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This analytical and interpretative survey focuses on cereals marketing, price policy and storage in the Sahel. Existing information covering the period 1960-1975 is included. The synthesis has a chapter giving an overview of storage policy issues. A working group attempts to bring together what is known, to underscore what needs to be known for more effective policy making, to seek out options, and to assess these options in the light of existing constraints. The purpose is to define and clarify the nature of the options open to Sahel governments in grain marketing and price policy. The country studies bring together the most recently available data on production of main crops, marketing, official prices to producers and official prices to consumers. Part 3 is an annotated bibliography comprising a large selection of pertinent writings in marketing, price policy, and storage literature. The Sahel states differ in that the coastal economies (Gambia, Mauritania, Senegal) are more fully integrated into the international economy. They export more and are more dependent on food imports. The interior states are normally self-sufficient and are likely to remain so. The basic issue for the coastal economies is the feasibility and desirability of a strategy of import-substitution in cereals. This strategy should be more gradual than now planned. Economic analysis and experience in the Sahel indicate that positive price policy has limited usefulness as an instrument of policy. It is difficult to maintain a support price because of inability to economically dispose of the incremental supply which would result. Whatever option is chosen for the reform of marketing systems it will have better prospects of success if efforts are made to integrate markets more effectively by improving rural roads, by disseminating information more widely on rainfall, crop estimates, and prices, and by encouraging the development of real cooperatives.

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CILSS
CLUB DU SAHEL
Working Group on Marketing,
Price Policy and Storage

**MARKETING, PRICE POLICY AND
STORAGE OF FOOD GRAINS
IN THE SAHEL**

A SURVEY

**Volume I: Synthesis
with Statistical Compilation
and Annotated Bibliography**

Submitted by

CENTER FOR RESEARCH ON ECONOMIC DEVELOPMENT
UNIVERSITY OF MICHIGAN

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August 1977

Marketing, Price Policy and Storage of Food Grains
in the Sahel Volume I

ERRATA

Synthesis

p. 3	line 20	The <u>Marketing, Price Policy</u> and...
p. 5	line 10	... <u>together statistical</u> and other information...
p. 85	line 11	... <u>being</u> distinguished.
p. 88	line 9	...cited frequently in Chapter <u>I</u> .
p. 92	line 11	... <u>Nicolas</u> ...
p. 95	line 22	What <u>it</u> means...
p. 99	line 20	... <u>grain distribution</u> organization...
p. 104	line 22	...how grain markets work - the difference between...
p. 107	line 1	...in the barème <u>was</u> reduced...
p. 114	title b.	Lack of Quality <u>Differentiation</u>
p. 143	line 17	...Tables <u>XVIII</u> through <u>XXIV</u> ,...
p. 167	line 4	The <u>problems</u> with...
p. 169	line 2	...this <u>fundamental</u>
p. 169	line 22	...marketing reform <u>involving</u> ...
p. 185	line 3	(Chapter <u>II</u>)
p. 188	line 14	...which was discussed in Chapter <u>II</u> .
p. 210	line 13	Table <u>3F</u> in the Appendix...
p. 223	line 16	...and elsewhere, <u>1</u> ...
p. 225	title	<u>V. Cereals Storage</u>
p. 229	line 13	...Table <u>XXXII</u> .
p. 234	line 15	...Table <u>XXXIII</u> .
p. 235	line 10	
	after table	...as indicated in Table <u>XXXIII</u> ...

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IA.3-19	line 9	...producers are <u>also</u> consumers of foodgrains...
IA.3-20	line 5	The conflicting <u>goals</u> of price policy...
IA.3-29	title	Price Policy with Special Reference <u>to</u> ...
IA.1-14	line 4	...E (Expected Value), V (Variance)...
IA.1-1	line 3	He concludes that "the basic policy objectives...with food supply."
IA.2-23	line 24	...with respect <u>to</u> ...
IA.3-7	line 6	...to " <u>manufacture</u> "...

A L G E R I A

PRINCIPAL FOOD CROPS

- ZONE
- 0 YAMS, CASSAVA, OTHER TUBERS
PLANTAIN, MAIZE, RICE
 - I MAIZE, RICE, SORGHUM, TUBERS
GROUNDNUTS
 - II SORGHUM, MILLET, GROUNDNUTS
COWPEA
 - III MILLET, SORGHUM, COWPEA.
 - IV. DESERT

ECOLOGICAL ZONES

ECOLOGICAL ZONES	ISOHYETS IN mm	
TROPICAL RAIN FOREST	ABOVE	1400
GUINEAN	1000	1400
SCUDANIAN	500	1000
SAHELIAN	250	500
SAHARIAN	0	250

