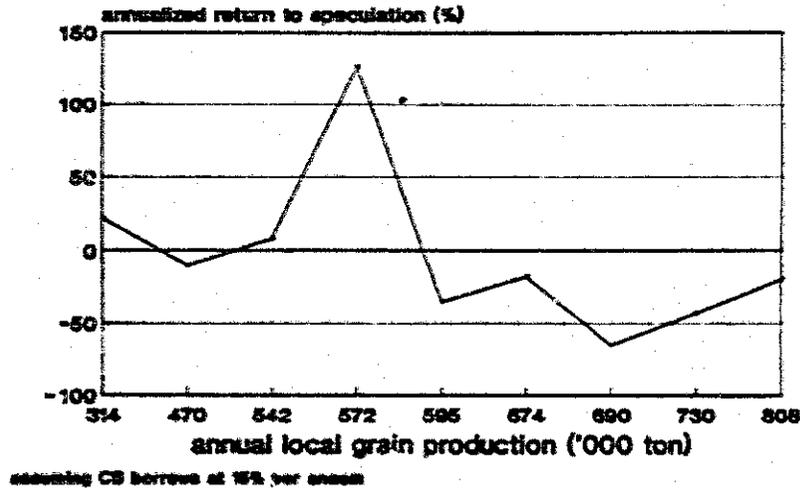


Figure 1

Bamako: Returns to Speculation

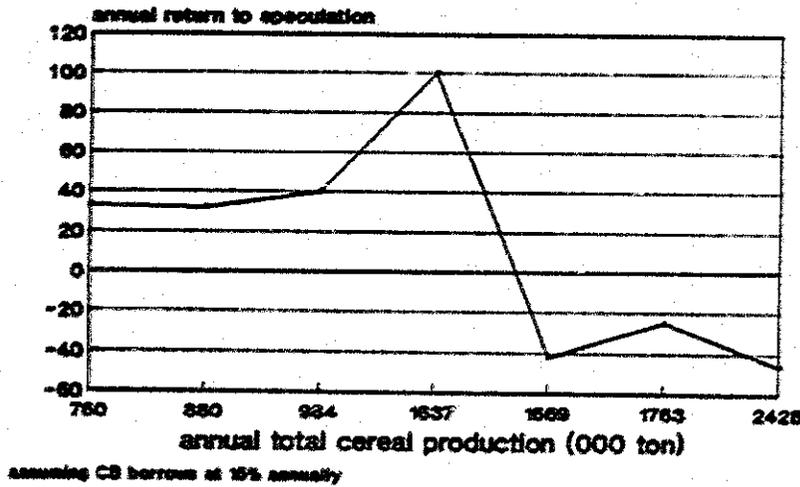


Figure 2

These graphs suggest that success in speculative storage requires choosiness and flexibility. Investments are more likely to pay off in bad years than in good years, although even following this rule is no guarantee of success; very bad years may be unprofitable if food aid arrives.

Diversified private traders are best adapted to this good year/bad year variability; they can shift capital between grain storage and other investments (say, cement marketing) according to prospects for profitability. Cereal banks are less well adapted to the good year/bad year phenomena; they tend to invest their capital in grain storage whether prospects for returns are promising or not. This tendency may be related to the inability of the CB to diversify rapidly into other investments due to inexperience, or due to social pressures to purchase grain locally even in good years when speculation is likely to be unprofitable. It may also be related to the cumbersomeness of CBs' collective management — management that is more likely to repeat the same operations as the year before than to shift its investments into another product or sector. But, after all, buying, holding, and selling grain is their *raison d'être*, and they see it as their role to buy in good years and bad.

Two other phenomena related to the good year/bad year problem compound the difficulties of cereal banks. The first is that during good years, CBs often have trouble selling their stocks during the lean season, because so many villagers already possess sufficient grain. Unsold grain must be carried in stock until the following year. This has two dangers. First, the stored grain has to be kept through the rainy season, which increases its vulnerability to spoilage. And more important, if a second good year follows the first, it remains very difficult to "unload" the CBs' stocks, and losses mount.

Very bad years — years of very poor harvests — also are risky for cereal banks. This is because during these years, villagers often do not have cash to purchase cereals and they frequently demand that the CB provide them with cereals on credit. These loans are frequently not repaid. If a second bad year follows the first, chances for repayment become even slimmer, as farmers do not have the grain or cash to repay their debts.

Success in cereal bank operations thus seems to require a delicate (and rarely occurring) succession of good and bad years. A succession of either two bad or two good years threatens its financial position. As a result, CBs are poorly adapted to the volatility and riskiness of the Sahel's grain markets, especially because the CBs are vulnerable to community pressures to sell cereals on credit or to invest in grain after abundant harvests. Successful interseasonal storage makes more sense as an on-again/off-again investment for a flexible trader (avoiding very bad or good years) than as the full-time economic foundation for a fragile cooperative organization.

The inherent lack of competitiveness of CBs in spatial arbitrage and in credit operations have already been mentioned. Effective spatial arbitrage requires knowledge of prices, market behaviors, conditions in ancillary markets (credit, transport, other inputs) and established relations with other actors. None of this is likely to be present in CB management.

Spatial arbitrage also requires action in economies characterized by large physical space, sharp regional variations in production and prices, imperfect information flows, sometimes poor and uncertain transport availability, and usually keen competition. These are conditions that put a premium on quick decision making, extensive networking outside the consuming village, and flexibility in all matters. The private trade has vastly more of these qualities than the CBs.

In *credit operations*, finally, the cultural and social environment imposes special hardships on collective bodies like CBs. These have been mentioned earlier, in various contexts, and can be summarized as follows:

- Social pressures to extend credit during bad crop years are extremely strong, indeed nearly irresistible. If there are two successive poor harvests, nonpayment is likely to be high;
- Even without a bad two-year run, repayment rates are likely to be worse for CBs because many villagers regard them as social welfare agencies and sanctions are mild for default; and
- Unlike the profit-seeking trader who can screen loan requests carefully on the morally acceptable grounds that he is in business to make a living, a CB manager or committee member is subject to community pressure to make loans to the poor and the influential.

Problems of Management and Control

The second set of reasons that cereals marketing is an inappropriate activity for cooperative organizations is that problems of management and control are often overwhelming. The problems touch on those mentioned above and elsewhere: management of cereals marketing activities is extremely demanding for a cooperative organization, and there are few reasons to believe that a CB committee could manage a grain trading enterprise more effectively than a self-employed trader. On the other hand, there are some a priori reasons to suspect that a cooperatively run CB would be less efficient than a privately run business, especially one that is individually owned. These reasons are outlined below:

- Private firms are usually able to make quicker decisions than cooperative bodies. This is of course more so for private operations that are individually run. In cereals markets, in which prices are constantly shifting, conditions vary in different parts of the country, and information costs are high, quickness of decision is a vital asset;
- Incentives for cost-minimization and effective information gathering are greater for private firms and greatest for individuals managing their own money than for a committee member who is managing donor-provided, cooperatively owned money;
- Private traders are likely to have longer trading experience and better information networks than committee members;
- Self-employed traders do not have principal-agent problems, or at least have far fewer than other kinds of agents. In particular, there is no embezzlement problem, whether of the wholesale kind or in cheating on prices said to be paid to purchase grain, announced spoilage rates, and so on; and
- The point about social pressures is worth repeating: a cooperatively run village enterprise is much more susceptible to pressures to make business decisions based on nonbusiness criteria — lending for political purposes, for example.

Can training resolve the management problem? More training and closer supervision are frequently recommended as remedies to the management ills that afflict CBs and threaten their survival. All promoting agencies now recognize that simple provision of a revolving fund and a warehouse is not enough to ensure CB success. Most experienced donor agency representatives familiar with CBs now consider that some five years of training and supervision is necessary before sponsoring agencies can withdraw with reasonable expectation that local management capacity is strong enough to assure survival.

This evokes two observations. First, the training and monitoring in question costs money — a great deal of money per CB or per ton of grain handled by the CBs. It greatly increases the subsidy necessary to establish a CB. Outside donors may willingly bear these kinds of costs — for example the maintenance of a vehicle-equipped extension team for five years. But it is exceedingly unlikely that local budgets could support these costs in the future. And even if the budget burden could be taken over, the organizational requirements of maintaining such an extension operation exceed capacities likely to be available in the next two decades.

The question has also to be asked: would allocation of local resources to these ends represent a wise choice of priorities? Many villages are already served by private marketing services; and the institution being sustained lacks competitiveness in performing its basic tasks and its probability of survival, even with extensive nurturing, is low.

In addition, the notion that the management deficiencies underlined here can be reduced substantially by training of village committee members seems wildly optimistic. First of all, as noted above, the kinds of management problems at issue are inherent in collective leadership and not just a matter of lack of know-how.

Moreover, the CB cannot be expected to benefit from accumulated management competence, nor assure continuity of leadership. The kind of training they receive is not organization specific: they learn the way to deal with consumers, private traders, and truckers; the way to maintain accounts; and the way to control and motivate workers. These kinds of skills can be used outside the CB at least as readily as inside.

At the same time, CB leadership receives little or no pay. They can put their CB-acquired human capital to work outside the CB more profitably than inside it. This practically guarantees high turnover of competent and trained leadership. More pay to committee members might slow this leakage, but affordability issues arise, as well as challenges to the essence of cooperative action, and the relative rewards available inside and outside the CB will nonetheless favor movement of managers from CBs to private income-earning activity, particularly trade.

Because of the above problems, the long-term viability of CBs is doubtful, a conclusion borne out by their poor track record. This strengthens our conclusions that cereal banks cannot strengthen community organizational capacity. CBs almost never generate a profit to be invested in other community activities⁶ and, when they fail, it is hard to see how CBs can build community spirit or "transform mentalities" in a positive direction. If villagers are to organize cooperatively, success is more likely if they organize around activities that are properly the domain of collective action and not of individual entrepreneurship or management. Targets for collective activity need to be carefully selected. They should have characteristics that clearly justify joint action — in terms of scale, externalities, public goods characteristics. To choose wrongly, to go down the wrong institutional path in village organization, has numerous (negative) consequences.

⁶ Although occasionally a CB committee will raid its revolving fund (not its profits) to finance a community school, mosque, or mill.

DISCOURAGEMENT OF PRIVATE TRADERS

One such negative consequence is the potential damage done to the development of the private trading sector. The problem is that promotion of CBs can lead to discriminatory policies against the private trader. Most analysts of marketing systems in the Sahel agree that competition between marketing agents is a positive phenomenon that can support producer prices (competition to buy crops), restrain consumer prices (competition to sell crops), and keep intermediary margins low. Situations involving numerous competing agents are normally desirable. It does not necessarily follow, however, that the creation of CBs is good policy because it adds more marketing agents to the ring and thus increases competition. Or "the more the merrier," as one USAID official expressed it.

"The more the merrier" is appropriate as long as competition is taking place on an even playing field. If one group of competitors — cereals banks or government cereals offices — is receiving subsidies, it risks driving nonsubsidized players (small private traders) out of the market.

This displacement phenomenon has long been a concern of donors when discussing food aid and the subsidized sales of cereals by cereals offices. Gagnon (1988), for example, describes how subsidized sales by Mali's grain board (OPAM) are a brake on the development of the private cereals trade in deficit areas. He writes:

La présence de stocks publics au niveau des chefs-lieux de cercle entretient l'incertitude chez les commerçants privés compte tenue que leur gestion est soumise aux pressions de l'administration locale. La décision de déstocker ne repose pas toujours sur une connaissance adéquate du marché. Cette incertitude permanente désincite les commerçants à conserver leurs propres stocks. . . . L'intervention de l'OPAM à prix subventionnés . . . n'a rien pour inciter certains candidats potentiels à devenir des commerçants de céréales. On ne peut vouloir accorder une plus grande place au commerce privé des céréales d'une part, et le concurrencer avec des prix subventionnés, d'autre part.⁷

A similar argument can be made about cereal banks: their role in grain storage and below-market pricing is made possible by subsidies to capital, management, warehousing, or transportation. Moreover, many CBs buy their stocks at subsidized prices directly from government grain offices, and there are

⁷ Gagnon, 1988, p. 14. [our bold].

numerous proposals for the building of privileged relations between CBs and the cereal offices.⁸ If the presence of subsidized CB sales displaces private cereals trading from a village (or discourages them from entering), that village will be better served only as long as the CB continues to operate. If the CB goes out of business (as older ones tend to do), the village may be left with no marketing services at all. Although private traders may eventually return to serve such a village, they will have lost time in developing the trading route, developing expertise, and forming investment capital.

Subsidies and preferential access to government grain stocks are not the only weapon used by CB programs to attack competing private cereals traders whom they often vow to "fight against." Other tactics include:

- Political interventions. In two cases in Burkina and Niger, the authors encountered situations where the local political authorities, in response to requests by CB leaders, banned any private commercial purchases of grain during times when cereal banks are purchasing (to protect them from competition);
- Special noncompetitive "set asides" for CBs and village groups in government grain purchases (Niger, Burkina, Chad), and privileged access to cereals offices' grain sales; and
- Harassment and verbal abuse. Anti-private-trader sentiment is pervasive among cereal bank promoters. Documents and extension agents repeatedly refer to merchants as "speculators," "usurers," and "maggots" (*verveux*), and discourage farmers from dealing with them.⁹

Despite subsidies and other forms of support, in practice most cereal banks have been unable to outcompete private traders, and only occasionally have led to their displacement. Nonetheless, it is important to recognize the potential damage that can occur if stepped-up privileges are accorded to CBs.

⁸ Serge Mihailov, for example, proposes that CBs be granted priority access to CSA stocks in Senegal: "Il est recommandé que les B.C. situées en zones structurellement déficitaires . . . ou de façon générale tout réseau de B.C. qui en ferait la demande, aie la faculté de s'approvisionner auprès du CSA en priorité sur les autres demandeurs, et cela au prix officiel . . ." *1er Rapport de Mission de l'Expert en Institutions Rurales, sur les Banques de Céréales*, draft, FAO, Dakar, Senegal, 1987.

⁹ Denis Dolidon (1980) writes that CBs must face "la concurrence des commerçants dont certains proposent des prix plus rémunérateurs que les BC. Pour lutter contre cette concurrence, certains banques de céréales interdisent aux commerçants de pénétrer dans le village, et s'il le faut empêchent physiquement de le faire. Les banques de céréales dissuadent les paysans de vendre aux commerçants, au nom de la solidarité villageoise."

The long-term solution — the development of a dynamic private sector — may be delayed by support to what appears to be an unsustainable institution.

CHAPTER SIX

FOOD SECURITY, EMERGENCY GRAIN STOCKS, AND CEREAL BANKS

One of the most commonly expressed objectives of cereal bank programs is "food security." The concept is elusive. The 1989 World Bank report, *Food Security in Africa*, sets out one broad definition: the assurance that people have the food they need. Falling within this broad umbrella are the many, commonly understood aspects of food security, including:

- Increased domestic production of food;
- Increased foreign exchange earnings (usually through increased nonfood exports), which allow greater food imports;
- Lower food prices through improved transport, more competitive marketing, and other improvements in food system efficiency; and
- Access to free or subsidized food aid when disposable incomes fall or production fails.

In light of the broad and diverse meanings given to "food security" in general discussions, it is not surprising that the concept is not well defined in West African food policy statements. For example, the 1986 Round Table on Cereal Banks in Niger lists "food security" as a major CB objective, and defines it as "facilitating the food supply of peasants by putting cereals at the village level . . . (so that) in case of an emergency, the CB constitutes the first stock to meet peasant needs while they await government aid." In the same document, the food security objective of CBs is defined as allowing rural consumers to have access to cereal stocks at "reasonable prices."¹

ROLE OF CEREALS BOARDS IN FOOD SECURITY

For many years, national cereals boards — for example CSA in Senegal, OPAM in Mali, OFNACER in Burkina, OPVN in Niger — were important actors in Sahelian cereals markets. They had

¹ FAO, *Rapport Final de la Table Ronde sur la Promotion des Banques Céréalières*, Niamey, Niger, 1986.

three main functions: stabilization of prices to consumers and producers, management of national grain emergency stocks, and management of food aid.

Although their significance varied over time and between countries, nowhere did the boards succeed in controlling grain markets in line with their objectives. They rarely bought more than 2-4 percent of marketed production, their "official" prices were rarely respected in the marketplace, and their price stabilization goals were almost never attained.

Most of these agencies have fallen victim to fiscal pressures and liberalizing policies in the 1980s. They have largely abandoned trying to set official producer prices and to support these and fixed consumer prices through their buying and selling activities. Thus, they are no longer attempting to build up and manage stabilization stocks. In policy dialogue with the major bilateral and international donors, the cereals marketing boards have agreed to a new, more limited role. This involves pursuing two functions only: management of emergency or security stocks and management of food aid.

In the mid-1980s in many of the countries, agricultural policy debate focussed on the appropriate size of the security stock. Government spokesmen, citing the frequency of severe drought and the resulting risk of famine, argued for relatively large stocks. Donors and some local officials underlined the high costs involved, and called for more cost-effective food security strategies — mostly smaller stocks. Although the debate was usually framed in terms of "objective" requirements for a "first line of defense" storage strategy (calculated by determining the number of "vulnerable" people, their average grain consumption, and the average time it takes for food aid to arrive, and so on), the results were political compromises. The debate on this issue has always been uneasy, since local authorities bear the risks involved with famine while the donors pay for the emergency stocks (often through the sales of surplus donor-country cereals).

In any event, in several countries at least, emergency stock targets have been reduced — in Niger, for example, from an initially sought 120,000 tons to 80,000 tons; and in Mali by roughly similar amounts. In other cases, combined stabilization and emergency stocks have been reduced from their high levels of the mid-1980s.

CEREAL BANKS INAPPROPRIATE FOR EMERGENCY STOCK USE

These circumstances, combined with the spread of CBs since 1985, have led many observers to suggest that these village-level organizations should supplement the role of national cereals boards in assuring food security. The general idea is shown in a committee report issued during a 1990 Round Table on cereal banks in Niger:

The need for cereal banks is based on two reasons: (1) the country's food situation, and (2) the contraction of OPVN's role. The OPVN, which once managed 270,000 tons, now manages only 80,000. . . . To assist in filling this gap cereals banks should be the first means of recourse . . . (though) the management of their stocks . . . must be coordinated at a level above that of the village.²

The framing of the issue here and the use of the figure of 270,000 tons as an opening move in a process of bargaining with donors tells us something about the aspirations of agriculture ministry officials. The 270,000-ton stock was an involuntary accumulation due to successive good harvests in the mid-1980s, and it was more than OPVN had ever held. In any case, there is much discussion of this idea throughout the Sahel. Nowhere, however, have specific and detailed proposals been put forward, so it is hard to know exactly what is involved. Two meanings are possible.

