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**Grain Marketing
Credit Programs: Asset
or Liability?**

**An Evaluation of the
Credit Component of
the Malian Cereals
Market Restructuring
Program**

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EXECUTIVE SUMMARY

CREDIT

A key assumption of the Programme de Restructuration du Marché Céréalière (PRMC) was that Mali is normally a grain-deficit producer and that seasonal shortages regularly cause grain prices to rise enough, within the year, to cover the added costs of storage and make speculation profitable. Although this did occur during the drought years and in 1988 (a special case, brought about by the rice ban), since 1986 profits and losses from storage have varied greatly. This may continue to be the case in good crop years, when seasonal shortages do not appear. The lack of alternatives (including exports, industrial processes, and animal feeds) to human consumption makes it difficult to use the surplus grain, especially when several good harvests follow one another. This has meant that long-term grain storage is extremely risky and unwise for private traders.

Recommendation: The PRMC credit program should not continue to encourage speculative grain storage by village associations and traders.

There was a PRMC assumption that a storage credit program could raise producer prices by creating an extra demand from traders receiving loans for grain to be stored. Since the traders buying this grain for storage would be in direct competition with those buying grain for the retail market, prices to the producer would be higher than without this extra demand. This assumption seems to have been proved true this year, when a record harvest was put on the market, but producer prices remained stable throughout the critical postharvest period. Although producer prices were not high during this period, they were higher than they would have been without the credit-financed purchases of grain for storage. Perhaps the extra demand created by credit was even too much, making the original purchase price of the grain so high that it cannot now be put back onto the market without the trader losing money. Grain prices have remained stable since the postharvest period. This illustrates the limits of a credit program in trying to control price fluctuations.

Success in raising postharvest producer prices to better reflect the size of the harvest depends on providing the right amount of liquidity to generate increased demand. Providing the proper liquidity is a function of the size of the harvest and the range of possibilities for disposing of the stored crops. The funds provided by the 1988 PRMC credit program appear to have created a little too much liquidity and a greater demand by the traders buying for speculative purposes within the closed Malian market. This raised the postharvest prices to a level at which the traders could not recoup their costs of storage (including cost of capital) when they sold later in the year. Providing the proper level of liquidity for the market is difficult to judge. A given credit program must depend on the market awareness and sophistication of the borrowers to know just how high they can bid up the prices and still earn a profit on the transaction. An export program allows more flexibility into the equation because it provides an additional outlet for a surplus crop, protecting local price integrity.

Recommendation: The donor group should consider encouraging Malian grain exports. A study should be made to investigate export possibilities. Donors should also consider making triangular purchases of grain in Mali for food-aid shipments to neighboring countries.

If the present PRMC loans are nearly all renewed for one year, few funds will be available for new loans in 1990. If the present loans are not renewed and traders are obliged to sell off their grain (causing severe price falls) and take their losses, few traders will apply for loans next year. Whatever the path followed, the PRMC storage credit program is facing difficult decisions.

The interest rate on PRMC loans is 3-4 percent less than the lowest loans of the Banque Nationale de Développement Agricole (BNDA) and far less than the rate on commercial loans. There seems to be no reason for such a low rate; it encourages traders to substitute the PRMC loans for other higher-cost loans and causes additional speculation.

Recommendation: Raise the lending rate to 12 percent, if possible.

The stability of grain prices this year has made it unprofitable for traders to sell their stocks. One solution for this problem is to insist they sell at any price and bear the loss. Other solutions are loan renewals, emergency purchases by donors, and exports. Renewals would be simple and easy, but there is no assurance that next year's prices will be better than current prices. This would also prevent new loans next year, as all the funds would be tied up in renewals. Donors could accelerate any purchases they might have pending. If there should be any requests for tenders, several traders asked that they be limited to PRMC loan recipients. Exports, if politically acceptable, offer several advantages.

Recommendation: PRMC should decide on a strategy to resolve the current impasse before September 30, when the trader loans fall due, possibly adopting one or a combination of the above suggestions.

No signs were found of a widespread perception among loan recipients that PRMC loans are another government handout, except possibly among some politicized village groups. Traders seemed very serious and worried about what would happen if they are unable to sell except at a loss. The banks seem to have done a good job in this respect, and it should be recognized.

Apparently, banks are taking the attitude that these loans are non-recourse loans. That is, if the borrower does not repay the loan, his or her collateral can be seized and sold. But if the sale proceeds do not fully cover the loan amount, no further action would be taken against the borrower.

Recommendation: The PRMC should agree to consider these loans to be non-recourse loans.

PRICES

PRMC loan purchases caused producer grain prices to rise in the postharvest period and consumer prices to fall when these stores were sold, normally at midyear and in the preharvest period. Too successful moderation of price fluctuations, eliminating price increases to cover the cost of storage, could present a serious dilemma for the PRMC credit program, as may have happened this year. The success of a credit program, as credit, depends on the repayment of its loans; and loan repayment depends on its trader loan recipients selling their grain stocks at a profit, covering their cost of storage. This has not yet happened this year.

Without any credit program or other intervention in the coming postharvest period 1989-1990, what will happen to producer prices? It is impossible to know, as there has not been any recent, pertinent experience in Mali by which to judge. What happens will largely depend on the size of the harvest.

If the harvest is good, as seems possible at this moment, prices may go very low, especially if the heavy storage volume is still hanging over the market. In this case, if anything is to be done, moderate exports would seem to be the simplest method. The extra demand represented by grain purchases would be the equivalent of the PRMC storage loans this year. The correct export-volume should probably be determined by approximations. That is, modest amounts would be exported, with continuous monitoring by a special *Système d'Information des Marchés (SIM)* monitoring effort. Since it is the purchase of the extra grain for export, and not the export itself, that causes the price effect, several requests for tenders could be requested, using only those that seemed necessary. In

the case of an excellent harvest, the amounts exported would need to be larger. If the harvest is poor, the present heavy storage volumes would serve to moderate any price hikes, and there would not be any exports.

Recommendation: The donor group should offer to make credit available to finance these exports. The exports should be handled by private traders.

One purpose of the PRMC loans was to help raise farmers' prices. The PRMC premise seems to have been that farmers were more or less homogeneous and undifferentiated. Studies by Michigan State University (MSU) have found, however, great differences among farmers, and, therefore, very different impacts resulting from the PRMC pricing. In simulation exercises, MSU divided farmers into categories of "sell only," "buy only," and "both." The "both" group benefited the most, as it profited from the higher postharvest sale price and from the lower preharvest buying price. Those who "sold only" were helped in the postharvest period when prices rose, but hurt when prices fell in the preharvest period. Those who "bought only" had the opposite effects, being initially hurt, but later helped. The magnitudes vary with the harvest size, the quantities involved, and the timing of the transactions.

Competition was increased by the PRMC loan funds, but only momentarily and superficially. Traders with loans bought more grain as long as their loan money lasted, but they did not improve their efficiency in any noticeable way. They did not change their usual marketing practices. They did not buy earlier in the season or later. They did not buy in different markets or use different methods. They did not even change their storage practices, except to conform to the loan contract demands, and they would not store in future years with their own money. It seems unlikely they would apply for another loan, if storage were required. They prefer to concentrate on short-term buying and selling, with only incidental, working storage.

The PRMC assumption that competition was not vigorous enough in the Malian grain market is difficult to prove or disprove. The big wholesaler group is an oligopoly, by nature. There is simply not room for 100 large grain traders in Mali. Other than this group, however, competition seems reasonable in most markets. The basis for the assumption that efficiency could be improved by credit for purchasing and storing grain is not strong. At any rate, in this case, trader loan recipients did not seem to improve their efficiency in any way.

One impact of the PRMC credit program is clear: with their loan money and the program requirement to store grain as collateral, more traders have stored more grain, for longer periods, than would have happened without the loan money. Since this is one principal purpose of the PRMC, this must be counted a success, although the final consequences of this massive storage are not yet known. Hundreds of traders are now holding this grain in store, waiting to see if it will turn into a profit or a loss.

Several studies have found that grain storage in Mali does not usually suffer serious losses from insects, termites, rodents, or mold. This is true for both rural and urban stores, so there is no advantage in grain being located one place or the other.

Low producer grain prices in the postharvest period are partly caused by farmers dumping grain on the market at any price to raise money to pay the tax collector. Taxes are collected at that time because it is believed that is when the farmer is best able to pay them. These taxes are principally composed of the national head tax (*impot minimum fiscal*) and the local development tax. Although the head tax is relatively unimportant to the national government (about 2.5 percent of total revenues), the local tax is about 80 percent of local revenues, and local governments have no real tax alternatives. A prime purpose of the PRMC credit program is to avoid the usual fall in producer prices in the postharvest period and a prime cause of this fall are the taxes collected there. If tax collection is a cause of the price fall, it is at least doubtful that a storage credit program is the best tool to offset that price drop. If it is used for this purpose, the amount of credit needed would be determined by the desired price effect. This is probably a poor criterion for deciding how much grain needs to be stored in Mali.

Some measures can be taken to decrease the tax collection effects. The head tax can be greatly reduced or eliminated. The local tax cannot likely be reduced, but collection of both taxes can be spread over time.

Recommendation: The national tax should be greatly reduced, and collection of both taxes should be spread over two tranches, the first one in March and the second in June.

MARKET INFORMATION

The SIM was created in 1988, within the Office des Produits Agricoles du Mali. Able to take advantage of the years of MSU work, SIM has developed rapidly. So far, its efforts have been concentrated on gathering prices in some 43 markets and analyzing the data. More information is needed, however, such as domestic grain storage and storage intentions, world export prices for cereals, and cereals prices in neighboring countries. This would be essential for any export program.

Recommendation: Budget commitments to SIM should be strengthened and made long term, making it able to attract and hold top-flight staff and to expand and improve service. One existing extension service should be encouraged to adapt the SIM materials for local needs and to present it in meetings with farmers and traders.

CHAPTER ONE

INTRODUCTION AND BACKGROUND

THE CEREALS MARKET RESTRUCTURING PROGRAM

In 1981, Mali began a series of price policy and market restructuring reforms in the cereals subsector as part of a gradual liberalization of its economy. This process of removing legal prohibitions to private trade and taking other actions aimed at facilitating the functioning of the private sector had the objective of placing greater reliance on the market to allocate resources. During these eight years, the government of Mali (GRM) has significantly reduced legal restrictions on private entrepreneurship, abolished many state enterprises, and restricted the activities of others. The centerpiece of the liberalization program has been the liberalization of cereal marketing, which has occurred under the multidonor-financed Cereals Market Restructuring Program (known generally by its French acronym, PRMC, for Programme de Restructuration du Marche Cerealier).

The essence of this program involves a pledge by the donors to ship food aid to Mali for several years in order to help supply the urban areas with grain, in exchange for the government's agreement to abolish the state's legal monopoly of the grain trade and to encourage private sector marketing.

The goal of these reforms was the achievement of food security on a self-sustaining basis. The program's primary strategies were:

- To legalize and develop private cereals marketing;
- To improve incentives for farmers;
- To reduce subsidies to the state grain marketing system.

Beginning two years ago, with most major liberalization measures completed (free pricing, minimal role for the GRM grain marketing agency, an end to consumer and producer subsidies), the GRM and donors began to focus more on measures which would facilitate a more productive, competitive, and efficient private grain trading sector. The most important was to be an increase in credit going to private traders and village cooperatives for the purchase and storage of grain.

Credit for private grain marketing and storage was seen as important for several reasons. With the GRM's role in grain marketing and storage now being eliminated, credit was seen as necessary to permit the private sector (which traditionally had stored grain for less than a month in order to avoid government harassment and in order to turn over its capital quickly) to take up the storage functions previously handled by the government grain marketing parastatal. Credit was also seen as a way to expand competition and efficiency in the grain market by permitting small traders who traditionally had no access to bank credit to now get access to formal sector loans. Finally, credit was seen as a way to increase the prices farmers received via two mechanisms. First, to the extent that credit permitted greater grain purchases by traders at harvest, the harvest price of grain would be higher than otherwise. Second, village cooperative credit would provide farmers cash against their grain at harvest, thereby permitting them to avoid distress sales at low prices at harvest, and permitting them to buy back the grain later in the season from the co-op at a price lower than the market price would otherwise be. Finally, the increased competition among traders, as well as the increased negotiating power of farmers vis-a-vis traders (since cooperative credit gave farmers an alternative to harvest distress sales) were both seen as having a positive effect on the prices farmers received for their grain.

The first two years of the credit programs were characterized by late start up, enormous implementation problems, and very limited amounts of finance actually going to grain traders. These operational problems were carefully evaluated in mid-1988, and a new set of programs, designed to overcome the operational problems of the previous two years, was set in place.