LIMIT OF WESTERN AFRICA AS DEFINED BY THE DA
 MEAN ANNUAL RAINFALL in mm.
 CAPITALS
 INTERNATIONAL BOUNDARIES

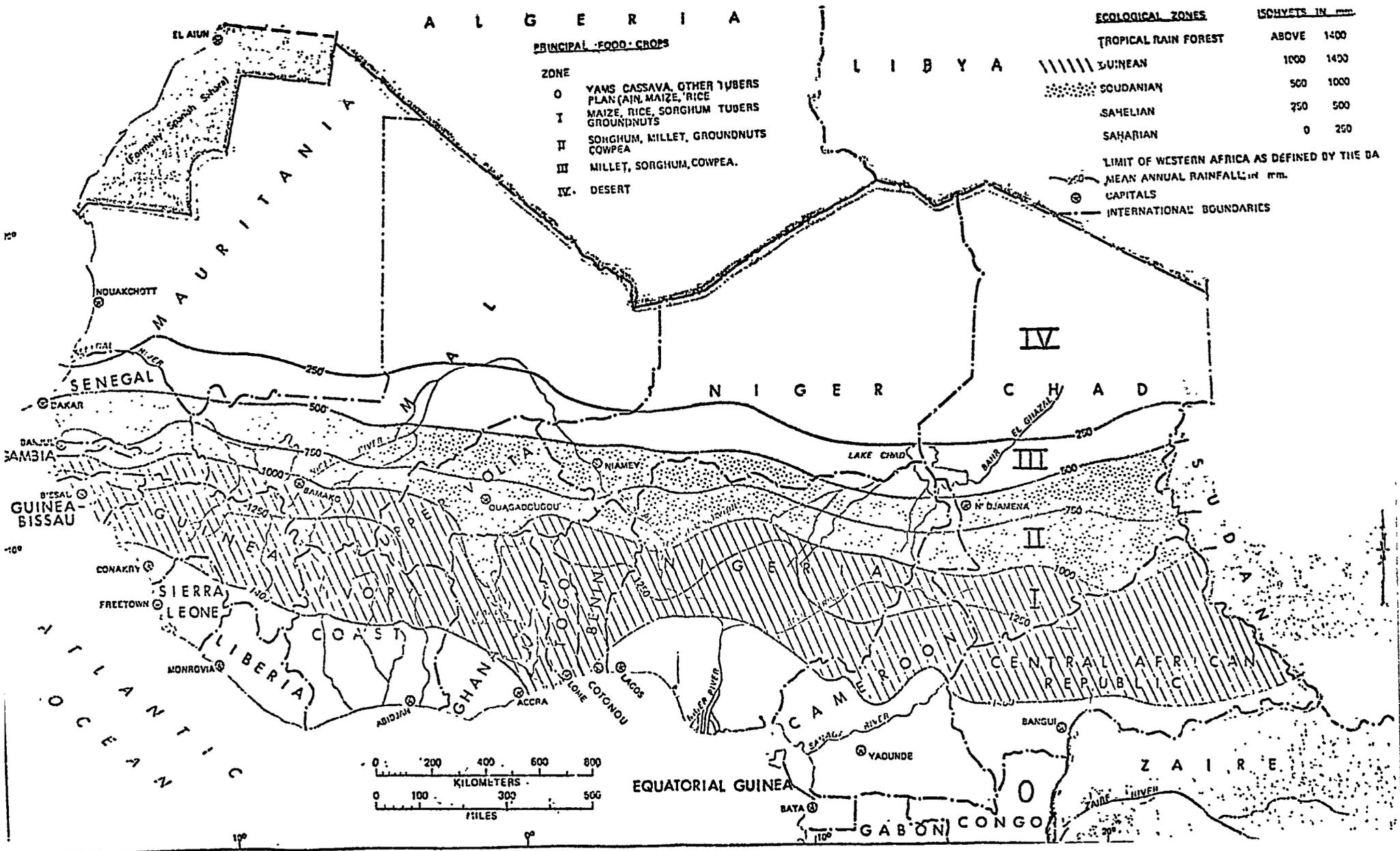


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PREFACE

This report has its origins in a request of the CILSS/Club du Sahel Working Group on Grain Marketing, Price Policy and Storage. At its first meeting (Dakar, July 19-21, 1976), the Working Group requested that a "diagnostic survey" be undertaken in order to bring together existing information on cereals marketing, price policy and storage in the Sahel, and to identify main issues. The Center for Research on Economic Development, University of Michigan was asked to undertake the study, which began in late September 1976, with financing provided by the Sahel Development Program of the U. S. Agency for International Development.

To indicate the nature of the information wanted by the Working Group, detailed terms of reference were drawn up in Dakar. A copy is appended. (Appendix 1). A questionnaire was also drafted and sent to all CILSS countries, requesting statistics and information on institutional and legal matters relating to grain marketing, price policy and storage.

Replies to the questionnaire were one of the inputs into this study. In addition, field trips were undertaken; these took place between November 1976 and February 1977. At least three work-weeks were spent in each country; in most cases, it was closer to a month. In each country, we worked with and through the CILSS/Club representative. Indeed, without that help, little could have been achieved. Everywhere, the team members spoke with officials, traders, farmers, researchers, and technicians. In each country, we traveled as extensively as time permitted. Everywhere, we gathered relevant documents.

The third input to the report comes from these and other studies, documents and reports, particularly those prepared by multilateral aid agencies. Most of these are unpublished; many are not for public circulation. Yet they circulate widely, and frequently provide the best source of recent information. They have, therefore, been freely drawn upon, as will be evident in the footnotes and the bibliography. It will also be evident, especially in the general synthesis report, that we have consulted as widely as possible the published literature. Unfortunately, the published material is extremely thin.