First, the CB might be envisaged as a miniature, decentralized national cereals office, engaging in interannual storage. It would manage a security stock in addition to or in place of its present interseasonal stock. It would rotate each year some portion (usually a third), to prevent spoilage. These operations could go on apart from the CB's regular seasonal activities. The emergency stock would be distributed free to villagers in years of extreme penury, and replenished later by food aid or otherwise.

The advantage of such an arrangement would be enhanced protection against food insecurity arising from crop failure. But its feasibility is questionable and it is not likely to be cost-effective. Its reach would be limited; only a minority of villages have cereal banks. It requires a much higher order of management skills than is now available in rural areas and, in addition, a whole new layer of regional/local planning and coordinating capacity. Location and scale of emergency stocks would have

² République du Niger, *Table Ronde sur Les Banques Céréalières*, 1990, Rapport de la Commission No. 1.

to be coordinated, and training and supervision provided in spoilage control, accounting, and asset management. Mind-boggling problems of control arise, along with multiple possibilities for foul play. How could all this be done in a region characterized by large size, dispersed population, poor communication, limited literacy, and poorly developed managerial resources?

A second conception of the CB role in emergency stock management is more viable. The CB would retain its present objective of seasonal storage, and continue to follow existing operating rules. But, in years of serious crop shortfalls, its stocks would be given away to needy villagers. The stock would be replenished the following year by government or aid donors, in cash or in kind.

The problems with this second approach are obvious. The CB is periodically decapitalizing itself, hence risking institutional suicide if for any reason replenishment grants do not come. Dependence on central government or donors is increased, which is contrary to overall goals of greater village autonomy. The new arrangement might reinforce the conception among villagers that the CB is a welfare institution — a conception already prevalent — and exacerbate tendencies for nonrepayment of credit given by some CBs. Normal self-reliant coping behavior (sale of animals, migration, appeal for remittances from family members in urban areas or abroad, and so forth) might be undermined by such a program. Also, targeting is hit and miss, unless the arrangement is limited to severely deficit areas and, even there, poorer villagers do not necessarily receive privileged access. Finally, the determination of operating rules, and their coordination among different CBs, would seem extremely difficult. How and by whom, for example, will crises be defined, permitting free distribution?

ALTERNATIVE MEANS FOR IMPROVING RURAL FOOD SECURITY

There are no easy solutions to food insecurity in many parts of the rural Sahel. However, our review of the evidence strongly suggests that CBs, as they are currently conceived and run, are not an appropriate vehicle for emergency stock management. Food insecurity due to drought or other sources of crop shortfall are better addressed by other means. Many of these are well known. Some are being pursued by current programs. The main points of the three major groups of alternative measures to improve food security can be outlined briefly.

Promotion of Freer West African Trade

First, West African governments should reverse their actual stance on regional trade, moving from looking at regional trade as a set of opportunities for public and private taxation to an active, and genuine, promotion of the movement of factors of production and products across national borders for the common good. These principles are in various regional agreements, such as those of CEAO and ECOWAS; they need to be seriously implemented. This would involve:

- Dismantling the remaining (and largely ineffective) formal barriers to regional West African trade;
- A vigorous multinational attack on practices and regulations that contribute to the high costs of cross-border trade and transport. These efforts would focus on (1) diminishing the government use of temporary border closures and special temporary "surcharges" and taxes, and (2) eliminating the formal or informal barriers consisting of roadside harassment and bribe-taking by uniformed "services" in each country; and
- Encouraging the development of stronger private sector links across borders, especially along north-south lines, which will directly contribute to increased food security in the Sahel. The more highly developed, and hence more responsive, the trade links between vulnerable regions and the more productive coastal areas and ports, the less need there is for emergency stocks.³

Improvement in Early Warning and Famine Relief Systems

An equally critical need is for continued improvement in the public sector's capacity to detect and respond to crop failure. The major elements include the following:

- Consolidation and institutionalization of the various early warning systems recently put in place throughout the region through donor project funding;
- Continue efforts to reduce delivery time between ports and vulnerable zones;
- Creation of a cash emergency fund to allow commercial purchases of grain, since these can be on the spot much more quickly than official food aid — two months as compared to as much as 4-6 months for food aid; and

³ The Club du Sahel and CILSS have recently undertaken detailed studies of the nature and extent of current West African trade and barriers to its expansion.

- Better planning and better targeting of food aid distribution, including greater use of food-for-work schemes.

Continued Streamlining of the National Cereals Boards

The current cereals offices should become lean, less demanding financially on state resources, and specialized in security stock management and food aid distribution. This has become a more feasible goal than formerly, because most of these agencies have now been stripped of difficult and lower-priority tasks, such as the attempt to maintain floor prices for producers, and they have benefited from much technical assistance in the past decade.

CHAPTER SEVEN

SUMMARY AND CONCLUSIONS

1. Intervention through creation and subsidization of cereal banks has become popular in the Sahel since the late 1970s, and the number of banks has grown dramatically. To a certain degree, this popularity can be attributed to government and donor reticence to let market forces completely control cereals markets; CBs are seen as alternatives to private grain traders, who are widely distrusted.
2. The objectives of cereal banks can be grouped into three categories: (1) to provide cheaper and better marketing services than those currently available through private traders, (2) to strengthen village organization and build cooperative spirit, and (3) to serve as emergency food stocks for crisis situations.
3. The bulk of this paper has been devoted to exploring the first of these objectives. Our first conclusion is that many of the assumptions that serve as rationales for the involvement of cereal banks in grain marketing are analytically unsound and empirically weak. Private cereal traders rarely enjoy monopoly positions in any marketing functions and therefore cannot, and do not, reap "excess" profits on a regular basis. The margins that they earn are generally justified by high capital costs and high risks (in the case of temporal arbitrage), high transportation and labor costs (in the case of spatial arbitrage), and high default costs (in the case of grain lending).
4. Because trading profit margins are normally thin, CBs can offer better services or lower prices on a sustainable basis only if they have lower economic (or real) costs than private traders — in other words, are more efficient service providers. We have seen in this report that they are less efficient in their use of resources than private traders, but can be said to have lower real costs nonetheless, in a special sense. Since they are a magnet for foreign aid, which otherwise would probably not come to the country in question, the opportunity cost of the capital they absorb can be said to be low.
5. This point should not be pushed too far. The opportunity cost of donor-provided capital may be low in an environment in which aid money is plentiful and acceptable projects few, but it can be high if financing of other projects is sacrificed to fund CBs. Also, capital subsidies or grants to CBs for grain storage may involve significant opportunity costs if profitable alternative investments (in, say, animal

fattening or education or petty trade) are being forgone every day that a CBs' funds are immobilized in grain storage or the treasurer's strongbox.

6. However the opportunity cost question is treated, there is no doubt that CBs have tremendous financial (or nominal) cost advantages over private traders, because of the large subsidies they receive. Physical facilities are usually provided free — brick and mortar by aid agencies, labor by village volunteers; working capital is given as a gift or at much below market interest rates; and volunteer labor is used for routine tasks and managers are paid little or not at all. Grain is sometimes acquired through official agencies at below-market prices. For spatial arbitrage, transport is often given by sponsoring agencies without charge. In addition, donors and some governments provide free training, supervision, and financial monitoring.

7. The availability of these subsidies and the encouragement by donors and governments that they reflect explain the existence of cereal banks. CBs are not authentic grassroots institutions. When subsidies are absent, villagers do not set up these types of collective marketing organizations.

8. Because the existence of CBs is so dependent on subsidies, the question of when and where CBs are appropriate is really a question of when and where subsidies are justified. Based on market failure criteria, we can think of several circumstances that might justify CB intervention:

- A monopolist or cartel is extracting excess profits from village farmers or consumers in an isolated market that has no alternative supplies. Here, the CB can play a positive role to end the monopoly and foster competition. Such cases appear to be rare;
- An information barrier (rather than a structural barrier) is keeping private traders from serving an isolated village. Here, the CB may be able to break this barrier by demonstrating that it is possible to supply such a market and still cover costs. The CBs' function need only be temporary. We believe that instances of this are also rare; and
- A rural capital market failure is blocking intermediation of funds between lenders with low opportunity costs and borrowers with high-return investment possibilities, possibly due to failures in contract enforcement. In this context, the provision of subsidized capital to CBs might be justified. It should be noted, however, that this is a third-best solution. A first-best solution would be to attack the failure directly by working to establish or to strengthen banking mechanisms that might sustainably serve rural clients. A second-best solution would be to channel subsidized capital to both CBs and individual traders, to avoid distorting competition between the two.

9. There also are legitimate reasons unrelated to the market to subsidize CBs:

- To provide welfare transfers to poor villages which cannot afford to support themselves in a free-market environment. (If this is a goal, more attention should be focussed on targeting);
- To maintain a village emergency food stock to feed those who have insufficient purchasing power to obtain food during a transitory crisis period, such as a total crop failure; and
- To achieve other nonmarket goals, such as strengthening village organization, or serving as a mechanism for training.

10. The track record of CBs, measured by financial performance, is extremely poor. The CBs exhibit a quasi-general inability to cover operating costs. Their level of activity declines as they mature. They have a high failure rate. Thus in Burkina Faso, the cradle of CBs, about three-fifths of those formed are effectively out of business. In Senegal, 205 CBs (36 percent of the total number created) manage no commercial activity. In Niger and Chad, scores of CBs are reportedly defunct; one recent inventory in Niger could find no CB that had survived more than three years after project support ended. Given the energy, hopes, and money invested in CBs, these results have to be regarded as nothing short of disastrous.

11. The evidence suggests that the cereals marketing functions that have been given to CBs are inappropriate for cooperative or collective action, and better left to private operators. There are two sets of reasons for this. First, these activities are inherently so risky or are done so much more efficiently by private traders that financial viability and even survival are unlikely for most CBs, despite subsidization. Second, cooperative cereals marketing involves problems of management and control that are overwhelming.

12. Because of their tendency to eventually disintegrate and the problems of management and control outlined in Chapter Five, CBs have difficulty in meeting social goals such as strengthening village cooperatives or generating profits to fund other collective projects.

13. As village emergency stocks, CBs can play some food security role — providing free food to those who cannot afford to buy food during crisis situations. Giveaways, however, entail decapitalization and the possible self-destruction of the cereal bank. Outside donors would regularly be required to recapitalize such banks, but this presents the problem of moral hazard by encouraging the CB to give

away its food in noncrisis situations. On the other hand, if crises are to be declared and giveaways are to be authorized by outside agents, CBs lose their appeal as independent, self-managed institutions, and a new government bureaucratic layer becomes necessary for information gathering, coordination, and control.

14. We recommend that donors and governments reconsider their support of cereal banks. Analytical reasoning and empirical evidence suggest that CBs are based not on sound economics and finance and will require ongoing and substantial subsidies. Under certain circumstances, subsidies can be justified. The CB track record, however, indicates that subsidization is creating institutions that are unsustainable in the medium to long term. This conclusion is not surprising, given the failure rates of previous donor efforts to replace the private Sahelian grain trader with cooperative, collectivist, and statist institutions. Interventions intended to replace private traders are less appropriate and less likely to succeed in the long run than are investments intended to facilitate genuine private trading operations, such as rural road construction, strengthening market information systems, removal of restrictive grain movement controls, and support for the development of institutions and mechanisms for sustainable financial intermediation.

INTRODUCTION TO THE ANNEXES

The first four annexes consist of organized notes on cereal banks, private grain trading, and government grain storage in the four countries visited during this study: Senegal, Burkina Faso, Chad, and Niger. These notes are not comprehensive; they simply provide background information on the cereal banks in each country, then discuss related issues, particularly the relationship between CBs and private grain traders. Following each discussion, a country-specific bibliography is presented.

Almost all cereal bank studies are country specific, the notable exception being the FAO's 1990 study *Evaluation des Banques de Céréales au Sahel*. Annex 6 provides a bibliography of the few multicountry studies of cereal banks, plus studies on Mali — a Sahelian country that was not studied directly for this paper.

Annex 5 provides calculations of potential returns to speculative storage in 13 rural Sahelian markets.

ANNEX 1a

**SENEGAL — NOTES ON CEREAL BANKS AND
PRIVATE GRAIN MARKETING**

Some 570 cereal banks have been created in Senegal by an assortment of NGOs and internationally supported projects. Since the first Senegalese CBs appeared in 1984, their numbers have increased rapidly, attracting the attention of the Senegalese government and many international donors. In November 1989, a seminar in Dakar brought together the country's CB promoters to exchange experiences, discuss program coordination, and explore the possible use of counterpart funds to promote decentralized grain storage through cereal banks. The possibility of promoting trade between CBs in deficit and surplus zones was also discussed.

Two noteworthy reports have been written on Senegal's CBs. The first was completed in April 1990 by Nicholas Gergely for the FAO (as part of a Sahel-wide study), and the second was finished in August 1990 by Senegal's Food Security Commission (C.S.A.).¹ These reports describe and analyze all of the major cereal bank programs in the country. Their results are summarized here and a few issues are highlighted, notably those of viability and the relationship between CBs and private traders.

OVERVIEW

The operating procedures of Senegal's cereal banks vary slightly from program to program. Most CBs are based on the "classical" model — that is, they buy grain in the village, store it, then sell it back to members at below-market rates during the lean season. CBs in highly deficit areas such as Louga purchase cereals from outside the area then re-sell them in the village. Interestingly, many Senegalese CBs use their revolving funds to finance trading operations in non-local cereal products, such as peanuts and imported rice. Most CBs seem to have received their revolving funds as grants from donor agencies, although many also received their funds as loans.

Geographically, Senegal's CBs are well distributed across the country. The table presented below from the 1990 FAO report is not fully up to date, but nonetheless provides a useful overview:

¹ Full citations in Annex 1c: Senegal Bibliography. A third report on Senegal's CBs — by Serge Mihailov for the FAO (1987) — is less precise and less useful.

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ANNEX TABLE 1.1
CEREAL BANKS IN SENEGAL

Promoter/Financier	Number of CBs	Number in operation	Quantity stocked (T)	Type of zone
Catholic Relief	250	30	300	varied
FIDA/SODEVA	82	15	25	varied
BIT/ACOPAM	41	41	900 (1988)	deficit
USE/PIP	41	41	1500	deficit
USE/Nganda	5	5	175	surplus
Church World Services		14	417 (1989)	deficit
ARAF/ADAK	10	10	75	surplus
SODIFITEX	31	31	398	surplus
Maison Familiales	20	20(?)	160 (?)	varied
Diverse (COSAB, AFVP, DGAS..)	35	35(?)		varied
Total	529	242	4,000	
Total from C.S.A.	571	366	2,170	

Source: FAO, 1990. Note that the total figures of 529 and 242 Cbs and 4,000 tons were corrected in the C.S.A. report to be 571 and 366 CBs and 2,170 tons. Acronyms are in French.

VIABILITY

Since almost all of Senegal's Cbs were created within the past five years and are still receiving outside support, it is difficult to assess their long-term viability as independent institutions. However, several reasons to be skeptical have already emerged, based on the findings of C.S.A.:

- Of the 571 cereal banks identified in the 1989 CSA study, only 366 (64%) are considered "operational" — that is maintaining some commercial activity.
- Only 151 (26%) maintain revolving funds of over 500,000 FCFA — enough money to buy roughly 70 sacks of grain.
- Of a total cereal bank storage capacity of 21,990 tons, only 2,170 tons (10%) were used in 1989.

There are various explanations for these figures.

First, many CBs never received a revolving fund (either an initial gift or loan of grain or money). These non-funded CBs generally have failed to operate as cereals banks. Of the 250 CBs organized by CRS, the 164 which did not receive a revolving fund stored an average of less than 5 sacs of grain per year in their 500-sac capacity warehouses. Non-funded SODEVA cereal banks are also reported to have no or minimal activity. Calls for villagers to voluntarily donate grain to constitute revolving funds generally have failed.²

Second, of the CBs which did receive revolving funds, a large percentage have seen the size of their funds diminish over time. Two programs for which reliable figures are available — CRS and CWS — have experienced an overall decline in the value of their CBs' assets (-7% and -24% respectively³). Over the past two years, 13 of CWS's 14 CBs lost money, two because of internal thefts and the rest due to sales and management problems. BIT/ACOPAM's cereal banks also are reported to have suffered serious deterioration of their working capital since start-up.

Third, embezzlement and corrupt management pose real threats to viability. Members of management committees have been accused of theft in the BIT/ACOPAM, CRS, and CWS programs. In the Louga area, this has been identified as a major cause for a high failure rate — roughly half of ACOPAM's CBs are reported closed due to internal thefts and poor management. Of CWS's 14 banks, 5 have suffered from internal embezzlements over the past two years. These CBs were closely supervised by the ACOPAM and CWS field staff; one must assume that CBs which receive very little supervision (such as the USE/PIP banks) are even more susceptible to embezzlement problems.

CEREAL BANKS, PRIVATE TRADERS, AND SENEGALESE FOODGRAIN MARKETS

In Senegal, as in the other countries of the region, the notion persists that private traders exploit villagers by paying extremely low prices for their cereals at harvest time and selling cereals at excessively high prices during the hungry season, thereby reaping large profits. The market is believed to be non-competitive and unfair. This assumption, widely held by many Senegalese policy-makers for a number of years, has been used in the past to justify heavy government intervention in the grain trade, (since

² The fact that cereal banks only seem to operate when outside capital is available reinforces our notion that subsidized capital is the key to understanding the economics of cereal banks. While villagers are unwilling to invest their own grain or money in cooperative storage, (because their own money probably can be invested in more profitable endeavors), they are more than willing to invest a donor agency's money in grain storage, because they know that this is a condition to obtaining the grant or low-interest loan in the first place. Access to subsidized capital, not some notion of community togetherness, is the reason that villagers form cereal banks.

³ CRS figure is based on October 30, 1990 database printout, CWS data are based on representative's 1990 memorandum.

recognized as a failure and discarded). Today, this same assumption provides the major rationale for the creation of Senegal's cereal banks. Grain traders are believed to make excessive profits, and CBs are seen as a way to avoid falling prey to these "exploitative middlemen." According to Church World Services, a CB's objective is "to protect the peasants' purchasing power from the speculation of private traders."⁴

In Senegal as elsewhere, the assumption of unfair, non-competitive markets is very shaky ground on which to base the cereal bank rationale. Most of the available evidence from Senegal indicates that grain markets are reasonably competitive and that the notion of "exploitative" middlemen earning monopoly or monopsony profits is generally false.