The objective of this evaluation is to assess the impact of grain storage credit on farmers' and traders' storage and income and to make recommendations for the future of such programs. The contractor will also assess the soundness of the programs' assumptions, their impact in 1988/89, and their likely impact for the future. The contractor will examine operational problems and aspects of the programs only as they assist in the overall assessment of impact.

ECONOMIC BACKGROUND

Mali, a large landlocked nation in the West African Sahel, is among the poorest countries in the world, with a 1985 per capita GNP estimated at US \$150 (World Bank, 1987, p. 202). Eighty percent of the approximately eight million population live in rural areas. Although the country covers a large geographical area (1,240,000 square kilometers or 479,000 square miles), its resource base is limited. Much of northern Mali (about 65 percent) is covered by the Sahara desert and unsuited to agriculture. At the other extreme, there are wooded savannahs in the south receiving well over one meter of rainfall per year. All of Mali runs the risk of drought. Most of the country's population and economic activity are found in the southern half of the country, through which flow the Niger, Bani, and, Bafing Rivers. Mali's major agricultural products are cereals, peanuts, cotton, and livestock, with cotton and livestock being the two most important earners of foreign exchange. Dryland, subsistence agriculture and livestock production employ the bulk of the population. There is also limited irrigated and flood recession farming and fishing along the rivers. Agriculture and livestock account for about 80 percent of the GDP.

The performance of the agricultural sector, particularly the cereals subsector, strongly influences overall economic performance. Approximately 70 percent of the total calories in the Malian diet comes from cereals. Millet, maize, and sorghum (variously referred to hereafter as simply grain or cereals) are the major rainfed staples, and account for about 85 percent of the cereal calories. Rice provides the remaining 15 percent, although it is principally consumed in the urban areas. Most rural residents produce at least some of their cereal needs. It is variously estimated that only about 15 to 20 percent of the total grain production is sold on the market. In urban areas, consumers devote from 18-31 percent, on average, of their total expenditures to cereals purchases. Rice accounts for about half of the total calories consumed in urban areas.

Grain production is highly variable in Mali due to fluctuating rainfall. This variability in production, combined with the low proportion of production entering the market, makes the market quantities and prices highly volatile and unpredictable. This instability makes cereal marketing risky.

Until the mid-1960s, Mali was a food exporter. Since that time, a combination of bad weather and bad policy have slowed agricultural growth (Staatz, Dione, and Dembele, 1989, p. 704). Throughout the 1970s, Mali became increasingly dependent on imported food, much of it in the form of food aid. Most of the cereal imports have been rice, with imports accounting for approximately half of total rice consumption. Historically, imports of millet, maize, and sorghum have been minimal except in years of drought. The last severe drought in Mali occurred between late 1982 and 1985, greatly reducing agricultural output. Real per capita GDP fell between 1983 and 1985. Improved rainfall and harvests in late 1985 and during the years since have provided substantial GDP growth in recent years.

CHAPTER TWO

TWO KEY ASSUMPTIONS OF THE PRMC CREDIT PROGRAM

ASSUMPTION: MALI IS A GRAIN DEFICIT PRODUCER

One basic PRMC credit program assumption, never really questioned, apparently, was that grain prices in Mali regularly rise enough seasonally, that is, within the year, to cover the costs of storage and leave a profit. This did occur, spectacularly, during the recent drought years. Drought years are not typical years, of course, but they left many lasting impressions. Unfortunately, agricultural statistics here were quite unreliable until the last very few years, so there was no good historical base for the PRMC program designers to examine their hypothesis of predictable seasonal price rises. Perhaps, in times past, grain prices did rise seasonally, but the regularity of these rises may not have been as constant, as precisely predictable, as people now remember.

Whatever the pre-drought seasonal price pattern may have been, the general belief today is that grain prices do normally rise from a post-harvest low to a pre-harvest high, and many people insist that speculating grain traders make large profits from this process. MSU surveys and the consultant's interviews with traders indicate that very few traders stored for more than a few days, prior to the PRMC credit program, keeping only the minimum working store needed to even out irregular purchases and sales. Traders inevitably say they do not believe there are regular, predictable seasonal price changes, and this is the most frequent reason they give for not keeping more than small working stores. It would seem strange, at least, if price rises were so predictable and good profits so certain, that traders would overlook such an opportunity. Certainly, since grain harvest volumes returned to more or less normal sizes in late 1985, grain prices have not exhibited any predictable regularity. (See Table 1 and Figure 1.) In five of the last eight years, prices started up in February or March, but in the other three, they were either stable or fell. Further, three of these five years (1983-84-85) followed poor harvests, and in a fourth year, 1988, the price rise was triggered by the GRM ban on rice imports. So, four of the five years were abnormal and the other year, 1982, had only a moderate increase. In 1986, prices trended downward all year, and 1989 has so far been stable or slightly downward. Successful speculation requires considerable accuracy in knowing when to buy and when to sell, or whether to buy at all. The seasonal "trends" of the last few years have not generally been predictable except during the special circumstances of the drought years. Under these conditions, speculation is essentially a lottery.

Basically, this assumption of seasonal price rises depends of the further assumption that Mali is normally a deficit grain producer, as in the drought years, and that grain shortages will regularly appear as the year progresses. In fact, Mali was once known as a grain exporter, prior to the unfortunate agricultural policies initiated in the early 1960s and continued through that decade and the following. In good harvest years, Mali's grain production is more than its population will consume, leaving a surplus. This year, 1989, part of the surplus has been bought and stored using PRMC credit, essentially what the Office des Produits Agricoles du Mali (OPAM, the parastatal agricultural marketing agency) used to do. It is not yet generally recognized that surpluses above what the Malian population normally eats will not be bought in country at any reasonable price. Since they cannot be stored indefinitely, without deterioration and heavy storage financial costs, they must eventually spoil or be exported.

FIGURE 1
MONTHLY RETAIL PRICES OF MILLET
BAMAKO

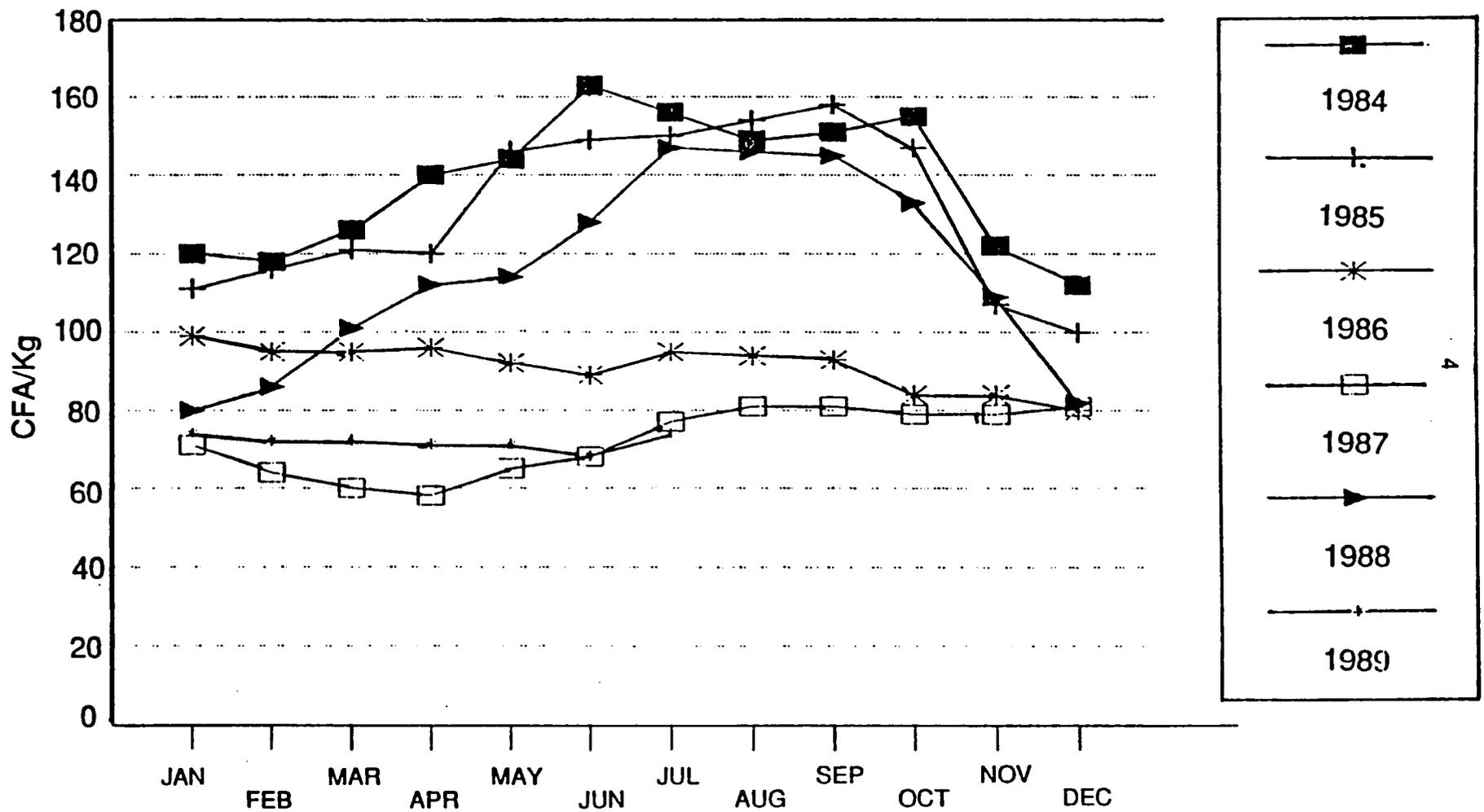


TABLE I
MONTHLY RETAIL PRICES OF MILLET IN BAMAKO
(CFA/Kg)

	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Prod.</u>
1982	81	77	78	82	82	85	90	91	94	95	87	87	999
1983	85	79	83	86	96	107	108	133	136	136	127	113	1080
1984	120	118	126	140	144	163	156	149	151	155	122	112	1147
1985	111	116	121	120	146	149	150	154	158	147	107	100	901
1986	99	95	95	96	92	89	95	94	93	84	84	80	1245
1987	71	64	60	58	65	68	77	81	81	79	79	81	1288
1988	80	86	101	112	114	128	147	146	145	133	109	82	1222
1989	74	72	72	71	71	68	74						1693

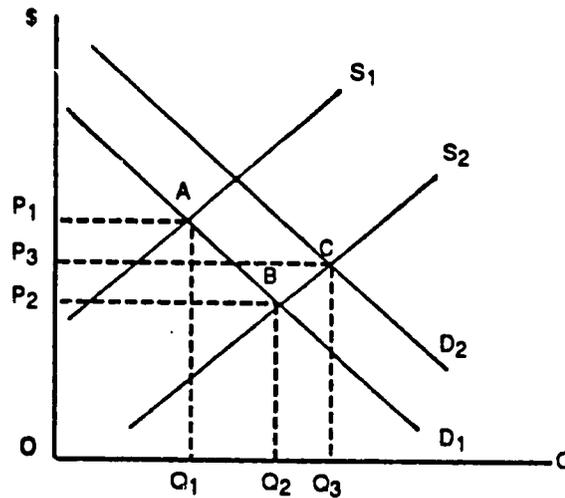
ASSUMPTION: A GRAIN STORAGE PROGRAM WILL RAISE PRICES

A second basic assumption is that a storage credit program could raise producer prices in the post-harvest period. This assumption appears to have been borne out this year, if the word "raise" is understood in the context of what prices would have been without the added demand provided by the PRMC credit program.² In absolute terms, prices may be lower than in previous years, as is the case in 1989 compared with prices in 1988, for a variety of reasons, but higher, nevertheless, than they would have been without the new demand of the credit program for grain to be put into storage. The record late-1988 harvest was expected to drive prices very low, and they did fall considerably, but knowledgeable grain market researchers, bankers, and traders, as well as economic logic, agree that prices are higher this year than they would have been without the credit program. There may well have been other responsible factors, too, as illegal exports, or an overestimation of the harvest size.

¹ The Bamako retail millet price series is used here for several reasons. It is considered the only reliable grain price series going back more than four or five years. All the major grains -- millet, sorghum, and rice -- are good substitutes for one another, so shortages or surpluses, and changes in prices, of one grain are quickly reflected in the prices of the others. The Bamako market is the principal grain market in Mali, receiving supplies from all the important production areas for consumption in Bamako and for redistribution to deficit areas. Various MSU studies have shown its close integration, both spatially and temporally, with other markets.