Most of the report was written at the Center for Research on Economic Development in Ann Arbor, between February and August, 1977. In February and March, the four principal members of the study team were together for the main part of the study: Boubacar Bah, Elliot Berg, Daniel Kohler and Clark Ross. The team benefited from the presence, for brief periods, of M. Ibrahima Sy, of Senegal, the chairman of the Working Group; M. Charles LeRoy (European Development Fund), the Rapporteur; and M. Serge Michailof of the Caisse Centrale de Coopération Economique, Paris.

The final report benefits also from a review of preliminary findings, held during a Working Group meeting in Brussels, March 16-18, 1977. At this meeting, there took place a useful airing of differences between the views of most of the Sahelian representatives and some of the propositions put forward in our preliminary statement of major findings. The observations and interventions of the Sahel representatives on the Working Group helped us to see dimensions of the problems at issue which we were tending to minimize or ignore. The views put forth at Brussels conditioned our thinking through the remainder of the study.

The major emphasis in this report is on marketing and price policy. Storage issues are discussed in each country study and in the synthesis, but these issues receive less intensive attention than marketing and price policy.

In fact, we were originally requested to do only marketing and price policy. Storage was to be the responsibility of a second group of consultants. The reason for this division of responsibility was our belief that the storage questions required skills and experience more specialized than those of the general economist or the agricultural economist and that marketing and price policy presented an already vast area of inquiry. In any case, it proved impossible to find consultants of the type required who were available when needed. We, therefore, did some work on storage questions. Each country study brings together the most recently available information on storage capacity; there is some discussion of costs; the synthesis has a chapter giving an overview of storage policy issues. However, we do not attempt to systematically appraise national storage programs, nor do we say much on specific storage projects. This will require a supplementary study, as the Working Group originally recommended in Dakar and as was again recommended at the Brussels meeting.

The marketing, Price Policy and Storage Working Group was, in one respect, different than the other Working Groups of the Club du Sahel. It was a policy-oriented group. The others were primarily program and project-oriented. The basic thrust of the Working Groups in the other sectors was to define a strategy, which could be done in rather general terms, and to put together a list of first-generation projects.

Our task was less well-defined, since neither the concept of a sector strategy nor that of first-generation projects was altogether applicable - except in storage matters with which we were only marginally concerned. The Working Group approach was to commission a group of consultants and to give it a rather broad fact-finding mandate.

We have followed the Working Group mandate in this report. Each country study brings together the basic facts we were asked to assemble, to the extent that we could find them: on grain production, marketing, structures and institutions, price, storage. These are summarized in the synthesis.

However, the Working Group wanted more than a simple catalogue of "facts." It sought an "étude diagnostique," and this is what we have tried to provide. There is no good English translation for the term étude diagnostique. It means an analytic and interpretive survey, but one which does not give recommendations on policy. Members of the study team were instructed to avoid drawing policy conclusions. However, the line between assessment of options and recommendations on policy is difficult to draw. We have sought nonetheless to hold close to the "diagnostic" posture, bringing together what is known, underscoring what needs to be known for more effective policy-making, seeking out options and assessing these options in the light of existing constraints. It is not our purpose to put forward recommendations, particularly detailed and specific recommendations - to say, for example, what particular grain marketing agencies should do, or whether and by how much official cereals prices should be raised or lowered in particular countries. Our purpose is more to define and clarify the nature of the options open to Sahel governments in grain marketing and price policy. This is not only in line

with our mandate, it also seems prudent given the complexity of the problems under discussion, their diversity from country to country and the brevity of our field surveys. One cannot read the marketing and price policy studies which have been done in the past without feeling a certain astonishment at the confidence with which recommendations are frequently made on matters which are little understood. It is clearly preferable to let understanding precede recommendations and action.

This explains a final aspect of the approach we have followed. We have tried to make this a study of more than passing interest. It brings together statistical and other information not easily available elsewhere. It poses policy problems in terms of broad options which may help to clarify debate on longer term strategy. It should provide a useful base for future enquiries.

In the country studies and in the "Statistical Compilation," which is part of this volume, we have brought together the available data on production of main crops, marketings, official prices to producers, official prices to consumers, have attempted to reconcile the highly diverse estimates for each series and have indicated the sources of the different estimates - all of which should be useful to future students of these and related matters. It could also be useful to future work of Club Working Groups.

To the same end, we undertook an extensive survey of the marketing, price policy, storage literature. An annotated bibliography comprising a large selection of the most pertinent writings is included as Part III of this volume. This may be of special interest to Sahelians in indicating the range of Anglophone literature on the subject.

On the procedural side, considerable autonomy has been given to the authors of the country studies. They, of course, had guidance of several sorts. The terms of reference set down a long list of specific questions about which information was to be sought. The entire team spent some 10 days together in the Upper Volta, and three of the four authors of country studies went to Niger together. In Niger, a more detailed set of analytic questions was worked out by the study director, and this was used to guide the inquiry in the remaining field work. In Ann Arbor, we had much discussion and each draft country study underwent extensive editing.

