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Analysis of the Food Marketing System in Niger: Possible A.I.D. Interventions

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Executive Summary

The food marketing and distribution system has to be able to perform four functions to assure access to sufficient food stocks for the entire Nigerien population. It must assure food supplies in areas of sedentary cultivation which, are overall, self sufficient in food but in which inequities in production require reliance on the distributional system. It must assure food supplies in urban areas and in the pastoral zones in which grain staples in particular are hardly produced at all. It must collect and store national food security stocks in case of climatic stocks such as those exprienced in the early 1970's. Finally, it must maintain linkages with international food commodity trading networks to dispose of surpluses advantageously or to fill deficits reasonably.

Nigerien food marketing systems cannot be considered apart from what is happening in the Nigerien and Nigerian economies in general. Both economies expanded rapidly in the mid-1970's. Nigerien expansion was based on export of uranium ore. Nigerian expansion was based on export of petroleum. In the last several years, however, demand for both raw materials has fallen. Niger is facing a period of shrinking income. This prospect requires, among other things, a reassessment of subsidies given the food producer and the food buyer. Nonetheless, the longstanding comparative advantages of Niger and Nigeria vis-a-vis each other remain intact. A large volume of trade in labor, foodstuffs and manufactured goods will persist.

Official protestations to the contrary, notwithstanding, there is no empirical or even theoretical evidence that the self serving middlemen strategies are the cause of ruptures of supply and seasonal price fluctuations that can wreak hardship on the consumer at the end of the dry season. All the evidence available shows low margins per transaction at the merchant level. Who stores what at the village level and what the economic returns to this enterprise are remain open questions. The real cause for the periodic breakdown in supply and dramatic price rises is a combination of problematic domestic production, a function of local ecological and climatological conditions, and the long distances that must be covered between the major supply areas and the major consumption areas in the country.

In terms of economic specialization Niger can be divided into three regions. These areas are a rural sedentary agro-pastoral zone, a purely pastoral zone and an urban zone. In 1981, Niger's population was estimated 5,715,400 of which 72% were in the agro-pastoral zones, 13.9% in the urban areas

and 13,7% in the pastoral zones. National cereals demand for 1981, was 1,286,000 ton according to GON hypotheses and 1,121,400 tons according to the hypotheses of this paper. It is very difficult to measure national output. Research shows the GON estimates of average production per hectare are very high. It has not been possible, however, to make an evaluation of the number of acres under cereals cultivation in Niger. Consequently no great confidence can be placed in overall net cereals availability figures of either GON or the present study. Impressionistic evidence suggests, nonetheless, that there are persistent net cereal deficits in Niger that are met only by large-scale imports of grain from Nigeria.

In addition to greater precision on national food production, an overall assessment of the structure, function and performance of food marketing systems in Niger needs to be done. One important piece of information needed is how a household allocates its harvest among a number of different recipients. A study was done on this question in Dosso Department in 1981. It is inconclusive because of the relatively compact location of the study and because it gives indications for one year only. All the same, it suggests several conclusions. First of all, Muslim clerics seem to collect large quantities of gift grain from villagers. Second, repayment of money debts seems to play only a small role in past harvest grain distribution. Thirdly, about 2/3 of the grain that is not stored for family consumption is given away in small quantities to a wide range of fellow villagers, relatives, friends, and political patrons. Finally very little grain is sold through the cooperative but far less is sold to private merchants. It is not clear from this study, therefore, how domestically produced grains enter the marketing system but the suggestion is that a number of the recipients of gift grains are in a position to store quantities of grain that permit them to sell to merchants in the dry season. Merchants outside the village appear to have little storage capacity and once the grain leaves the village it appers to travel relatively rapidly to consumers.

It is often stated that cultivators are obliged to liquidate a portion of their harvest at low peak-season prices to meet cash needs only to repurchase equivalent quantities of grain well into the dry season at substantially higher prices. To the extent this is true, a suitable AID intervention would be promotion of a network of village cereals banks. The principle would be to permit producers to use their cereal as a pawn in a secured loan program. The cost of storing the grain in the village

should be lower than the merchant's costs of, in effect, storing at some distance from the village. AID should study the feasibility of such a project carefully since some of the premises presented here are not firmly established.

The question of what initiatives AID should take in the grain deficit areas is more complex. At present maintenance of supplies at preferential prices for, at least, a minority of deficit areas residents places a heavy burden on the OPVN, the GON cereals marketing parastatal. In time of shrinking national budgets GON should consider embarking on more feasible consumer price structure to reduce the OPVN burden.

AID should explore assistance to OPVN in the food security area only. Otherwise AID's interest should be focused on private sector interventions.

Livestock sent to market in Nigeria are a major source of Nigerien export earnings. The Nigerien government tries to limit sales fearing depletion of the national herd. Nonetheless an unknown number of animals trek across the frontier illegally. No clear profile of livestock exports is, therefore, possible. No estimate can therefore, be made of the long term effects of cattle exports, legal and illegal, on the national herd in Niger. An attempt must be made to grapple with the problem of counting exports and describing their age and sex structure. This is necessary in deciding future policy initiatives.

Irrigated production, from a locational standpoint only, looks very promising in Niger. The potential irrigated zones are conveniently close to the high consumption zones. Feasibility studies for irrigated development should, therefore, have high profits.

The study makes several recommendations:

1) AID should mount a study designed to test the feasibility of a village cereals bank project.

2) AID should give priority to development of irrigated cultivation in Niamey Department to the degree it is feasible. Only irrigated cultivation holds any possibility of keeping marketing costs for food grain at a reasonable level for the city of Niamey.

3) AID should mount a comprehensive study of Nigerien food marketing systems to fill in the following gaps:

a) How much grain is available to the market ?
b) How much food is currently being imported?
c) Price series data for grains and livestock in Northern Nigerian markets.
d) Number of livestock exports and their age and sex structure.
e) Location of cereal storage in Niger
f) Market chains and market margins
g) Market price series data in Niger for cereals, vegetables,rice and livestock.
h) Cost of transport per kg/km for OPVN, for a private transport owner and for rented space on a private vehicle.
i) The proportion of production that must be deducted for seed and loss to determine net production available for human consumption.

4) Insofar as AID supports OPVN it should focus its efforts on OPVN role in national food security to the exclusion of its role in cereals distribution and price stabilization.

I. Introduction

The objective of this study is to convey an overview of the food marketing system or, more properly, systems in the Republic of Niger. The point of departure of the study is the food producer. The fundamental question is what are his marketing options and, faced with these options, on what does the producer base his choice among them?

The heterogenous interests of any national population cannot, all the same, best be understood by analyzing the behavior of only one of its constituent groups, however important. For this reason, this study also examines food marketing in Niger from the point of view of various functions it must perform in the natural arena. Throughout this discussion, as well, however, a watchful eye is kept on the producer because his decisions feed the system.

The study team spent the month of October, 1982 in Niger. This is hardly enough time to prepare a study with any great depth. The team has indicated, at several points in this report, what kinds of information are needed and, where possible, the manner in which this information can be obtained to increase the depth, precision and reliability of its analysis. This report should, therefore, be seen as a framework for further analysis of Nigerien marketing systems with an eye toward increasing their ability to fulfill national distributional objectives.

Two members of the team, a sociologist and an agricultural economist were supplied by the USAID centrally funded Small Market Access Project. The third team member is an agricultural economist attached to the Agricultural Development Office of AID/Niamey.

The first two weeks of the study were spent in Niamey. The team made contact with Nigerian Officials in the Ministry of Planning, in the Ministry of Rural Development, in the Union Nationale de Credits et de Cooperatives. in the Office de Produits Vivriers de Niger, in the Centrale d'Approvisionnement and in the Ministry of Commerce. In addition the team was able to discuss marketing issues with directors and staff members of several development projects such as Niamey Department Development and Niger Range and Livestock. Between personal contacts the team carried out relevant documentary and statistical research.

During the third week two members of the team visited food markets in Zinder, Maradi and Tahou to gather information on prices, sources of supply and destinations of the grains on sale there. The team also discussed relevant issues with

The team wishes to express its gratitude to all for their support and encouragement. The team benefited from the attention, guidance and cooperation of a number of people, official Nigeriens, official Americans and others. The report goes as far as it does thanks to their interest. It goes no farther due, in part, to the limited availability of data and time and, in part, as is always the case, to the imperfections of the authors' understanding of the subject at hand.

II. Responsibilities of the Food Marketing and Distribution System in Niger.

The food marketing and distribution system has to perform certain functions to be able to achieve its ultimate objective of assuring the food security of the entire Nigerien population. The four functions or responsibilities presented below can, in the abstract, be performed entirely by the private sector, entirely by the government sector or by some mixture of the two. At this point in the discussion it is enough to indicate that some means must be found to accomplish the tasks listed. How these tasks are and can best be carried out is the subject of later discussion.