To examine this question more closely it is helpful to divide grain marketing activities into two categories: (1) the transfer of cereals from one market to another, and (2) the transfer of cereals from one time period to another through storage. Next, one needs to assess whether traders are reaping excessive profits in either of these activities to determine if "unfair" prices are being used, exploitation is taking place, and an intervention is justified.

THE TRANSFER OF CEREALS FROM ONE MARKET TO ANOTHER: SPATIAL ARBITRAGE

Do private traders extract excessive profits when they transfer grain from one location to the next? Do margins dramatically exceed costs?

The structure of the Senegalese coarse grain market suggests that probably the answers to these questions are no. The presence of numerous grain traders on all levels of the commercialization process — collection, wholesaling, transporting, and retailing — implies that competition is likely to be intense and margins thin. The absence of significant barriers to entry either in terms of skill level (many Senegalese farmers become traders in their free time) or initial investment (\$40 is all that is needed to buy and resell a sack of grain) suggest that the trading class is not an exclusive cartel. Collusive agreements and high profit margins are unsustainable and unlikely under these conditions of free and easy entry.

Extensive research conducted by the Senegalese Institute for Agricultural Research between 1983 and 1987 directly addresses the question of traders' profit margins⁵. This research concludes that Senegalese coarse grain markets are competitive on all levels and that profit margins are quite thin: between 0 and 1.25 FCFA/kg for rural grain collectors, and less than 3.1 FCFA/kg for wholesalers —

⁴ Church World Services, "Evaluation du projet Banques de Cereales de Keur Momar Sarr par la Commission CER et Development Social," Louga 1990.

⁵A collection of ISRA papers is found in La Politique Agricole au Senegal, edited by James Bingen and Eric Crawford for ISRA.

a very low percentage of retail costs.⁶ Given the structure of Senegal's cereal markets, it is not surprising that profit margins are small — entry is extremely simple, participants are numerous, and competition is particularly vigorous in collection and retailing.

The competitive nature of the system is well reflected in the high degree of integration of Senegal's cereal markets. This is demonstrated by work completed by GFA Consultants in 1989.⁷ Correlation coefficients calculated on price data collected since 1987 vary between 0.67 and 0.96 for the ten largest regional markets, (except Kolda which is physically isolated). The integration of neighboring weekly markets is even higher, as demonstrated by the 0.96, 0.96, and 0.96 coefficients calculated by GFA for the rural markets of Passy, Mabo, and Prokhane. GFA Consultants draw three important conclusions from their study:

- Private traders allocate grain competitively and efficiently in Senegal, to a large degree as a result of the country's good road network;
- Commercial margins between rural producer prices and urban consumer prices are very stable and homogenous, reflecting mainly transport costs; and
- Intense competition between traders disallows excessive profits.

GFA concludes:

Ce resultat empirique permet de constater que les commercants, du fait de la concurrence et la transparence du marche, ne peuvent pas realiser de rentes supplementaires. En consequence, il convient de contester le prejuge defavorable tres repandu parmi les fonctionnaires et les politiciens, selon lequel generalement, les commercants exploitent les paysans. Ce raisonnement est tout a fait contradictoire avec les realites du marche cerealier du Senegal. Les reultats de cette etude sont aussi confirmes par les travaux de F.Martin (voir CILSS(Martin), 1986).⁸

Thus the structural and empirical evidence does not support one of the rationales for the creation of cereal banks. Trading margins are thin and there is little reason to believe that village groups would be able to transfer grain over space more efficiently than private traders.

⁶ Ouedraogo and Ndoye, "Les Marges et Coûts de Commercialisation des Cereales dans le Bassin Arachidier," in La Politique Agricole au Senegal, pp. 189-191.

⁷ Gesellschaft Fur Agrarprojecte in Ubersee (GFA), L'Amelioration du Systeme d'Information du Systeme d'Information sur les Prix des Cereals du CSA, 1989.

⁸ GFA 1989, p.27.

CEREAL BANK EXPERIENCE IN SPATIAL ARBITRAGE

Most Senegalese CBs purchase grain directly in their villages and are not involved in transferring grain between regions. CBs located in the highly grain deficit zones of Louga and St. Louis, however, cannot buy sufficient grain locally and are obliged to seek outside supplies. Two major options are open to these banks : (1) purchase grain directly in a southern surplus zone and arrange for its transport back to the village, or (2) contract with private traders to deliver the desired quantity of grain.

The first option has met with mixed results. The cereal bank of Medina Ndiatbe, for example, sent representatives south to the region of Kaolack to purchase 17 tons of grain in 1989. The final cost-price of the operation was 100 FCFA/kg., but at the same time traders were selling in Medina at 90 FCFA/kg. The operation resulted in losses. Other operations have been more successful; however, frequently they have been subsidized by project personnel. This has been the case for many of the CBs of BIT/ACOPAM, which have received extensive assistance in traveling to surplus zones to make purchases. According to the FAO/Gergely report, CBs that have tried to "avoid the middleman" by purchasing directly in surplus zones generally have not achieved lower cost-prices, "at least when the project does not pick up the transport charges."⁹

Markets are very well integrated in Senegal and there is no reason to believe that CBs will be able to carry out spatial arbitrage at lower margins than private traders.

THE TRANSFER OF CEREALS FROM ONE TIME PERIOD TO ANOTHER THROUGH STORAGE

The evidence indicates that traders do not earn excessive profits through spatial arbitrage, but the question remains open as to whether they earn excessive profits through temporal arbitrage — buying grain, storing it, and selling it later at a higher price. The assumption made by most promoters of cereal banks is that profits to private storage are enormous. Serge Mihailov, for example, writes in an FAO document on cereals banks in Senegal:

A l'approche de la soudure, les commercants reconstituent leurs stocks de cereales, qu'ils vendent a des prix devenus 3 a 4 fois plus eleves qu'a la recolte. (Mihailov 1987:12)

Are such price swings and enormous profit opportunities possible? The structure of the cereals market suggests that they are very unlikely. There are virtually no skill or financial barriers to entry in grain storage; for \$20 you can buy a sack and store it in your home. If profits were as consistently high as suggested by Mihailov, private investment in storage would expand dramatically and seasonal price differentials would be reduced. On theoretical grounds, Mihailov's claim appears unsound and unlikely.

An empirical examination of the price data shows that Mihailov's contention is pure exaggeration. In Dakar, which is well integrated with other major markets and where the longest price series is available, the price of millet in the lean season has never been triple that of the harvest price. In fact,

⁹ FAO, 1990, p.16 of Senegal section.

the average hungry season price of millet is only 6% higher than the average post-harvest price. The data are presented in a table below.

ANNEX TABLE 1.2
RETAIL SOUNA MILLET PRICES IN DAKAR

	Average price of millet in Oct, Nov, Dec.	Average price of millet in Jun, Jul, Aug.	Percent difference
1974/75	39.0 FCFA/kg	45.0 FCFA/kg.	15%
1975/76	45.0	55.0	22
1976/77	61.7	56.7	-8
1977/78	70.0	64.3	-8
1978/79	65.0	58.7	-10
1979/80	60.0	68.3	14
1980/81	80.0	68.3	-15
1981/82	72.7	80.0	10
1982/83	93.3	132.7	42
1983/84	150.0	150.0	0
1984/85	140.0	170.0	21
1985/86	141.7	149.0	5
1986/87	133.3	115.0	-14
1987/88	95.3	94.3	-1
1988/89	95.0	125.0	32
1989/90	116.7	110.0	-9
Average	91.2	96.4	6%

Source: Direction de la Statistique, Dakar¹⁰

Price series for rural markets do not date as far back as those for Dakar, however, the data gathered by the C.S.A. over the past three years provide no indication that rural prices make the outrageous seasonal leaps suggested by Mihailov and other CB supporters. Data from markets in the Louga, Podor, and Tamba regions (the areas of highest cereal banks activity) are presented below.

¹⁰ The price data is official. Although it may not be highly accurate, it probably is accurate enough to show that Dakar price swings are small.

ANNEX TABLE 1.3

SEASONAL PRICE MOVEMENTS IN RURAL MARKETS, 1987-1990

	Average price of millet in Oct, Nov, Dec.	Average price of millet in Jun, Jul, Aug.	Percent difference
LOUGA:			
1987/88	65.3 FCFA/kg	72.0 FCFA/kg	10%
1988/89	77.7	97.7	25
1989/90	76.3	93.0	26
ST. LOUIS:			
1987/88	74.3	85.0	14
1988/89	89.0	105.0	18
1989/90	93.7	102.3	9
TAMBACOUNDA:			
1987/88	51.0	73.7	45
1988/89	57.3	83.3	45
1989/90	59.3	89.0	50

Source: C.S.A. data bank, rural markets only

These data indicate that the average soudure price of millet is 20% higher than the average post-harvest price in Louga, 47% in Tambacounda, and 14% in St. Louis. If one assumes 3.5 FCFA/kg warehousing and handling costs for eight months, and 5% physical losses, the average annual return to speculative storage is 13% in Louga, 6% in St. Louis, and 49% in Tambacounda.

Are these rates of return "excessive"? This depends on the trader's cost of capital. At bank rates of 16 to 24% APR, storage yields slightly negative returns in Louga and St. Louis, and positive returns in Tambacounda. At informal sector interest rates of 39% APR (based on Gaye's 1989 study)¹¹, rates of return in Louga and St. Louis become highly negative while rates of return in Tambacounda remain positive (10% annual return).

These moderate and frequently negative rates of return go a long way to explaining why very few Senegalese wholesalers are interested in stocking for periods longer than one month, and most prefer quick turn-over cereals trade. In most cases storage is not profitable.

While the issue of storage is under consideration it is useful to make some remarks about the costs of storage — mainly the cost of immobilizing capital (either the interest costs or the opportunity costs), warehousing costs, and physical losses. Warehousing costs are usually modest and physical losses are probably below five percent. The cost of capital, however, is high, and it is therefore the key explanatory variable in the storage calculation. This is demonstrated in an example provided by

¹¹ Gaye, Matar, "Le Credit Informel en Milieu Rural Senegalais," in La Politique Agricole au Senegal.

Ouedraogo and Ndoye concerning a cereals trader who engaged in the storage of millet over six months in 1987:

ANNEX TABLE 1.4

AVERAGE COSTS FOR MILLET STORAGE
IN LOUGA FOR 190 DAYS IN RELATION TO INTEREST COSTS

	At Bank Interest Rate: 15%	At Informal Interest Rate: 39%
Gross Margin (FCFA/kg)	17.50	17.50
Handling (FCFA/kg)	0.95	0.95
Warehousing (FCFA/kg)	1.52	1.52
<u>Capital Costs (FCFA/kg)</u>	6.13	15.95
Net Margin (FCFA/kg)	8.90	-0.92

Source: Ouedraogo and Ndoye 1988 in *La Politique Agricole au Senegal*, p. 199.

In this example (which assumes no physical losses), the storing trader covers his costs and makes a positive profit if he is able to borrow from a bank at 15%. However, if the trader's cost of capital is evaluated at the average annual informal interest rate of 39%¹², the storage investment involves losses. According to an ISRA survey, only six percent of wholesalers and a negligible number of itinerant traders are able to borrow from banks, while a large portion of itinerant traders and 22% of wholesalers must borrow on the informal market¹³. The average informal rate thus provides a better estimate of the cost of capital to grain traders. The scarcity of capital and its consequently high price makes storage a relatively unattractive investment in most instances. Without access to cheap credit, storage is usually not a good investment.

¹² See Gaye 1989 for the estimation of informal interest rates.

¹³ Mark Newman, Alassane Sow, and Ousseynou Ndoye, "Regulatory Uncertainty and Government Objectives for the Organization and Performance of Cereal Markets: the Case of Senegal," ISRA, 1988, p. 13.

CEREAL BANKS EXPERIENCE WITH TEMPORAL ARBITRAGE

The crucial role played by the cost of capital is evident in Senegal's cereal bank experience. Those CBs that have not received credit (or a revolving fund grant) have not invested in collective grain storage, (SODEVA and CRS CBs without funds report zero or minimal activity), while those CBs that have been granted or loaned funds at low rates have engaged in cereals storage.

How have CBs fared with their grain storage investments? Again the data are difficult to come by, but the answer appears to be mixed. Certain CBs have been able to play the game successfully and others have not. For two programs for which data are available — CWS, and CRS — the average value of their CB's assets have declined over time, (-24% and -7%), however it is not clear if these declines are due to the low profitability of temporal arbitrage or due to other factors.

"FORCED SALES"

Another common rationale for cereals banks is the belief that many farmers are forced into selling their cereals at very low prices immediately after harvest to meet pressing financial needs, and subsequently purchase cereals during the lean season at very high prices.

The only concrete evidence from Senegal on this topic does not support the "forced sales" thesis. This evidence comes from research conducted by Goetz (1990) in the southeastern region, and it implies that "forced sales" are very rare¹⁴. Of 150 households surveyed, only 15 both bought and sold coarse grains. Of these, six were purchasing at low prices after harvest and selling at higher prices in the lean season, and only five actually were following the traditional "forced sales" pattern. Goetz concludes that "the hypothesis of "forced sales" after harvest and repurchases later on in the season at higher prices generally does not hold for this sample." (p.240).

According to research conducted by M.L. Bocoum in Senegal's groundnut basin¹⁵, early millet sales are not necessarily "forced sales." Bocoum observes that many producers who are not household heads will sell their millet early to gain cash to invest in petty trade or animal fattening. These producers apparently feel that the rate of return on these activities is superior to that of grain storage¹⁶.

¹⁴ Stephan Goetz, Market Reforms, Food Security, and the Cash Crop-Food Crop Debate in Southeastern Senegal, Ph.D. dissertation for Michigan State University, 1990.

¹⁵ M.L. Bocoum, "Les politiques de developpement et les strategies paysannes dans le vieux basin arachidier," CIRAD, 1989.

¹⁶ When an individual farmer or trader has limited capital resources, it may not make sense for him to tie up his wealth in grain storage; he may want a certain amount of liquidity to improve his lot through investment or consumption. Similarly, when a country has scarce capital resources, it does not make sense to tie them up in grain storage if more productive uses of that capital are available. When capital markets work correctly, they allocate capital to its most productive use.

(Interestingly, many Senegalese CBs have come to similar conclusions — they use their revolving fund to finance trade in peanut seeds and imported rice, and in one village that we visited — Haere Lao —, the CB lent its funds out to petty traders at an interest rate of 10% every three months).

FINANCIAL PROFITABILITY

The viability of a CB depends upon its profitability; it must avoid taking losses if it is to maintain its working capital and continue operations. Profitability implies covering the costs of grain acquisition, transportation, management, and the cost of capital (interest). Questions have been raised in Senegal about the ability of CBs to cover these costs, particularly interest costs. The 1989 CSA report concludes that cereal banks cannot be profitable if they must pay interest charges on their loans, despite the soft terms of these loans. In Louga, for example, a CB which purchases grain at 80 FCFA/kg and resells it at 90 FCFA/kg cannot even cover an annual interest charge of 15%, let alone cover the costs of amortizing the initial acquisition loan, warehouse, handling, and any physical losses. The FAO/Gergely and C.S.A. reports discuss the problem of profitability and the frequent need for CBs to be cross-subsidized from other community projects.

Can CBs be profitable? This depends on the mark-up between purchase and sales prices. For example, if a CB purchases 10 tons of millet at 70 FCFA/kg and stores it for 7 months before selling, it is liable to incur the following costs:

-acquisition:	700,000 FCFA
-handling:	7,500
-empty bags:	30,000
-management:	60,000
-warehouse (amortization)	50,000
-cost of capital 15.5% (8 months + fee)	97,500 FCFA
Total	945,000

To cover its costs, this CB will have to sell at 95 FCFA/kg (assuming no storage losses). This implies a 25 FCFA mark-up or 36%. Most functioning CBs in Senegal do not mark-up this much (10 FCFA is more typical), and thus probably do not fully cover their costs. Because the warehouse and revolving fund are frequently gifted by a donor, the CB tends to ignore amortization and capital costs. Management costs are also ignored when services are voluntary, and the costs incurred by the donor in monitoring and training are not taken into account¹⁷.

If a CB sold its grain at market prices could it fully cover its costs? This depends on the size of the seasonal grain price increase and the ability of the CB to time its purchasing and sales opportunely.

¹⁷ Monitoring costs are estimated at \$92 per CB per month in a preliminary version of a manual on CBs called "Manuel sur l'implantation, le fonctionnement, et le suivi d'une BC, le cas de la SODEVA/ACOPAM dans la region de Louga," Dakar, July, 1990.

The rural market price data presented earlier in the annex for Louga, St.Louis, and Tambacounda regions (three areas of high cereal bank concentration) indicate that seasonal price increases frequently are not high enough to allow a CB to cover its costs.

CREDIT

Several cereal bank programs have avoided the issue of credit by simply granting the initial revolving fund to the CB. Other programs provide credit directly to their CBs, but this poses problems of sustainability because the donor agency is forced into the role of banker. Recently, a limited number of experiments with formal bank credit have taken place. Over the past two years, six CBs in the Tambacounda region have arranged for small loans from an agricultural development bank (CNCAS) to invest in their cereal bank activities, (interest 15.5%). The repayment rate was good, and CNCA is lending to an additional 18 CBs this year in the Louga region. The joint government-donor Counterpart Fund is exploring the idea of encouraging such loans in the future through a guarantee mechanism.

While this development is interesting, there are reasons to be cautious about possibilities for the future. The first is that seasonal price increases will not always be large enough to cover interest costs, which will make repayment difficult. The second is that Senegaiëse farmers have defaulted massively on agricultural credit programs in the past and this has affected their attitude to repaying loans. According to a survey conducted in south-east Senegal, a full 23% of household heads sampled believe farmers do not have a moral obligation to repay fertilizer credit in the event of crop failure.¹⁸

¹⁸ Goetz, 1990, p.185.

ANNEX 1b

SENEGAL — NOTES ON THE NATIONAL FOOD SECURITY STOCK

Unlike its Sahelian neighbors, Senegal's national food security stock is not held in local cereals nor is it subject to annual technical rotations by thirds. Instead, the security stock consists of a 60,000 ton inventory of broken rice managed by the Price Equalization and Stabilization Fund (CPSP) — the government agency responsible for all broken rice imports. This security stock is not a separate entity per se, but rather a government requirement that the CPSP maintain at least 60,000 tons in inventory while it carries out its regular function of importing and distributing rice throughout Senegal. The idea is to have at least two months of average national rice consumption available in the country at all times, to avoid supply ruptures in case of delays in rice shipments. Thus Senegal's food security stock has less to do with providing emergency relief during a famine situation than it has to do with assuring a reliable flow of imported rice to consumers in urban areas where most rice is consumed.