It, nonetheless, remains true that each country study is the responsibility of its author, and will reflect his perceptions and ideas to a considerable extent. Such a devolution of responsibility seemed desirable for several reasons. (a) The field work could only be organized by specializing individual team members in given countries; it would have been too difficult for any one or two individuals to visit all seven Sahel countries in the time available. (b) Attribution of individual responsibility has obvious positive effects on the authors' incentives. (c) Perhaps most important, the study of marketing systems is peculiarly subject to the preconceptions of the investigator. It, therefore, seemed preferable, as well as necessary, to allow each country study to reflect its author's understanding and insight, which is to say, also his biases. This has resulted in differences of emphasis and outlook in the country studies--differences which are accounted for also by the fact that marketing and price policy problems arise in different contexts in each of the

Sahel countries. We tried to compensate for this "preconception effect" by having at least two team members work together in each country, but there is no way to escape the problem.

A study of this size, done in two languages, is obviously an enormously complex undertaking, especially if it is done with some attention to detail. It hardly needs mentioning, therefore, that a large number of people have been involved. The field surveys were executed by the four core members of the research team: Boubacar Bah, Bureau Africain de Recherche Appliquée; Elliot Berg, Professor of Economics and Director, Center for Research on Economic Development, University of Michigan; Daniel Kohler (M.S. Agricultural Economics, University of Zurich) presently Research Associate, CRED, University of Michigan; Dr. Clark Ross, formerly Assistant Professor of Economics, William and Mary College, presently Research Scientist, CRED, and Research Associate, Centre de Recherche d'Economie Appliquée, University of Dakar. Responsibility for the country studies was divided as follows: Mali and Mauritania: Bah; Niger and Chad: Kohler; Senegal and the Gambia: Ross; Upper Volta: Berg. The synthesis was the responsibility of the project director, Professor Berg, except for the chapter on storage, which was done by Dr. Annette Pinckney.

Aimée Ergas was responsible for the annotated bibliography. Greg Conboy and Bijan Amini were mainly responsible for the Statistical Compilation in Volume I. Bijan Amini also was main draftsman for the diagrams and figures.

Aimée Ergas oversaw the general administration of the project and did overall editing. She performed these trying tasks with uncommon

competence, good judgement and good humor. Judy Brooks assisted on the Upper Volta editing, and in other ways. Charles Steedman worked on Mali and Mauritania. Annick Pizzetta-Morris was responsible for the French translation. Delays and the unexpected length of the study enormously complicated her task and caused much personal inconvenience. She, nonetheless, carried it through with dedication and skill. She was given major assistance by Henri Josserand and Miguel de Acevedo at later stages of the work, as well as by Rita Anderson, Nicole Roger-Hogan, Youssef Sillah and others for shorter periods. Laurel Minott and Jayne Owen oversaw the typing, with Linda Burnett and Marie Klatt, Marge MacKenzie, Angela Ransom, Aviva Khan, Cathy Noto, Nga V. Dao, Amber Chand-Plunkett and Jane McCormick carrying much of the work. Many others participated in various ways for shorter periods.

The size and complexity of the report, the press of deadlines amidst the intrusion of other demands and the many textual changes and corrections put great demands on all concerned. They deserve more than a ritual word of thanks for their extraordinary willingness and tolerance and their very substantial contributions to the study.

M. Ibrahima Sy, the Chairman of the CILSS Working Club on Marketing, Price Policy and Storage, deserves a special word of thanks. Because of the long gestation of this study, M. Sy's Group was without a final report while the other Working Groups had theirs in hand. This exposed the Working Group to some criticism. Through it all, M. Sy gave us his continued support. We hope he will not be disappointed in the result.

Elliot Berg
Study Director
Ann Arbor, Michigan
August, 1977

SUMMARY

1. The Sahel's agricultural economies share many common features. Cultivation is predominantly rainfed. Methods are "traditional," millet and sorghum are the major staples, rice, maize, cowpeas the main subsidiary food crops. Cotton and groundnuts are everywhere the main cash crops. Holdings are small - typically, 3-5 hectares. Food crop acreage is 7-10 times greater than cash crop acreage except in Senegal, where 46% is in groundnuts, 42% in millet. Rural incomes are between 10-20,000 CFA francs (\$U.S. 40-80) in most of the region.
2. The Sahel countries differ in important respects. In Mauritania and Senegal, important non-agricultural sectors exist; in Mauritania, only 20% of the population is agricultural, in Senegal 70%. Elsewhere, the proportion is much higher. More important, the coastal economies, (Senegal, Gambia, Mauritania) are more "open" than the states of the interior, more integrated into the international economy. They export more and import more. They are more dependent on imported food. Senegal recently has imported over 35% of its cereals consumption, Mauritania almost half, Gambia almost 20%.
3. From the early sixties to the mid-seventies, agricultural production stagnated or declined in most of the region. Official producer prices were also stable or falling. Rural incomes, even in money terms, therefore, declined or stagnated. The real income decline was more severe. In 1974/75, this situation was dramatically reversed as producer prices and output rose sharply.
4. The volume of cereals production is very imperfectly known because of inherent difficulties in measuring subsistence crop production, limited availability of statistical services and scarcity of special studies. This hinders planning and policy-making. Generation of more solid information is a priority need.
5. Volumes of cereals marketed are equally little-known. The usual estimate is that 15% of millet/sorghum production is sold. If 4 to 5 million tons is average annual production for the region, marketings are 600-750,000 tons annually. More millet/sorghum is marketed than any Sahelian crop, except groundnuts in some years.
6. There is some debate as to whether Sahelian farmers sell only their "disposable surplus," or whether they are more fully integrated into the money economy, buying and selling grain in good years and bad. The issues remain unresolved because of the absence of intensive microeconomic studies at village level, and the scarcity of studies of any kind.