² In Figure 2, following, the initial producer supply curve S_1 and the retail market demand curve D_1 are in equilibrium at point A. In the post-harvest period, the increased amount offered by farmers causes the supply curve to shift to the right to S_2 , where the new equilibrium point with D_1 is at B, with the price falling to P_2 . However, in the same post-harvest period, the extra demand for grain for storage, made possible by the PRMC credit program, causes the original demand curve to shift up to D_2 and a new equilibrium at point C, with price P_3 . While P_3 is lower than the former equilibrium at P_1 , still, given the new supply curve S_2 resulting from the recent harvest, it is higher than the price P_2 which would have prevailed without the new storage demand for grain.

FIGURE 2



The idea behind this PRMC assumption was simple, but effective: creating an extra demand from traders for grain to be stored. Since the loanee traders buying this grain for storage would be in direct competition with traders buying for the retail market, producer prices would be higher than without the loan-induced extra demand. As noted above, it is generally believed this occurred this year. It is possible the extra credit-created demand effect was even too much in the post-harvest period, holding prices too high. At any rate, the cost of the grain put into storage was so high that it cannot now be put back on the market without the trader losing money.

The assumed regular seasonal rise, so essential to the success of the credit program, has not occurred to date this year. Prices in mid-August are about the same as they were in January. The arrival of the rains, late, but regular now they have started, appears to presage a good harvest beginning in late October and early November. If the rains do continue into September, farmers will be more and more willing to sell from their emergency stores, in the knowledge that they will be able to replenish them with the new harvest.

Success in supporting producer prices some desired degree, neither too much nor too little, obviously depends on creating just the right amount of extra demand. Obviously, the right amount of extra demand depends on the size of the harvest. The right amount for a small harvest will not be the same as the right amount for a big harvest. By the same token, the loan money needed to buy the right amount in each case will vary, too.³ But the funds available for the PRMC credit program were not determined by the size of the 1988 harvest. By chance, the amount of PRMC credit money available this year may have been a little too much for this particular harvest volume and to have created too much extra demand by the traders buying for storage. If so, this pushed post-harvest prices too high and has prevented traders from profitably selling their stores. This now threatens the whole program with serious problems. The PRMC grain storage credit absolutely depends on the seasonal price rises predicated in the design. Without them, trader loanees cannot sell their stored grain profitably and will lose money.

³ The use of the credit funds is important, too. If these are used to replace capital and credit previously devoted to grain buying, the net effect of the new funds may be zero. Many grain buyers are engaged in multiple activities, buying and selling different goods. They are usually chronically short of capital, using credit from family, friends, and suppliers. A new credit source for one line of business may free money normally employed there to be passed to some other activity. Several MSU and PRMC evaluation studies, especially those of Mona Mehta, have found that a majority of the PRMC trader loanees declare their new loan has replaced other credit formerly used for grain purchases. The village association loanees, on the other hand, with some few exceptions, have used the entire loan sum to buy grain. Since they had no previous credit and did not buy grain, these funds are net additions to the demand for grain. The net addition represented by the PRMC credit is thus impossible to determine, but it is clearly less than might appear at first glance, lessening the price impact the program would otherwise have.

PRESENT LOAN PROSPECTS AND THE PRMC LOAN RENEWAL POLICY

The chances of the current loans being repaid on time are decreasing each day. Fortunately for the country, given the time of the year (September) and the generally satisfactory rains, the prospects for a good harvest this year are favorable. Grain prices have hardly varied since January, and there now seems little likelihood of an important rise soon. If the next harvest is good and there is a significant carryover of this year's grain stores, prices in 1990 may be no higher than in 1989, and may even drop. Unless the GRM begins to encourage grain exports, the prospects for a grain price rise in the near future are slight.

An important decision which will probably soon face PRMC policy makers is whether to renew delinquent loans for some additional period or to refuse any renewals and seize the grain held as collateral. It is not yet certain how many loans may be involved, but it will likely be most of them. PRMC internal discussions and consultations with the banks should begin as soon as possible, in order to reduce to a minimum any delay in the banks being able to announce their actions.

The present grain loans expire on September 30, just prior to the new harvest beginning soon thereafter.

What should be done? Asked this question, bankers said this was a decision for the PRMC to make. There are many issues to consider. The following discussion looks first at the AVs and then at the trader loanees.

The PRMC credit line for village associations (AVs) presents a risk of real damage to some of them in case they don't repay their loans. It is generally recognized that loanees this year have faced an impossible task in trying to make a profit, or just to break even, on their grain stocks purchased with PRMC money. Through no fault of the associations, the expected seasonal price rises have not occurred this year. Their loans come due September 30, along the traders' loans.

A few AVs were expressly created to participate in the PRMC credit program, but the great majority already existed, most for several years. If the new AVs fail because they fall into default, it will be unfortunate, but the failure will not have grave consequences for anyone. The PRMC credit program will lose some small part of its funds, and that will end the matter.

But, if the AV is a functioning institution, with several years of experience incorporated in its staff and operations, a loan failure is potentially more serious, possibly even destabilizing in some cases.

Since the AVs are legal entities, their farmer members are not individually responsible for the AVs' debts. No other security was required for the AV loans than the grain collateral.

The policy decisions to be made regarding traders' loans are identical to those for the AVs. Since the two groups have different circumstances, however, the policy decisions need not necessarily be the same.

The differences should not be over-estimated between the lower end of the trader scale and the AV members, in terms either of sophistication or well-being. Other than these traders, the argument can be made that the traders freely entered into the grain storage loans. In spite of their usual dislike of speculative, long-term stores, they were led by easy money and greed to gamble on rising prices. They lost the wager and the present lesson will not be forgotten soon. It could also be argued that the PRMC credit design assumption of regular seasonal price rises was flawed and the

traders therefore should not bear all the responsibility. At any rate, it is likely the traders will now return to their customary buying and selling and leave the speculating to others.⁴

The traders we talked to were quite worried. In fact, they were not much interested in discussing any other aspects of the loan. They have each put up a very large sum of money, up to one million FCFA (about US \$3,000), equal to 20 percent of their loans, which they may lose if their stored grain cannot be sold to cover the loan amount. Many traders borrowed money to make this payment. Without information on their annual incomes, it is impossible to guess what the loss of these deposits would mean to them.

RECOURSE OR NON-RECOURSE LOANS

The PRMC must first choose between renewing the existing loans or not. If they are renewed, the immediate problem is resolved, although, of course, the long-run issue of selling the grain and repaying the loan remains. If the PRMC decision is not to renew the loans, there is another immediate policy choice which must be made. This is whether to accept the AV grain collateral stores as acceptable repayment of the loans (a non-recourse type loan), even if the value of the grain store does not fully cover the loan amount, or to require full repayment of the entire loan amount. That is, sale of the grain collateral at present prices will obviously not cover full repayment of the loan, or the AVs would sell the grain themselves and pay off their loans. Therefore, if these collateral stocks are seized by the banks and sold in the near future, the proceeds will not fully cover the loan amounts. What is to be done about the unpaid remainder?

The consultant has heard different opinions about the best decisions to make. Two BNDA staff members (a branch bank chief and a division chief at the headquarters) had similar views. (A BMCD branch chief said essentially the same thing about his trader loans). First, they agreed that it was up to the PRMC to decide what to do about loans which are delinquent on October 1, and it is up to the bank to carry out the PRMC decision. The branch bank chief said he thought the loans should be renewed, while the division chief did not give an opinion. Second, they both did favor considering the loans to be non-recourse.

They said, in separate interviews, that the PRMC program is outside the bank's usual credit lines. Unless there is evidence, in a particular AV case, of malfeasance, bad faith, or accounting irregularities, they do not want the PRMC loan results to affect their established relations with the AVs. They believe that if an AV can account for all the loan funds received and its collateral grain stores are present in the proper amount, it should be considered that it has fulfilled its obligations and is blameless, and they would like to see the matter ended there. They did not give opinions on what to do with the grain collateral.

Another view of how incomplete loan repayment should affect AVs was expressed by an OHV project staff member. He felt the bank should make no distinction between a PRMC loan and any other loan. The AVs should be held strictly accountable. Any usual consequences for incomplete repayment of the non-PRMC loans should apply in the case of PRMC loans, such as restriction of next year's credit lines or amounts. The OHV, for example, normally continues giving production credit to delinquent borrowers, but refuses any new investment credit until the loan repayment has been completed.

⁴ In recent Malian history, speculative, long-term storage has largely been carried out by OPAM, but it now holds only the national emergency stores. A few of the larger wholesalers have done some long-term storage, but mostly as working stocks appropriate to their volume of business. The principal owners of grain in long-term storage have been the grain producers themselves, keeping it in on-farm stores. If grain traders do go back to their former custom of holding only short-term working stocks, grain producers will take up the slack.

THE GRAIN COLLATERAL

Whatever is decided about the issue of recourse or non-recourse type loans, if the loans are not renewed, there remains the problem of the disposal of the grain collateral. Will the delinquent loanees be ordered to sell this within some brief period, say 15 or 30 days, and turn the funds over to the bank? Will the bank take control of this grain and sell it itself? Normally, the bank would seize the collateral and dispose of it itself or through an agent.

If it is left to the AVs to sell off the grain, there would be a temptation for whoever is responsible to either carelessly sell it at any price or to carefully sell it at the best possible price and then underdeclare this price in statements to the bank. On the other hand, the bank may not have staff members skilled in managing and marketing a rather large amount of grain, scattered in small lots over a large territory. Presumably, the bank would prepare requests for purchase bids, listing the details of each lot.

Any sudden, massive release of grain on the retail market, especially in the approaching post-harvest period, would cause a radical fall in prices. Any time it is released, in fact, it will lower prices. The effects of this fall will be felt equally by those who participated in the PRMC credits and those who did not. All producers will receive a lower price for grain they sell in the market. All traders' working-inventory stores will immediately lose value in the same proportion as grain prices fall. This could have very unfortunate effects on acceptance of the whole idea of market liberalization and strengthen the hand of those who advocate market controls to avoid the alleged chaos of liberalization.

Consumers would benefit from the lower prices, of course, but at the expense of the producers and traders.

For the traders, the basic policy decisions and possibilities for the PRMC remain as for the AVs: to renew or not to renew the loans, to consider the loans to be recourse or non-recourse loans in case of default, and to resolve how to handle the grain collateral in case of default.

One dilemma presents itself: If the current loans are renewed, there will be little loan money available for the coming post-harvest season; if loans are not renewed and the grain collateral is sold off quickly, there will be some loan funds available, but will traders want it? Either way, then, the next post-harvest season may see the first totally unsupported Malian grain market in recent history.

INTEREST RATES

In an effort to reduce costs to borrowers and to be more attractive to them, the PRMC loan interest rate was set at 8 percent. The current commercial bank rate is 13 percent. When PRMC rates are set lower than the going commercial rate, this encourages the substitution of the PRMC credit for other existing credits, without increasing the total funds available for grain purchase, and thus without contributing to the price support objective of the PRMC program. The pull of low-rate loans was especially evident during 1987, when the credit program for larger wholesalers gave excessive amounts to some individuals with political influence. Their subsequent low repayment rate was below that of the AVs, a common occurrence when powerful people are attracted by subsidized interest rates.

The administrative costs and the risks of handling these loans are higher than for normal loans. To better cover loan costs and to make its loans less attractive as substitutes for already existing loans, the PRMC should raise its rate to 13 percent or higher rate charged by banks for their other loans.

The AV credit program might well be an exception to this general rule. Its credits are not used as substitutes for other, higher cost loans, but are net additions, for the good reason that AVs do not have any other loans for grain purchases. However, the BNDA, charged with the AV credit line, has especially high servicing costs on these loans, due to the dispersed location of many of the groups. The program can not be self-sustaining at the present 8 percent rate. Therefore, on balance, it is considered that the rate for the AVs should also be raised to 13 percent.

LOAN DESIGNS

The PRMC loan designs for each credit program are standard, with the only variation in loan amounts. Many observers believe these designs should attempt to adapt themselves more closely to the differing circumstances of the loanees. Credit for the AVs, for example, has one single set of purposes and procedures, one loan limit, and identical due dates, regardless of whether the AV is in a surplus grain production area or in a deficit zone. In practice, there is considerable confusion about the exact purposes of the AV credit program. The formal, stated purposes are to support producer prices, to encourage village cereals storage, and to improve the efficiency of the cereals markets by acting against speculation. What these really mean is unclear enough that AVs can interpret them in many different ways and act accordingly. In the same production area, some AVs essentially acted like any other grain trader, buying not only from members, but also in local markets, even hiring commission buyers to help them. Others bought only from members, with the intention of selling their stores at a profit when the awaited seasonal rise appeared. Still others intended to buy and store their members' grain for later re-sale back to members when the seasonal price rise occurred. All of these depended on the flawed assumption of the regular seasonal price rise, however, and, regardless of their original intentions, all of them still have their grain in stores.