In reality, the size of the security stock varies between 35,000 and 80,000 tons (41,000 tons in October 1990)¹. Recently the GOS decided to increase the size of the inventory requirement to 70,000 tons to account for increases in national population and tendencies to consume rice.

Opinions vary on the appropriateness of the CPSP security stock. Some feel that a 60,000 ton working inventory is a reasonable requirement, given the size of CPSP's import and sales operations — over 400,000 tons in 1990. They cite a case in 1986 when a mid-sea shipping accident caused a delivery delay which necessitated drawing down the security reserve to limit regional supply ruptures.

Others feel that the size of the stock is exaggerated, given the speed with which rice can be imported into Dakar's excellent port, and given the high cost of maintaining such high inventory levels. According to CPSP officials, the security stock requirement involves the immobilization of approximately 20 million dollars in inventory, plus increased warehousing and management costs for the agency. High inventory levels are also likely to increase physical losses and complicate management's control responsibilities.

The CPSP is not responsible for emergency relief operations. This is the domain of the Food Security Commission (CSA), which up until now has not managed a separate food security stock (it has managed a "stabilization stock" of local cereals, but this activity has been minimal over the past four years). In theory, the CSA can buy rice from the CPSP's security inventory to distribute in response to regional food emergencies. In practice this has proved clumsy and has rarely happened.

The Food Security Commission is a descendent of Senegal's national cereals offices (ONCAD and the CAA) which operated in the local cereals markets in the 1970s and early 1980s. These interventions were costly, ill-managed and generally considered failures. ONCAD was abolished in 1980, the CAA was renamed CSA in 1984. Coarse cereals markets were liberalized in 1986. Since that time, CSA's interventions in local cereal markets have been relatively small, and their objectives have not

¹ All figures were provided by CPSP.

always been clear, (stabilization having been implicitly abandoned). CSA has instead concentrated on (1) managing a market price information system, (2) handling some non-emergency food aid, and (3) distributing emergency food aid (although this has been insignificant for the past six years).

There has also been talk about CSA creating a national security stock in local cereals. CSA's first attempt to establish such a stock involved a request for donor funding (in counterpart) for the purchase of 25,000 tons of local cereals (mostly millet). This request was denied because of unclearness of the stock's purpose and doubts about CSA's ability to manage efficiently such a stock. The request has since been revised to 7,500 tons; however, ambiguity still exists about the stock's purpose and management procedures.

General ambiguity about the respective roles of the CSA and the CPSP in the government's grain storage policies prompted USAID to ask the GOS to establish a document defining its policy in 1990 (PL480 agreement March 1990). This document has not yet been produced and a certain amount of confusion still reigns vis a vis the two agencies' roles. It appears that the GOS is considering leaving security stock and non-emergency food aid management in the hands of the CSPC and limiting the CSA to simply managing emergency food distributions. Roles are likely to be better defined once ongoing negotiations on structural adjustment in agriculture are completed.

ANNEX 1c

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ANNEX 2a

**BURKINA FASO — NOTES ON CEREAL BANKS
AND PRIVATE GRAIN MARKETING**

Burkina Faso is the mother country of cereal banks, and as a result its experience has been the most extensively researched. Early studies were produced by Dolidon (1980), Satana (1981), and Kat (1983).¹ Ledoux provided a global description and census of Burkina's CBs in 1986, and a doctoral thesis on the topic in 1989. The FEER (the government's rural water and development agency) produced an updated census in 1989, and Guillermain wrote a very useful piece for the FAO in 1990. The Guillermain piece provides a solid description and analysis of Burkina's cereal bank programs; it should be referred to by those needing more detail. All of the literature comes to similar, somewhat standard, conclusions and recommendations — Cbs offer numerous advantages to villagers, but they need further strengthening through closer monitoring and management training.

The purpose of these notes is not to repeat the information available through the above documents; instead, it is to lay out briefly a few of the basic facts on Burkina's Cbs, then to discuss a few related issues that merit further attention, notably, the viability of Cbs and the economic relationship between CBs and private grain markets.

Approximately 1500 cereal banks have been established in Burkina Faso over the past 16 years. About half were set up by non-governmental organizations (NGOs) and half were organized through government development projects. CBs are distributed geographically over most of the country, and are present in approximately 20% of all Burkinabe villages.²

¹ All reference can be found in Annex 2c: Burkina Faso Bibliography.

² Republique de Burkina Faso/CILSS, Plan Cerealier du Burkina Faso, Vol 3, 1990, p. 173.

ANNEX TABLE 2.1

CEREAL BANKS IN BURKINA FASO

NGOs	# of CBs established	Government development projects	# of CBs established
Six S	165	FEER/ILO/WFP (ACOPAM)	219
FEME	113	Dev. Ag. de la Volta-Noire	160
ADRK	87	Dev. Ag. des Hauts-Bassins	93
FONADES	76	Proj. Vivrier Ouest Volta	76
ARDTOM	87	Dev. Region de l'Est	53
PPIK	54	FAO/Italy	52
CDRY	36	Dev. Ag. Ouest-Volta	38
UGVO	30	Swiss (Houet)	34
OXFAM	18	d'Execution de Dev. Integre	18
AFDI	17	Amenagements Valles d. Voltas	10
ACDI	8	Other	6
AFRICARE	7		
FDC	7	Total	756
AMURT	6		
EURO-ACTION	6		
LVIA	5		
SNV	4		
Other	8		
Total	734		

source: FEER, 1989, "Inventaire des Banques de Cereales au Burkina Faso."

NGO CEREAL BANKS

The first cereal bank was created in Burkina Faso in 1974 by a local NGO called FOVODES (Voltaic Foundation for Development and Solidarity). By 1980, 150 CBs had been established, 80% of them by local and international NGOs. During the 1980s, NGOs continued to establish CBs, but government regional development projects also became involved, and the NGO share of all CBs fell to below half.

Each NGO employs a slightly different system of organizing its cereal banks and providing follow-up services. Some NGOs provide the initial revolving fund as a gift to the village group, either in cash or in cereals. This amount can range from 100,000 to 3,000,000 FCFA (\$4,000 to \$120,000 in 1990 \$US). Others provide the revolving fund as a loan which must be repaid over 3 to 5 years. Almost all NGOs assist each village group to construct a village warehouse by providing cement, roofing, and other building materials. Management advice and training are provided either directly by NGO agents, or by encouraging the involvement of government agricultural extension agents who are based in the area.

CEREAL BANKS ESTABLISHED BY GOVERNMENT DEVELOPMENT PROJECTS

Government development projects began to adopt the cereal bank idea in the early 1980s. The regional offices of the Ministry of Agriculture acted as the executing agencies for several cereal bank program. These regional offices, originally called ORDs (Regional Development Offices) and now known as CRPAs (Regional Centers for Agro-pastoral Promotion) continue to play a key role in implementing Burkina's cereal bank programs.

The national rural development agency currently known as FEER (Fonds de l'Eau et de l'Equipement Rural), which is part of the Ministry of Water Supply, oversees the largest cereal bank program. Since 1979 FEER has organized the establishment of 219 CBs in seven CRPA zones, using a variety of financing sources (PNUD, World Bank, ILO, WFP). FEER does not have field agents of its own; it relies on CRPA agents for CB implementation and supervision. Since 1985, an ILO/WFP project (BIT/ACOPAM) has provided technical assistance to the FEER and CRPAs to improve their cereal bank programs.

Several regional development projects have also worked through the CRPAs to implement cereal bank programs. These have included a World Bank-funded project in the Black Volta region, an Italian/FAO project in the Center-East region, and a USAID-funded project in the Eastern CRPA. These have all been "integrated" projects with cereal banks being only one of many components (animal traction, fertilizers, seeds, etc.). They have emphasized the construction of village cereal warehouses and have often failed to provide the financial system (revolving fund) necessary to make their cereal banks work.

CBs in Cereal Deficit Areas

The goals and operating procedures for cereal banks in chronically grain deficit areas differ from those in traditionally surplus-producing zones.

In chronically deficit areas such as the Sahel, Yatenga, and North-Center zones, cereal banks are primarily concerned with securing grain supplies for village consumers during the hungry season. These CBs usually purchase only a small percentage of their grain needs in the immediate vicinity of their villages. Most of their cereals must be brought in from surplus areas of the country. CBs employ four methods to import these cereals:

- i. The sponsoring agency arranges for the purchase and delivery of the cereals;
- ii. The CB management committee organizes purchase and delivery through OFNACER — the government Cereals Office (most CBs in the Sahel CRPA employ this method);
- iii. The CB management committee sends two or three of their agents to a surplus area to purchase grain and arrange for its return transport;
- iv. The CB contracts with a private trader to purchase and deliver the needed cereals.

The first method has been used primarily by the NGOs Six "S" and UGVO. These organization have managed centralized operations which stockpile cereals in a central location then distribute them to individual cereal banks to be sold. The Cbs act as retail outlets, returning sales revenues to the center, and keeping a small margin for their effort. Frequently these operations involve selling cereals below full cost — an NGO effort to subsidize poor rural consumers.

The second method highlights the close ties between many CBs and the state cereal office. Because of its pan-territorial pricing policy, OFNACER frequently sells grain at below-market prices in deficit zones. Cereal Banks are often given priority access to this subsidized grain, which frequently is transported for free to the CB's village. Some CBs purchase this grain using their revolving funds, while others receive the grain on credit. Cereal Banks which receive subsidized grain don't have much trouble selling it at a profit. Through this process, CBs play a positive role in bringing subsidized grain out of the cities and to the rural poor. On the other hand, the presence of subsidized grain in rural villages is likely to discourage traders from building commercial grain links to these villages, which may be damaging to long run development. And the availability of subsidies depends on continued external aid, given the limited budgetary capacity to subsidize out of domestic revenues.

The third method directly implicates the CB in spatial arbitrage. Typically, the management committee confides the CB's funds to two members to travel to a surplus area to purchase cereals. After about two weeks of purchasing, they arrange for a commercial truck to transport 5 to 20 tons of cereals back to the village. The costs of the operation (grain, transport, handling, per diems, etc.) determines whether the final cost-price is competitive in the home village. The success record is mixed.

In some cases, the final cost-price is equal or above the price offered by private traders. This occurs when the purchasing team does not buy at the lowest available price or is unsuccessful in negotiating the cheapest available transport. Occasionally, local administrative barriers prevent CBs from transporting grain over provincial boundaries, and occasional cases are reported where the CB's designated purchasing agent embezzled the money confided to him.

In many cases, particularly in the Yatenga, the final cost-price obtained through these operations is below that which is available through commercial traders. Some CBs make several trips a year to supply and re-supply their warehouses. It is difficult to determine if this success in obtaining grain at a lower final cost is attributable to large trader profit margins on a less-than-competitive trading route, or to the large amount of voluntary labor put in by CB members during the operations. In some cases, the cereal banks' competitive advantage is derived by using subsidized transport provided by the CRPA or the World Food Program. In other cases, a CRPA-arranged "laissez-passer" allows CBs to transport cereals with less administrative hassles than private traders.

The fourth method for CBs to obtain outside supplies is to contract through private traders. This method is common in both the Yatenga and Center-North CRPA zones. In Yatenga, the CRPA agent facilitates contacts between CBs and those traders capable of importing cereals from surplus zones. One private trader in Ouahigouya reports fulfilling over 30 contracts with CBs in 1990. Some cereal banks which contract for deliveries are averse to the risks of making a supply trip themselves. Others who have made direct supply trips in the past have turned to private contracting either because they are no longer interested in putting out the effort a direct mission involves, or because they feel that the final cost-price of a mission is likely to equal that offered by the private trader.

Once a cereal bank in a deficit area obtains its grain supply, it acts essentially as a retail grain dealer. It can either decide to store the grain for several months, or to begin sales immediately. In villages which have alternative grain suppliers (private petty traders), the CB and these traders are in competition. Consumers benefit from the CB when its prices are below those available through private channels. Jan Kat (1983) and the FAO (1990) estimate the price difference to average around 15%, but according to CRPA officials, the difference may be less. In villages which are irregularly supplied by private grain dealers, the most important advantage of the CB is the ability to buy grain directly in the village without walking to other markets.

CBs in Cereal Surplus Areas

Although most of Burkina's CBs are in cereal deficit areas, several hundred have also been established in normally surplus-producing regions of the country, mostly by regional development projects. The purpose of these banks is two-fold: to provide a profitable outlet for local production, and to maintain a stock in the village which can be sold during the hungry season to those families who must purchase grain.

In fact, most cereal banks in Burkina's surplus zones have fared very poorly. Of a sample of seven cereal banks in surplus areas of the Eastern zone visited by this mission, all seven had lost their revolving funds and were out of operation. Of a sample of five cereal banks visited by the mission in surplus areas of the Mouhoun zone, three had lost their revolving funds and two had never received funds in the first place. Of the 53 cereal banks established by the FAO/Italy project in Center-East zone, four-fifths are reported to be out of operation. CRPA agents in the Hauts-Bassins area report that none of the 93 cereal banks established in their zone maintain any level of activity.

There are a number of explanations for these failures. According to CRPA agents, villagers in surplus zones are much less receptive to the cereal banks idea than are those in deficit zones. After the cereal harvest, they are interested in selling their grain to the highest bidder. In productive villages the cereal bank is in direct competition with numerous village collectors who also purchase cereals, usually acting as agents for other traders³. CBs can only obtain cereals if they offer higher prices than the private collectors. However, when they do pay higher prices it becomes difficult for them to sell their stocks at a competitive price and still cover their costs. When they stock the cereals until the hungry season, waiting for a price rise, they frequently face insufficient demand for the cereals; stocks are not sold, and the cereals begin to deteriorate physically. Occasionally, the World Food Program or OFNACER will bail these CBs out by purchasing their unwanted stocks. Occasionally, the deteriorating stocks are distributed on credit to villagers, who often never repay these loans.

³ According to research conducted by the University of Michigan, grain markets work particularly well in surplus regions. Producers have a variety of sales outlets and competition is intense. (Center for Research on Economic Development, "The Dynamics of Grain Marketing in Burkina Faso," Vol. I, p. 193).

Viability

The long-term viability of Burkina's cereal banks is uncertain. The 1990 FAO report estimates that only half of the country's CBs are currently operational. We estimate that 37% are operational and 63% maintain a zero or minimal level of activity. Over 900 of Burkina's 1500 CBs can be considered failures.

Our estimates were calculated by looking at Burkina's ten largest CB programs, both NGO and governmental.⁴ The ten largest programs are officially censused as having created 1096 Cereal banks, of which, according to our field interviews, approximately 402, or 37%, are operational, and 694, or 67%, are defunct. By multiplying this 63% failure rate by the number of CBs created in Burkina (1,490), we estimate that about 939 CBs are no longer functional.

Dolidon remarked in his 1980 report on FONODES's cereal banks that CBs tend to gradually reduce their level of activity over a number of years, and may eventually cease functioning altogether. In 1990, FONODES agents report that six out of seven of their CBs are "dead," which re-affirms, to a certain degree, Dolidon's observation. Most CBs fail because of mismanagement, non-repayment of grain loans to the CB, and embezzlements by committee members.

Amongst those who promote CBs in Burkina Faso, there appears to be general agreement that time is the true test of a cereal bank's viability. The first few years of a CB's operations typically occur under intensive outside supervision and are relatively easy, but later years, when outside assistance is minimal, management problems become more severe. Therefore, the best test of the viability of CBs is probably not an examination of the survival rates of all CBs, but an examination of the survival rates of the CBs that have existed for at least five years.

The non-availability of survival data made it impossible to carry out a complete examination of this type while we were in Burkina Faso. We were, however, able to gather data on a non-random sample of pre-1985 cereal banks in the areas of Burkina that we visited. Of 18 pre-1985 FEER CBs in the Yatenga, credit and embezzlement problems had caused six to stop activities or to reduce them to a negligible level. Of five pre-1985 OXFAM CBs in the Yatenga, two were in similarly bad situations. In the Eastern zone, seven out of eight of the pre-1985 CBs that we visited were no-longer operational. In the Kaya region, eight of 16 FEME pre-1985 CBs were reportedly defunct, as was one of three older FEER CBs. Seven of seven pre-1985 CBs visited in the Mouhoun area were defunct, and FONODES reports that 60 of their 70 pre-1985 CBs are effectively "dead" institutions. Overall, 72% of the pre-1985

⁴ Of the FEER's 219 CBs, 160 are reported to be operational (FAO 1990). Of the 165 CBs listed for Six S, 90% appear to be functioning. Of PDAVN's 160 CBs, only 38 received revolving funds, none repaid the loans, some funds were allegedly stolen by CRPA agents, and perhaps eight CBs are still functioning. Of 113 FEME banks, two-thirds appear closed (extrapolating from Kaya region). CRPA agents report that none of the 93 CBs in the Hautes-Bassins development project maintain any activity. Of 87 ADRK CBs, only 15% are reported to have operated between 1986 and 1989. Six out of seven of FONADES's CBs are reportedly defunct. Of the 76 West Volta CBs, only 42 received funds, 20 of which never bought cereals with the money and 22 which functioned for one or two seasons before ceasing activity — perhaps 8 maintain a minimal activity level. According to PPIK field agents, very few of their CBs are still operational. In the Eastern Development project, between zero and fifteen of the 52 listed CBs are reported to maintain activity.

CBs for which we were able to gather somewhat reliable data appear to be defunct. Without doing too much for these data, they certainly give the impression that a large percentage of CBs are not sustainable.

Monitoring and Support Services

Most promoters of CBs in Burkina recognize that sustainability is a serious problem. The solution they propose most frequently is "more monitoring and support services," (*suivi*). Many agents across many programs repeat a similar sentiment — the provision of a warehouse and revolving fund is insufficient to create a viable CB; several years of monitoring and support services are necessary for success. Field agents must make frequent visits to each cereal bank to provide marketing and organizational advice to the management committee.

The problem with this solution, however, is its cost. The CRPA of the North estimates the costs associated with these visits to be over 134,000 FCFA per CB per year, not including salaries and fuel.⁵ If fuel costs are included, the cost per CB per year increases to over \$1,600. Expense estimates for the ILO/WFP program are between \$1,000 and \$4,000 per year per bank, depending on whether costs of literacy training and expatriate staff salaries are included.⁶

These monitoring and support expenses should be weighed against the benefits offered by the cereal bank. If a CB is located in a village where there are other sellers of cereals, the advantage of the CB is its lower prices. If, for example, the CB sells 100 sacs a year at 15% below market price, it saves village consumers only about \$500 per year — at a cost to the monitoring agency of at least \$1,000, and probably more. And this excludes the real cost of associated voluntary labor and the warehouse and initial capital subsidies.