7. The firmest data for marketing are quantities handled by the national grain marketing agencies. These have usually amounted to less than a quarter of total estimated domestic marketings. The grain agencies have been the conduits of much greater quantities of drought-induced food aid.

8. Of the price data available, five series are especially relevant to food grain policy: official producer prices for main cash crops, notably cotton and groundnuts; official producer (floor) prices for main cereals; official consumer (ceilings) prices for main cereals; actual retail prices in markets of the capital cities; unpublished and unprocessed data on actual prices in rural markets, collected by local authorities in some of the Sahel countries.

9. The strongest data are for official producer prices of cash crops. The other series have high margins of error. Actual retail prices of cereals in retail markets differ widely from official consumer prices. In most years for which we have data, actual retail prices in most countries appear to have been substantially above official prices.

10. Three types of marketing organizations coexist in each CILSS country: an export crop structure, a state structure for food grain; a private structure for food grains. Export crop marketing is essentially governmental. It is the responsibility of state monopolies (for example, SONARA in Niger, COTONTCHAD in Chad, GPMB in Gambia, ONCAD in Senegal), regional development organizations or specialized development agencies (ORDs in Upper Volta, "Operations" in Mali), or special stabilization funds which utilize licensed buying agents (Upper Volta). In four of the six Francophone states (Mali, Upper Volta, Niger, Senegal), there exists a legal monopoly of the grain trade. But these monopolies are not enforced in fact. The private or "traditional" sector handles 60-80% of marketed domestically-produced cereals.

11. The Sahelian producer has many options in disposing of his grain crop. He can sell it to the cooperatives, to licensed buying agents, sometimes to the national grain agency's buying teams, to a local trader ("assembler"). He can retail the grain himself, sell it to an "informal" trader - someone with excess cargo capacity in his vehicle, or he can store it on-farm.

12. Private traders have shown evidence of great ingenuity and skill, but the private trading system is underdeveloped. Most traders are unspecialized. Many are part-time. The number engaged mainly in trade is small. They provide a relatively small share of total rural credit. They store little grain in anticipation of post-harvest price rises. The main reason for the underdeveloped state of the private trading sector is historical: most public policy efforts in marketing have been devoted to building cooperatives and state marketing structures, and the presence of expatriate firms, and Levantine traders, probably slowed the emergence of African trading skills and capital.

13. A correlation analysis of price data gathered by the study team (for Niger, Chad, Upper Volta) shows generally poor results, suggesting a relatively low degree of market integration in these countries.

14. Parallel price structures exist similar to the parallel marketing structures. The public price structure has some effects in all the states - e.g. some grain is bought by the national grain agency at the official producer price, and some is sold at the official consumer price. However, transactions at official prices are a small proportion of total transactions.

15. Most technicians concerned with marketing and price policy matters agree on the main problems.

(a) Too little information is available. Official statistics are irregular and of uncertain reliability. Basic studies, especially village-level surveys, are very few. The resulting knowledge gap is a critical obstacle to effective policy-making.

(b) Many people in the Sahel - and elsewhere - believe that grain markets are monopsonized, that farmers are exploited by traders, that "speculation" is rampant. However, there is very little empirical evidence that grain markets work that way in the Sahel. Recent studies in Northern Nigeria indicate that grain markets there are competitive and that peasant farmers do not seem to be captives of moneylender/traders. As against the "imprudent peasant - monopsonized market" model which circulates so widely in the Sahel, these Nigerian studies suggest that a "prudent peasant - competitive market" model is more applicable. There are also structural reasons to believe this is so, but the critical point is that, because of a lack of the basic studies, it is not known how Sahelian grain markets function.

(c) Policy-making suffers from lack of staff work, particularly systematic fact-finding and analysis.

(d) Marketing services are deficient. In some countries, traders do not appear to visit villages as frequently as in the past. Transport of grain to primary buying points is often the responsibility of the producers. Credit, off-farm storage capacity, access to off-farm inputs are not easily available to grain producers.

(e) Policy objectives are not being met in those states where de jure cereals marketing monopolies exist. The grain market is not "dominated" (matrisé); producers cannot be guaranteed a remunerative minimum price; prices are not stabilized; private traders supply most of the grain consumed in urban centers. Nor has a more orderly and efficient organization of grain markets resulted. In fact, there is

almost everywhere considerable administrative and bureaucratic overlap and uncertainty. The national grain agencies show various manifestations of inefficiency: frequent storage losses, inadequate transport arrangements, long delays in submission of accounts and reports, large operating deficits (OPAM and OFNACER).