A) Assure rural food supply - the population of Niger is overwhelmingly rural. According to official 1977 population data 88.2% of the national population dwelt in the rural areas. The problem of meeting rural food needs is complicated by low densities of rural occupation and difficulties of access of many sites from national centers. It is, however, eased by the fact that the rural population meets a large share of its food needs through its own production. In an average year many parts of the country produce food surpluses in varying amounts.

B) Assure urban food supply - residents of urban areas of over 5,000 inhabitants accounted for only 10.65% of the Nigerien population in 1977. These people are dependent on the marketing and distribution system for virtually their entire food needs. Niamey is by far the largest urban center. Table I projects the growth of the 25 largest urban centers of Niger from 1977 to 1982. The annual growth rate for this period is assumed to be the same as that recorded between 1960 and 1977. These data are taken from the current Niger Five Year Plan.

TABLE I

1982 Estimated Nigerien Urban Population

City	Official 1977 Population	Annual Growth Rate	Estimated 1982 Population	% of National[1] Population 1977	1982
Niamey	225,300	10%	362,800	4.42	6.21
Zinder	58,400	6%	78,200	1.15	1.34
Maradi	45,900	6%	61,400	.90	1.05
Tahoua	31,300	5%	39,900	.61	.68
Agadez	20,500	7%	28,800	.40	.49
Dogondoutchi	10,200	3.7%	12,200	.20	.21
Tessaoua	12,000	3.7%	14,400	.24	.25
Birnin-Konni	15,200	3.7%	18,200	.30	.31
17 other centers[2]	124,400	3.7%	148,100	2.44	2.53
Totals	543,200	7.2%	764,000[3]	10.65	13.07

1. The 1977 census counted 5,098,427 people. The current Five Year Plan (P.63) estimates annual growth at 2.77%. The Nigerien national population at the end of 1982 is therefore estimated at 5,844,700.

2. These centers had populations of 5,000 to 9,999 in 1977. They include Arlit, Nguigmi, Dosso, Gaya, Dokoro, Tibiro, Filingue, Tera, Tillaberi, Illela, Madaowa, Goure, Magaria, Matamey, Maria, and Tanout.

3. There is a difference in totals between the sum of the estimated 1982 population column and the extrapolation of the totals line. The difference is 5000 people. It is due to rounding off.

Not only must the marketing and distribution system meet the entire food needs of the urban areas but it must do this at a price level acceptable to the mass of consumers. This problem is more serious in urban areas than in rural areas because the urban population is so much more dependent on the marketing and distribution system for its food supply than is the rural population. At the same time its power to command supplies in the market is largely a function of cash incomes over which levels it has little control.

C) Collect and store national food security stocks - In the past 10 to 15 years Niger has experienced several climatic shocks which have placed national food self-sufficiency in question. In order to protect the nation from future shocks of this nature the marketing and distribution system will have to sequester a certain quantity of food stocks to constitute a national reserve. These reserves should be of such a volume and in such locations as to feed the marketing and distribution systems in time of crisis long enough to permit external food stocks to be begin arriving in the region.

D) Maintain linkages with international food commodities trading networks- The marketing must be able to channel excess production of whatever nature into the international trading system in order to maintain a level of domestic producer prices that encourages produce marketing and in order to earn credits for the national accounts. At the same time the marketing and distribution system must maintain its links with the international trading system to secure food stocks in time of national deficits.

III Macro-Economic Changes

A. Nigerien Economic Growth

During the past 5 years, uranium production and exports have spurred economic growth in the Nigerien economy. As of 1980, 37 percent of government revenues and 100 percent of budgeted capital outlays have emanated from royalties, taxes and dividends from the uranium industry. Revenue available for investment has amounted to $40 to $60 per capita. (IBRD, Ag Sector Paper, Feb. 1981:8).

The recent uranium wealth has caused GDP to increase at an average annual rate of 18 percent, while GNP has risen by 18.5 percent. Government investment increased by 64 percent from 1979 to 1980, and has remained at around 100 million CFA. Public investment in the agriculture sector has likewise risen by 62 percent over the past 3 years.

Table II

Nigerien Macro Economic Changes

(Millions CFA)

	1977		1978		1979		1980		1981
GDP	291.0		303.5		442.5		522.5		580.5
% change		,20		22		18		11	
GNP	285.1		351.2		428.8		506.7		560.0
% change		23		22		18		11	
Public Sector Agricultural Investment			-		7.55		11.1		12.23
Total Public Sector Investment					62.96		103.5		100.8

Souce:IMF

The effects of this vast economic change have been felt in increases in incomes and the rate of urbanization which has been caused by much of the Government's investments in construction, infrastructure and increasing its services and necessary functions. Incomes have risen in the urban areas altering consumption patterns inducing increased imports of some cereals and processed products. The opportunities resulting from growth in the Nigerien economy have undoubtedly led to increased monetization in the rural economy and perhaps caused some of the changes in crop production and exports that have recently taken place. The infusion of investment funds into the agricultural sector has offered some new opportunities for employment and influenced certain commercial patterns in both crop and livestock production.

B. Nigerian Economic Growth

During the same period that growth occured in Niger, the economy of Nigeria underwent similar but much more fundamental changes, resulting from the oil wealth at the disposal of the country. From 1975 to 1980, GDP in Nigeria increased at an average rate of nearly 20 percent, declining only recently because of the world oil glut. The wealth has infused the entire economy in every sector as investments have been made by the Federal Government and by each state government as well. Employment opportunities have grown, urban migration has increased and incomes have likewise been enlarged as a result of the revenues spread through the economy.

Opportunities for semi-skilled and unskilled labor have increased in Nigeria, drawing large numbers of Nigeriens often for seasonal work. The phenomenon has been insufficiently investigated to determine whether the migration compels many Nigeriens to remain permanently or whether they return to fulfill responsibilities for planting and harvesting in their own areas. However, the research that has been conducted, preliminarily, has demonstrated that most migrants return to their home villages rather than remain in Nigeria or any of the other coastal countries to which they are attracted by the potential for pecuniary gains. (See Painter, forthcoming dissertation).

The demand for food products has increased sharply in Nigeria as incomes have risen, compelling imports both legal and illegal to be made from many neighboring countries, Europe and the U.S. Despite the large government investments being made in the Nigerian agricultural sector, the country is far from its goal of food self-sufficiency and must depend on other sources. This necessity has drawn much of the Nigerien production of cowpeas and caused demand to increase for livestock products supplied often from Niger.

The attractiveness of Nigeria as a market for Nigerien labor and some agricultural products results in benefits for the Nigerien economy, rather than in disadvantages. The funds that remittances offer, the growing markets for exports and the possibility of importing certain products from Nigeria made the economic relationship a vital and necessary one, an indisputable fact of life. Moreover, as pointed out in Baier (1971), for at least the last several centuries, the greater part of long distance trade in West Africa overall, has been oriented in a North South direction. The orientation has been built upon the comparative advantages of the Sahelian and Sudanic zones. While the colonial era caused certain changes in the participants in trade, the terms of trade and the products traded, the rationale for the orientation of the trade has remained unchallenged and, consequently, the pattern of North-South trade continues strong with a set of actors particular to contemporary circumstances. Historically the Hausa states coalesced around trading activities linking the desert areas with the Sudanic zones. Early adherence to Islam helped create a network of contacts that permitted Hausa merchants to situate themselves in a brotherhood, however distant from the comforts of their kin group. Muslim clerics, to this day, are disproportionately responsible for furnishing the traders and brokers to man Sahelian marketing systems in general and Nigerien systems in particular. Their importance is greatest in interregional as opposed to local trade.

IV. The Marketing Problem in Niger

Given the responsibilities of Nigerien marketing systems it is now important to define the marketing problem in Niger that requires solution. The approach taken here is to analyze an array of phenomena that are most commonly cited as marketing problems in Niger.

The objective is to determine which are, in fact problems and which are not.

A) The middle man

Many of the analyses of the marketing problem in the project area focus on the middle-man. It is often alleged that middle men are well enough organized to force the price of produce, especially grains, down at harvest times when the average producer must sell because of his needs for cash. The middle men are then alleged to secrete these stores for 8 to 10 months in obscure warehouses. At the height of the dry season with near monopoly power they open their warehouses. They force the price up during peak demand season and make exhorbitant profits.

Research in many parts of the world, including studies by Scott(1976) and by Ojiga and Robinson (1981) in Northern Nigeria just across the Nigerien frontier, call this picture of the rapacious middleman into question. Ojiga and Robinson for example, find that traders do not necessarily make a profit on cowpeas when the cost of storage, spoilage, losses, the opportunity cost of money tied up in produce in storage and the cost of handling and transport are taken into account. Some years there are profits; some years there are losses. Studies carried out in the last several years by former DS/RAD in Cameroon, in Guatemala and in Thailand have noted the same phenomenon.