So, while the formal loan design may not have been flexible enough in its understanding of the different AV interests, these groups have, in reality, generally managed their funds as they saw fit.

The consultant questions the concept of the AV as a cereals store for later resale to members. After a poor harvest, when prices do go up seasonally, members expect to buy at a cheaper price at the AV than in the open market, arguing that the group should not be making a profit at their expense, that, after all, it is their own grain they are buying back. In short, the AV should not act like a trader. If the AV operates on this idea, then, after a poor harvest, it may be performing a good service for its members. Whether it is a good service for its own well-being, however, is not so clear. After a good harvest, prices on the open market may not go up, and may even go down; if the AV tries to price its grain to members high enough to recover its original cost plus storage expenses, the members will bypass the AV and go to the market for their needs. Thus, the AV will find it difficult to make a profit when prices rise seasonally and difficult to recover expenses when prices fall seasonally.

Loan designs for traders might also vary, as traders, too, have different needs. To some extent, the PRMC has been sensitive to this by creating the different loan programs for traders, but within each program there is no flexibility. The small trader, especially, has only a single program possibility, the Economic Interest Groups (Groupements d'Interet Economique, known usually as the GIE). Traders in surplus production zones have different customs from those traders in deficit zones or in redistribution zones. Traders in Koutiala, Bamako, and Mopti may have very different needs.

How feasible it would be in practice to attempt to adjust the loan designs to fit the different circumstances of each zone is difficult to say. Experimental changes might be made in restricted areas, if the banks would agree to cooperate. It would be a time-consuming task to design, implement, monitor, and evaluate. Even within a zone, there is great variability in the circumstances and interests of neighboring AVs. The basic question would seem to be the overall concept of the grain credit program in general, dependent as it is on the seasonal price rises that don't always occur.

LOANS AS HANDOUTS

Fortunately, there does not appear to be any widespread perception of the PRMC loans as just another government handout, with the exception of a few politicized AVs. To the contrary, trader loanees whom the consultant met seemed very serious and worried about their pending loan repayments. Again, with few exceptions, no one talked of the government having to do something to save the situation. No one talked of the possibility of the loans being written off. One trader, a local Chamber of Commerce president, who was in a hurry to go to a meeting with the governor, worriedly said someone was going to have to help them as they obviously could not help themselves, given the failure of the seasonal price rises this year.

There was a universal hope among traders that something would be done, although there were few concrete suggestions. Two traders said that tender requests for grain sales to government and non-governmental organizations should be restricted to PRMC loanees. Some larger traders, especially, believe the government can not afford to let the program fail. Many traders feel the loans should at least be extended for a year. Asked if they really believed prices would rise next year, given the apparent good harvest which is coming soon, they were not optimistic and said that an extension might only prolong a bad situation. Their confusion and uncertainty are quite reasonable, since, for the great majority of small and medium traders, this is their first experience with a bank loan and with long-term grain storage.

The banks seem to have done a good job in promoting the impression that these loans are serious business loans and not some government handout. In fact, some banks have been stricter than intended by the PRMC agreements in approving loan applications.

The banks, judging from the small sample interviewed, do believe these loans should be considered non-recourse. They said that as long as the traders have complied with the loan terms of buying and selling the correct amounts of grain, they considered the traders to be blameless and to have satisfied their obligations. The traders could still lose up to their 20 percent loan contribution, if, as expected, the grain collateral sale proceeds don't cover the loan amount.

CONCLUSIONS AND RECOMMENDATIONS

1. The assumption that Mali is normally a grain deficit producer and, therefore, that seasonal price rises occur predictably enough to make speculative storage a profitable affair, is highly doubtful. While the grain price series available is too short to permit a definitive statement, the experience of the last four years makes it clearly evident that price changes can be quite abrupt and unpredictable. The customary refusal of most grain traders to store for more than a few days is thus shown to have a sound basis. Prices do rise seasonally in poor harvest years, as shortages occur later in the year, worsened by producers who are forced to sell grain soon after harvest to obtain needed cash. In a good harvest year, without exports or some other alternative use for the grain, domestic consumption will not increase enough to avoid very significant price drops.

Reliance on the assumption that Mali was normally a grain deficit producer was the basis for the belief that long-term grain storage was profitable and should be encouraged through a credit program. Since the experience of the last several years shows this to often be untrue, it is recommended that the PRMC credit program should not continue to encourage grain storage by farmers' associations and private traders.

2. The second basic assumption of the PRMC program was that a grain storage program would raise producer prices. "Raised" prices must be understood as relative to what prices would have been without the credit program's added demand. In this sense, it seems certain that the PRMC credit did significantly help support producer grain prices in 1989. Other factors, as illegal exports, also played a role, but were probably far less important than the credit. The crucial factor was that

storage added to the demand for grain and reduced the supply going to the retail market. Simple working capital credit would not have had this effect.

The debility of the storage concept, in a good harvest year, is that this grain must eventually be returned to the retail market. If grain supplies for domestic consumption are adequate, and there is no export, retail prices may not seasonally rise sufficiently to profitably sell this stored grain. Profitable de-stocking of this grain is essential to the success of the credit program.

Another serious problem with the grain-storage credit concept is that the amount of credit needed for any given price effect will vary with the size of the harvest. Unfortunately, no one knows what the price effect of a given amount of credit will be on a given sized harvest. To further aggravate the problem, because of weather uncertainty and inadequate crop estimation data, no one can be sure in advance what the proximate size of the coming harvest will be, anyway.

3. The chances of the current PRMC grain loans being repaid before the September 30 due date are daily becoming less. The PRMC must make several policy decisions. The first is whether to renew delinquent loans. The second decision is whether to consider the loans to be recourse or non-recourse. The third is what to do with any grain collateral which is seized. Separate decisions should be made for the AVs and for the traders; they may well be the same, but this is not necessarily so.

The consultant recommends that:

- The loans be renewed for six months, to see if the government is going to really permit exports or not, and to allow the PRMC to follow the evolution of prices and decide what its definitive policies should be:
- The loans be considered to be non-recourse; and
- Discussions be started as soon as possible with the banks regarding the procedures to be followed with any grain collateral which is seized for loan nonpayment.

4. There is no justification for keeping the PRMC interest rates below that of other bank loans. It is recommended that the rate be increased to equal the normal bank rate (market rate).

5. While the loan designs are probably not optimal, it would be time consuming to attempt to improve them, get the banks' agreement, implement the changes, and monitor the results. In practice, without formal approval, the AVs have generally succeeded in adapting the loans to their main desires. It is recommended that the loan designs be left essentially as they are.

6. The PRMC loans have not been widely perceived as government handouts.

CHAPTER THREE

PRICE IMPACTS OF THE PRMC CREDIT PROGRAM

PRICE IMPACTS ON FARMERS

One of the principal purposes of the PRMC credit program was to raise farmers' grain prices in the post-harvest period. Buying grain for storage at this time was expected to raise farm prices during this period, while selling the stored grain later was expected to moderate the seasonal price rises at mid-year and in the pre-harvest period.

"Farmers" were apparently assumed to be a more or less homogeneous group, all producing grain and all selling in the market at similar times. Michigan State university surveys found farmers to be dissimilar in many ways. For analytical purposes, MSU researchers desegregated their sample farmers into several groups.¹ Farmers who only sold grain were classified as "sell only." Farmers who only bought grain were classed as "buy only." Farmers who both bought and sold grain were classed as "both." There was a fourth group of farmers who neither bought nor sold in the market. These were classed as having no transactions. In fact, most of the "sell only" farmers did some buying, and the "buy only" farmers did some selling. The "sell only" farmers could perhaps be considered "net sellers," having sold more than they bought, while the "buy onlys" were "net buyers." To avoid confusion, however, the original MSU classifications will be used here.

The survey covered some 185 randomly selected farmers in two zones, the CMDT and the OHV, during the period 1985-1988. This period had three very different production years. The first year, 1985-1986, was considered a good production year following a bad production year. The second year, 1986-1987, was a very good production year, following the good 1985-1986 year. The third year, 1987-1988, was considered by MSU to have been a poor production year following the previous very good year.

The survey showed widely different patterns of market practices. These varied not only by the MSU farmer categories, but also by zone. The CMDT zone is a grain exporting zone, while the OHV is an importing zone.

The CMDT buy-only farmers appeared to be involved in the market to make up for deficits in their own household production. The number of households buying grain and the volume bought increased in poor production years relative to good years. The number of buy-only households varied inversely with the type of production year, going from 29 percent of the sample in the worst production year to 15 percent in the best production year. Seasonal trends in their grain purchases varied from year to year, again generally reflecting the type of production year and how long household stocks were likely to carry the family. In general, these families buy least in the post-harvest season, when grain prices are lowest. Most of their purchases occur later, when prices tend to be at their annual highs.

The CMDT sell-only farmers were the most important group in this zone, comprising 45 to 60 percent of the sample farmers there. It appears that these farmers are selling to unload surplus production rather than because they are forced to sell to meet cash needs. Most, or all, of these farmers produce cotton and use the cash from its sale to meet their post-harvest cash requirements,

¹ The MSU data show "extreme degrees of heterogeneity among households within a village, villages within a zone, and zones within the country." It is very difficult to generalize in these circumstances. Even within the categories used by MSU, they note that the price and income impacts of the PRMC credit program depend on the timing of sales and purchases by each household. Buying or selling earlier or later or changing the relative magnitudes of earlier or later transactions will affect the impact results. (See D'Agostino, Staatz, and Webber.)

such as tax payments. This group of farmers sold most of their grain in the third and fourth quarters of the year, taking advantage of seasonal price rises occurring in some years. This timing of their sales greatly improved their income during the drought years, when high seasonal price rises occurred. A storage credit program which successfully moderated price rises, however, would hurt them if they continued selling during this time of the year.

The CMDT buy-and-sell group of sample farmers appears to purchase grain to make up for deficits in its own production. They seem to be making forced sales early in the year (to meet tax, ceremonial, and other expenses) and then making purchases later in the year to meet consumption needs.

The OHV buy-only group buys grain more or less evenly across the year, with no significant seasonal pattern.

The OHV sell-only group, excluding those farmers who did not participate in the market at all, was the least important in the OHV in terms of the number of households and the quantities of grain traded. They concentrated their sales in the first two quarters of the year, when prices are generally lowest. It appears these sales may be for post-harvest cash needs, especially tax payments.

The OHV buy-and-sell group tends to sell its grain very early in the year when prices are low and to buy grain later in the year at annual price highs.

MSU researchers carried out some simulation exercises, using the data analyzed above to represent a "before-PRMC credit program" scenario. Two simple scenarios were constructed to model the effects of a credit program on farm revenues and expenditures from grain transactions. The credit program would cover both AVs and traders. The scenarios were carried out for two different types of years: a mediocre production year, as 1987-1988, and a good production year, as 1986-1987.

The first scenario assumed the credit program would increase the first quarter post-harvest price for grain by 20 percent and decrease the fourth quarter pre-harvest price 20 percent below that which would occur without the credit program. The second scenario was similar to the first, except it allowed the decreased prices in the fourth quarter to be spread between the third and fourth quarters, lowering prices by 15 percent in each quarter.

The most striking result was that the group of farmers most positively affected was the "both" group in both years under both scenarios. In the mediocre production year, their net revenues went up from 16 to 23 percent under the first scenario and from 21 to 33 percent with the second scenario. This group received the benefits of both the post-harvest price hike when they sold their grain and the pre-harvest price moderation effect when they had to buy grain then. The "buy-onlys" and "sell-onlys" under the first scenario didn't see a positive or negative change of more than 3 percent. The "buy-onlys" were hurt by the post-harvest price hike, but then benefitted from the pre-harvest price moderation, the two effects more or less balancing each other out. The "sell-onlys" were not helped much by the post-harvest price hike, as one might expect, because they don't usually sell their grain then, but keep it to sell in the third and fourth quarters when prices have sometimes been higher. This same practice of selling later in the year hurt them because of the supposition that price rises then were being moderated by the credit program. Under the second scenario for the mediocre year, the positive effect on "buy-onlys" net revenues was more marked, as their net revenues went up 8-11 percent. The "sell-onlys" under the second scenario suffered a net revenue loss of 7 percent. In sum, in this mediocre production year, the credit program would have the desired positive effect on the relatively "worse-off" groups of farmers in the sample.

The surplus production year had similar results, but more marked. Again, the "boths" had the largest absolute and percentage increases in net revenues. Again, too, the only group that did not benefit financially from the credit program in this second year was the "sell-onlys." Their net grain revenues dropped 8 percent this time.