16. The only major issue over which diagnosticians of marketing deficiencies differ is the question of farmer behavior and how grain markets function - i.e., the degree to which those markets are characterized by monopsony, exploitation, inefficiency. These different perceptions can only begin to be reconciled as more and better information comes from an expanded research effort.

17. On price policy issues, similarly, there exists, on a technical level, a broad consensus on what is wrong.

(a) Grain price policies have tended to favor urban consumers. Official consumer (ceiling) prices are commonly set too low to cover producer (or market) price plus marketing margins. The operating deficits of some of the grain marketing agencies are one indication. Another is reluctance to raise consumer prices when costs rise - whether import costs, as in the years 1972-74 when massive subsidization of imported food grains occurred in Senegal, Mauritania and Mali - or domestic costs, such as transport cost increases in recent years. Subsidization of grain consumers has had incentive effects: it tends to be financed by revenues generated in the export sector, directly or indirectly reducing returns to producers of export crops. It has had growth effects, to the extent that the subsidies are financed out of general public revenues which might have been used for development purposes. It has had equity effects to the extent that it benefits urban consumers who are already better off than producers of cereals or export crops.

(b) Official producer prices are generally announced in October or November - well after planting. This is widely criticized as being unsuitable, since it does not affect the farmers' annual planting decision. But the criticism is unjust. Announcement of prices at planting time would be appropriate only if the grain authority was willing and able to purchase whatever volume of grain was offered for sale. This is not the case in the Sahel, for reasons of finance and storage capacity, among others.

(c) In some of the Sahel countries, barèmes or cost "norms" are used for the build-up of official prices from producer to consumer levels. These "norms" in the barèmes, however, often do not reflect reality. They often depend on political and administrative bargaining. Frequently, when one item is raised, another is cut, so as to maintain the official prices at the consumer level. This is one reason why margins of the national grain agencies are inadequate to cover their costs. Additional

consequences are: confusion in public sector price relationships and inter-agency financial flows; and grain agency inability to purchase private sector inputs (e.g., transport in Mali) at the price specified in the barème, making resort to administrative authority necessary (e.g., "requisitions" in Mali).

(d) The public price structure is not adequately differentiated. In some countries, there is one official price for all the main cereals (millet, sorghum, maize). In most of the countries, no distinction is made in the official price structure between millet and sorghum. No quality differentiation is made, except for rice. Uniform national prices are common at the producer and consumer levels. Many negative economic consequences result. Public sector marketing costs are pushed higher than private sector costs (since the private traders do not buy or sell in the regions of most difficult access), making public-private competition difficult. Farmers tend to sell only inferior grains to the public agency. Sorghum production is encouraged, since in some areas at least, yields per acre and per man are higher for sorghum than for millet. The subsidization of transport costs encourages consumption in distant regions and intensified use of scarce transport facilities. It encourages production in regions which may not be economically or ecologically suitable. The equity effects may even be other than intended, as in Senegal, where areas far from Dakar, which benefit most from the policy of uniform prices; are often better-watered and more fertile.

18. If there is wide agreement on the above points, there is considerable diversity of opinion on two major issues.

(a) It is widely argued that cereals prices are "too low." Four dimensions of this question are explored: whether "distortions" elsewhere in the economy depress grain prices; whether grain price levels are too low in a "productionist" sense - i.e., below what is necessary to stimulate output to a desired level; whether prices are too low in an incomes policy sense; whether prices are lower than in neighboring countries. The evidence suggests that some price-depressing distortions exist (food aid, notably) but that, by other criteria, it is not clear that official cereals prices are now generally "too low." Returns to labor are higher in export crops, but the ratio of official cash crop prices to official cereals prices shows no movement unfavorable to cereals in recent years. The agricultural terms of trade were sharply downward from 1960 until 1974, but have since been reversed. In Mali, there has been, since 1974, a particularly sharp rise in the prices of off-farm inputs. Comparison of wage rates with official grain prices does not show that wage earners have done better than grain producers. On the basis of official prices and using the criteria indicated, the general conclusion is that the data do not give strong or general support to a price-rising argument, either from a productionist or an incomes policy point of view. This conclusion is highly tentative. It relies on use of official not actual prices, and generalizes over the region, while individual country situations differ and relative prices are changing constantly.

(b) Price fluctuations, both intra-annual (seasonal) and inter-annual (between years), are commonly believed to be "excessive." Distress sales by farmers are said to be common: many must sell at the times of lowest prices and buy when prices are at their peak - during the pre-harvest soudure. To assess this argument, we bring together the available data on actual retail grain prices and analyze their variations. In most cases, prices diverged by less than 20% from the annual average price. The highest price within one calendar year, for six capital cities, averaged 83% more than the year's minimum price. The average increase from harvest to soudure is only about one-third this amount. These are much smaller price swing than are commonly mentioned in the Sahel. They do not seem out of line with experience from other LDCs. The data suggest that potential speculative profits do not greatly exceed estimated storage costs.