While international donors may be willing to support these monitoring costs for several years in the hope that some of their CBs will eventually become viable on their own, it makes less sense for a local government to invest its own scarce funds in such a low return investment — especially when private traders are capable of effectively offering marketing services that do not require government subsidies.

Cereal Banks and Credit

Although several of Burkina Faso's cereal bank programs provide a cash or in-kind grant to their CBs, most operate on a system of seasonal or medium-term (3-5 years) credits.

Some programs run their own credit operation and make no pretense about sustainability. Thus FEME, for example, provides 600,000 FCFA five-year loans to its CBs. Because of poor management and the absence of penalties, repayment is very weak.

⁵ CRPA du Nord, Ouahigouya, "Détermination des coûts unitaires de suivi des unités économiques financées par le FEER," June 1990 mimeograph.

⁶ Based on interviews with project personnel.

The largest credit program is associated with the FEER/ACOPAM project. Initially 3-year loans of 660,000 FCFA were accorded; however, most CBs were not profitable enough to retain any working capital after meeting their loan payments. In response, the loan amount was raised to over a million FCFA and the repayment period spread over 5 years. Again, repayment obligations greatly reduced CBs working capital. In 1985 it was decided to grant 10 to 15 tons of cereal to each FEER CB in order to lighten the debt burden. Currently FEER CBs receive the cereal grant plus a loan of 550,000 FCFA payable over five years at an interest rate of 8.5%. The recovery rate has hovered around 75%, indicating that the credit scheme is far from self-financing.

The ADRK program provided seasonal credit at 1% per month which becomes 2% per month if loan repayment is late. According to field agents, these interest rates are considered high by the villagers, and over the past two years most CBs have refrained from borrowing, fearing that seasonal increases in grain prices would be inadequate to cover interest costs.

The large regional development projects generally have been notably unsuccessful in administering cereal bank credit. Under the PDAVN project in the Mouhoun, for example, five-year loans of 500,000 were arranged through the national agricultural bank for 38 CBs. In the end, administration was poor and almost nothing was recovered. CRPA agents, who were responsible for collecting the loan payments from villagers, were accused of embezzlement and one was reportedly jailed.

Cereal Banks and Private Traders

Cereal banks and private cereals traders are in the same business — buying, storing, and selling foodgrains. As discussed in the text, the rationale for CBs and the impetus for their creation is general dissatisfaction with the way private grain markets function. Since CBs surfaced in Burkina Faso 15 years ago, their promoters have vilified private cereals traders as "speculators" and "maggots" who should be avoided by marketing through cereal banks.⁷

As has been argued earlier, most carefully executed research on grain marketing does not support the view that cereals markets are noncompetitive, inefficient, and unfair in their operation. Profits generally are not unduly large, because competition between traders drives them down to levels close to the opportunity cost of labor/management involved. Policies that encourage villagers to avoid private traders and to depend on cereal banks may harm long-term institutional development because CBs require outside subsidization and are, all too often, nonviable, fragile institutions.

Temporal Arbitrage

Private merchants in Burkina, perhaps more even than in other Sahelian countries, are frequently accused of buying grain at very low prices immediately after harvest, storing it until the lean season, then

⁷ For example, FOVODES announced at the round table on cereal banks in 1983 that one of CBs' central goals is "to avoid the vicious circle of private cereals traders." (Final Report, p. 20).

selling it at double or triple the original price to reap large profits.⁸ Does this accusation reflect reality in Burkina?

Probably not. According to a study on grain marketing conducted by the University of Michigan in 1983-85, seasonal price fluctuations are generally consistent with storage costs, including the cost of capital. The report concludes that:

Although the absolute magnitude of the price fluctuation is high, the percent change in grain prices seems within the range of the estimated cost of storage for most markets. The storage function does not seem to yield excess profits. This conclusion from the quantitative data is further supported by the fact that traders seemed to be most concerned with quick turn-over and not with inter-seasonal storage.⁹

The analysis of price data for white sorghum in Ouagadougou, Sanmatenga, and Po, presented earlier, reaffirms the University of Michigan's conclusion: on average, returns to storage are not very impressive.

A survey of 34 cereals traders in Ouagadougou commissioned for the present study also re-affirms the Michigan observation that traders prefer quick turn-over trade to inter-seasonal storage. None of the 34 traders interviewed claimed to participate in inter-seasonal storage.

Spatial Arbitrage

Promoters of cereal banks in Burkina Faso frequently discuss the positive role that these institutions can play in transferring grain from surplus to deficit zones. At least two international agencies — the International Labor Bureau/ACOPAM and Afrique Verte — are involved in planning long-distance trade between Burkinabe cereal banks, and the official "Plan Cerealier du Burkina Faso" makes provisions for encouraging trade between surplus-area and deficit-area CBs.

Is there a problem with the way that private traders are already carrying out long-distance cereals transfers that justifies the intervention of cereal banks in this domain? Can CBs be expected to carry out spatial arbitrage more effectively than private traders?

The apparent assumption of those who encourage CBs to engage in spatial arbitrage is that private traders regularly gain excess profits when they transfer cereals between zones; by avoiding the middlemen, CBs can get better prices. Or these better prices can be obtained by substituting volunteer labor for that of traders.

⁸In its position paper at the 1983 roundtable, one CB promoter (ADRK) writes that one of cereal banks objectives is to reduce the price of cereals, "which double or even triple in the lean season because of traders' speculation."

⁹Center for Research on Economic Development, University of Michigan, "The Dynamics of Grain Marketing in Burkina Faso," Vol. I, p. 134.

The empirical evidence does not tend to support the assumption of persistent excess profits. Research on market integration conducted by the University of Michigan in the early 1980s showed that prices between regions in Burkina generally are highly correlated, indicating that price signals are serving to direct grain transfers from surplus to deficit zones. Returns to trade vary widely, and high profits in some months are offset by losses in others.¹⁰ Along the major trading axes, intense competition keeps profit margins low.

Low profit margins are to be expected for analytical reasons as well. If margins were regularly high, newcomers would be attracted into grain marketing and this would help compete away any excess profits. There are no significant barriers to entry into the grain trade in Burkina, and therefore, there is no reason to expect that high profits could be sustainable.¹¹

This is not to say that high profits do not appear temporarily along certain trading routes, during certain times of the year. Undoubtedly this occurs. But this does not mean that CBs should become involved in spatial arbitrage along these routes; if they do, they will face the same costs as traders (unless they are subsidized) and the same risks (temporary profits may become temporary losses). Other ways to encourage competition along such routes may be more institutionally sustainable than cereal banks, such as improving infrastructure or removing administrative hindrances to increased private trading activity.

¹⁰C.R.E.D., p. 129.

¹¹ cf. Jonathan Haughton, "Cereals Policy Reform in the Sahel — Burkina Faso," Elliot Berg Associates, 1985, p. 30.

ANNEX 2b

BURKINA FASO — NOTES ON THE NATIONAL GRAIN OFFICE AND THE NATIONAL SECURITY STOCK

In 1971 the government of Upper Volta (Burkina Faso) established its national grain office — OFNACER (Office National des Cereales). The office's mandate was threefold:

- To stabilize intra-annual grain prices by buying in surplus areas and selling in deficit areas;
- To smooth inter-annual price fluctuations by purchasing in good years and selling in deficit years;
- To establish an emergency grain stock and distribution system.

In its early years OFNACER's main function was to distribute food aid. One of its major responsibilities is still the programming and sale of food aid, but the office also operates a large "stabilization stock" of locally produced cereals (millet, sorghum, maize).

Until very recently, OFNACER operated as follows: Its buying campaign for the stabilization stock opened after the annual harvest, once the government established official prices. OFNACER bought in selected areas where the market price was lower than the official price, and it stored or transported the grain for storage. Later in the year, it sold in cities and deficit areas at government-set sales prices.¹² Typically, producer prices were set in the immediate post-harvest period, and consumer prices in March. Prices were pan-territorial and pan-seasonal. Legally, official prices also apply to private grain sales.

All this "traditional" system has evolved in recent years. Even though liberalization has lagged behind other countries in the region, buying policies, official price policies, and activities of OFNACER are being reconsidered.

Because OFNACER had to buy and sell local cereals at official prices, the office could not cover its substantial operating costs and it regularly ran large deficits. (In 1990, the financial director estimated losses of 10 to 15 FCFA for each kilogram of coarse grain handled). These deficits are covered by donor counterpart funds and by revenues earned selling food aid. When OFNACER's official purchase price is above the market price, it effectively subsidizes the traders, farmers, and village groups who are able to sell to the office. When OFNACER's official sales price is below the market price, those buyers who have the best access (government workers, military, urban consumers) are subsidized.

¹²C.R.E.D., p. 54-55.

ANNEX TABLE 2.2

OFNAGER TOTAL STOCK MANAGEMENT IN THE 1980S
(in thousand tons)

	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89
Local cereal purchases	28.7	24.5	14.2	38.8	39.8	21.4	2.4	35.0
Food aid, and imports	53.3	23.5	44.2	60.3	16.0	8.2	35.5	4.5
Sales	26.1	80.1	67.2	44.3	33.4	53.1	71.5	24.0

Source: *Plan Cerealier 1990*

The National Security Stock

Burkina Faso's National Security Stock (NSS) was established in 1976 with the assistance of the Federal Republic of Germany, which provided a revolving fund for the creation and maintenance of a 30,000 ton cereal stock. In 1987 the European Community contributed 5,000 tons to the NSS. France, Canada, and USAID have also participated. The stock is managed under terms fixed by a agreement between the GOBF and Germany which states that the stocks are to be used in emergency situations only, although one third of the stock should be rotated annually in order to maintain its quality. The following table summarizes the Security Stock's operations.

ANNEX TABLE 2.3

NATIONAL SECURITY STOCK OPERATION, 1976-1990

Year	Initial Stock	DEPOSITS		WITHDRAWALS		Final Stock
		Purchases & grants	Transfers	Emergencies	Transfer/rotations	
76/77	0	8680			673	8007
77/79	8007	18061			16864	9204
79/80	9204	11699		500	4579	15824
80/81	15824	953	215	3000	9134	4858
81/82	4858	23886	3237		6015	25966
82/83	25966	19211	2165	4200	24800	18342
83/84	18342	6881	25	13570	1875	9803
84/85	9803	369	20342		3456	27558
85/86	27558	2000	18168		2123	45603
86/87	45603		18932		26335	38200
87/88	38200		2405		33146	7459
88/89	7459	14979	21226		6559	37105
89/90*	37105		15676	555	15843	36382

*as of Aug 31

Source: Plan Cerealier '88 and OFNACER (1987-1990)

By 1984 the Security Stock reached 92% of the 30,000 ton target. The target was later revised to 35,000 tons. In 1986/87 the stock reached a high of 45,503 tons because of difficulties in carrying out the scheduled technical rotation.

All purchasing and sales operations for the NSS are carried out by the commercial office of OFNACER. In theory, one third of the stock is to be sold each year and replaced "grain for grain" by freshly purchased cereals. In reality, the rotation operation is varied and in some years is used as a means to stabilize market prices. Such was the case in 1988 when 33,146 tons were "rotated" as a reaction to sharply increasing market prices. No separate "bids and tenders" system exists for the NSS. During rotations, stocks are ceded to OFNACER's stabilization stock which then sells them at officially fixed prices. Later, stocks are purchased from the stabilization stock to reconstitute the NSS. Accounts are kept separately for the two stocks.

The costs of constituting and maintaining the Security Stock are met entirely with donor funds — both foreign exchange accorded through a bilateral agreement with Germany, and counterpart funds from various sources. Almost no Burkina government funds are involved. In its five-year plan for 1985-90 the government announced its intention to increase the level of the NSS to 50,000 tons. This figure was arrived at through Burkina's political process and is not based on mathematical calculations of emergency food needs. According to the Plan Cerealier of 1990, a stock of 50,000 tons is sufficient to feed about two million people for one month in a crisis situation.

The cost of maintaining the NSS has not yet been clearly calculated by OFNACER. The procedure for the emergency use of the security stock requires a government declaration of disaster in

the region requiring relief. Regular OFNACER logistical systems are used to distribute the food usually at highly subsidized ("social") prices.

The Reluctance to Liberalize

Of the major Sahelian countries included in this study, Burkina Faso is the only one left that still manages a substantial stabilization stock and still sets official prices (legally applicable to all cereals traders). As recently as 1988/89, OFNACER purchased over 35,000 tons of local cereals.

The magnitude of OFNACER's intervention is destined to diminish in the near future, as negotiations are currently underway with the World Bank to establish a structural adjustment program, covering cereals policy. These negotiations are likely to call for the liberalization of cereals trade, an end to OFNACER's interventions via the stabilization stock, and the restriction of the institution's activities to the management of food aid and the National Security Stock. The team commissioned by the Ministry of Agriculture to draft the 1990 Cereals Plan recommends similar measures: liberalization in cereals prices and trade, the restriction of OFNACER to the management of a single reserve stock of 50,000 tons, and the establishment of a *contrat-plan* between OFNACER and the government.

Up until recently, the government has resisted such calls for liberalization. According to a document adopted by the Conseil d'Administration Extraordinaire in September 1988¹³, OFNACER should not curtail its stabilization efforts until other actors — cooperatives, cereal banks, "groupements d'intérêt économique" — are prepared to take full responsibility for cereals marketing. The document reflects what appears to be widespread apprehension in the government about allowing private traders to be responsible for cereal marketing. Generally, private traders are not trusted, and if OFNACER must reduce its level of intervention in the cereal market, many hope that other collectively-run institutions (like cereal banks) will take up the slack, not private traders. However, cereal banks and cooperatives suffer from many of the same ills as OFNACER — non-viability without outside subsidies, vulnerability to embezzlement, management sluggishness, and possible displacement of individual marketing agents.

¹³ République de Burkina Faso, Ministère du commerce et de l'approvisionnement du peuple, "Projet de restructuration de l'office national des céréales — OFNACER," Ouagadougou, Burkina Faso, 1988.

ANNEX 2c

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ANNEX 3a

CHAD — NOTES ON CEREAL BANKS AND PRIVATE GRAIN MARKETING

THE PROMOTION OF VILLAGE-LEVEL STORAGE

The Ministry of Plan's Orientation Plan established in December of 1990 lays out the government's position on many development issues, including that of cereals storage. It reads,

In the future, village organizations will be responsible for (cereals) storage, and the ONC will fulfill the role of centralizing information and animating stock management. Detailed study is still necessary to create a well articulated system of storage which will be composed of primary stocks based in villages or in groups of villages and secondary stocks based in the prefecture or sub-prefecture levels.¹

According to the FAO team assisting in the elaboration of a national Food Security policy, the government of Chad favors the organization of village groups to carry out the storage and commercialization of cereals. Most donors, tired of the ONC's record of failure, have joined in the government's call for the development of village level storage schemes — cereals banks and community granaries.

CEREAL BANKS

Little has been written on Chad's CBs. The identified papers include a 1990 report prepared by Lucien de Lardemelle for the FAO entitled "Cereal Banks in Chad," and two short 1989 reports prepared by Lawrence Kent for CARE International: "Millet Prices, Grain Storage, and Cereal Banks in the Cheddra Region," and "Grain Storage in the Kim, Marba, and Gabri Areas of the Mayo-Kebbi."² Lardemelle's work is a general description of Chad's CB programs, while Kent's pieces are highly site-specific.

The information found in the following notes is not based on the above-cited reports; it is derived from field visits and interviews in Chad. Because the material is not otherwise available, we set it out in greater detail than is the case in the other countries studied.

Approximately 350 cereal banks have been organized in Chad, most of them within the past two years. A variety of government, donor, and private voluntary organizations have been involved.

¹ Republique du Tchad. Plan d'Orientation: Options de Developpement, Ministry of Plan, December 1989, p. 92.

² References are in Annex 3c: Chad Bibliography.

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ANNEX TABLE 3.1
CEREAL BANKS IN CHAD

Sponsor	Estimated number	Location
SECADEV	150	Sahel zone
FED/ONDR	140	Moyen Chari
BELACD	30*	Southern zone
World Vision	18	Logones
CFPA	6	Moyen Chari
UNICEF/ONDR	6	Mayo Kebbi
Total	<hr/> 350	

*Rough estimate; see explanation below
Source: Field interviews

The National Office for Rural Development (ONDR) — a bureau of the Ministry of Agriculture — has served as the implementing agency for two cereal banks programs. The first involves roughly 140 CBs in the Moyen-Chari province which were funded through the European Development Fund (FED). This program is to be expanded in the upcoming two years to create 475 more CBs in Southern Chad, Guera, and Chari-Bagrimi provinces.

The second program is funded by UNICEF, involving 6 CBs in the area of Kelo in Mayo Kebbi Province. ONDR and UNICEF agents provide follow-up. Plans are underway for the creation of 30 more CBs in the Ati, Mao, and Kelo regions.

The Center for Professional Agricultural Training (CFPA) in the city of Sarh has used Swiss funding and technical assistance to establish 6 CBs in Moyen-Chari province. The CFPA is a government agency supervised by a section of the Ministry of Agriculture. It plans to establish 8 additional CBs in the upcoming year.

The American PVO World Vision International established 18 CBs in Logone Oriental and Logone Occidental between 1987 and 1990. World Vision has its own extension team and works independently of any government agencies. Its program will end in March of 1991.

Catholic agencies in Chad are also very involved in promoting cereals banks. Catholic Aid for Development (SECADEV) is a large PVO based in N'Djamena which runs programs in nine sites in the Sahelian zone. SECADEV has encouraged the formation of hundreds of small (10 to 20 members) cooperatives throughout these sites to undertake a variety of development activities, including organizing cereals banks. In the past three years, SECADEV has provided seasonal credit to approximately 150 of these small CBs.

The Office for Studies and the Organization of Community Diocesan Action (BELACD) is the second Catholic agency to promote village-level cereals storage in Chad. BELACD is based in each of the three southern Catholic dioceses — Moundou, Sarh, and Pala. While BELACD has facilitated the establishment of over 500 "community granary" village organizations, the agency usually has not provided a revolving fund or credit to these organizations. For this reason, the BELACD "community granaries" are not considered as cereal banks and are not included in the total BC figure presented above.³

Two international PVOs working in Northern Chad — CARE International and the Organization for Rehabilitation and Training (ORT) — have also experimented with credit schemes for cooperative produce storage. This has involved seasonal credits to finance the purchase and storage of onions, okra, and other agricultural products whose prices usually climb rapidly two to three months after their harvest. Only 10 small (10 to 25 members) cooperatives have been involved. While these schemes work on the same principles as cereal banks, they do not figure in the total CB figure presented above because they concentrate more on vegetables than on cereals.