The MSU study found that the impact of increasing the post-harvest price farmers receive for their grains is most likely to be felt by the "worst-off" category of sellers: those who cannot wait for seasonal price increases to sell their grain. These post-harvest sales tend to be involuntary sales to meet pressing cash needs, such as taxes, ceremonies, and so forth. If farmers have a target income to meet these needs, then higher post-harvest prices mean these farmers can sell less grain to get the same level of income. This grain can be retained for home consumption later in the year, reducing the farmer's need to buy so much grain later in the year.

The simulation exercises corroborate what can be deduced intuitively: the greatest positive impact of the credit program will be felt by farmers involved in both buying and selling cereals. They receive a double benefit, as they typically sell their grain in the post-harvest period when the credit is stimulating grain prices, and they buy back grain later in the year when grain supplies released from storage are moderating seasonal price rises.

The only losers in the simulation exercise are the "sell-onlys," and this is because they are presumed to hold on to their grain until late in the year, waiting for possible seasonal price rises. The assumption that these farmers would sell late in the year was retained in the simulation exercises only because that was their practice during the MSU survey years prior to the PRMC credit program. If the scenario presented here occurred for one or two years, these farmers would probably become more flexible in choosing their sales periods.

In a simulation exercise like this, who wins and who loses with the implementation of a credit program depends on several assumptions one makes about the impact of the program on seasonal price fluctuations, long-term storage strategies, and so forth. It should be noted that winners and losers are essentially the same under the different annual harvest volume changes. Changes in the harvest volume principally affect the magnitude of the benefit or loss, rather than determining who won or lost in a particular scenario.

The assumptions for this exercise specified a 20 percent rise in post-harvest prices and a 20 percent fall in pre-harvest prices. It seems certain the PRMC credit did raise the post-harvest price relative to what it would have been without the credit, but, since the stored grain has not yet been sold, its eventual effect is not yet known.

The analysis above would apply equally to farmers who are members of an AV, affecting them according to their categories of buyer, seller, or both in the same way. AV farmers would receive the same benefits or losses as non-member farmers. However, as AV members, they would benefit in several additional ways. They sell their grain in their village and don't have to transport it to a weekly market, which may be several kilometers away. They know the price they will receive from the AV and can compare it with the open market prices to be sure it is as high. They don't have to worry about the price falling. These are significant non-monetary benefits.

The associations themselves, however, are more like the traders, whose functions they are now partly performing. Assuming the seasonal price rise occurs, they could sell and profit just as traders would. Unfortunately for the AVs, this was not a good year for storage speculation. The AVs have an important advantage vis-a-vis the traders, in not having to put up 20 percent of the loan amount received. If the loans are declared to be non-recourse, the AV has only to turn over its grain collateral and its account is cleared. If the loans are not considered to be non-recourse, some of the AVs' assets might theoretically be seized to make up the shortfall, but this is highly unlikely in practice. The AV bank, the BNDA, does not want to jeopardize its relations with its principal clients because of the PRMC loans and might well not order any seizures, whatever the PRMC decision about the non-recourse issue.

It appears that some AVs may have abused their ability to set the price they paid for their members' grain, paying more than the going rate in the market. How widespread this practice was is not known, but it would always be an obvious temptation for members to pay themselves well. However, it must be recognized that it is difficult for AVs to change their prices in the same way

traders do, paying one member a certain price today and another member another price tomorrow, so there could be a tendency to set the initial price on the high side, to try to avoid frequent changes later.

IMPACT ON FARMERS' GRAIN PRODUCTION

Assumption: Increased Grain Prices Stimulate Production

The PRMC designers believed that higher cereals prices were necessary to stimulate farmers to increase their production of these grains. It was assumed that farmers had the potential capacity to increase their production. Two recent studies call into question the extent of this capacity.

An analysis of data collected by Michigan State University surveys in the OHV and CMDT zones indicates that three principal factors influenced the households' ability to produce a net surplus of grains for the market: the rainfall and soil conditions, the level of farm technology, and the institutional supporting services. Of these only the level of farm technology (primarily animal traction equipment) is subject to the family's control and could be acquired if grain prices increased sufficiently to cover its cost. Other critical determinants were: the size of the farms' labor force, the availability of cash income from non-farm activities of help finance input purchases, and the households' involvement in cotton production (D'Agostino, pp. 103-127, as described in Staatz, Dione, and Denibele, 1989). None of these factors would be greatly influenced by an increase in cereals prices.

The two zones are very similar agro-ecologically, but they differ significantly in their amount and quality of marketing infrastructure and agricultural supporting services. Each zone was subdivided into two sub-zones, according to the amount of rainfall received.

None of these factors would be greatly influenced by an increase in cereals prices.

The two zones are very similar agro-ecologically, but they differ significantly in their amount and quality of marketing infrastructure and agricultural supporting services. Each zone was subdivided into two sub-zones, according to the amount of rainfall received.

The conclusion of the analysis was that it was primarily the fully-equipped farmers in the southern CMDT zone that have any capacity to increase their coarse grain production in response to higher prices.

Two questions then arise: (a) to what extent are these farmers willing to expand their grain production? and (b) what actions would be needed to endow farmers in other sub-zones, as well as the semi-equipped and non-equipped farmers in south CMDT, with the capacity to expand their production (Staatz, Dioné, and Dembélé, 1989, p. 713).

Informal discussions with fully equipped farmers in south CMDT indicated that most of them, once they have produced a reliable home supply of grain,² prefer to invest additional resources in less risky enterprises, such as cotton production and non-farm businesses. These farmers report that such enterprises are generally much more profitable and less risky than producing coarse grains for the commercial market. The conclusion of this analysis was that inducing these farmers (who

² The most commonly accepted estimate for cereals sales as a percent of production is about 15 to 20 percent. Obviously, this varies greatly from farmer to farmer, from region to region, and from year to year, according to many, many circumstances. Whatever the true figure may be, there is unanimous agreement that it is a small percent of the total production. Production is undertaken for consumption, first and foremost, with sales occurring as obliged by cash needs (taxes, and so forth) and as permitted by surpluses. Farmers don't produce more this year because prices were high last year, nor produce less because prices were low.

are already equipped, experienced, and making use of the existing marketing and institutional facilities) to expand their cereal production for the commercial market would probably require a very large increase in the relative price of cereals, as well as actions aimed at stabilizing the cereal markets (Staatz, Dione, and Dembele, 1989, p.713).

It would be even more difficult and complex to endow semi-equipped and non-equipped farmers with the capacity to produce a reliable marketable surplus of grain. This would entail improving these farmers' access to input markets, credit, and a reliable cash crop to help amortize the investment in agricultural equipment. The current investment capacity of these farmers is extremely limited, and is exacerbated by the need of most of them to sell what grain surplus they have immediately after harvest in order to meet tax obligations (Staatz, Dioné, et Dembélé, 1989, pp. 713-714). Periodic droughts, particularly in the more arid north, frequently force farmers who have managed to accumulate some equipment to disinvest in order to purchase food. Hence, to obtain a significant supply response from most coarse grain producers would require substantial investments, and many years' time, in improving technologies, the input supply system, and supporting services (such as agricultural extension) available to the producers in each area.

A second study, confined to one village in the OHV zone, determined the potential impact of improved agricultural technologies on the farming systems there. It was found that the production of food for home consumption was the prime objective of these farmers, just as reported in the MSU study cited, and not the maximization of gross returns (Camara, 1988, pp. 82, 85).

All farms practiced a very diversified, and complex, cropping strategy, with no significant differences between traditional and equipped farms in crop varieties grown and rotations practiced (Camara, p. 61).

The selection of the seed varieties of each product to be cultivated is a complex balance, involving labor demands at different periods, vegetative periods, early or late maturation, resistance to drought and to bird attacks, yields, taste, and so forth. Many plants are intercropped to minimize labor use and to take advantage of symbiotic effects. Improved varieties, with their needed expensive and difficult-to-find inputs, give better yields in good rainfall years, but worse yields in bad rainfall years. For families depending on these crops for consumption, this is a very serious obstacle to their adoption.

Available labor constraints at critical periods prevent any increase in one crop without a corresponding decrease in another. Available land is not a constraint in this area, and farmers cultivate all the land they can manage every year.

The conclusion compelled by both these studies is that simply raising cereals prices is not likely to cause any important increase in cereals production.

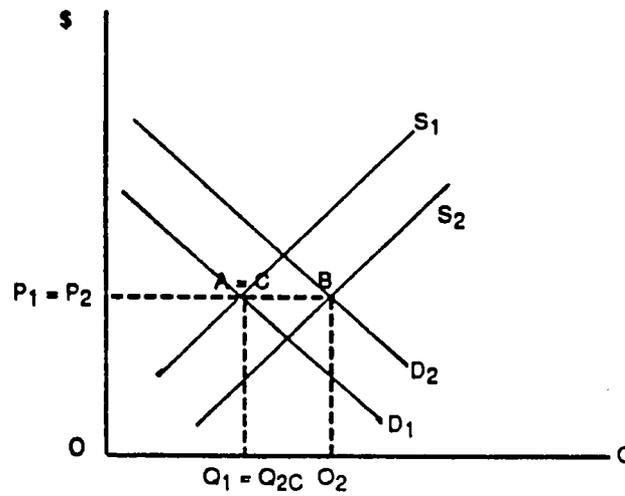
PRICE IMPACTS OF GRAIN STORAGE IN MALI

All grain produced in Mali and not consumed or exported is stored somewhere, on the farm or in traders' stores. One impact of the PRMC storage credit program is clear: with the credit, there is more grain in traders' stores than there would be without the credit.

What is not so clear is the origin of these increased stores and the resulting price impact on consumers. At first glance, it might be supposed that they necessarily represent a net transfer from farmers' stores. We can examine this question more carefully with the use of comparative statics analysis. In Figure 3, below, D_1 is the traders' demand curve for grain to sell to consumers on the daily retail market. This grain comes almost entirely from the last harvest, kept in storage at the farmers' homes. It is bought by traders in the weekly rural markets, transported to urban markets, and sold within days to consumers for immediate use. Various Michigan State University studies in Mali have shown that most urban traders keep only working stores of grain, with a constant turnover

of incoming supplies. Grain sold in the market is not processed, but is prepared in the consumer's home. (Rice is, of course, an exception.) Thus, traders' demand for grain to sell in the retail market is a very close reflection of immediate consumer demand.

FIGURE 3



In Figure 3, with demand curve D_1 and supply S_1 , equilibrium will be reached at point A, with quantity Q_1 and price P_1 .

Now, in the post-harvest period, stimulated by the PRMC grain storage credit program, traders who receive loans will begin to buy grain for relatively long-term storage, which goes beyond their usual working storage needs. ("Long-term" is used here only to distinguish the purpose of purchasing this grain, which is not intended for immediate sale on the retail market. This grain cannot be sold profitably until prices have risen enough to cover its additional expenses.)³ This additional demand for grain for storage by traders no longer reflects consumers' desires for more grain at the prevailing retail market price.

This new, credit-driven demand is based solely on the traders' belief that seasonal price rises on the retail markets will eventually be enough to cover their storage costs and leave a profit. Demand D_2 , in Figure 3, is thus composed of consumer demand plus the added trader demand for long-term storage.

There will also be a larger supply, S_2 , based on the new harvest grain coming on the market. The increase in supply vis-a-vis the increase in demand will determine the new equilibrium price and whether consumers will get more grain for less money or less grain for more money.

³ This does not mean that prices will, necessarily, rise enough to cover the added expenses. They may, in fact, fall. This is precisely the reason traders in Mali buy and then sell as quickly as possible, because they know the market does not respect their purchase and handling costs. In the long run, prices tend to cover all average costs of an industry, if that industry is to survive. This does not mean the costs of all suppliers, only the more efficient ones, nor does it save even the more efficient firms from committing pricing blunders, from paying more for something than the market will recognize. Business constantly goes bankrupt because they cannot recover their costs. With identical products in a competitive situation, those suppliers with lower costs will survive, while those with higher costs go out of business. In a declining industry, prices may not cover the fixed costs of any supplier, and they will all eventually go out of business, only continuing while prices are higher than their variable costs.

Three possibilities are shown in Figures 3, 4, and 5. In Figure 1, the new post-harvest supply exactly equals the new trader demand for grain to go into storage. Consumers, therefore, will get the same quantity as before and at the same price. The original market equilibrium at point A passes to point B. The consumers' original equilibrium point A was identical to the market point then. Now, it is at point C, being only a sub-section of the overall demand, and found where the price line cuts the consumer demand curve D_1 .

In Figure 4, the increased demand exceeds the increased supply, so prices will rise to P_2 . At this higher price, the consumers' equilibrium point will be at C, with Q_{2c} , a smaller quantity than before.