19. Sahel governments can choose one of three broad directions of policy in organizing their marketing systems: improvement of the present arrangements; a move to fuller public sector control; a move toward lighter, more indirect forms of public control.

20. The "ameliorated status quo" option rests on the view that nothing is basically wrong with the present arrangements; only more resources are needed. This option has advantages: it is easily implemented and there would probably be improvements in grain agency performance were more money, trained people, trucks, warehouses made available. But there are also disadvantages.

(a) It rests on an optimistic interpretation of the tractability of public sector marketing deficiencies.

(b) It retains an illegal private trading sector. This leads to reduced protection for producers: risks and uncertainties inhibit trader activities and competition among buyers is discouraged. Nor would the present arrangements encourage the long-term development of trading skills, techniques and capital.

(c) Private traders operate at lower unit costs than the state trading agencies. They buy from the lowest priced areas and sellers, and sell in the places where returns are highest. State agencies are obliged to buy and sell everywhere. In addition, private traders work part-time. Because of low opportunity costs, they work for relatively low returns. Many are casual or informal traders - chauffeurs and bus drivers for example. The private traders use transport and other inputs much more efficiently.

(d) Public agencies, under present arrangements, receive inferior qualities of cereals, the private traders better qualities.

(e) Effective price stabilization, which is very difficult and expensive to achieve, is a precondition of stable coexistence between public and private marketing sectors. In bad years, government must be able to prevent market prices from rising above the official price. Unless it does this, producers will sell mainly to the private traders in bad years and only to the national grain agencies in years of good harvest. This has been the pattern up to now.

(f) Wherever state trading institutions act as buying and selling agents, many farmers and traders and some consumers can more profitably buy and sell cereals by dealing with each other directly. The state agents become an additional layer of intermediaries.

21. The conditions for effective public sector competition against the private sectors are thus very demanding. They are as yet unmet in the Sahel.

22. One consequence is common: the grain agencies tend to seek a bigger share of the market, in order to spread their overheads and reduce their operating deficits. They also look for activities more profitable than the trade in cereals. The OPVN in Niger, for example, has exported cowpeas to Nigeria, and OFNACER in Upper Volta has purchased grain in Ghana which it hoped to sell at a profit in Upper Volta. Also, the grain agencies tend to have an interest in continuation of food aid. None of these activities are central to the stated objectives of the grain marketing agencies.

23. The second option is for government to try to make the legal marketing monopoly more effective in practice. Current proposals in this direction are in circulation in Mali and Upper Volta.

24. The arguments in favor are:

(a) it would cut the trader-peasant nexus, effectively preventing exploitation.

(b) it would make state grain agency operations more economic.

(c) it would remove the "contradictions" inherent in competition with private traders.

(d) it would be a simple extension to foodgrain marketing of the existing arrangements for export crops.

25. The problems with this option relate to its feasibility and its desirability.

(a) The market structure for foodgrain is not the same as for export crops. The growing area is geographically more vast and more dispersed. The bulking function involves thousands of separate transactions. The distinction between producers, traders, consumers is fuzzy. In order for a monopoly to be made effective, it would be necessary to control movement of grain from surplus to deficit regions but, with thousands of "traders" dealing in small lots everywhere in the countryside, effective control would seem either impossible or enormously costly and burdensome. Freedom of movement would be severely restricted. Opportunities for illegal transactions could multiply, as every bush taxi and bus becomes the object of official control.

(b) There are price policy conditions, as noted earlier. In the absence of an effective inter-annual price stabilization scheme, it will always pay for producers to sell privately in years of bad harvest and hence high prices. And the grain agency must stand ready to purchase at announced prices regardless of harvest size, or lose its credibility.

(c) The monopoly option raises the critical question of who would replace private traders in primary marketing. Three main alternatives exist: the cooperative, the rural development organizations and the national grain agencies:

-the cooperative structure is non-existent or weak and has the fundamental problem of scarcities of management and accounting manpower.

-the development agencies are vulnerable to withdrawal of external assistance. Their prime task is stimulation of production, with which marketing activities will conflict. This is especially likely, since experience shows that primary marketing agents in the public marketing system are almost invariably paid too little for the primary marketing activity. Finally, involvement in marketing puts the development agency in a position of potential conflict with the producer, which could also diminish its impact on production.

-the third possible agent of primary marketing is the national grain agency itself, via buying depots or mobile buying teams. The main disadvantage would be that the grain agencies have little direct rural contact and a high degree of local knowledge and competence is essential, especially if necessary reforms are introduced, such as quality grading. Also, it would involve considerable duplication of effort. Most important, the grain agency buyers would have to face the problem of potential competition from thousands of small, unspecialized "traditional" traders. It would continue to run high risks of deficit, and would require a suitable price stabilization scheme.