An important question here is who is doing the grain storage and where is it? This is a problem that needs greater study. Preliminary indications from the present study are that the greatest part of the storage is at the village level. The people who are doing the storage are, by and large, relatively well-to-to villagers who acquire surpluses of fellow villagers through gift, purchase, in exhange for services,in repayment of cash loans or as a kind of tribute. These relatively well-to-do villagers store the grains in their compound until the time comes for it to begin traveling to its destination. It appears that once the grain begins to travel it spends very little time in storage. Assemblers and large-scale wholesalers make their profits on a rapid turnover of merchandise. Even the largest merchants, despite their monopolist reputations, seem to find long term storage too speculative. They seem to owe their wealth to a large volume of transactions each with a relatively low net return.

The theoretical explanation for the low margins, at least for the village level middle-men, lies in the competitiveness of the market. The capital requirements for a prospective middle-man to launch his enterprise, at the village level and even at the small-scale assembler level, are low enough so that the number of firms engaging in this activity would theoretically expand or contract in response to a rise or fall in net returns. The competitiveness of the individual firms assures that the margins will be small, barring exogenous variables such as national level policy initiatives, and only the most efficient firms will stay in business.

B) Locational Problem

In fact the major problem in food marketing in Niger can be subsumed under this heading. The problem is a conjunction of several subsidiary problems.

1) Location of major food supply areas - The major sources of food surpluses in Niger are the southern parts of the Zinder and Maradi Departments. Moreover, the bulk of grain shipments that enter Niger from Nigeria enter the Nigerien marketing system in Maradi or Zinder.

Livestock surpluses tend to come from Agadez Department.

2) Production and Prices - The nature of the production system in Niger is largely a function of inadequate and unpredictable rainfall in the cultivated regions. In addition low adoption rates of intensive cultivation technology, infrequent use of improved techniques and the predominance of traditional strategies contribute to the low productivity and the yearly fluctuations in output that commonly occur. Stocks and marketable supplies thus fluctuate with the production cycles.

Production was demonstrated by Kohler (CRED 1977: 71-74) to be uncorrelated with price, implying that normal price incentives do not necessarily induce increased production. In fact many farmers must plant as much land as possible, expecting that at least some portion of the crop will mature under the unpredictable and precarious conditions common to Niger. Marketable surplus may well be responsive to prices, but insufficient information exists on this topic to confirm this hypothesis.

Table III presents the evolution of producer prices offered by the Nigerian parastatal Office des Products Vivriers du Niger. O.P.V.N., as of the 1982-83 seasons, buys through village cooperatives only. The price it offers is the same throughout the country.

TABLE III

Official Producer Prices (in FCFA/kg)

Crop	1977/78	1978/79	1979/80	1980/81	1981/82
Millet	30	40	40	40/45	80
Sorghum White/red	30/20	40/35	40/35	40/35	80
Rice(Paddy)	45	45	45	45	70
Peanuts in Shell	50	50	50	50	55
Cotton 1st/2nd/3rd	55/47/40	62/55/45	62/55/45	62/56	
Cowpeas	39	45	45	45	

Source: Ministry of Agriculure

The official producer prices tend to act as a floor price for producer grain sales at harvest time. The OPVN buying campaign in 1982-83 will last from mid-September 1982 to the end of March, 1983. OPVN will be able to buy successfully through the cooperative system at the beginning of that period. This is especially true in villages with difficult access to motor transport. Within a few months after harvest, however, the open market price will rise to the extent that OPVN is a poor competitor.

The seasonal rises of grain prices on the open market encourage people to store grain if they are in a position to do it.

3) Low and undependable crop yields - Although some agronomic research has been undertaken in Niger, no reliable systematic method of estimating yields has been established. Because conditions vary from region to region and year to year, it is important to have the capability to make reliable estimates that will provide a figure for national production with some confidence. As it is, figures for yield vary tremendously,often with Government estimates remaining higher than is reasonably believable and thus projecting a picture of supply that may be far from the actual situation. In short, too little is known about the variation in yields for different crops in differing regions throughout the country to make any firm estimation of yield. For the purposes of this study, however, a revised yield figure for millet of 225kg/ha versus GON'S 327kg/ha. and for sorghum of 200kg/ha versus the GON's 327 kg/ha. To give some notion of how the figure was arrived at Table IV on yields will be of value.

4) Consumption Zones - The major net consuming areas of Niger are the urban centers and the pastoral zones. The pastoral zones hold relatively few inhabitants but they are widely dispersed. In any case the pastoral zones are a considerable distance from the major sources of food supplies.

The city of Niamey is likewise at a considerable distance from the national grain supply sources. It alone, as shown in Table I, represents almost half the Nigerien

Table IV

COMPARISON OF MILLET YIELD ESTIMATES, KG/HA

1		2		3	4	5	6	7
Village A 500 mm Rainfall		Maradi Area, 1979		Daudawa village Northern Nigeria	Niger 1981-82	Niger	Upper Volta 1980	Niger 1976, 1977, 1978,
Local variety	190	Ganda Fields	436					less than 300 kg/ha
		Gammana Average	282	Sorghum	Millet 432	Millet 225		approx. 500 mm
Village B less than 500 mm Rainfall		Gammana Men	353	Indigenous Variety	Sorghum 327	Sorghum 220	Unimproved variety with 790 mm rainfall	rainfall
		Gammana Women	237	1973: 436 ± 172				
Local variety	165	Average	350	1974: 845 ± 112			200	
				Improved Variety				
				1973: 1161 ± 385				
				1974: 1530 ± 245				

(1) ICRISAT study on crop production in Niger; preliminary results from 1982-83 season. 27 farmers in each villages; 95 percent confidence value.

(2) From USAID Agriculture Sector Assessment, Social Analysis of the Nigerien Rural Producer, John W. Sutter, p.37 Ganda = collective fields, gammana = individual plots

(3) From D.W. Norman, Technical Change and the Small Farmer in Hausaland, Northern Nigeria, African Rural Economy Paper No. 21, 1979 MSU, KSU, ABU, Zaria, Nigeria, p.92. Table 5-2. 95% confidence limit. Rainfall in northern Nigeria is considerably higher than in Niger. It averaged over 1000 mm during the study 1973-76 and the previous year.

(4) GON official estimates

(5) Small Farmer Marketing Access Project Team Estimates. This study has used a figure much below the GON estimate, based on yields from other studies, rainfall distribution, type of seed used, knowledge of typical success of crops in Niger. Much of the area cultivated in millet and sorghum receives less than 500 mm of rain per year so that yields must naturally be lower than 400 kg/ha. Information was also used from conversation with agronomists on various AID projects and economists in the Ministry of Plan.

(6) From ICRISAT study area, see writings of Peter Matlon.

(7) From CI Raynaut Recherches Multidisciplinaires sur la Region de Maradi: Rapport de Synthese, D.G. R.S.T., Paris, October 1980, p. 55. Research done in four villages in Maradi Dept.

urban population. A number of other urban areas are also located at some distance from the main supply centers.

5) Transport charges - It costs money to transport food supplies from their source to their destinations. Table V derives the real cost of transport per kilometer per kilogram in Niger. Further study of this question is very important. This table is an attempt to analyze private transport costs. O.P.V.N. transport costs would require an analysis of OPVN management, operations and costs. Public transport costs are set by a fee schedule.

Table VI uses the cost data per kilometer per kilogram generated in Table V to calculate the real cost of transport per kilogram between the source of grain supply and urban centers that are in grain supply deficit areas. In Niamey, the largest consumption center in the country, it costs 14,5 FCFA to transport a kilogram of grain from the Maradi supply center in a 7 ton truck. It costs considerably more in smaller vehicles. It would cost twice as much if the truck returned to Maradi largely empty. This cost figure does not take acount of handling, storage, spoilage, the opportunity cost of money or any risk factor for engaging in the transport venture. In short, the cost of transport alone is a major factor pushing up the retail cost of grain at urban consumption centers.

Table V

Real Cost of Transport per Kilometer per Kilogram in FCFA

Item	Annual Cost	Cost/km/kg[1] (FCFA)		
		7 ton truck	3 ton truck	1 ton pick-up
Amortization of vehicle	2,400,000[2] 1,300,000[3] 900,000[4]	.00857	.01083	.02250
Driver salary	400,000	.00143	.00333	.01000
Spare parts, maintenance and repair[5]	1,200,000[2] 650,000[3] 450,000[4]	.00429	.00542	.01125
Insurance, Registration annual use tax	80,000 70,000 60,000	.00029	.00058	.00150
Gasoline[6]	1,795,200[2] 1,496,000[3] 897,600[4]	.00641	.01247	.02244
Oil, grease, lubricants	179,520 149,600 89,760	.00064	.00125	.00224
Total costs	6,054,720 4,065,600 2,797,360	.02163	.03388	.06993

1) Assuming annual operations are carried out over 200 days during each of which a vehicle travels 200 kilometers fully loaded.

2) 7 ton truck costs 12,000,000 FCFA at full tax price amortized over 5 years. It uses 24 liter of gasoline per 100 km.