Figure 5 shows the effect of a relatively larger increase in supply than in demand. In this case, price falls to P_2 , with the consumers' equilibrium point at C, and a larger quantity Q_{2c} .

FIGURE 4

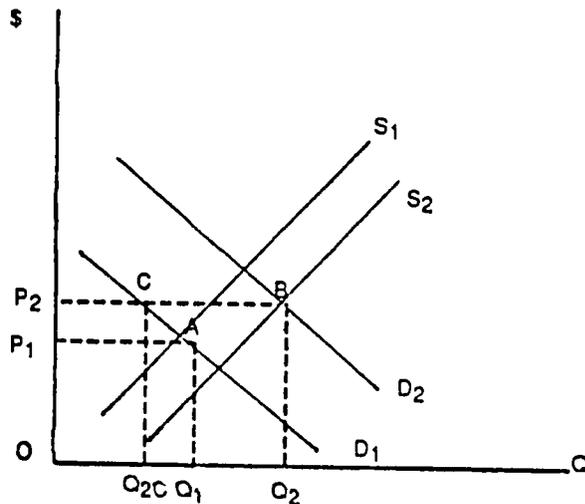
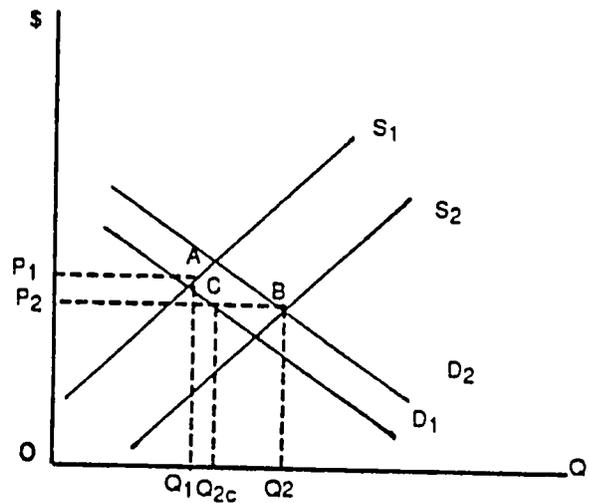


FIGURE 5



Long-term storage (that is, non-working stores) has some inherent economic difficulties in the Malian marketing context, as grain purchased for long-term storage is taken from the same marketing channel that supplies grain for retail sale. As noted above, the extra trader demand for grain for storage, on top of the normal retail grain demand, shifts the demand curve D_1 (in all three figures above) to the right, to D_2 , and raises the equilibrium price for any given amount of grain on the market. So, traders have paid more for their storage grain than the price that would have cleared the market for the retail grain demand alone. As soon as this added storage demand is withdrawn, the total demand, now equal only to the consumers' demand for retail grain, will shift back to D_1 , and the new equilibrium will be found at the intersection of D_1 with S_2 , with the corresponding price.

Now, with the additional storage demand gone, if the trader tries to return his stored grain to the retail channel with its demand D_1 and its corresponding price formed at the intersection with S_2 , he will lose money, because he bought this grain at price P_2 (all three figures) on a market fueled by the dual demands for retail and for storage. The trader must now wait for a seasonal price rise (in effect, a decrease in supply, that is, a shift to the left of the supply curve (not shown in these figures) that will lift the equilibrium to something above his cost price P_2 , in a market with only the retail demand to stimulate it.

If all grain were held by storers, then all grain would face similar costs, as is the case in the more developed countries.⁴ But most grain in Mali is held by farmers and has few monetary costs of storage. On-farm storage losses are not higher than in commercial stores. The farmer holds grain for many reasons, the principal one being for security purposes in case the current crop doesn't progress well. In these circumstances, holding grain in storage has a positive value for the farmer, not the monetary costs that traders bear.

Almost all the grain entering the retail market channel comes directly from individual farm stores. It is the flow of this grain that is the most important factor in determining the quantity of grain to be sold on the retail market and, thus, its price. Farmers sell grain fairly regularly when they have it for sale, as their cash needs, desired grain reserves, and current crop prospects lead them to decide. In general, they are not very sensitive to grain market prices in deciding how much to sell, since they know that present grain prices may soon rise or may soon fall, without apparent reason. The important point is that the total on-farm grain coming on the market, outside the post-harvest period when farmers are driven by high cash needs, is a function of the farmers' appraisal of their general situation and not of market prices. They seem to sell about as much when prices are relatively high as when they are low. The total grain coming to the retail market from rural stores is far greater than the amount held in trader storage and, thus, will be the dominant force in determining the price.

The quantity of grain bought by traders for long-term storage and eventually sold by them from these stores will have a marginal effect, possibly very significant, on the total supply and the prices of retail grain. This effect will probably be greater at the time of trader purchases than at the time of their sales. Their purchases are concentrated in the short post-harvest period, while sales would normally be spread out over a longer, less precise time. This year, however, these sales might be very concentrated because of the storage loans' expiration date. If the seasonal price rise isn't enough to let trader loanees sell at a profit, they may wait so long they are all forced to sell together

⁴ It may be helpful to emphasize certain differences in the grain markets in more developed countries from the market in Mali. In more developed countries' grain markets, the total harvest is initially bought for long-term storage. Some of it may reach consumers, in one processed form or another, within a matter of months, while some of it may stay in storage for a year or more. None of it will be sold directly to consumers, either immediately or ever. Essentially all grain, except that fed directly to animals on farms, goes through a series of transport and storage steps before processing or export. There is considerable on-farm storage, retained temporarily by its farmer-owners in the speculative hope that prices may rise later, but when it is sold, it will go through the same procedures as the grain above. There is no parallel market channel with grain going from farmer to trader to consumer, in an unprocessed form and in a matter of days, as in Mali. In fact, relatively little of the total grain supply is eaten, even in a processed form, by consumers. Most of it is either fed to animals or exported. There are many alternatives in each of these markets and among them. It is important to note that, in spite of all the marketing advantages enjoyed in the more developed grain producing countries, these countries have not yet found good solutions for the problem of agricultural overproduction. Persistent overproduction beyond consumer, industrial, and export demands forces producers' prices below politically acceptable levels. In reply, the United States, for example, spends thousands of millions of dollars annually, trying to keep producers' prices from falling too low. Some problems may have no satisfactory solution.

Malian grain has only one eventual destiny, consumption by people. There is no alternative market, except some illegal or, more rarely, legal export. If traders divert part of this grain temporarily from the retail market, it must finally return there, normally before the next harvest. As noted above, most Malian traders have not historically tried to store grain for more than a few days. In general, they have limited their market functions to buying grain from producers or assemblers in rural areas, transporting it, storing it as briefly as possible, and quickly selling it at retail, keeping only working stores to ensure a smooth product flow from occasionally erratic rural buying points.

just before the expiration of their loan period. Since all these loans mature at the same time, September 30, just prior to the new harvest, this could result in massive dumping of storage stocks at any price, especially if the coming harvest looks good.

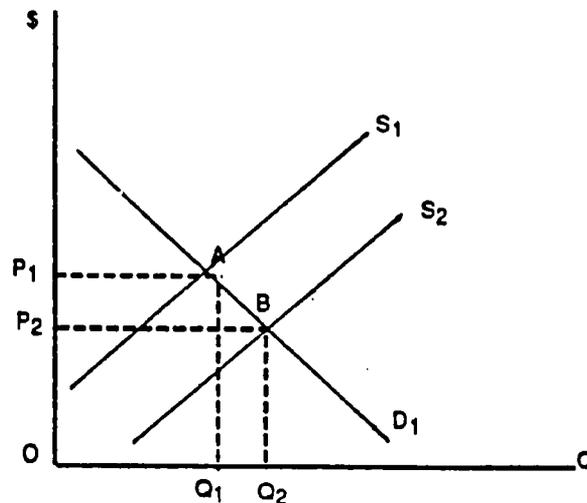
Although the amount of grain in trader storage, compared to that in farm storage (excluding farm emergency reserve stores not intended for sale), is relatively small, it is a key, marginal, amount which has been diverted temporarily from supplies going to the retail market and will later be returned there. During any short period, it may comprise an important part of the grain actually being marketed. Thus, it takes on an added significance in a market with a highly inelastic demand.⁵ Any given change in the amount supplied or demanded will provoke a disproportionately large price change in the opposite direction. Therefore, the price increase discussed above, when grain for storage was taken from the retail market supply, would be relatively great, as would be the corresponding price decrease when this grain was put back into the retail market supply.

This means, of course, that the PRMC credit funds will have a greater leverage in effecting grain price changes in the post-harvest period than would be the case if demand were relatively elastic. That is, for any given amount of storage loan money, the purchase of the corresponding grain to go into storage will achieve a larger increase in producer prices. These purchases will normally be carried out during the post-harvest period. In the same way, the eventual sale of these stocks in the retail market, presumably in the pre-harvest period, will also have a relatively great effect in reducing potential price increases to consumers. Thus, price stabilization would be facilitated.

But, this very stabilization could present a serious dilemma to the PRMC credit program. Its success, as a credit program, depends on the repayment of its loans; and loan repayment depends on the trader loanees being able to sell their stocks at a profit. The latter requires that prices rise considerably. Moreover, the loanees face a special handicap in trying to make a profit. The traders' purchase of grain for storage, when they bought it out of the grain flow normally going to the retail market, caused grain prices to rise then. Thus, the grain going into storage was expensive. Now, its return to the retail grain flow, for sale there, will provoke the opposite reaction, reducing the retail price below the equilibrium price that would have prevailed in the absence of this extra grain coming from traders' stores. In Figure 6, the supply curve S_1 is the amount of grain going from farmers to the retail market. The demand for grain for the retail market is represented by D_1 , with equilibrium at point A, with quantity Q_1 and price P_1 . Then, the traders' addition of their storage grain to this market shifts the supply curve to the right, S_2 , with the new quantity Q_2 and price P_2 . So, traders who store grain are at a disadvantage both when they buy and when they sell. This is caused by the existence in Mali of two parallel grain market channels, that is, grain coming from farmers' storage and from traders' storage.

⁵ While the price elasticity of demand for any one grain in Mali is normal, the elasticity of all cereals, as a group, is highly inelastic. That is, any one grain can substitute fairly well for another, but there is no substitute for all grains together. Commodities with inelastic demands are often in the classification of necessities with few substitutes. Cereals in Mali are the basic food for most people, and they have no practical substitute. That the demand for them be highly inelastic is not surprising; the same reasoning also applies to the price elasticity of demand for foods, as a group, in more developed countries. There any one food can be readily substituted by others, but all foods together have no substitute and the price elasticity of demand for them as a whole is very high.

FIGURE 6



Grain prices in 1989 have been remarkably stable in Mali, similar, so far, to the behavior in 1986, but at a 30 percent lower level. The last harvest, in late 1988, was a record amount for Mali, far exceeding any previous harvest. Prices were expected to plummet this year, but they haven't. There is far too little reliable information to be able to identify the causes, but knowledgeable people speculate that the two most likely causes are the PRMC credit and illegal exports. (Other possible contributors may have been that prudent farmers added still more to their emergency reserve stocks, but this seems improbable, on any significant scale, following three previous good years. The consumer demand curve could have shifted, but there is no reason to suppose this happened.)

Suppose the PRMC credit this year was a principal cause of the price stability to date, having avoided the usual drop in producer prices during the post-harvest period, by creating the demand at that time for grain to go into storage. (Similar to Figure 3, above, where the increased supply equalled the increased demand.) This stimulus in demand raised prices higher than they would have been otherwise. In fact, it may have raised them too much, as prices should fall somewhat after a good harvest; and now, in August, when popular belief has it that prices would normally be rising, they have fallen, about 5 percent since the beginning of the year. With the caveat of other things being equal, this would be an indication of post-harvest prices having been too high. It is yet to be seen how prices will evolve in late August and September, the final months before what appears to be a reasonably good harvest starting in October. But, supposing that the amount of credit this year was optimal, neither too much nor too little, supporting producer prices some desired amount and reducing the seasonal price rises later in the year. What would happen if this same amount of credit were released after a significantly larger or smaller harvest? Obviously, it would either be insufficient or too much (as shown in Figures 4 and 5). When it comes to predicting just the right amount of intervention, in the form of credit availability, the lack of adequate market information becomes critical. How much do farmers have in their emergency reserve stocks? How much do they have in a more tentative reserve stock, waiting until they can better judge the prospects of the coming harvest? How much was the last harvest, really? What are the prospects of the coming harvest?