MODES OF OPERATION AND THE PROBLEM OF SUSTAINABILITY

Of the 350 CBs identified by this study, the vast majority operate on a seasonal credit basis — that is, the relevant project provides a short term loan to the village organization to purchase cereals at harvest, store them, and then sell them during the lean season. The loan must be repaid to the project once the cereals are sold. This is the case of the ONDR/FED project, the ONDR/UNICEF project, the CARE and ORT projects, and most of the SECADEV sites.

This seasonal credit system presents several advantages. For those programs that are just beginning to experiment with cereal banks (this is a relatively new activity in Chad), the short-term credit allows the projects to quickly evaluate village groups' management capabilities. If the group repays its loan, the CB is usually considered a success and it becomes eligible to receive a second seasonal credit. It is generally felt that the short-term obligation to repay the loan imposes more discipline on the CB's management.

The obvious disadvantage of this system is that it requires the project to act as a permanent banker. When the project ends, credit will no longer be available, and the cereal banks will no longer be able to function. Three solutions to this problem have been proposed.

The first is that instead of giving a loan to the CB, the project provides a grant which does not have to be repaid; it can be used repeatedly as a revolving fund. World Vision International appears to be the only program to have attempted to do this in Chad. An initial donation of 5 to 10 tons of grain was provided to each WVI cereal bank to be sold on credit to its members. By paying back their credits in kind, the members were to reconstitute the CBs' stocks on a sustainable basis. In most cases, the theory has not worked well; members have not reimbursed their credits to CBs, working stocks have diminished, and in at least one case the members decided to sell off all of the granted grain and split up

³A few BELACD "community granaries" have received revolving funds in the Moyen-Chari and Mayo-Kebbi regions, and therefore can be considered as cereal banks. The decentralized nature of BELACD's operations made it difficult to get an accurate estimate of their number; we chose 30 as a rough guess, but there may be more.

the money. It seems that many villagers came to the conclusion that once they had received their free grain from World Vision, there was no longer any reason to manage it collectively: they could store it and sell it more easily on an individual basis.

The second oft-proposed solution to the banking/sustainability problem is the idea that over several years a CB will be able to earn enough profit from its operations to pay off its loans and build up its own revolving fund, which can then be used to sustain operations. The ONDR/FED, ONDR/UNICEF, and CFPA programs are based on this belief. The reasoning, however, is questionable on two counts. First, it is doubtful that CBs in Chad will be able to consistently make enough profit both to pay off their loans and to build up their own revolving fund. UNICEF CBs have not been able to reimburse 40% of the money lent to them so far, and ONDR/FED CBs have had ongoing problems in repaying their debts, let alone building up any of their own equity. Management problems and inconsistent seasonal price trends make it difficult to make consistent or substantial profits. Second, if a CB were to build up its own equity and no longer received credit, the reason for managing that equity collectively would probably dissolve as members decided that they could manage their grain individually at least as efficiently as they could collectively. Without continued access to outside credit, most of the reasons for grouping together disappear.

A third solution to the project-as-banker dilemma is to attempt to build links between CBs and sustainable banking institutions, which will continue to provide loans even after the projects are completed. In the context of Chad's extremely weak banking sector, this is a particularly unrealistic solution. Chad's commercial banks are not interested in making loans to small, dispersed farmers' groups. Administrative costs would be extremely high and many CBs already have poor records in credit reimbursement. In fact, the only credit institution currently willing to make small loans in Chad is the American PVO Volunteers in Technical Assistance (VITA). CARE International at one point talked of building sustainable links between its produce storage groups and a VITA credit line. However, given that VITA's interest revenues currently cover less than 30% of its local administrative costs, it seems unlikely that VITA will ever be able to build a self-financing banking institution. The idea of helping cereal banks to access VITA credit involves the simple substitution of one subsidized, unsustainable credit source for another.

The ONDR/FED cereal banks program in the Moyen-Chari has taken an interesting approach to the project-as-banker problem. The ONDR extends credit for millet operations only to village groups which also are involved in cotton production. Because all cotton must be sold to the national cotton company — COTONCHAD —, the ONDR is able to collect any outstanding village debts by having the cotton company withhold the money from the villages' cotton payments. This system has effectively guaranteed ONDR's loans and led to a 100% recovery rate. Cotton sales, however, take place nearly six months after the millet loan is theoretically due. The fact that ONDR usually has had to wait until the cotton harvest to recover its millet loans has thrown off the timing of its cereal bank operations and allowed most groups to participate only once every two years. It is difficult to estimate ONDR's costs in providing this credit service, because the dozens of field agents which supervise the operation are simultaneously involved in other ONDR activities.

Until now, the ONDR/FED program in the Moyen-Chari has been well managed, under supervision of expatriate technical assistance. Once foreign support ends, will the ONDR be able to continue to act as the region's banker, making cash loans to hundreds of village groups, without misappropriation of funds?

COMMUNITY GRANARIES

Community granaries are considered separately from cereals banks in this report because they do not involve the establishment of a revolving fund or a credit relationship between the village group and a project. Community granaries are simpler than CBs; they typically involve the construction of a central grain storage place where villagers can stock their cereals collectively, rather than in their individual family granaries. The Catholic PVOs BELACD and SECADEV have helped organize hundreds of these community granaries during the past seven years. It is worthwhile to analyze the rationale for these organizations, because much of the same reasoning is often used when cereal banks are discussed.

An often-cited reason for establishing community granaries is "to increase village-level grain storage." While this is a worthwhile objective, it is hard to see a priori how villagers moving one or two sacks from their own individual granaries to a collective granary will actually increase cereals storage.

The transfer could reduce post-harvest losses if the collective facility were superior to traditional granaries. Most studies carried out in other Sahelian countries, however, indicate that this is unlikely; physical storage losses are probably the least severe in traditional structures. Where "improved" storage facilities have been constructed in Chad, they have been underutilized. In 1987, the ONDR constructed 50 village warehouses in the Moyen-Chari province at a cost of roughly \$8,000 each. Of the 1,500 ton total capacity, only 175 tons of space were used by the villagers to store grain.⁴

The transfer might also have an impact if collective storage led to better supply management than individual stocks. This is a key assumption that often lies behind the promotion of community granaries by many outside agencies. A theory is that Chadian farmers tend to manage their cereals harvests poorly; they "waste" a large portion by giving cereals to friends and relatives, by overeating, and by selling grain to buy other goods. It is said that this "irrational" behavior is due to the individual farmer's inability to plan for the future and to avoid short-term social pressures. The solution, it is said, is to move a portion of the individual's stock to a community granary where it will be managed in a more rational manner.

There are several reasons to question this belief and thus to question the wisdom of promoting "community granaries." First, there is no empirical evidence to support the "irrational management" thesis. Second, there is little evidence to support the idea that collective stocks are particularly well managed. BELACD's activity report for 1989-90 (Pala) cites cases of "laxness, reticence, misunderstanding, false accounting, and unauthorized withdrawals often carried out by committee members..."⁵ The report says that the management of the community granaries has become "imprecise and negligent." One of ORT's three collective storage structures burned down with all of the produce inside. Thus, while grain stored at home may be subject to risks and temptations, it should be remembered that grain stored collectively is also subject to risks and temptations. It is unclear where the risks are the greatest.

In some cases the community granary is carefully controlled by project agents; in the Koumra area, for example, BELACD agents keep the keys to the village storehouses. Here the risks involved in

⁴ ONDR, (Project FED), "Rapport Final de l'Assistance Technique aux Groupements Villageois et a la Commercialisation — Juillet 1986-Octobre 1988," Sarh, 1988, p.28.

⁵ BELACD de Pala, "Rapport d'Activites No. 2, 1989-90," Pala, 1990.

collective storage are mitigated, and villagers are often willing to deposit cereals in a collective depot, especially if they feel cooperation is a prerequisite to accessing other project assistance. In cases where community granaries are not carefully supervised by project agents, however, it is unclear if villagers consider collective storage "safer." It is very difficult to find a community granary which operates traditionally, or independently of project supervision. On the other hand, it is easy to find numerous cases of community granaries that have fallen apart due to mismanagement and lack of interest. The sustainability of community granaries remains doubtful.

We have treated the community granary issue in some detail because of its connection to the cereals banks question. When confronted by the question of why villagers should store and speculate in cereals collectively rather than individually (other than to access subsidized credit), defenders of cereals banks often fall back on the "irrational management" thesis that is used to justify community granaries. It is important to note that the idea that collective storage is safer than individual storage is unproved, dubious, and frequently expressed in a highly paternalistic fashion.

CEREALS BANKS AND PRIVATE TRADERS

As in the other Sahelian countries, much of the rationale for the promotion of cereal banks in Chad is based on the belief that private traders exploit small farmers, ("We must combat them," says one project supervisor). In Burkina Faso and Niger this has frequently led to a situation of rivalry between promoters of CBs and those who favor the strengthening of the trader class. From a policy perspective, it is important that CBs not be granted special privileges that would allow them to unduly displace private cereals traders. In Chad this has not been much of an issue. Chadian traders are experienced and numerous. Cereal banks are new to Chad and as of yet do not pose a serious threat to private traders and the services they provide. As more donors promote more CBs in the future, however, they should not be allowed to use subsidies to drive private traders out of village cereals markets.

PRIVATE COMMERCIAL GRAIN TRADING — SPATIAL ARBITRAGE

Unlike its Sahelian neighbors, Chad has maintained a fairly liberal trading environment over the past 20 years for its basic cereals (millet and sorghum). The government cereal board has never controlled more than 10% of the market and has never been granted a monopoly in cereals trade. Almost all buying and selling of cereals is done by numerous private traders, producers, and consumers. Although private cereals traders face many obstacles in Chad, official government hostility has not been a major problem.

Chadian cereals traders are principally interested in spatial arbitrage — purchases in grain surplus areas where prices are low (eg., Bokoro, Bousso, Dameneji) and transporting the grain to deficit areas where prices are higher (eg., N'Djamena, Moussoro). Much of this trade is centered around N'Djamena — the capital and principal consumer market.

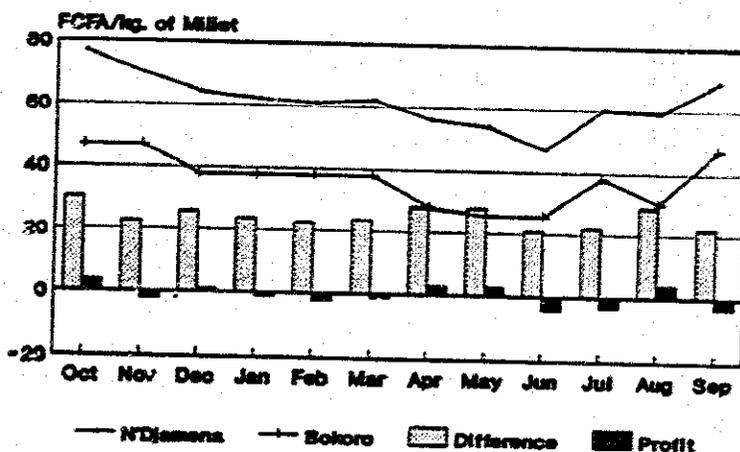
Chad's large territory, natural barriers (rivers), and horrendous road system (certainly the weakest in the Sahel), make it difficult for traders to carry out the spatial arbitrage function. Because transport costs are very high, price differentials must be substantial between two locales before trade becomes profitable. Large differences between farmgate and consumer cereals prices have occasionally led to

traders being accused of taking exorbitant profits on these transactions. The evidence suggests, however, that keen competition keeps traders from earning excessive profits in the cereals trade. This is the conclusion of Kent's 1988-1989 study of the grain trade along the Cheddra-N'Djamena corridor; even ignoring capital and personal labor cost, profit margins averaged only 9 percent.⁶ A 1990 report, "Cereals Price Formation," by the Interministerial Bureau of Studies and Projects (BIEP), comes to the same conclusion.⁷

A glance at the price data from N'Djamena and Bokoro (a major supply area 300 kms from the capital) shows how well integrated certain Chadian cereal markets may be, (Figure 3). Price data from Chad's large southern city Sarh and its major supply area Danamaji also show good integration, (Figure 4).

N'Djamena - Bokoro Millet Prices 1988/89 Season

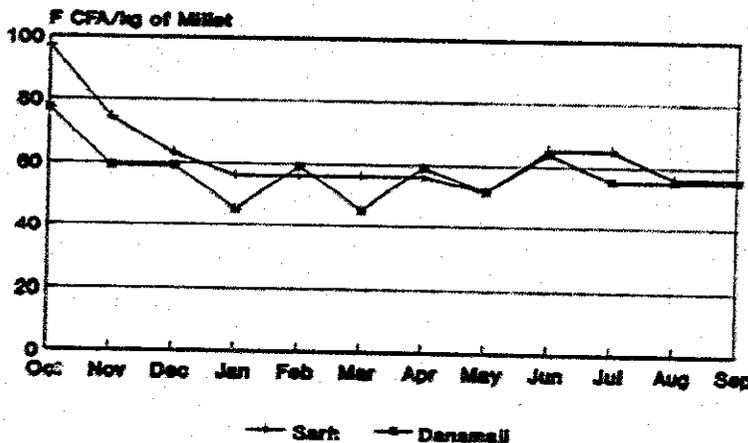
Figure 3



source: BIEP/1990, avg difference is 25

Sarh - Danamaji Millet Prices 1988/89 Season

Figure 4



source: BIEP

⁶ Lawrence Kent, "Farmers' Groups and the Commercialization of Cheddra's Produce," CARE International in Chad, 1989.

⁷ BIEP, "Cereals Price Formation," N'Djamena, 1990.

Spatial integration between more distant Chadian markets is poorer. This is because large distances, poor roads, natural barriers, and numerous road blocks make it too expensive to trade between these markets during most of the year. Under these conditions, price movements in one market are not always reflected in other isolated markets. The problem would seem to relate to high transportation costs and not exorbitant trader profits.

PRIVATE COMMERCIAL STORAGE — TEMPORAL ARBITRAGE

As well as performing spatial arbitrage, Chadian cereals traders are involved in arbitrage over time — buying grain at a time of the year when prices are low, storing it, then selling it at a time when prices are higher. In the context of a single annual millet harvest, such storage helps to assure that grain is supplied to the market during every month of the year.

Two opposing views about private cereal storage are commonplace in Chad, as elsewhere in the Sahel. The first is that certain large traders buy large quantities of grain at low prices at harvest time, stock them until the lean season in July and August, then sell them at high prices to reap big profits. The second view is that cereals traders are not involved in long-term storage at all; they prefer quick turn-over trade and are not willing to tie up their limited capital in long-term storage. According to this perception, long-term storage is carried out by farmers, not traders.

To find which of these two viewpoints is closer to the truth, 34 cereals traders were interviewed about their storage practices— 28 in N'Djamena, 2 in the roadside town of Massaguette, and 4 in the sub-prefecture of Massakory. These interviews indicated that the truth lies somewhere in-between the extremes — traders usually prefer quick-turnover trade, however, some traders also are willing to invest a portion of their working capital in medium term (3-5 months) storage.

16 grain wholesalers were interviewed at the "marche de mil" in N'Djamena. Although responses varied, certain commonalities emerged. First, these traders prefer to buy and sell their cereals as quickly as possible. They typically send their own agents to surplus areas to make purchases in areas such as Bokoro and Bouso, or they buy from intermediaries who transport the cereals to them directly in N'Djamena. Once they have taken possession of the cereals, they stock them in open-air shade structures in the marketplace. Next, they attempt to sell the cereals as quickly as possible to retailers who in turn sell to consumers. The wholesalers usually store only as long as it takes to sell the stock; for a stock of 400 sacks this may be from one to six weeks. This storage is considered incidental and not speculative.

To a lesser extent, traders are also involved in speculative storage or arbitrage over time. Several traders mentioned that other than their quick turn-over trade, they also store 50 to 500 sacks of millet from 2 to 5 months to take advantage of seasonal price rises. This storage is never their principal activity; it is usually a side-line from which they hope to earn additional profits. None of the traders interviewed knew of anyone who stored over 1000 sacks. Most traders said that they did not hold out for very large seasonal price increases; once the price of a sack had increased by 15 to 20% over the purchasing price, they were eager to sell and realize their profits.

Apparently wholesalers are not the only ones involved in speculative storage. In years of poor harvests when prices are expected to rise, many retailers, petty traders, and even civil servants store 20 to 100 extra sacks in their homes, hoping to sell them once prices rise in the hungry season. This size of these "neighborhood stocks" ("stocks de quartier") is very difficult to assess, because those who are involved are typically secretive about their activities.

During the rainy months of July and August, most of Chad's roads become difficult or impossible to travel on. In N'Djamena, millet no longer arrives from rural areas and commercial stocks become the principal source of cereals in the marketplace. If price rises are large, the entrepreneurs who invested in storage emerge as the winners. In rural areas, the situation appears to be different. Commercial stocks are uncommon in the countryside. Most stocks are maintained by those farmers who produced a saleable surplus. If rainy season prices increase dramatically in rural areas, these farmers are the ones who benefit the most when they sell their surpluses.

CONSTRAINTS TO PRIVATE TRADER STORAGE

Of the 34 cereal traders interviewed for this study, 100% said that they expected the price of millet to rise between the harvest and lean seasons of 1990/1991, given the poor nature of this year's rains. The 12 wholesalers predicted that the price would rise, on average, 60% this year. Given these predictions, the wholesalers were asked if they were expanding their storage activities to take advantage of this opportunity for profit. Several responded that they planned to store more grain this year than in the past, but many claimed that they were unable to do so, for various reasons.

First, they lack sufficient financial capital. Most traders work exclusively with their own money; they do not borrow. In years where storage looks like a profitable investment, they are limited to their own money stock for investment. If they want to increase their investment in storage, they must shift funds out of other activities, which they are reluctant to do because of a desire to remain diversified.

None of the traders had ever received formal credit. A few worked with informal credit, usually from relatives, which entailed a sharing of any resulting profits — usually one half to one third of all gains revert to the supplier of funds. But informal credit is difficult to come by in N'Djamena, and according to traders, it is available only in small quantities.