3) 3 ton truck costs 6,500,000 FCFA at full tax price. Amortized over 5 years. It uses 20 liters per 100 km.

4) 1 ton pick up costs 4,500,000 FCFA at full tax price. Amortized over 5 years. It uses 12 liters per 100 km.

5) 10% of vehicle cost

6) At 187 FCFA/liter. All vehicles assumed to travel 200 km/day x 200 days/year.

7) 10% of gasoline.

Table VI

Cost of transport between supply points and main urban consumer markets[1]

Destination[2]	Distance in km		Cost in FCFA/kg[6]		
	From Maradi	From Zinder	7 ton truck[3]	3 ton truck[4]	1 ton pick-up[5]
Agadez	776		16.8	26.3	54.3
In Gall	646		14.0	21.9	45.2
Arlit	1,008		21.8	34.2	70.5
Bilma	1,498		32.4	50.8	104.8
Diffa		452	9.8	15.3	31.6
Maine-Soroa		372	8.0	12.6	26.0
Nguigmi		597	12.9	20.2	41.7
Illela	324		7.0	11.0	22.7
Keita	397		8.6	13.5	27.8
	494		10.7	16.7	34.5
Tahoua	334		7.2	11.3	23.4
		160	3.5	5.4	11.2
Filingue	720		15.6	24.4	50.3
Ovallim	767		16.6	26.0	53.6
	730		15.8	24.7	51.0
Tera	835		18.1	28.3	58.4
Ayorou	874		19.9	29.6	61.1
Tillaberi	786		17.0	26.6	55.0
Niamey	670		14.5	22.7	46.9

1) Assumes vehicle is fully loaded for all legs of the round trip.

2) These are the major

3) @ .02163 FCFA/km/kg derived in Table V

4) @ .03388 FCFA/km/kg derived in Table V

5) @ .06993 FCFA/km/kg derived in Table V

6) Cost is figured from either Maradi or Zinder, whichever supply area is closer.

6) Agricultural Prices and Exchange Rates - A number of regional market studies have been carried out over the past few years to collect prices for various food products throughout much of Niger. Although most of these studies report price data that was routinely collected, often on a weekly basis from a number of markets, none reports data over more than two seasons in the same market, so no complete price series is available over a period of years for any one market or product. Still these studies reveal several important characteristics of the marketing system and point out patterns that even though they may be anomalous in a given year, are important to understanding the structure and movements in these markets. Asking the question, what is the market price of a chosen grain? is difficult to answer, for it must be qualified by asking in which market, what time of year and who is selling.

A) Market Prices

The available studies nevertheless show some striking patterns and indicate what kinds of other data need be collected. (Only grains will be discussed here, although most of these studies concentrated on a variety of products.) First, price fluctuations occur in all markets during the year with prices at their highest in June and July, they begin to fall as the growing season progresses, decline to their lowest in October, November and December, and then start rising often steadily until the next harvest. There are some variations in this pattern, but for the most part it holds throughout most of Niger, and in most of the Sahel. Another striking pattern in prices is that during some years price differences between markets remain fairly consistent. If these price differences are seasonal, they may only reflect local production and marketed supply conditions, which of course are both highly variable. If they hold consistently across years they may reflect differences in transport costs, preferences for use of certain markets or access to supplies from elsewhere. Historically, certain markets have dominated a given region because of their size or location, and often they are preferred for trade of specific products or kinds of transactions. Preferences for these markets do shift over time, but in the short term, price data should effectively indicate which markets are favored and for which products. However, without data from a number of consecutive years it is difficult to determine if the pattern is anomalous or consistent.

B) Marketing Margins

One important element in the marketing chain that has been little investigated is the spread between the producer price and the market price. If such a spread could be calculated, the efficiency of the local markets could be judged in passing along costs or calculating the profits of the merchants selling grain. Data are needed on prices actually paid to farmers and on whom they sell to , to discover what they recieve and how costs are portioned out in the marketing system. With these price data, it would be possible to discern the pattern of sales, how marketing decisions are made, and what the options are for a farmer to sell his product. This kind of data collection and analysis at the farm level on marketing decision-making has been undertaken by ICRISAT, but nothing else of a systematic nature has been done on marketing margins. (The Agricultural Sector Assessment's Marketing section addressed this in a cursory fashion.)

C) Marketing Options

Farm level decision making on marketing needs to be more fully understood. Presently, producers can sell to the cooperatives which guarantee a price that is presumably competitive with merchants' prices when transport and other costs are deducted by the merchant. But the price offered by a merchant will be determined by the location relative to the market or a road, the credit arrangement made by the farmer, and any number of other factors. The cooperative may be theoretically a good option, but it may be inconvenient or impractical for other reasons. Moreover a producer has other options in disposing of his crop. Other necessities and obligations may require a quick sale for a low price, or gift giving, which nets him no financial gain, but enhancies his social status may, take a portion of the marketable surplus.

D) Prices and Imports

The fluctuations in local market prices reflect more accurately than almost any other indicator, local supply and demand conditions. But data are needed as was stated earlier on how much of a crop is marketed and on household consumption patterns, so that a notion of cash and consumption needs can be constructed. Without such data predicting consumption needs becomes complicated since in most of Niger, local production is insufficient to meet local needs and supplies must come from elesewhere. Knowing their origin is cruicial in discovering the pattern of trade. If production is as low as the SFMA team estimates, then very little local grain is available for marketing and

movement elsewhere in the country, leaving many markets in Niger in deficit. Such a deficit is made up with grain from other sources, notably imports. The quantities imported are determined by a number of factors, which cannot all be elaborated on here. However, it is apparent that at least in the marketing year 1982-83, a significant quantity of grain was imported from Nigeria. This may have occurred in other years, and it depends on market prices and production in Nigeria, on the black market exchange rate, and on the quantities demanded in the local markets. And if the SMFA team's estimates are accurate on domestic consumption needs, then substantial imports would have been necessary this year as well as in previous years. There is no way of knowing what these quantities have been, in past years, but one indication of the flow may be the black market exchange rates, which at least indicate hypothetically in whose favor the trading would be, when demand is taken into account.

Table VII

Market Exchange Rates, CFA to Naira

	1975	1976	1977	1978	1979	1980	1981	1982
Official Exchange Rates	348.22	381.38	381.13	355.27	352.92	386.61	442.7	482.48
Recorded Black Market Exchange Rates	243.33	279.40	240.67	199.92	203.13	232.57	296.64	293.86
Parity Exchange Rates	243.33	281.20	234.34	209.94	221.0	255.43	320.24	326.27

Sources: Official Exchange Rates and CPI figures from IMF International Financial Statistics; Black Market Exchange Rates from Pick's Currency Yearbook, 1979 and averages from Monthly Bulletins.
Parity exchange rate calculated by using the black market rate reported by Pick's Currency Yearbook in the following formula: exchange rate x Nigerian CPI/Nigerien CPI.
1975=100 for CPI.
1982 black market and parity exchange rates are based on ten months of observations;CPI figures for Niger are estimated from first two quarters of data for 1982, and estimate the entire year in Nigeria.

The comparison of these exchange rates reveals similar movements from year to year. The parity exchange rate is consistently higher; it theoretically indicates the real buying power of the CFA vis a vis the Naira, since it is deflated by the CPI. It curiously increased in 1982 over 1981, despite the fact that the black market exchange rate declined over this period. The decline in the latter was confirmed by money changers interviewed by the SFMA team.

These rates are clearly not the most important determinant of the direction of trade, but may set the magnitude of trade which is determined more directly by local production and needs. The inter-annual fluctuation in these rates could conceivably induce trade, but it may be more reasonable to look at quarterly or monthly fluctuations in these rates. In any case, this aspect of cross-border trade needs to be more fully investigated since these rates contribute to the movement of grain in both directions.

E) Nigerian Prices

Another aspect of this trade is price data in Nigeria. Presumably if production is sufficient in Niger to allow some to be exported and the price is attractive in Nigeria, the grain will be exported. Conversely, if supplies are ample in Nigeria, which is more often the case, with a favorable exchange rate for Nigerien merchants, grain will be imported from Nigeria. This was the case this year.

It would be useful to have Nigerien market prices for grains to compare them in the same currency, but they are unavailable. In the absence of these prices, producer prices have been used instead. They are only a crude indicator of the actual market price, since they are the official guaranteed minimum, while in fact market prices are many times higher because of high rates of inflation and levels of demand. Still for the sake of comparison, Nigerien producer prices have been converted to Naira, to provide an indication of the theoretic attractiveness for Nigerien merchants to sell in Nigeria or buy there as well.