If the optimum amount of credit for the 1988 harvest were applied to a significantly smaller harvest, market prices would likely be badly destabilized. Traders, with little previous relevant experience or information to guide them, could bid up the price of grain in the post-harvest period far above some "reasonable" level and store too much of a small harvest. What would be the meaning of PRMC's purpose of raising producer prices under these conditions? "Raising producer prices" may be fine for normal or large harvests, but to raise already high prices in a bad harvest year to even higher levels would be unthinkable (Figure 4). If traders were seen buying up grain for storage, they would be condemned in the strongest terms for hoarding and speculation with the nation's foodstuffs.

Certainly, no government authority would be likely to defend them or the PRMC program. If, on the other hand, the harvest were much larger than in 1988, then the same amount of credit would be of less use in raising producer prices, as the portion purchased by the loans would be too small to be very effective (Figure 5).

LIQUIDITY AND COMPETITION

Many analysts of the PRMC credit program have commented on its objective of raising producer prices and assumed this would be achieved through greater liquidity and competitiveness among traders. An MSU survey of traders found they declared their biggest obstacle to expansion of their business was a shortage of capital.

The late-1988 grain harvest was a record for Mali, and post-harvest prices were expected to plummet. Instead, they have held remarkably stable, apparently stimulated by the PRMC loans. It is considered that the credit did effectively support grain prices, if not raising them absolutely, then relative to what they would have been without the credit.⁶ Some analysts attribute much of the success in supporting prices to greater liquidity permitting greater competitiveness.

The mechanism whereby this additional liquidity and competitiveness might affect prices is not clear. They could permit greater marketing efficiency on the part of traders (such as achieving economies of scale in transport and handling or carrying out some horizontal or vertical integration) or help suppress "monopoly" practices in some area. However, in the very brief time the PRMC loans were active in the market, there was no evidence of any of these things occurring. There do not seem to be any notable economies of scale waiting to be realized. Large traders and small use essentially the same methods of buying. If anything, large traders may have higher buying costs per kilogram, but they make up for this in the volume they handle.

If the extra cash and competitive urge were simply used to bid up the grain price against other traders without loans, the successful buyer would then have to take his higher priced grain to the retail market place and try to recover his added cost. In a competitive market, there is only one price that can clear the market: the point where the quantity of grain supplied meets the quantity demanded by consumers.

Customers don't care what something has cost its owner. Each owner probably has somewhat different costs. The customer only knows what he is willing and able to buy at a given price. In a competitive market, all grain of a given quality will have the same price. If traders have bid up their buying price for a given quantity of grain above what consumers are willing to pay for that quantity, then traders will have to lower its price or carry it back home. Sooner or later, it will have to be put on the market and the going price accepted.

With a given quantity of grain on the market, the only way to raise its unit price is to increase the demand, that is, have a shift to the right in the demand curve, so the consumer would be willing to pay a higher price for a given quantity. No amount of trader liquidity or competitiveness or high costs can cause this shift in the consumer's demand curve. Consumers' demand curves shift for a variety of reasons, but traders' need to get rid of overpriced stock is not one of them. Unless this curve can be shifted or marked efficiency gains realized, traders can pay no more for a given quantity of grain that they could before the new liquidity. That is, all the prices which consumers are willing to pay for different amounts of grain are in place (the consumer demand curve). The specific equilibrium price that will prevail in the market will be determined, not by the trader's cost for the grain, but by the particular amount of grain which farmers supply to the market. In effect, farmers as a group, through traders, decide how much they will supply at the price the consumer

⁶ Actually, grain prices fell sharply in late 1988 and have trended slowly downward since January, 1989. Whatever help the PRMC credit may have been, prices so far this year are among the lowest in the last eight years, exceeded only by those in the first six months of 1987.

market will pay for that particular amount. They can supply a smaller quantity and receive a higher price or a larger quantity and a lower price. They set the price they are going to receive when they decide the quantity they are going to supply. Some farmers and some traders will have had higher costs and some will have had lower costs, but they are all going to get the same price in the market. The price traders can pay for a kilogram of grain is determined, then, not by their liquidity, but by the price they can sell it for.

The cause of the success of the PRMC credit program in supporting grain prices in the post-harvest period was the requirement for storing the grain. This is the crucial difference that distinguishes this program from one for working capital loans. The extra liquidity the loans provide was used to finance a new demand, a demand for grain for storage, a demand which hardly existed previously among private traders.

This new demand for grain for storage has very important consequences. One possible danger is that the trader can bid up the price of grain, without regard for any immediate retail market price discipline. In practice, if he is going to participate in the grain storage credit program, he has no choice. His market is still months in the future and there is now no hint of the price that will prevail then.⁷ Even if the trader realizes what he is doing and is concerned, there simply are no price signals to guide him. The trader buying for storage buys from the supply normally going to the retail market. He must pay the same price paid by traders buying to sell on that market.

This discussion of liquidity and working capital does not apply to investments which a trader might make in transport, storerooms, and so forth. It also does not touch on the personal benefits which one trader might derive by being able to buy in sufficient quantities to be able to bid on contract deliveries to organizations. This concerns the players in a zero-sum game, which may be very important for each player, but has little macro effect on the economy. While it can be important for the individual trader to be able to participate, to expand his volume, he does so at the expense of other traders already in the game. It isn't evident this benefits the wider public. If reasonable competition already exists, the addition of more players will add no more. If there are oligopolistic elements, then, of course, the addition of more players may be important.

TAXES

The National Head Tax and The Local Development Tax

The effects of a head tax collection in Mali have important implications for the PRMC credit program.

Everyone between the ages of 14 and 60 must pay these taxes. The rate varies in different parts of Mali, but everyone in a given administrative district pays the same amount. There are a few exemptions recognized: children in school, women with more than four children under 14 years, and disabled persons.

The tax collected currently is believed by many, even most, people to be the same head tax (impot du minimum fiscal) collected for many decades. In fact, it now consists of the head tax and a relatively new rural development tax (impot de developpement rural). The head tax revenue goes to the national government. The national government formerly funded the budgets of the local administrative offices throughout the country, but now, the so-called rural development taxes are

⁷ In more developed market economies, all the market participants know, with considerable accuracy, the total available supply, and they can buy as much as they want of it at any time. In Mali, no one knows with any accuracy how much the harvest was or how much of it farmers will choose to market. The Malian trader has very serious disadvantages in attempting to determine what a probable price may be for more than a few days in the future.

used to fund regional, cercle, and commune government offices. These could better be called simply local head taxes, as they are not used to fund any development programs, but to pay the local government personnel who used to be paid by national funds.

Many farmers don't realize the second tax, the regional and local tax, exists. Various functionaries explained to us that it was better to group both taxes under the single, accustomed name, the traditional one, in order not to confuse the farmer. They said the farmer would not be interested, anyway, in such details, because all he really wants to know is how much he has to pay.

There are other taxes collected, too, on animals, firearms, and bicycles. These could reach large sums in some cases, but they are often avoided entirely or very much underpaid.

The per capita amount of each tax varies by cercle and commune, respectively. These vary widely, both in absolute terms and relative to each other. The highest taxes are in Sikasso Commune, where the head tax costs 1,600 CFA (about US \$5 at the present rate of exchange) and the local development tax is 2,500 CFA. The lowest rates are in the arid north, in several cercles, where the head tax is 450 CFA and local tax is 875-1,000 CFA. The ratios of the two taxes also vary a great deal, ranging from 1:1 (head tax:local tax) 1:3. In general, though, the local tax is usually 50-100 percent more than the head tax.

The relative sacrifice that payment of these taxes implies can be appreciated by comparing them with the volume of grain the farmer needs to sell in order to pay them. In Kita (Kaye region), the total taxes per person are 2,915 CFA. In January, the producer's average price for millet was 59 CFA per kilogram. Some 50 kilograms of millet would have to be sold to pay each person's taxes. In Douentza, the taxes were 2,250 CFA, and the price of millet was 46 CFA, giving an estimated millet equivalent of 49 kilograms. A lack of sufficient producers' price data for most areas prevents similar calculations for other areas.

Another way of looking at this would be to compare the tax with the average annual per capita consumption of cereals in rural areas. This is estimated, in Mali, to be 220-240 kilograms. On this basis, the 50 kilograms of grain sold to pay taxes equals about 20 percent of a person's yearly supply of grain. Since many farm families do not produce as much grain as they consume, any grain sold in January will have to be bought back later.

The information available on the total receipts of these taxes is not clear, but it appears the national and local taxes brought in 2,554,000,000 CFA (some US \$8 million at the current exchange rate) in 1987, representing about 2.5 percent of the national government's revenue that year.

Since these are per capita taxes, they are extremely regressive, bearing little relation to income. The tax rates do vary among districts, said to be in some rough relation to their general income status, but within each district they are invariable. There is no regard for the personal situation of the individual or for the size of the grain harvest. If the crop production is so bad the taxes literally cannot be collected from a majority of the population, the government may declare a moratorium, but the taxes will be collected in a subsequent year.⁸

While the national head tax revenue is only a small amount of the total revenue of the national government, the local development taxes represent about 80 percent of the district government's total revenue. At the national level, there are active proponents of abolishing the head tax. This is not a closed or forbidden topic. It has been discussed at party and government meetings, reports have been made, and resolutions adopted which declare unequivocally for its abolition. It is condemned as holding back rural economic development. At a national level, then, it seems only a matter of time before the head tax statute is removed from the books. Proponents recognize the

⁸ The governor of the 6th region, a perennially grain deficit area, announced in January that absolutely all back taxes would be entirely recovered this year (Quotidien du 10 Fevrier 1989). According to other sources, the government is attempting to collect up to five years of tax arrears in the countryside (1984 through 1988).

revenue foregone from the head tax must be replaced by some other tax, and the discussions are now centered on this problem, they say, not on whether the head tax should be ended.

It is at the local level where it seems impossible to find an alternative revenue source of the same magnitude. If the local tax can not be eliminated, however, its unfortunate impact on grain market prices could be attenuated by collecting it two or three times during the year, instead of the single time as at present. Since farmers have other reasons than tax payments to sell grain in the post-harvest period, the first tax collection should skip this period and begin in March. The second time should be in June, well before the soudure (hungry season). If possible, this split-collection system should be tried experimentally in a few districts, accompanied by a close monitoring study to determine its consequences on farmer's grain sales. It would be a great advantage to do this areas where baseline data already exist, as in some of the MSU long-term survey villages.

Tax Effects on the PRMC Credit Program

One of the major purposes of the PRMC credit program is to raise producer grain prices in the post-harvest period, when these prices are usually at their lowest annual level. The cause of the low prices at this time is the much larger quantity of grain which farmers suddenly start putting on the market. The farmer has several cash needs to meet soon after the harvest, but, for a significant number of farmers, the head tax (Impot du minimum fiscal) and the local development taxes are the biggest outlays.⁹ A multi-year study of eight villages in the OHV and CMDT zones found striking differences between the motives for selling grain in the post-harvest period (Dione, pp. 140-146). In the OHV zone, where farmers lack cash crops and are generally poorer, the tax payments were reported as the first-ranking motive for sales by the majority of cereal sellers (51 percent in the southern sub-zone and 92 percent in the drier northern sub-zone). When the ranking of sale motives is disregarded, part of the sales of virtually all grain sellers in OHV was motivated by tax payment.

In contrast, sales to generate cash for tax payments are, in general, marginal in CMDT and concern mostly the households without animal traction equipment. Tax payment is a reason for sales for fewer than 15 percent of the sellers in south CMDT and fewer than 3 percent in north CMDT. There farmers declared their prime motive in selling grain was to buy nongrain food items (fish, meat, sugar, oil, salt, and a variety of spices) in order to improve and diversify their diet.

The farming areas with cash crops in Mali are limited, and most farmers do not have this advantage. Farmers in the more favored areas with cash crops rely on these for income right after harvest and save their cereals to sell later in the year, when prices are expected to be higher. It is the poorer farmers, in the above study, who sell the most grain in the post-harvest period. First quarter sales were dominated by farmers at low production levels. These farmers don't have enough grain to meet their own annual consumption needs and will have to buy grain on the market when their own stores run out.

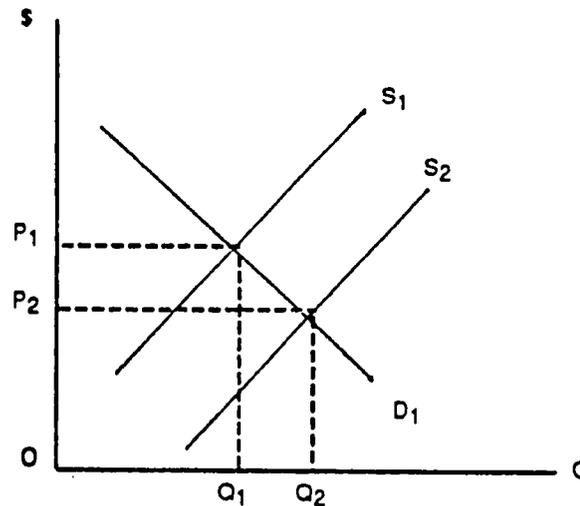
Whatever the burden on particular types of farmers, on a macro level, it is evident the taxes are an important factor in causing increased grain sales and lower prices in the post-harvest period. These lower prices affect not only the particular farmers who have to make the grain sales for taxes, of course, but, given the competitive nature of Malian grain markets, they affect all farmers in all markets. Heavy grain sales and lower prices in poorer villages are quickly reflected in lower grain prices in all villages. Even those CMDT villages in the above survey which are relatively free of the need to sell grain for tax payments will suffer from the lower prices. The principal objective of the PRMC credit program is to try to counteract these grain price falls by buying some of the extra grain and putting it into storage.