Other factors which discourage long-term investment in storage emerged during the interviews. These include the turnover/war effort tax which is assessed on a trader according to the size of his business (which may be judged by the size of his stocks), and the memory of instability during the war years (1978-85), when trader stocks could be requisitioned by the authorities. According to the traders, these factors are minor compared to the problem of limited capital.

The lack of warehouse space was never mentioned as a constraining factor. Traders rent shade structures in the marketplace to hold their stocks, and these structures are rarely filled to capacity. Sacks can also be stored in traders' homes without major difficulty. Because stocks are rarely maintained for longer than six months, storage losses are invariably described as minimal.

ANNEX 3b

**NOTES ON GOVERNMENT GRAIN STORAGE IN CHAD:
THE ONC AND THE NATIONAL SECURITY STOCK**

ONC OPERATIONS

Since its creation in 1978, the National Cereals Office (ONC) of Chad has played a relatively minor role in national grain markets. Unlike the grain boards of neighboring Sahelian countries, the ONC has never been granted a monopoly in coarse cereals marketing. It has always operated alongside private grain traders and has typically controlled less than 10% of the commercial cereals market. ONC's activities were suspended during Chad's civil war, but the office resumed operations in 1983, thanks to FAO/Dutch support, with new guidelines stating that purchases and sales should follow the laws of supply and demand, that operations should cover costs, and that "prices should be regulated to avoid too much private speculation." The ONC's buying and selling patterns are shown in the table below:

ANNEX TABLE 3.2

ONC Purchases and Sales in Metric Tons of Coarse Cereals
(Operational Stock Only)

	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
purchases	1,268	7,536	8,283	6,785	12,019	8,672
sales	767	457	4,570	13,875	7,959	n.a.
carry over	501	7,580	11,292	3,098	6,691	2,465*

(* is as of 9/30/90)

Source: ONC

By almost all accounts, the ONC has failed in its attempts to stabilize cereals prices. Because the office usually purchases most of its stocks from private traders at above-market prices, well-connected merchants have been the main beneficiaries of ONC buying campaigns. When the office sells its stocks, the main beneficiaries have been the relatively well-off civil servants who are granted grain on credit. The ONC has suffered from serious mismanagement (five different directors since 1988), high costs, and charges of fraud; it has incurred financial losses every year of operation.

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ANNEX TABLE 3.3

ONC OPERATIONS, 1986-1989

1986/87	loss of	75,000,000 FCFA	(\$300,000)
1987/88	loss of	123,000,000 FCFA	(\$492,000)
1988/89	loss of	74,000,000 FCFA	(\$296,000)

Source: Francis Valere-Gille, 1990, *Rapport de Mission sur la Creation d'un Stock de Securite Alimentaire au Tchad*, World Food Program, May 1990.

The ONC operations have been financed almost entirely from donor funds. The participating donors — the Dutch, the EEC, and the French — are generally disillusioned with the office's performance and are unwilling to put any new funds into its operations. Without continued donor subsidies, it is unlikely that the ONC will be able to continue its attempts at market intervention. The major donor agencies generally seem in agreement on this point: the ONC should cease its annual "stabilization" efforts and should instead be restricted to managing a food security stock, to be used only in emergency situations.

The Chadian government is not averse to this re-definition of the ONC's role; its "orientation plan" of December 1989 recognizes that the ONC has failed to stabilize cereals prices and that the office's role should be reconsidered. It is probable that in the near future the ONC will be confined to the role of managing a national food security stock and occasionally serving as a paid buying agent for donors interested in purchasing cereals for bilateral projects.

THE NATIONAL FOOD SECURITY STOCK

When the ONC was re-established after the war, it was assigned the task of creating and maintaining a separate national security stock to be used only in emergency situations. Little initiative was taken in this domain, however, until October 1988, when a tripartite committee made up of Chadian, FAO, and Dutch representatives recommended that a food security stock of local cereals be formed immediately.

While Chadian officials originally requested that the stock's level be set at 35,000 tons, the figure of 20,000 tons later was decided upon during discussion with the donors. The tripartite committee decided that the stock would be managed by the ONC and stored in decentralized warehouses. Decisions to use the stock would be taken by a joint government-donor committee. One third of the stock would be rotated annually to maintain its quality.

Many of the management procedures for the security stock have yet to be finalized. With FAO assistance the government of Chad elaborated an "Accord Cadre" in mid-1990, specifying the principles and management procedures of the security stock. It was originally planned that all of Chad's major donors would sign this agreement and work together to supervise the security stock; however, at the time of this writing, only one donor — USAID — has been willing to sign. The other major donors, notably the EEC, the Dutch, and the French, are unwilling to commit themselves to this document because of

the bad experiences that they've had with the ONC in the past, and because of the ambiguity that surrounds some aspects of the security stock's management procedures.

The most controversial of the management questions is who is responsible for replenishing the security stock after an emergency grain withdrawal. According to the "Accord Cadre," the donors are to "declare themselves 'in solidarity' to accomplish this replenishing." Several donors, particularly the French, interpret this clause as an open-ended commitment to furnish food aid, and thus are unwilling to sign the agreement.

Who will pay the recurrent costs of managing the security stock is an equally controversial question. These costs include warehousing, handling, insecticide treatments, and other expenses. According to calculations done by an FAO consultant, these costs may range from \$500,000 to \$1,000,000 per year.³ The "accord cadre" states that these costs will be covered by withdrawals from a special "security stock fund" consisting of donor contributions (mainly counterpart funds). Again, donors are hesitant to commit themselves to cover these recurrent costs, and only the French have deposited money in the "security stock fund."

A third of the security stock is to be renewed each year to maintain the quality of the cereals. This will involve selling about 7,000 tons of three year old cereals each lean season and purchasing 7,000 tons of new cereals each harvest season. FAO representatives have suggested that by buying low and selling high the ONC will be able to make a profit on these rotations which will cover a portion of the stock's maintenance costs. This appears to be wishful thinking. The ONC has never made a profit by annually buying and selling cereals in the past; it is unlikely that it will be able to do so in the future, when it will have to hold cereals for three years before selling them.

According to the "accord cadre" all decisions regarding the rotation and the emergency use of the security stock are to be taken by consensus by a joint government-donor committee which will meet on an as-needed basis. USAID's food officer considers this an acceptable arrangement that will allow donors to have veto power over management decisions. He notes the recent history of positive, open cooperation on food security matters between the government and the donor community. Other donors, however, are more skeptical about the committee's ability to assure proper management of a 20,000 ton stock.

IS A FOOD SECURITY STOCK NECESSARY?

All of the major donors, except perhaps the World Bank, agree that a security stock is necessary in Chad. Droughts and civil conflicts have resulted in serious food shortages several times during the past 20 years which have necessitated the delivery of sizable quantities of food aid. Because it can take several months for food to arrive from abroad, the government wants to maintain a food stock in Chad which can be used for emergency purposes until other stocks can be delivered. Donors like to have a stock in-country because it gives them more lead time to assess the situation before rushing to order food aid shipments.

³ Jaques Guillaud, "Consultation: Definition des Mechanismes d'Ettablissement et de Gestion d'un Stock de Securite Alimentaire," GCPS/CHD/018/NET, N'Djamena, Tchad, June 1989.

Thus, the presence of a food security stock is desirable. There are, however, associated costs: (1) the physical and financial maintenance costs, and (2) the cost of possibly disrupting normal commercial cereals circuits by maintaining regular government intervention in the market.

The government of Chad does not have the resources to cover the stock maintenance costs, and donors are reluctant to commit themselves to bearing these recurrent expenses. Faced with this dilemma, it is worthwhile to consider alternatives to maintaining a physical security stock.

One alternative is to rely more heavily on private traders to stock and deliver grain to severely deficit areas. In the drought year of 1984/85, for example, private Chadian traders imported large quantities of Cameroonian mais and Nigerian sorgho. A freer trade regime would facilitate private traders' deliveries of cereals to areas of food shortage. Of course, private traders will not deliver to zones where purchasing power has collapsed. These zones must receive free or subsidized food, or the income to buy it.

Another alternative to a physical security stock is to maintain a special financial account to be used to purchase food in emergency situations and deliver it to those in need. The great advantage of a money stock is that it does not involve recurrent maintenance costs; in fact, it can earn interest. Quick grain purchases either can be made in domestic areas of surplus, or in surplus areas in neighboring countries (Cameroon). As well as actual food purchases, a money stock can be used to finance emergency logistics, eg. hiring trucks to deliver supplies.

Two problems associated with the idea of an emergency money stock are that (1) it may be difficult to purchase grain quickly in years of severe regional drought, and (2) donors are reluctant to contribute funds to an emergency money stock. The first concern is perhaps exaggerated. Even in severe drought years, some regions of Chad and Cameroon produce surplus cereals which could be purchased and distributed with emergency funds (albeit at a higher price). Donor reluctance to put money in an emergency fund is a more serious problem. In Chad, only the French have been willing to put some counterpart funds into the government's food security fund. USAID has decided to keep its emergency counterpart money in its own blocked account. Concerned about the management of a government emergency fund and aware of the fungibility of money, most donors are unwilling to contribute to such a fund.

ANNEX 3c

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ANNEX 4a

**NIGER — NOTES ON CEREAL BANKS
AND PRIVATE GRAIN TRADING****LITERATURE**

Recently, much has been written about CBs in Niger. Four major reports appeared in 1990: "Situation Actuelle des Banques Cerealières Implantées au Niger" by Seyni Harouna for the FAO; "Les Banques Cerealières" by Francisca Beer for the University of Michigan's Center for Research on Economic Development; "Evaluation des Banques de Cereales du Projet" by Serge Mihailov for the FAO; and "Evaluation des Banques de Cereales au Niger" by Bernard Guillermain for the FAO in Rome as part of a broader study in the Sahel. The University of Michigan team based at the Department of Studies and Programming in the Minister of Agriculture has frequently touched upon cereal banks in its numerous reports.¹

All of these reports concentrate on describing Niger's cereal banks and analyzing their modes of operation. Most say little about the underlying economic issues surrounding competitive cereal marketing. A number of them make the same assumptions that were used to justify the creation of national grain offices two decades ago — that cereals marketing cannot be left to the private sector, but should be channeled through collective institutions. So few questions are raised about the necessity of these institutions. Instead, the papers simply analyze how the institutions operate, and make recommendations on how their management might be improved. These recommendations typically involve increased training and better coordination and monitoring.

The notes in this annex do not repeat the description and analysis available in the above-cited documents. Instead, these notes summarize some basic facts on Niger's cereal banks, then consider the issues raised in the previous annexes — notably, the relationship between cereal banks and the official cooperative movement, the government grain board, and the private grain trade.

NUMBER AND TYPES OF CBS

Currently, there are 500 to 650 cereal banks in Niger. The 1990 Niamey Roundtable lists 645 CBs, while Harouna's census arrives at a figure of 530. Harouna's number appears to be the most reliable; it is lower than the roundtable's estimate because it does not count cooperatives interested primarily in inter-regional grain transfers. These will be discussed separately later.

¹ Full citations in Annex 4b — Niger Bibliography.

27 separate projects promote CBs in Niger. The five largest are:²

● Tahoua Rural Development Project (GTZ)	106 CBs
● International Labor Organization - Zinder (ILO)	88 CBs
● Joint Program of Nutritional Support (WHO, UNICEF)	60 CBs
● Support Project for Organizations Responsible for the Commercialization/Management of Cereal Stocks (FAO, SNV)	79 CBs
● ACOPAM (International Labor Bureau/World Food Program)	49 CBs

Each project has a slightly different conception of how their cereal banks should operate. It is useful to classify these operating styles by dividing CB projects into two groups: (1) those that advocate that all cereal be purchased and sold on a cash basis, and (2) those that encourage their CBs to distribute grain on credit during the lean season and to recover the grain in-kind after the following harvest. About 150 CBs operate primarily on a cash basis while 379 emphasize in-kind credit.

² Source: Harouna, p. 17-18.

ANNEX TABLE 4.1

Project	# of CBs	Stock in 1989/90 (tons)
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Projects whose CBs operate primarily on in-kind credit

PDR/Tahoua	106	218
OIT Zinder	73	835
PCAN/NIGER/OMS/UNICEF	60	434
BIT/ACOPAM	49	979
Projet Integre Keita	39	382
Basse Valee Tarka FED	11	103
Other	41	307
Total	379	3,258

Projects whose CBs operate primarily on a cash basis

SNV	49 CBs	487 tons
FAO	30	240
FIDA	17	161
PAM	9	-
Caritas	7	151
FSA	7	-
FED	6	30
Other	26	326
Total	151	1,395

Source: Harouna p. 17-18, abbreviations are in French.

A second way to classify Niger's CBs is by the organizational level at which they work. Roughly 330 CBs operate at the village level while about 200 work on the multi-village or official cooperative level. Geographically, CBs are distributed over all of Niger's departments — including cereal deficit, surplus, and variable regions. Most of the agencies promoting CBs give their cooperatives an initial cash or cereal grant; of the larger organizations only the Regional Productivity project of Tahoua works on a loan basis.

The number of cereal banks in Niger has expanded rapidly from the first CB in 1980, to 77 CBs in 1985, and 530 in 1990. Expansion is expected to continue as the FAO and ILO are currently planning new programs. Despite this growth, CBs remain a relatively small actor in the grain storage picture.

Niger's cereal banks currently control stocks and cash equivalent to approximately 5,500 tons of cereal³, which equals less than 2% of the cereals commercially traded on an annual basis in Niger.

IN-KIND CREDIT-BASED CEREAL BANKS

Unlike in the other Sahelian countries, most CBs in Niger are based on an in-kind credit system, which typically operates as follows. The donor grants 5 to 30 tons of cereal to the CB which stores the grain in its warehouse. During the lean season, the CB committee distributes the grain to members on credit. After the harvest, the members are required to reimburse the amount that they've borrowed plus 25 to 50% interest.

Two principal problems are evident in these arrangements.

- After the original food aid grant, the system probably does not increase the net availability of grain in the village; every time a member repays his debt to the CB, grain is simply shifted from his individual storeroom to the CB warehouse.⁴
- During years of poor harvests, members tend not to repay their debts to cereal banks, which threatens their sustainability.⁵

SUSTAINABILITY

Niger's experience with cereals banks is relatively short — according to Guilerman (1990), the average CB is less than 3 years old. Because almost all CBs still enjoy the active support and supervision of a donor agency, it is difficult to gauge their ability to continue operations once this assistance is terminated.

There are reasons, however, to be skeptical. Seyni Harouna, who visited 83 cereal banks in 1990 before writing his inventory report for the FAO, could not cite one case of a CB that continues to function three years after the end of project supervision. On the other hand, he was able to cite over thirty CBs that had ceased operating once outside assistance ended.⁶ According to Harouna, Niger's

³ Seyni Harouna, Situation Actuelle des Banques Cerealières Implantées au Niger, Projet d'Appui aux Organismes Chargés de la Commercialisation et de la Gestion des Stocks Cerealières, FAO/GCPS/NER/026/NET, Niamey, May 1990, p. 26.

⁴ Because of the risks of embezzlement and physical deterioration due to neglect, grain cannot automatically be considered "safer" when it is being stored collectively.

⁵ Recognizing this problem, the International Labor Bureau/ACOPAM program is now encouraging its cereal banks to shift from a credit system to a cash-based system.

⁶ Interview with Kent, Niamey, October 4, 1990.

largest cereal bank program (the PDRT) is a "catastrophe," which failed almost completely because of insufficient follow-up and the unwillingness of villagers to repay their debts to the CBs. Harouna believes that close project supervision of CB committees is the main reason that certain programs, such as International Labor Bureau/ACOPAM have been partially successful. However, once these projects end and the close supervision ceases, Harouna believes that CB committees will begin to embezzle funds and members will reduce their repayment rates, causing most of these CBs to fold within a few years.

CONTEXT

Cereal Banks in Niger are best understood in the context of two important background phenomena: the evolution of the government's official cooperative movement; and the restructuring of the OPVN — Niger's national cereal office.

THE OFFICIAL COOPERATIVE MOVEMENT

Since independence, the Government of Niger (GON) has promoted the development of rural credit and marketing cooperatives. In the late 1970s the government announced the formation of a hierarchical cooperative structure in which every village in the country was considered a base unit — a "Groupement Mutualist" (GM). These GMs were grouped into organizations of several villages known as cooperatives, which in turn were grouped into sub-regional and regional unions. The cooperatives were assigned the legal monopoly of primary marketing of grain in Niger, and were considered as important vehicles for the implementation of projects in rural areas.

In general, the cooperatives failed. They never were able to satisfactorily handle more than a tiny percentage of Niger's marketed cereals, and the cooperative movement is now widely understood as a political imposition from above which is weak administratively, organizationally, and financially. An anthropologist studying Niger's cooperatives characterizes the movement as "an inexpensive means for promoting wider state penetration into Niger's rural economy behind a facade of self management."⁷

⁷ Thomas Painter, "In Search of the Peasant Connection: Spontaneous Cooperation, Introduced Cooperatives, and Agricultural Development in Southwestern Niger," in Anthropology and Rural Development in West Africa, 1986, p.214.

When preferential legal status allowed some cooperatives to play a role in Nigerien cereals marketing in the past, this typically involved serving as poorly paid collection agencies for the OPVN's now-abolished, loss-making stabilization interventions.⁸ To date, the majority of Niger's cooperatives have proved themselves to be nonviable institutions; they exist in name only and manage no economic or social activities.⁹

When cereal banks were first introduced in the early 1980s, they were required to work through the official cooperative network. Many projects, such as that of the FAO, continue to work exclusively at this official cooperative level. On paper, the GON's National Union of Cooperatives (UNC) is responsible for overseeing all CB activities. But the UNC is currently only able to do this in those few areas where a donor is willing to underwrite its operating costs (fuel, etc.). According to Mihailov, project-sponsored cereal banks are frequently the first and only economic activity for many official cooperatives and thus provide a justification for existence of these structures.¹⁰

Niger's cooperatives have shown themselves to be incapable of organizing the nation's cereal marketing, not only because they were poorly managed, but because cooperative-type bureaucratic institutions are ill-adapted to compete in volatile cereals markets. These artificial cooperative institutions should not be bailed out by cereal bank programs. Nor should they be replaced by new cooperative institutions — cereal banks — which are prone to many of the same problems as the old-style cooperatives. If Niger is to truly liberalize its economy, it needs genuinely private actors (traders), not official or quasi-official entities that are dubbed "private."