Table VIII

Millet Producer Price Comparison between Nigeria and Niger

	1976	1977	1978	1979	1980	1981	1982
Nigeria Naira/kg.	.80	1.10	1.10	2.20	2.20	3.21	3.30
Niger, CFA/kg.	30	40	40	40	40	70	80
CFA to Naira calculated using parity exchange rate	.84	.94	.84	.88	1.15	2.56	2.61

1982 Nigerian producer price is estimated. Sources: IBRD. Nigerien Ministry of Agriculture.

Keeping in mind that market prices are much above what is calculated in Table VIII, it is obvious that market prices are much more favorable in Nigeria than in Niger. Such favorability would support the GON's contention that much of Niger's grain is exported and would easily draw stocks into the Nigerian markets if such grain were available. But if supplies are as limited as the SFMA team estimates, then it is unlikely that sufficient quantities are available for export, particularly not to the extent the GON claims. It is possible that in some recent years with high production levels in southern Niger, some grain was sold into Nigeria, but such a case is likely an exception to the pattern of grain moving northward rather than southward. And now, with the exchange rate more favorable for Nigerien merchants, grain in Nigeria is quite affordable. The higher production and abundance in local Nigerian markets, access to these markets and the high demand for hard currency in Nigeria, makes the proposition an attractive one. In fact, given the patterns of production and consumption in Niger where local stocks have not been re-constituted over the last few years and supplies in local markets insufficient, grain must be procured from outside the local markets. Nigeria is the only souce for such grain. It is unfortunate that time series data on market prices in both Niger and Nigeria were unavailble for this study because the profitability of this cross-border grain trade could have been calculated.

F) Other Evidence

Merchants interviewed by the SFMA team reported that the black market exchange rate had dropped from 275 CFA/Naira in 1981 to 250 CFA/Naira in 1982. When the SFMA team visited markets, the Nigerian market price was reported to be 40 Naira per 100 kg. bag, converted at 250 CFA/Naira, this was 10,000 CFA. Merchants reported that the transport cost from markets in Kano, Sokata, or Kaduna to southern Niger was 1,000 CFA per bag, thus making the "landed" price in Zinder or Maradi 11,000 CFA. At this time of year, the middle of the harvest, the local price was at or near the season's nadir, at 10,000 CFA per bag, 1,000 CFA below what grain from Nigeria would have cost in the same markets. But the merchants interviewed, claimed they could easily sell their grain at 11,250 or 11,500 CFA per bag, indicating that the grain was being bought for storage by merchants who might sell it later, or more likely being shipped farther north to deficit areas where the price is always higher and such an initial price can be easily recouped. These merchants also indicated that they deal almost exclusively with Nigerian grain. Morevoer, the amounts that they deal with seemed only to be available from Nigeria, not from local production and stocks. And furthermore, they claimed they suffer little loss in storage since they claim to move their supplies very quickly, even at the apogee of the harvest when local supplies are plentiful.

7) Summary - The real market problem in Niger is a function of Nigerien physical geography. The main supply areas and the main consumption areas are very far apart. Production is not consistent from zone to zone or from year to year. Yields are generally low and undependable. The main consumption centers can feed themselves in most cases only at the cost of transporting produce several hundred kilometers over roadways. The geographic factors alone, therefore, conspire to force the cost of grains in the main consumption areas to a level in many cases 20% - 30% above that of the supply areas.

V. Regional Specialization in Niger

For purpose of this study, Niger can be divided into three regions according to economic specialization. The differentiation is based on the basis of population size, density and growth rate and production and consumption needs. These zones are the overall sedentary agricultural zone, the pastoral zone and the urban zone.

Table IX divides the Nigerien national population by zone according to the official 1977 census and estimates its subsequent growth to 1982.

Table IX

Nigerien Population Estimates (000 inhabitants)

	Growth rate	% of total 1977	1977	1978	1979	1980	1981	1982	% of total
Rural sedentary	2.43	73.7	3756.4	3847.7	3941.2	4037.0	4135.1	4235.6	72.0
Urban	7.27	11.8	602.0	645.8	692.7	743.1	797.1	855.1	14.5
Pastoral	1.43	14.5	740.0	750.6	761.3	772.2	783.2	794.4	13.5
Total[1]	2.77	100.0	5098.4	5244.1	5395.2	5552.3	5715.4	5885.1	100

Totals do not agree perfectly with projections according to growth rate due to rounding off. Source: Ministry of Rural Development

A) Agro Pastoral Zones

A limited portion of the southern belt of Niger receives an average of between 700 mm and 500 mm of rain per year. Rainfall declines to 400 mm and less as a transition zone known as the agro-pastoral zone is approached. This southern belt is critical to Niger's crop production since the southern tiers of the three departments of Dosso, Maradi and Zinder receive the highest rainfall and contribute most heavily to overall agricultural production. These three departments contribute 58.4 per cent of agricultural production, contain 59.7 per cent of cultivated land and are inhabited by 53.9 per cent of the rural population. Population density in the zone averages above 40 people/km.^{2}

Table X breaks down the figures of surface cultivated, production and share of the national population by department.

Table X

Contribution of Southern Departments to Agricultural Output and Population

Department	% of total national surface cultivated	% of total national grain production	% of total national population	% of national rural population
Dosso	17.0	15.9	13.5	14.6
Maradi	22.6	20.4	18.5	19.0
Zinder	10.1	22.1	19.6	20.3
Total	59.7	58.4	49.6	53.9

Source: Ministry of Rural Development

B) Pastoral Zone

There exists no clear demarcation of the pastoral zone in the southern part of the country since livestock raising is common throughout all of the agricultural zone. Although there is some limited crop production throughout much of the

pastoral zone, livestock production dominates the regions with less than 400 mm. of annual rainfall, and stretches well into the arid zones of the country. Population density of this zone is often below 20 inhabitants/km2. Diets are dominated by animal protein, in the form of milk and supplemented by grains and other food products purchased with receipts from animal and animal product sales. It is a grain deficit area and requires supplies to be shipped long distances to centers of distribution, causing prices to be high throughout much of the year.

The relationship between the pastoral population and the sedentary population of the zone which deals commercially with them has been little studied and presently not enough is known about these relationships to understand how they have been evolving in recent years. But research is now underway to explore these relationships and to detail the movements of herders, herd structure, and the economic and social forces that have brought about change in these societies. Undoubtedly, changes in herd size and composition have taken place resulting not only from the droughts, but from other economic and physical conditions. The extent of these changes is not well known, but it appears that the terms of trade for many pastoralists have declined over the past few years. Their position in the marketplace and their ability to buy the food products they need may well have been eroded by the changes in relative prices of the products they sell and those which they consume.

Per capita annual cereal consumption for the pastoralists is thought to be between 120 and 160 kg. The range of this figure depends on which group of pastoralists is considered. For this study, a figure of 140 kg./person was used and with a population of 783,200 pastoralists at the end of 1981, the annual cereal needs for the group would be 109,648 tons.

C) Urban Areas

The urban population of Niger is estimated at 797,100 at the end of 1981. This represents 14.5 percent of total national population and is growing at an annual rate of 7.27 percent. The department of Niamey had a population estimated at 1.33 million at the end of 1981. Probably one quarter of this population lives in the city itself.

Consumption in Niamey and other urban areas is subsidized by the government which buys grain throughout the country transports it, stores it and sells it to urban residents at a price below cost and often below the open market price. The present study team projects a per capita

cereal consumption figure of around 180 kg. Because other products, more animal protein, pasta and more fruits and vegetables are available for consumption, many urbanites need not consume cereals to the extent that rural residents do. Based on 1981 population figures of 797,100 urban dwellers and 180 kg/per person, annual consumption would have been 143,478 tons in the urban areas.

D) National Cereal Consumption Needs

Table XI presents various estimates of per capita grain consumption in Niger. An attempt is made in the table to differentiate sedentary cultivators from pastoralists from urban dwellers in terms of per capita grain consumption.

Table XI

Estimated Per Capita Cereal Consumption in Niger (kg/year)

Group	1	2	3	4	5	6	7
Sedentary Cultivator	212.8	480.11					210
Pastoral	120	290.3			140		140
Urban Dweller	140	364.3					180
Overall	190.5		220	225		190	

1) SEDES, Les Produits Vivriers du Niger, Paris, 1963
2) Eddy, E., Labor and Land Use on Mixed Farms in the Pastoral Zone of Niger,(CRED University of Michigan, 1979)
3) Kohler, op. cit. p.92
4) Current factor used in Government of Niger calculations
5) John Sutter, 1982
6) FAO estimate cited by Kohler, op, cit., p.92
7) Estimate accepted by the present study team based on table.

Table XII takes the information developed in Table IX and derives demand for cereals in Niger under the official GON hypothesis of per capita consumption and under the per capita consumption hypothesis of the present SFMA study.

Table XII

Comparison of Annual per Capita Grain Consumption by Group, 1981

Group	Population	Per Capita Consumption Estimates		Total Consumption (1000 tons)	
		GON	SFMA	GON	SFMA
Rural Sedentory	4,135,100	225	210	930	868
Pastoral	783,200	225	140	176	109
Urban	797,100	225	180	179	143
Total	5,715,400	225		1,286	1,120

Table XIII compares official Nigerien government estimates with those of the present study regarding estimates of national cereals production and availability in 1981-1982.