⁹ In January, the governor of the 6th region declared in Tombouctou, that "the principal problem remains that of liquidity, not always immediately available, required urgently by farmers to pay their taxes as well as to cover their families' needs" (Quotidien du 10 Fevrier 1989).

The present collection system for these taxes relies on a single annual collection, occurring shortly after the harvest period. This timing started in colonial times (when the tax itself was also initiated) and continues today because it is believed this is the best time to collect from the farmer. This is probably true and sensible from a tax collector's point of view, and it seems to be an effective collection system, but it wreaks havoc on the normal functioning of the grain market system. Because it compels heavy grain sales by many farmers who have no other way to get the necessary amount of money, it has a very one-sided effect on the supply side of the market. It has, of course, no equivalent effect of an increase on the demand side. If anything, it probably has a depressing effect on demand because of the withdrawal of all the tax payments from monetary circulation.

The effect can be seen in Figure 7, where the original equilibrium is at point A, with P_1 and Q_1 . When producers increase their grain deliveries to the market, the supply curve S_1 shifts to the right to S_2 . The new equilibrium is at point B, with P_2 and Q_2 .

FIGURE 7



When some outside factor provokes an one-sided increase in the supply of a product, without similarly increasing demand, the only market solution is for prices to drop.

The principal purpose, and success, of the PRMC grain storage credit program was to buy up this added supply and take it off the retail market. The other half of this same purpose, and the principal failure, of the PRMC program was to be able to profitably return the stored grain to the retail market later in the year when prices were assumed to almost inevitably rise. As noted elsewhere in the report, the excellent 1988 harvest has provided stable supplies, and prices, all through 1989, to date.¹⁰

It is important to state that it is not asserted here that all the increased supply coming on the market in the post-harvest period is caused solely by the annual tax collection. Farmers also have several other needs for cash then.

¹⁰ MSU studies have clearly shown the heterogeneity of farmers and the relative importance of grain sales to pay taxes, especially among poorer farmers without cash crops. This area of information is of such crucial importance for agricultural policy decision makers for the whole field of grain marketing that it should have an in-depth study as soon as possible and then be part of a permanent, on-going periodic survey of farmers' existing grain stocks and of their plans and motives for storing and for selling grain. If it is concluded that the present tax collection system is a principal cause of the heavy post-harvest grain sales, and consequent fall in prices, and if the GRM wants to correct this problem, the present tax system must be modified.

CONCLUSIONS AND RECOMMENDATIONS

1. An apparent assumption of the PRMC credit program was that farmers were more or less homogeneous, all producing grain and all selling in the market at similar times. Michigan State University surveys, however, have shown that farmers are a very heterogeneous group. While almost all of them are grain producers, a minority of them are net producers, that is, produce more than their own family consumption. While the deficit grain producers do sell part of their grain in the post-harvest period in order to obtain cash, they sell much less in the following months and will eventually have to buy grain themselves. Surplus producers, on the other hand, usually have cash crops they rely on for their post-harvest cash needs and prefer to sell their grain later in the year, hoping a seasonal price rise will favor them. Any development program which intends to help "farmers" must carefully identify which segment of this group is to be their target.

2. In simulation exercises, Michigan State University found the PRMC credit program most helped those farmers who sold early in the post-harvest season, benefiting from the relative price increase then, and who bought cereal later in the year, benefiting from the price moderation at that time, brought on by traders' selling their stored grain. This is under the assumptions of their model, which provided for a 20 percent increase in post-harvest prices and a 20 percent decrease in later seasonal rises in consumer prices.

3. The village association members were helped in the same way as other farmers and derived other benefits from not having to transport their grain to markets to sell, knowing what the price would be in advance, and so forth.

4. The PRMC assumption that increased grain prices would stimulate production is questionable, according to recent studies. Farmers are already cultivating all the land they can manage, and the weather thereafter is the main determinant of the harvest results. According to MSU studies, most of the factors of production are outside the farmer's control: rainfall, soil quality, institutional supporting services (extension, marketing, roads), feasibility of cash crops, and size of the family labor force. The main factor in control of the farmer is the level of technology used, but this consists largely of animal traction equipment, which is very expensive. Surplus grain producers are not inclined to further increase their output because they consider grain production to be very risky and prefer to invest in other more profitable activities. Another study of a village analyzed the potential impact of improved agricultural technologies on the farming systems there. It found the production of food for home consumption was the prime objective of farmers and not the maximization of income. The cropping systems used were very diversified and complex, attempting to balance many factors, as labor demands at peak periods, and so forth. These systems cannot increase one crop, say cereals, without decreasing others and upsetting the balance of production factors. The conclusion compelled by both these studies is that simply raising cereals prices is not likely to cause any important increase in cereals production.

5. The price impact of the PRMC grain storage program depends on the size of the harvest in relation to the loan funds available. If a harvest is relatively small, a given amount of credit could push post-harvest prices very high. If the harvest is relatively large, the same amount of credit will have little impact. Only in the case of a harvest appropriate to the available funds would the price impact be the desired one. Little is known about the precise effects of a given amount of storage credit on a particular harvest. This difficulty is compounded by the lack of good crop estimates in Mali.

6. While any one trader could buy extra grain for storage without affecting the market price, when there is a general attempt to buy large amounts, the price is pushed up, just as predicted by the PRMC credit program. This is good for farmers who are selling at the time, but it means the traders will have to have a higher seasonal price rise if they are to profitably sell their high-priced grain. Further, if the harvest has been good, there may not be any seasonal price rise at all. Prices may even fall. In addition, one trader may take his grain from storage and sell it without affecting the market price, but if many traders begin to sell storage grain, this extra supply will force prices down.

7. Some analysts have attributed the PRMC success in raising post-harvest grain prices (relative to what they would have been without the added demand) to the increase in liquidity provided by the loans. It appears, rather, that this success was due to the requirement for storing the grain, thus temporarily taking it off the retail market supply. Trader liquidity can raise the purchase price of a good, but it can't affect the retail price which consumers are willing to pay for a given amount of that good. In the present case, it was able to raise the price because the extra grain it purchased was going into storage and didn't have to face the retail market price reaction. As further proof that grain costs cannot determine the retail market selling price, the storage grain has not yet been able to profitably face that market.

Increased liquidity for one individual trader can be very useful, but when many traders get it simultaneously, its utility is greatly diminished.

8. Collection of the head tax and the regional development taxes during the post-harvest period appears to be one of the prime reasons for grain farmers to sell grain then. Many studies have found this to be the most important factor obliging grain sales at that time. If these taxes cannot be abolished, their collection time should be shifted away from the post-harvest period when farmers have other cash needs to meet.

It is recommended that the PRMC carry out a study of the effects of the present tax-collection system to determine the importance of its incidence on increasing grain sales in the post-harvest period. If it is found to be an important factor, the PRMC should recommend that its collection be divided into two periods, in March and in June.

If the post-harvest tax collection is a major cause of the usual sharp drop in prices then, the GRM should remove the cause instead of trying to treat the symptoms.

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ANNEX A
MARKET INFORMATION

MARKET INFORMATION

In order to improve agricultural policy formation, on one level, and the daily functioning of Malian grain markets, on another level, a better system of information collection and diffusion is needed. Le Systeme d'Information des Marches (SIM) was created in 1988, within OPAM, and has already begun the collection and analysis of price and volume data in 43 markets.

Other areas also need attention and little has been done in them to date. In these areas, hearsay, anecdotes, and speculation must serve to form important opinions. Little reliable information is available about farmers' and traders' grain stores and intentions to store or about farmers' marketed percent of production. Better domestic grain production estimates are required, although these have been improved over the last three years. More systematic information is needed about neighboring countries' grain production, consumption, and marketing. All of this is required on a regular basis. Occasional, incomplete, and unrelated visits or studies are totally inadequate for policy and executive decision makers.

Who should carry out such tasks? There are obvious advantages to concentrating all market information responsibilities in a single agency, though some, as production estimates, may better be left where they are now.

Diffusion of market information is obviously vital, if collection and analysis are to have any value. In addition to its weekly, monthly, and quarterly printed series, SIM provides data for a brief weekly radio broadcast intended primarily for farmers and traders. While professionals may be able to use the information in its present form, most potential users -- and those for whom it would be the most necessary -- are not able to put it into a meaningful context. Isolated bits of information are useful only in context; without this, they may even be misinterpreted and misleading. (As a simple example, several complaints were made that the SIM radio prices were inaccurate. Because the price quoted is an average for each locality, many market participants, who had received -- or paid -- more or less than the average, thought the price was mistaken. Perhaps using a price range from low to high would help).

To appreciate the significance of a price quotation, the user must know exactly what the price refers to, what other recent and not -- so -- recent prices were, what the previous grain production volume was, and similar information. At a minimum, the user needs several years' production and price data. Only a serious extension effort, by one of the agencies already in the field, can supply this material and its context. Production, prices and other relevant information must be put into printed form and presented to interested groups of farmers and traders. Regular visits are needed initially to explain the data and lead discussions about their meaning.

This is not as difficult as it may first seem. Illiterate, non-French-speaking farmers and traders are perfectly capable of usefully understanding a graph showing production and price data. They don't have to grasp the complete meaning of everything in order to see some of the rather obvious relationships and how these have varied and influenced each other in the past: how one market is affected by others, how good and bad grain production years affect prices and why price controls are so difficult to carry out successfully, how storage affects prices, and so forth. The themes are endless and, used properly by skilled discussion leaders, can give rise to important ideas about market liberalization. Keeping price graphs up to date is simple and can easily be done by a careful primary school graduate, if the initial, large-scale graph is supplied by the extension agent.

RECOMMENDATIONS

Budget commitments to SIM should be strengthened and made longer term, in order to attract and hold good dedicated staff, able to expand and improve the current activities. One of the existing extension agencies or projects should adapt SIM data for local groups of farmers and traders and present it to them in regular meetings. This should be limited to a small number of groups at first, perhaps 4 or 5, until the methodology (materials, timing and duration of meetings, sequence of presentation, how to encourage participation in discussions, etc) is perfected. One of the PRMC donors should carry out or sponsor a study of one neighboring country which would serve as a prototype for a Malian agency, perhaps SIM, to adapt and use for similar studies of the other neighboring countries.

ANNEX B
LIST OF ACRONYMS

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ACDI	Agence Canadienne de Développement International
AV	Association Villageoise (village-level cooperative organization)
BMCD	Banque Malienne de Crédit et de Dépôts (Savings and Loans Bank)
BNDA	Banque Nationale de Développement Agricole (Agricultural credit)
CESA	Commission Nationale de Suivi et d'Evaluation de la Stratégie Alimentaire du Mali (Food Strategy Commission, Mali)
CFA	Communauté Financière Africaine (Financial Community of Western and Eastern Francophone African States, except Guinea and Mauritania)
CFAF	CFA Francs (Currency unit of the CFA Zone)
CFDT	Compagnie Française pour le Développement des Fibres Textiles, (French Textile Development Company)
DNAE	Direction Nationale des Affaires Economiques (National Direction of Economic Affairs), Mali
DNSI	Direction Nationale de la Statistique et de l'Informatique (National Direction of Statistics and Computing), Mali
FSA/CA	Food Security in Africa Cooperative Agreement
GRM	Gouvernement de la République du Mali
IER	Institut d'Economie Rurale (Agricultural Research Institute), Mali
MSU	Michigan State University
ODR	Opération de Développement rural (rural development agency)
OHV	Opération Haute Vallée (Niger River upper-valley development agency), Mali
ONG	Organisation non-gouvernementale
OPAM	Office des Produits Agricoles du Mali (Agricultural marketing agency)
OSCE	Office Statistique des Communautés Européennes (Statistical agency of the European Community)
PRMC	Programme de Restructuration du Marché Céréaliier (Cereals market restructuring program), Mali
SIM	Système d'information des marchés
SOMIEX	Société Malienne d'Importation et d'Exportation (import-export)
USAID	United States Agency for International Development