THE RESTRUCTURING OF OPVN

The restructuring of OPVN is also important background to understanding the spread of cereal bank projects in Niger. Since the GON's 1985 decision to restrict the level of OPVN's intervention in cereals markets, many officials have suggested that CBs take up the OPVN's now-abandoned role as "stabilizers" and "moralizers" of the marketplace. The prevalence of this notion became apparent at a round-table discussion on CBs held in Niamey in 1986, where the inability of the OPVN to intervene in rural areas was lamented, and cereal banks were recommended to fill the void. The final communique makes no mention of a role for private traders. When a second roundtable was convened in 1990 this

⁸ Direction des Etudes et de la Programmation, "La commercialisation primaire par les cooperatives," Niamey, Niger, April 1988, p 6.

⁹ In *Evaluation des Banques de Cereals du Projet*, FAO, Niamey, Niger, April 1990, FAO consultant Serge Mihailov expresses a sentiment on Niger's coops that appears to be widely shared:

Il faut savoir que la structure cooperative pyramidale (UNC, URC, USRC, ULC, Cooperatives, GM) est davantage une construction bureaucratique hierarchisee du pouvoir central qu'une emanation spontanee de la base. Chaque producteur nigerien nait cooperateur, souvent sans le savoir, et rares sont les cooperatives qui exercent une quelconque activite. (p.30)

¹⁰ Mihailov 1990, p.31.

sentiment was repeated by the Secretary of State for Agriculture and the Secretary General of the National Union of Cooperatives. The roundtable's commission number one concluded:

The need for cereal banks is based on two factors: (1) the country's food situation, and (2) the contraction of OPVN's role. The OPVN which once managed 270,000 tons, now manages only 80,000 tons — a 150,000 ton reduction. To assist in filling this 150,000 ton gap, cereal banks should be the first means of recourse. But the management of their stocks, which vary over space and time, must be coordinated at a level superior that of the village.¹¹

Again, no mention of a role for private traders in the Roundtable's final communique. The idea appears to be that when the State pulls back, other collectively run institutions — "coordinated" CBs — should fill the void. This reflects the reluctance of many policy-makers and some donors to recognize the central role that private intermediaries can and should play in cereals markets.

ORGANIZATIONS PROMOTING INTER-REGIONAL COOPERATIVE CEREAL TRADING

Two private voluntary agencies in Niger are working to strengthen official cooperatives that buy, transport, and sell cereals. The Cooperative League of the U.S.A. (CLUSA) is funded through USAID and the "Campagne pour une Afrique Verte" (CAV) receives French financing. These agencies encourage exchanges between cooperatives in grain deficit zones with cooperatives in grain surplus zones, and their efforts have generally been viewed favorably by the donor community and program analysts (Beers, Guilliermain, Gressard). They also promote village "boutiques" and other commercial endeavors. Other agencies (FAO, ILO) are also promoting cooperative "boutiques" and are planning to promote inter-cooperative cereal trading in upcoming projects.

The rationale behind these programs deserves closer examination. Why should cooperatives be encouraged to carry out spatial arbitrage when in a liberalized economy this is considered the domain of private traders? Most empirical studies have concluded that the private sector carries out this function quite well in Niger, and that cereal trading margins are not excessive.¹²

The CLUSA and CAV response to this question is that cooperatives should be allowed to compete alongside private traders. This is the "more the merrier" argument and in some cases it makes sense. Where exchange routes are not competitive, the addition of another actor can increase competition and provide better service. However most trading routes, as mentioned above, are already competitive. Along these routes a cooperative can only compete successfully if it is more efficient than private traders or if it is subsidized or granted official privileges. If competitiveness is the product of subsidies or privileges, successful operation will cease once they are removed. In the meantime, private traders will

¹¹ Republique de Niger, "Rapport final de l'atelier de reflection sur les banques cerealieres au Niger," FAO, Niamey, Niger, p. 38.

¹² Preliminary results of calculations based on recent, reliable data indicate very high degrees of market integration. These results are available through the University of Michigan team at the D.E.P., Ministry of Agriculture.

have been displaced, or they will have been discouraged from entering these markets, as they were earlier by official cooperative/OPVN transactions.

To be fair it must be noted that the CAV and CLSUA are sensitive to these issues and attempt to minimize their subsidies. Nonetheless, subsidies do exist, and it is doubtful that many of these cooperatives could continue to operate without them. CAV provides a flexible, interest-free loan to each of its cooperatives to cover their purchasing, bagging, and transportation costs. Each cooperative is given an FAO or Japanese-funded warehouse. Initially, trading was done using government or project trucks at highly subsidized rates. CLUSA cooperatives receive privileged access to low-interest bank loans, only made possible by CLUSA's policy of providing 100% guarantees for these loans. CLUSA supports a team of over 50 field agents on motorcycles to provide management assistance to both CLUSA and CAV cooperatives at an estimated annual cost of over \$260,000.

Another questionable factor is the close relationship between the CAV project and the State cooperative hierarchy with which it works. The organization plans soon to move its bureau to the National Cooperative Union office in Niamey. CAV's latest project extension involves equipping the representative of the Regional Cooperative Union with a truck and providing fuel to the Sub-Regional Cooperative Unions, which are staffed by salaried government employees. In one case, CAV funds were lent directly to a USRC director to purchase a "buffer stock" of millet from the OPVN which he quickly sold at a 1,000 CFA/sac profit "to help finance the USRC's activities". Last year, when OPVN received funding from Luxemburg to purchase cereals, CAV's representative arranged for CAV cooperatives to provide that grain on a non-competitive basis (outside the prevailing tender and bid process). While CAV cooperatives collaborate with the UNC and OPVN systems, they are discouraged from dealing with private traders.

CLUSA and CAV cooperatives have managed profitable trading endeavors as well as operations that have resulted in losses. As CLUSA's director puts it "that's part of trading in a volatile market." Whether or not they can survive in that volatile market without project management assistance, close monitoring, and privileged access to capital and OPVN markets is open to doubt. Six of the 51 cooperatives with which CAV works have had serious problems with embezzlement of funds. According to a CAV representative, this number would be larger if it weren't for the careful monitoring provided by project agents. In the meantime, these cooperatives are probably displacing, or discouraging the entry of, private traders.

The International Labor Bureau's "pastoral boutique" program provides a good example of how a subsidized cooperative can displace private traders. The project organized 16 cooperative retail shops in remote zones of northern Zinder province and provided nine tons of cereal and 500,000 FCFA of start-up capital to each. In addition to regular visits by the project's expatriate staff, five project field agents dedicate 80% of their time to supervising the 16 shops' operations. In addition, the cooperatives have been granted privileged access to five Toyota pick-up trucks posted to the zone by a World Bank project. With all of this freely-provided assistance, it is not surprising that some of the "boutiques pastorales" have driven several private (non-subsidized) shops out of business. If the fragile, cooperatively-owned shops cannot survive once project supports are ended, the region may be left without a reliable source of supplies, and displaced private traders will have lost years of experience in developing a commercial route for bringing staple goods into the area.

THE BASIC ASSUMPTION: PRIVATE GRAIN MARKETING IS "UNFAIR" TO VILLAGERS

One of the major objectives of cereal banks and CAV-type marketing cooperatives is to replace the "middleman" and thereby obtain more favorable prices. The basic assumption behind this reasoning is that "middlemen" extract excess profits when they perform marketing functions.

The empirical literature tends to confirm the thesis that private markets are competitive and margins are slim.¹³ Although some authors dissent,¹⁴ most researchers who have studied the problem find no evidence of excess trader profits (Hays, Kohler, Berg, Proulx, Arnould, Waldstein, Cullen). Arnould concludes that while a few well-known merchants become very wealthy through trade, most full-time traders barely make ends meet, and most part-time traders are able to make only slim additions to their total incomes.¹⁵ For traders/transporters serving the Niamey market, Berg estimates the gross return to be under 10%.¹⁶ Cullen concludes that traders' profits are "modest on a transaction basis and their prices seem to be consistent with their costs."¹⁷

To assess traders' profits from storage, Berg (1983) assembles and analyzes monthly millet price data from 13 years of Niamey data¹⁸. His conclusion is that the widespread assumption that traders gain large profits from "speculation" is unfounded; the average annual return to interseasonal speculation on the Niamey millet market was a relatively modest 8 percent over those 13 years. This analysis of monthly price data is reviewed in the body of the present paper. Conclusions are similar: Once all costs are taken into account, interseasonal storage is not highly profitable, but it is highly risky.

¹³ For example, Alfred Waldstein emphasizes this point in his 1984 draft on Niger entitled "Where is All that Food Storage We Hear So Much About, Anyway?" He writes, "In Niger...there still are a large number of trader/transporters in the field. Numbers of smaller-scale traders simply rent space on trucks owned by others. Clearly, entry in regional and national trade has relatively high capital requirements. Yet there are numerous food staple traders at every level. No small group of traders is able to coordinate its marketing behavior, gain control of the market and enforce its prices." p. 5.

¹⁴ Notably, Barbara Harriss and Emmanuel Gregoire. See for example Gregoire's "Etat et reseaux marchands dans le commerce des vivres au Niger," CILSS, September 1989.

¹⁵ Eric Arnould "Regional Market System Development and Changes in Relations of Production in Three Communities in Zinder Province, the Niger Republic," Ph.D. dissertation, Department of Anthropology, University of Arizona, 1982, pp. 26-30.

¹⁶ Elliot Berg, "Cereals Policy Reform in the Sahel - Niger," April 1986, table 3.

¹⁷ Michael Cullen, "Pricing and Marketing Policy Reform and Current Grain Market Conditions in Niger," 1985, USAID, Niamey.

¹⁸ Elliot Berg, "Joint Program Assessment of Grain Marketing in Niger," Vol 1, 1983, pp. 66-77.

ANNEX 4b

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ANNEX 5

**RETURNS TO SPECULATIVE STORAGE
CALCULATIONS FOR RURAL MARKETS**

There are two principal reasons for private traders' reluctance to invest in speculative storage — the very high opportunity cost of capital in the Sahel, and the riskiness of investments in speculative storage. This is demonstrated by looking at seasonal price data and calculating the potential profits that could be earned by a trader investing in speculative storage. We have carried out this exercise under the following assumptions:

- Grain is purchased at its average price in the post-harvest period (October, November, December, unless otherwise noted);
- The grain is stored for six to eight months in a warehouse;
- The grain is resold at its average price in the soudure period (June, July, August);
- Physical storage costs include 50 FCFA/sac/month and a 5% physical loss over the entire storage period;
- Three different rates are presented for the opportunity cost of capital: 0%, 15%, and 40%. (We consider 40% to be the most realistic estimate of the opportunity cost of capital to a private trader¹)

¹ CRED estimates for the cost of capital in Burkina range from 27% to 60%, while Matar Gaye estimates an average rate of 39% for Senegal. Informal estimates for the other countries fall in a similar range. CRED, The Dynamics of Grain Marketing in Burkina Faso, University of Michigan, 1987, Vol. I, p. 134. Matar Gaye, "Le credit informel en milieu rural Senegalais: enquete dans les regions de Fatick et de Kaolack," ISRA, Dakar, Senegal, 1987.

BURKINA FASO²

ANNEX TABLE 5.1

PO, BURKINA FASO — WHITE SORGHUM
(6 months)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1979/80	60.0	92.0	32.0	8.1	80%	65%	40%
1980/81	64.0	84.0	20.0	7.7	38%	23%	-2%
1981/82	63.0	83.0	20.0	7.7	39%	24%	-1%
1982/83	67.0	119.0	52.0	9.5	127%	112%	87%
1983/84	116.0	130.0	14.0	10.0	7%	-8%	-33%
1984/85	81.0	97.0	16.0	8.4	19%	4%	-21%
1985/86	60.0	63.0	3.0	6.7	-12%	-27%	-52%
1986/87	35.0	60.0	25.0	6.5	106%	91%	66%
AVERAGE	68.3	91.0	22.8	8.1	50%	35%	10%

ANNEX TABLE 5.2

ZINIARE, BURKINA FASO — SORGHUM
(6 mos.)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1981/82	59.7	76.5	16.8	7.3	32%	17%	-8%
1982/83	70.6	92.4	21.8	8.1	39%	24%	-1%
1983/84	76.5	70.6	-5.9	7.0	-34%	-49%	-74%
1985/86	102.9	108.8	5.9	8.9	-6%	-21%	-46%
AVERAGE	77.4	87.1	9.6	7.9	8%	-7%	-32%

² Po and Ziniare data are from the CRPA du Centre, Ouagadougou; the Sanmatenga data are from Thiombiano, "Role des prix dans la decision paysanne de produire et de vendre les cereales traditionnelles au Burkina Faso," paper presented at the Seminaire sur les Strategies et Politiques Alimentaires au Sahel, Ouagadougou, 1989. Because of data limitations, the harvest price is the January price, *soudure* price is the July price.

ANNEX TABLE 5.3

SANMATENGA, BURKINA FASO — SORGHUM
(6 mos.)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1981/82	58.0	54.0	-4.0	6.2	-35%	-50%	-75%
1982/83	69.0	99.0	30.0	8.5	62%	47%	22%
1983/84	92.0	137.0	45.0	10.4	75%	60%	35%
1984/85	111.0	112.0	1.0	9.1	-15%	-30%	-55%
1985/86	74.0	65.0	-9.0	6.8	-43%	-58%	-83%
1986/87	43.0	54.0	11.0	6.2	22%	7%	-18%
AVERAGE	74.5	86.8	12.3	7.8	11%	-4%	-29%

Source: Thiombiano, 1989. Role des prix dans la decision paysanne de produire et de vendre les cereales traditionnelles au Burkina Faso. Seminaire sur Les Strategies et Politiques Alimentaires au Sahel, Ouagadougou.

SENEGAL³

ANNEX TABLE 5.4

LOUGA, SENEGAL (RURAL MARKETS) — MILLET
(8 months)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1987/88	65.3	72.0	6.7	7.1	-1%	-16%	-41%
1988/89	77.7	97.7	20.0	8.4	22%	7%	-18%
1989/90	76.3	93.0	16.7	8.2	17%	2%	-23%
AVERAGE	73.1	87.6	14.4	7.9	13%	-2%	-27%

³Senegal data are from the Commissariat a la Securite Alimentaire (CSA).

ANNEX TABLE 5.5

ST. LOUIS, SENEGAL (RURAL MARKETS) — MILLET
(8 months)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1987/88	74.3	85.0	10.7	7.8	6%	-9%	-34%
1988/89	89.0	105.0	16.0	8.8	12%	-3%	-28%
1989/90	93.7	102.3	8.7	8.6	0%	-15%	-40%
AVERAGE	85.7	97.4	11.8	8.4	6%	-9%	-34%

ANNEX TABLE 5.6

TAMBACOUNDA, SENEGAL (RURAL MARKETS) — MILLET
(8 months)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1987/88	51.0	73.7	22.7	7.2	46%	31%	6%
1988/89	57.3	83.3	26.0	7.7	48%	33%	8%
1989/90	59.3	89.0	29.7	8.0	55%	40%	15%
AVERAGE	55.9	82.0	26.1	7.6	49%	34%	9%

CHAD⁴

ANNEX TABLE 5.7

MAO, CHAD — MILLET
(8 months)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1987/88	75.3	176.7	101.3	12.3	177%	162%	137%
1988/89	50.0	61.3	11.3	6.6	14%	-1%	-26%
1989/90	100.0	113.3	13.3	9.2	6%	-9%	-34%
AVERAGE	75.1	117.1	42.0	9.4	66%	51%	26%

ANNEX TABLE 5.8

BOUSSO, CHAD — MILLET
(8 months)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1987/88	40.0	113.3	73.3	9.2	241%	226%	201%
1988/89	46.7	34.7	-12.0	5.2	-55%	-70%	-95%
1989/90	46.0	62.0	16.0	6.6	31%	16%	-9%
AVERAGE	44.2	70.0	25.8	7.0	72%	57%	32%

⁴ Chad data are from AEDES/SAP (Systeme d'Alerte Precoce).

NIGER⁵

ANNEX TABLE 5.9

BOUZA, NIGER (RURAL MARKET) — MILLET
 (8 months)
 (Harvest: Nov, Dec, Jan)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1987/88	60.0	72.0	12.0	7.1	12%	-3%	-28%
1988/89	50.0	63.3	13.3	6.7	20%	5%	-20%
1989/90	63.3	116.7	53.3	9.3	104%	89%	64%
AVERAGE	57.8	84.0	26.2	7.7	45%	30%	5%

ANNEX TABLE 5.10

LOGA, NIGER (RURAL MARKET) — MILLET
 (8 months)
 (Harvest: Nov, Dec, Jan)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1987/88	66.7	83.3	16.7	7.7	20%	5%	-20%
1988/89	52.3	64.0	11.7	6.7	14%	-1%	-26%
1989/90	70.0	129.0	59.0	10.0	105%	90%	65%
AVERAGE	63.0	92.1	29.1	8.1	47%	32%	7%

⁵ Niger data are from Office des Produits Vivriers du Niger (OPVN). The harvest price, or low price, is calculated as the average price for November, December, January.

ANNEX TABLE 5.11

MAINE SOROA, NIGER (RURAL) — MILLET
(8 months)
(Harvest: Nov, Dec, Jan)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1987/88	73.3	60.0	-13.3	6.5	-41%	-56%	-81%
1988/89	52.0	50.0	-2.0	6.0	-23%	-38%	-63%
1989/90	65.0	107.3	42.3	8.9	77%	62%	37%
AVERAGE	63.4	72.4	9.0	7.1	5%	-10%	-35%

ANNEX TABLE 5.12

MATAMAYE, NIGER (RURAL) — MILLET
(8 months)
(Harvest: Nov, Dec, Jan)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1987/88	36.3	40.7	4.3	5.5	-5%	-20%	-45%
1988/89	39.7	51.7	12.0	6.1	22%	7%	-18%
1989/90	60.3	97.0	36.7	8.4	70%	55%	30%
AVERAGE	45.4	63.1	17.7	6.7	29%	14%	-11%

ANNEX TABLE 5.13

QUALLAM, NIGER (RURAL) — MILLET
(8 months)
(Harvest: Nov, Dec, Jan)

	Harvest price	Soudure price	Gross return	Physical storage costs	Net annual return on invested capital under various opportunity cost assumptions		
					0%	15%	40%
1987/88	103.3	76.0	-27.3	7.3	-50%	-65%	-90%
1988/89	60.0	60.0	0.0	6.5	-16%	-31%	-56%
1989/90	78.3	122.7	44.3	9.6	66%	51%	26%
AVERAGE	80.6	86.2	5.7	7.8	0%	-15%	-40%

ANNEX 6

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