Table XIII

National Grain Production and Availability (1981-82)

	Millet		Sorghum		Total	
	GON	SFMA	GON	SFMA	GON	SFMA
Hectares cultivated	3,037,600		982,320		4,019,920	
kilograms/hectare	432	225	327	200		
Production (000T)	1,312.2	683.5	301.2	196.5	1,613.4	880.0
Losses and Seed (000T)	196.8	102.6	45.2	29.4	242.0	132.0
Net Available	1,115.4	580.9	256.0	167.1	1,371.4	748.0

(Source: Ministry of Agriculture)

1) It is assumed that 15% of gross production is unavailable for human consumption due to losses and seed requirements. Further study is needed to establish the accuracy of this factor.

Table XIII, however, can be only a crude approximation of national cereal availability. Because data available on crop yields and hectarage cultivated are unreliable it is difficult accurately to measure national output. Since much intercropping is done and many fields must be replanted during the season, systematically sampling the area cultivated becomes almost impossible. This, compounded with the unreliable yield estimates, calls the accuracy of production figures into question. At present, there exists no reliable alternative means available to the GON to collect figures on area cultivated so the GON figures must be used. If these figures are used, however, the inevitable conclusion, factoring in the yield figures established in Table IV, is that Niger had a large cereals deficit in 1981-82. Table XII drives the deficit according to the production and consumption hypotheses of the Nigerien government and of the present study.

Table XIV

Niger Cereals Needs and Availabilities (1981-1982)

	GON	SFMA
Total Needs (000T)	1,286.0	1,121.4
Net Availability (000T)	1,371.4	748.0
Difference (000T)	+ 85.4	- 373.4

The picture of food production and marketed quantities is a complex one, with little statistical information of good quality. But if interpreting the production and marketing trends is difficult, it is much more difficult to determine what the picture is with regard to imports. First, because there is much debate about production levels, it is difficult to determine what supplies are and what per capita consumption may in fact be. Without extensive studies to demonstrate consumption levels, it is almost impossible to determine national need and thus the demand for imports, which are made to fill the gap between local supplies and needs. Furthermore, the difference between the quantities officially reported as imports and the much larger quantities which are actually imported, suggests that the shortfall between local production and needs is much greater than is officially admitted. The quantities that make their way into the Nigerien markets, particularly from Nigeria, bespeak a food situation far worse than the government's calculations indicate.

VI. The Present situation

A) Sedentary rural grain cultivators

As mentioned above, the most productive areas of the agro-pastoral zone are in the departments of Dosso, Maradi and Zinder. Insofar as grain surpluses are produced in Niger in a given year to feed the marketing sytem they would tend to come from these three departments.

It is very difficult to estimate the amount of grain available to the marketing system on a national basis. Studies are spotty and no national level data are available. Table XV presents data from the 1981 harvest taken in a sample of villages in the Dosso Department. It illustrated the allocation of the harvest in a sample of 119 households.

Table XV

Percentage Allocation of 1981 Grain Harvest in Dosso Department

Stored for household consumption	87.70
Sold	
in market	.07
to outside merchants	.19
to cooperatives or canton chiefs	.88
to private individuals	.86
Given	
to Muslim clerics	3.71
to relatives	1.37
to friends	.64
to traditional leaders	.45
to elderly persons	.90
to repay debts	.27
for services of blacksmith or herder	.17
to land owner	.12
Stored for later sale	.40
Other uses	2.00
Total	99.73

Source: "Resultats de l"Enquete sur la situation de depart dans les Districts de Harikanassou, Koygolo, Tibiri, Guecheme, Diandiou et Kara-Kara" Republique du Niger, Ministere du Developpement Rural, Project de Developpement Rural de Dosso, Section Suivi Evaluation, Document S.E. No. 24, Dec. 1982, Table 12. (Survey of 119 households)

Several points should be kept in mind when interpreting this table. First of all, Dosso, among the more productive areas of the country, would tend to be able to satisfy producer household consumption needs with a lower portion of household harvest than in most other areas. However, 1981 was not a good crop year in general in Niger. This implies that, in Dosso and elsewhere, people were storing larger portions of their harvest than they did in say, 1980. Another point is that after storing the largest part for

household consumption the remainder is allocated to a number of takers, few of whom receive a share of any significant size. Almost a third of this remainder, however, goes to Mulsim clerics. A somewhat smaller share of the remainder is either sold, put aside for future sale or given in repayment for debts.

The hypothesis suggests itself that these clerics and assorted buyers are the first link of the marketing chain. Together their share of the harvest of the 1981 Dosso sample was 6.38%. This hypothesis is consistent with the historical role Muslim clerics have played in Sahelian West Africa. Moreover, in the Senegambia area, for example, clerics are still the most prominent actors in rural marketing systems for a wide range of goods. Finally, it is not possible to determine from Table XV which recipients of cereal gifts would be inclined to store their grain for future sale. It seems likely that as many recipients of gifts would be relatively well-to-do as would be impoverished. The conclusion is that, in 1981, in one of the most productive areas of the country, between 6 and 9% of the harvest found its way into the marketing system one way or another.

The same Dosso Department survey shows 1981 production per capita for the sample families of 243.5 kg. These families apparently felt their food security needs were met by setting aside 213.5 kg per capita for home consumption.

The quantity of grain available to the national market varies as a function of two factors. Most importantly it is a function of production. Producers will tend first to safeguard a vital stock to meet their family's annual consumption needs. Other requirements may intervene, of course. A producer will have to pay his debts; he will have to meet his several responsibilities to the local cleric, to his more distant relatives and to the friends and neighbors with whom he maintains reciprocal relations.

Kohler, for example, (CRED 1977:6) cites Becker (1974) as stating that a given family will have certain stable needs for grain supplies and will market what remains for cash needs, making fluctuation in marketable surplus greater than fluctuation in annual production. At the same time it may be possible that the increased monetization that has taken place in the economy since Kohler did his research has meant that cash needs must be met for loans or various social obligations. This need would compel many producers to sell off a given quantity each year in order to meet their pecuniary needs. In either case, so little is known about marketable surpluses at the village level that it is difficult to draw any solid conclusions. Both Raynaut (1978) and Sutter (1979 Ag. Sector Assessment) assert that exchanges of grain are a local phenomenon, with a

small number of transactions being made outside of the village, reaching commercial channels. If this is the case for most of domestic production, then available commercial supplies from local production are small and would be insufficient to cause the large scale speculation that is commonly believed to take place.

After securing the family's vital stock and meeting his other responsibilities a producer will deploy his remaining stocks more or less as a function of the spot market price. If spot prices are low he will tend to store more; if spot prices are high he will tend to market more. Indications are that as much as they would like, in the abstract, to build up long term reserve supplies of grains, few producers have been able to reconstitute the reserves attributed to them in the pre-drought period. Indications are that virtually all the grain from a given harvest is either consumed, sold or distributed before the succeeding harvest.

Based on the material from PDR de Dosso base-line study and from field work done for the present paper the following sketch emerges. At the present time a producer has two marketing options for spot sales. He or she can sell either to private parties or through Government channels. This year's grain sales through government channels are being handled exclusively through the cooperative system. Spot prices for grain sales in Zinder and Maradi during the week of October 18,1982 were 100 FCFA per kilogram. In villages 35 and 53 kilometers west of Zinder on the paved road spot prices of 85 FCFA per kilogram were reported. Given the cost of transport from the villages to Zinder plus the opportunity cost of a person's time during harvest, many household heads would find it more advantageous to sell in the village than to sell in Zinder. Villagers maintained they paid transport charges of 300 FCFA per 100 kg sack of grain to take their produce to market in Zinder. This does not include the cost of the producer's round trip travel.

Meanwhile the cooperative is offering 80 FCFA per kilogram at all its buying centers. Government channels are therefore very competitive at this time of this year in the rural areas. The farther from central markets, moreover, the more competitive the cooperative system. On the other hand, the further into the dry season, the higher the spot price from the merchants. In that system, all the more family heads would be impelled to sell through private marketing channels, even if they have to transport their produce to market themselves.

Grain sold on the spot market at harvest time or shortly thereafter represents only part of the grain that circulates in the national marketing system. Muslim clerics are

apparently accumulating stocks of grain that considerably exceed their food requirements. They are in a position to hold onto a large portion of their stocks awaiting a propitious moment. Likewise, sales to private individuals within the village account for transfers equal to sales through the cooperative. Are these quantities also held in reserve for future sale? There is also some forward sale of grains although, judging from the PDR de Dosso study, less than expected. A small amount of grain, in the Dosso study, is given to individuals in repayment of money advanced during the year to the producer. The forward price of grain in these cases is generally prejudicial to the producer. Finally, a certain amount of grain given in gift should be viewed as tribute in a patron-client relationship. A large share of this finds its way into the marketing system. It is difficult to estimate the shares or quantities involved.

There is the question of where the stocks of grain are stored that enter the market between the height of the dry season and the following harvest. Interviews with large merchants in Zinder, Maradi and Tahoua all point to small margins, in the range of 250 to 500 FCFA per sack, per transaction. These merchants are, of course, dealing in large quantities of grain and, therefore, make large absolute profits. They maintain they have limited storage capacity. Given the low margins their interests are best served by high turnover rates of stock. Who then is storing the grain? The hypothesis that is suggested by the available evidence is that the vast majority of storage space is at the village level in the granaries of the Muslim clerics and of those private individuals who are well enough off at harvest time to buy excess production of fellow villagers in need of cash or who manage, in the course of the year,to accumulate stocks thanks to their socio-political position in the village.

Cash needs impel a number of villagers to part with a portion of their vital stocks at harvest time. They are anticipating enough cash income by the time remaining vital stocks run out to be able to replenish them at the current price. This problem becomes more and more serious as one proceeds north into the less productive agricultural areas of the country. The price to replenish stocks is often very high. The problem is that the factor determining the price is the cost of transporting it back from the central market at time of need. If there were a means of storing in the village the costs of replenishment in the dry season would be considerably reduced. It would be worthwhile to investigate the possibility of a secured loan program at the cooperative level. It is understood the MDR is already discussing this. Under such a program a producer in exchange for cash would deposit a quantity of grain with the cooperative. In the dry season he would have

the right to take back his grain by repaying the original loan plus a sum that takes into account the cost of storage, handling and the use of the money. Presumably this would cost less for grain stored locally than for grain, in effect, stored in a central town.

*Recommendation - AID should mount a study designed to test the feasibility of a village cereals bank project. The study can be designed and implemented by the staff of S & T Bureau's Small Farmer Market Access Project. The same resources could be used, if appropriate, to design the actual project.

B) Grain Supplies in Non-producing Areas

There are two classes of zones in the country that do not produce significant amounts of cereals. There are the urban areas and the pastoral zone.

Grain supplies are delivered to these zones through two channels, the private merchants and OPVN. OPVN is a Nigerien parastatal agency. It has two major functions. Its first function is to manage a chain of warehouses in which the national grain reserves are kept in case of food emergencies. This function will be discussed in a later section. The second function of OPVN is to stabilize national grain prices but especially to stabilize prices in the urban areas where people are entirely dependent on the marketing system for their supplies.

The most important supply centers of the country, whether from domestic production or from grain importation from Nigeria, are Maradi and Zinder Departments. During the 1979-80 buying campaign over 90% of the millet bought by the UNCC for national distribution came from these areas. Even during the following, less productive year, UNCC acquired over 80% of its supplies there.

During the week of October 18, 1982 large quantities of millet identified as coming from Nigeria, were seen in the Maradi and Zinder markets. While estimates are hard to make, several hundred tons were seen in the open.. OPVN is paying farmers 80 FCFA per kilogram at its buying centers wherever they may be. Nigerien grain in the Zinder and Maradi markets was selling for 100 FCFA per kilogram. Nigerian grain was selling for 11,000 to 11,500 FCFA per 100 kg sack. However, Nigerien grain was available only in much smaller lots than Nigerian grain. A large scale buyer would be willing to pay something of a premium to save the time assembling a shipment. On the other hand,one Nigerian trader was complaining it did not pay this week to bring grain in from Nigeria. This price differential is probably a short lived phenomenon connected

with the arrival in bulk of the Nigerien harvest on the market.

The cities of Maradi and Zinder are the most important grain assembly points in Niger whether it be for grain controlled by OPVN, by domestically supplied merchants or by merchant importers (It appears that the latter two are generally different persons and conduct their operations in different parts of the market). Distribution from these assembly points takes grain to urban zones, pastoral zones and other deficit areas all over the country.

Who pays the cost of distribution? OPVN buys grain at 80 FCFA per kilogram and sells at 120 FCFA kilogram nationally. The buying and selling price do not vary from Maradi and Zinder to Bilma. Yet the OPVN director general told the study team it costs OPVN 25 FCFA per kilogram to take grain from Agadez to Bilma alone and Agadez is about 750 kilometers on the paved road from Maradi.

Niamey, by far the biggest market in the country, is about 650 kilometers from Maradi. In the OPVN case the cost of distribution in the case of most of the grain distributed far exceeds the 40 FCFA margin. The government, therefore, picks up a large share of the cost of food distribution.

However, in cases of private distribution of either domestically produced or imported grain the consumer pays the cost of distribution. One objective of OPVN is to be able to intervene at several critical distribution and consumption points, principally Niamey, Agadez, Maine and N'Guigmi, with sufficient quantities of grain to drive down the prices for local consumers in those markets and for outlying consumers whose cereal supplies pass through those markets. These markets are the hubs of regional distribution networks and it is theoretically sufficient to intervene in them to have wide ranging impact on village retail markets.

The danger is,assuming OPVN can control the grain necessary to have the impact it desires, that it will succeed in driving the retail price in a given retail marketing system below the level private merchants can recoup their costs. Then the private merchants will withdraw from the market requiring OPVN to meet all the cereal needs in a given area. OPVN is not designed to fulfill this function.

More likely, a two tier market will have to be accepted. A privileged group will buy at OPVN prices. The majority of people will have to buy at the free market price high enough to permit a profit for the merchants. In fact this is more or less the current marketing system in urban areas and the pastoral zone. The problem with this system is in the economic cost of subsidies to OPVN and with the social cost of creating two classes of consumers.

Civil servants have the right to buy one sack of millet per month from OPVN at the official price of 12,000 CFA per sack. This right may be considered a benfit of employment with the government. A large share of OPVN sales is made up of these purchases by civil servants.

In terms of stabilizing prices while maintaining a steady flow of cereals to structurally deficitary areas, OPVN should explore the implications of charging consumers a large share of the real cost of cereal distribution in a given market. This would have the advantage of reducing the drain of OPVN subsidies on the national budget while maintaining a realistic pressure on private merchants to charge prices determined by free market forces.

If civil servants are not to experience a drop in their real incomes with more flexible OPVN pricing they will have to have a cost of living allowance tied to grain prices at their post. It may, in fact, be a smaller drain on national resources to subsidize the grain distribution system through adjusted civil service salaries than through large outright subsidies to OPVN. This should be analyzed.

C) Food Security Issues

The national vocation of OPVN, even more than food supply to non-producing areas or price stabilization, is national food security. At the present time OPVN has a 45,000 ton reserve storage capacity. Storage depots are located in the largest towns in each department. There are a total of eleven storage depots nationally. While the private sector can and will take care of, say, urban food supply only OPVN can or will take charge of securing grain reserves.

Assurance of food security is one of the three objectives of U.S. food and agricultural assistance (see AID Policy Paper, Food and Agricultural Development, 1982:2). AID is emphasizing four interrelated elements to accomplish its food and agricultural development objectives: 1) improvement of country policies to remove constraints to food and agricultural production; 2) development of human resources and institutional capabilities; 3) expansion of the role of developing country private sectors and the complementary role of the U.S. private sector in assisting this expansion; and 4) employment of all available assistance instruments in an integrated manner in a way that contributes to the other three elements.

Given the priority of assurance of food security in AID policy, given the demonstrated vulnerability of Niger in the

food security domain and given the critical role that OPVN alone can play in providing for national food security. USAID should explore further ways in which it can intervene in favor of OPVN's food security activities. One suggestion would be to help OPVN reorganize into two or three sub-directorates one of which would manage the OPVN food security operations as a discrete undertaking, another of which would manage OPVN's normal urban food supply functions as a discrete undertaking and a possibly a third which would manage OPVN's price stabilization functions as a discrete undertaking. AID might then want to explore supporting the food security sub-directorate in terms of acquisition of stocks, construction of storage, training of personnel, creation of distribution networks, all manner of attendent operational assistance, etc.

* Recommendation - AID should focus its support of OPVN on promoting a reorganization that recognizes its various functions and vests each in a discrete sub-directorate. AID should then give the bulk of its support to the sub-directorate charged with food security.

D) Livestock Sales

The Nigerien national livestock service estimated the national cattle herd at 2,287,900 head in the pastoral zone and 1,066,100 in the agricultural zone in 1980. Independent research within the NRL project confirms these estimates.

Research in Sahelian pastoral systems has also shown that in pastoral zones annual offtake is between 8 and 11% of the cattle herd. This number is about 1/3 aged and/or sterile cows and 2/3 males between ages 2 and 6. In the agropastoral zones cattle offtake is lower, about 5%, although the composition of sales is about that of the pastoral zone.

Theoretical offtake of the 1980 Nigerien cattle herd would be between 250,000 and 300,000 head, assuming the pattern consistent with that seen elsewhere. From this point, all that is known is that 41,000 head were exported under license to Nigeria and 88,000 where slaughtered in Niger in municipal slaughter houses. What happened to the other 125,000 to 175,000 head that were theoretically available to the market? Estimates of illegal sales to Nigeria range as high as 368,000 head.

For many reasons similar calculations for sheep and goats are more difficult than for cattle. The principle reason is that uncontrolled slaughter is very common. On the other hand, the analysis that follows is as valid for them as for cattle.

The problem is that the largest meat market in Niger by

far is a considerable distance from the largest meat supply areas or trade routes. It is more convenient and less expensive for livestock merchants to trek their animals to antennae of the Nigerien market just over the frontier than to trek them to Niamey. Moreover the Nigerian price is more advantageous to the Nigerien producer than the domestic price even discounting the much over-valued naira.

Purely from a locational stand point it makes sense to shunt Nigerien livestock to Nigeria while supplying Niamey with Malian livestock from areas directly north of Niamey Department. Such a strategy would maximize foreign exchange earnings while keeping the cost of meat to Niamey consumers to a minimum.

The problem then is that demand in Nigeria may be so great and prices so high that Niger would risk depleting its national herd by opening its frontiers to free exports. In order to guard against this danger it is important to have a real idea of what animals are being exported and to promote the export of animals generally considered expendable in offtake statistics.

Specifically the Nigerien government can easily determine from the estimates of the national livestock service the numbers, species and age and sex structure of expendable animals in any given year. It could subtract a number intended for domestic consumption. Then it could facilitate export of the remainder while maintaining controls on export of, especially, fertile females. Smuggling unexpendable animals into Nigeria costs more than selling through legal channels. Animal smuggling cannot be stopped. But it can be reduced to the degree that the marginal cost of smuggling an animal approaches the marginal benefit of selling him. The marginal benefit of selling him can be reduced by facilitating sales of large numbers of expendable animals at the lowest cost possible. This opening of exports to Nigeria with the blessing of the Nigerien government may help protect the integrity of the national herd.

F) Irrigated Production

This paper has not been able to examine with any depth marketing issues associated with irrigated cultivation. One remark, consistent with the general theme of this paper, is appropriate. The potential for irrigated cultivation in Niger is concentrated in Niamey Department. From purely locational considerations the proximity of potential irrigation works to the largest market in the country is an argument in favor of irrigated development. The main marketing problem in Niger is

the great distances between the main supply centers and the main consumption center. It is logical to look for a way to create large scale production increases in the vicinity of that consumption center, therefore.

This is purely a market supply argument. It must be admitted that creation of irrigation works brings difficult technical and especially social problems. This has proven to be the case in the Niger River Delta and along the Senegal River. In fact it is entirely possible that the real cost of grain delivered in Niamey produced in irrigation works near Niamey Department will exceed that of grain trucked in from Maradi.

The point here is that all parties concerned with food marketing in Niger should give serious consideration to various irrigated agriculture options as one means of making available ample food grain supplies at reasonable prices to inhabitants of the largest consumption center in the nation.

* Recommendation - AID should give top priority to development of irrigated cultivation in Niamey Department to the degree it is feasible. Only irrigated cultivation would have any possibility of keeping marketing costs for food grain at a reasonable level for the city of Niamey.

VII Prospects for the Short Term

The next 3 to 5 years seem likely to follow in the pattern of the past two. Due to continuing political problems for the nuclear power industry, demand for uranium will not grow substantially. Moreover, the world economic recovery will not lead to rapid growth. Demand for Nigerian oil will remain more or less level if not drop somewhat . The drop in oil revenues will disrupt the Nigerian economy further since spending commitments have been made already on the assumption of larger oil revenues than now appear reasonable. This will cause further erosion of the naira. The terms of trade would shift increasingly in favor of Niger assuming the Franc zone can more or less maintain its level vis-a-vis the dollar.

For Niger this means the government will have to cut back its expenditures to correspond with its drop in revenues. In terms of food marketing it will have to examine reductions in subsidies to OPVN, and to the Central d'Approvisionnement which provides agricultural inputs. In order to safeguard other sectors of the national budget the government may have to encourage increasing reliance on private marketing channels to distribute food. On the one hand this would imply a reduction of the OPVN mandate. On the other it will mean an increase of grain prices for at least one sector of the consuming public, those presently able to buy at the controlled price. At the

same time the government may want to examine means of turning the livestock trade with Nigeria even more to its advantage.

The pressure to export grain from Nigeria to Niger should grow. Niger and Nigeria may, in fact, want to explore a modus vivendi for exchanging livestock for grain at institutional levels. This scheme would, however, be very expensive for the governments involved unless it addresses the interests of the small scale producers in both countries.

VIII. Further Information Needed

In order to make an in-depth analysis of the Nigerien marketing system certain information, at present unavailable, would be very helpful.

1) How much grain is available to the market - to determine how much grain is available to the domestic market it is necessary to have accurate data on production in a given year and on consumption. The methodology used by the agricultural statistics section of the government should be reexamined.

The problem of acreage cultivated may be able to be resolved by aerial photography or satellite imagery. Studies should be launched to determine average annual cereal consumption by urban dwellers, sedentary cultivators and pastoralists. This is necessary to approximate national cereal needs and availabilities by locality.

2) How much food is currently being imported - Since there is no regulation of cereal imports in Niger it is not known how much is currently entering the country. It is not recommended that any controls be instituted. All that is asked is that customs agents be asked to register the date, the amount, the nature and the point of origin of cereal stocks crossing the border from Mali, Nigeria and Benin. It should be an easy task to do this as long as no controls are exercised on imports.

3) Nigerian market prices - All things considered, the Nigerian economy exercises a great influence on the Nigerien economy. For that reason it is essential to be able to follow the cereals and livestock market prices especially in northern Nigeria. Such information will invariably foreshadow private investment in the Nigerien marketing system.

4) Number of livestock exports and their age and sex structure - It is important to know the number and age and sex structure of livestock exports to gain some insight into the effects of these exports on the national herd. It may be possible to obtain these data at livestock assembly points on the Nigerian side of the border.

5) Location of cereal storage - It is important to determine the nature and location of national dry season grain stocks. Such information will give insight into who controls the market, how much they benefit and what causes these price rises.

6) Market chains and market margins - The question here is what and how many hands do cereals go through between producer and consumer? How much and in what form are profits taken?

7) Market price series - It is important to be able to follow the evolution of grain prices around the country to be able to follow grain flows. In principal the greatest part of the difference in price between central markets and dependent local markets should be the cost of transportation. If the difference is much greater than the cost of transportation, storage and handling then some exogenous factor is distorting the market. Such a situation should be analyzed and remedial action taken if possible. The Ministry of Rural Development, Division of Agricultural Statistics recently launched a long-term collection of market price data in 200 markets nationally. The information from this study will be vital to understanding the Nigerien marketing system.

8) Cost of transport - In order to make use of the market price series data an analysis must be made of the real cost of transport between different points. The study should be oriented to transport between points on routes actually taken by grains from peripheral to central market, from central market to central market, and from central market to peripheral market. A transport study should also analyze and compare the private cost of transport with the OPVN cost over a given route to determine the lowest cost alternative as an element for future policy discussions.

9) The annual cycle of food sales at the producer and at the consumer levels - When do people sell? Is there a pattern to the profiles of the sellers? To what degree are these hardship sales? When do people buy? Is there a pattern to the profile of the buyers? To what degree are purchases intended for immediate consumption?

10) What share of production should reasonably be deducted for seed and for losses in deriving net availability for consumption?

* Recommendation - AID should mount a comprehensive study of the Nigerien food marketing system to fill in the gaps in the data that are listed above.

VIII. Conclusion

The main marketing problem in Niger is the great distance of the largest consumption center from the sources of supply. The cost of keeping Niamey supplied by food is high. It is borne in part by the government and in part by the consumer.

Many rural areas produce little or no grain surplus. The pastoral zones, by definition, are deficit areas. Even in areas that are able to meet their cereal needs with their own production, circumstances conspire to force farmers to sell part of their vital stock at harvest time only to replenish the stock at higher prices during the dry season. A cooperative cereals bank could lighten the cost of replenishment of a farmer's stocks.

Trade relations between Niger and Nigeria are important to assure uninterrupted food supplies in both countries. The basic exchange appears to be Nigerien livestock for Nigerian grain. It may be worthwhile for the two countries to explore a means of institutionalizing the trade so that it redound to their mutual advantage at both the macro-economic level and at the producer level.

The best policy, given a projection of world and regional economic trends for the next few years would be for the Nigerien government to cut back the burden of its intervention in the marketing system. In any case it will have to maintain its costly food security program. It may be able, however, to reduce its subsidies in its normal marketing program and leave more activity to private merchants. A preconditions of increasing reliance on private merchants would be a more comprehensive understanding of the structure and operations of food marketing systems in Niger. Only then would the government be able to set up a system to monitor private merchant activities to assure the interest of the overall body politic.

Finally, the most important relief valve from pressures on Nigerien food marketing systems would be large scale increases in food production in Niamey Department. A feasibility estimate for such an undertaking is, however, beyond the scope of this paper.

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