26. The final option is "light" intervention utilizing indirect methods wherever possible: improving market functioning and reducing monopolistic tendencies by rural road expansion, for example, and providing more and better information services concerned with informing farmers on crop size and prices. It would involve price intervention only by state purchases and sales from a buffer stock, and direct state sales only in case of emergencies. This option is relatively simple. It places fewest demands on formally trained manpower. It uses trader skills and energies. It avoids most of the contradictions inherent in government attempts to "dominate" the grain market. It would stimulate entrepreneurial development. It also has disadvantages. It may be unattractive doctrinally and politically. It would probably work slowly. It could only work at all if it were introduced in a situation where conditions for its success are present - e.g., no unusual food scarcities and no imposed price structures which make it profitable to behave illegally.

27. The reform of many of the deficiencies in the public price system, such as consumer-bias, inappropriate timing of price announcements, inaccurate barème components, inadequate differentiation of prices in terms of quality and geography presents few analytic problems. It is only a question of how to overcome the political or administrative constraints on reform.

28. The price elasticity of supply of cereals is low in LDCs - below 0.1 in most studies, but it is undoubtedly positive. So a policy which sets grain prices above the market-determined level will increase marketed supply. The question is: should such a "positive" price policy be pursued? Four underlying factors condition the reply:

-grain production is highly variable from year to year because of variable rainfall;

-marketed grain supply varies by more than total output;

-the price elasticity of demand for foodgrains is relatively low. Changes in marketed output, therefore, tend to lead to sharp inverse changes in price;

-in normal years, in the interior states, domestic cereals production approximately satisfies domestic demand, except for wheat. Opportunities for import-substitution are few.

A positive price policy induces greater marketed supply. What can be done with this incremental supply?

-it can be sold on the domestic market, but the low price elasticity of demand makes this unfeasible for any substantial volumes.

-it can be stored, but this can't go on forever and is, in any case, expensive.

-new uses can be found - as animal feed, for example. This is a promising possibility, and the search for new uses should be intensified. For the immediate future, however, it does not seem likely that significant quantities of grain could be absorbed in this way.

-it can be exported, but at present only Mali and perhaps the Upper Volta have export potentials, and serious obstacles prevent Malian exports of rice to the main rice importing market in Senegal - notably, inability to compete against cheap Asian brokens. Millet/sorghum may be more competitive, but any cereals export will demand marketing capacity and performance not now present. Hence, at least for the next few years, export markets cannot be counted on to provide outlets for surplus cereals which might be induced by a positive price policy.

29. Stabilization of grain prices is a frequently-expressed policy objective. Two kinds of stabilization are at issue: within-year (or seasonal) and between-year (inter-annual). Both can be done by pure buffer stock arrangements. Both can benefit producers and consumers. The former type of stabilization scheme presents no special problem and can be implemented rather easily. It is only a question of weighing probable costs against benefits.

30. Between-year (inter-annual) price stabilization, however, is risky and expensive, and has certain disadvantages. Large variations in supply imply large storage capacity requirements. Price stabilization schemes can end up destabilizing prices if the buffer stock is not large; traders will not be convinced that price ceilings can be maintained in a bad crop year, and will be encouraged to speculate. Price stabilization, if effective, will destabilize producer incomes. Most important, there exists a basic contradiction. The purpose of price stabilization is to reduce farmer uncertainty but, for a scheme to be credible, a support price would have to be maintained over a period of years, regardless of harvest size. Also, a stabilization scheme which effectively increased output by reducing uncertainty would create a financing and storage burden. Holding to a stable price, which is the requirement for reducing farmer uncertainty, prevents price adjustments which might make the stabilization effort sustainable.

31. The conclusions on price policy are straightforward: a "positive" price policy, involving establishment of higher than market prices, may not be feasible and, if successful, would be costly and unstable. This is due to the difficulty of disposing of the induced grain "surplus." Macroeconomic consequences would be mainly negative. Similarly, inter-annual price stabilization presents severe problems. Only seasonal price stabilization seems within easy policy reach, at least in principle. These rather pessimistic conclusions on price policy as an instrument of agricultural transformation are similar to those found in much of the analytic and econometric literature on these questions.

32. A special problem of rice-millet competition may arise in the near future, particularly in Mali, which is planning to increase its 1979 rice output by 50% over the 1974-75 level; its rice consumption is to increase apace. However, it is not clear how the rice is to be marketed. Exports are not now probable, given the import of low cost brokens in the coastal countries, particularly Senegal. Domestic rice consumption increases of the magnitudes envisaged would have to be at the expense of millet. Relative consumer prices would have to move dramatically in favor of rice. However, millet presently costs less than half as much to produce as rice and may become relatively cheaper in the future. Unless investment priorities are reconsidered, Mali may find itself producing at high cost a staple food (rice) which can only be sold by cutting its price below another staple (millet) which is much cheaper to produce.

33. Senegal, the Sahel's biggest cereals importer, has recently put forward a new proposal to import-substitute foodgrains on a massive scale. But the proposal ignores the fact that there exist labor and land constraints to production, so expansion of cereals output will be at the expense of export crop production. Also, relative prices to producers now strongly favor groundnut production. Thus, according to this proposal, Senegalese consumers will reduce wheat and rice consumption and vastly increase millet and maize flour consumption,

while Senegalese producers are to increase rice and millet production. With rice there is no consistency problem: higher prices can reduce consumption and stimulate domestic production. With millet, however, higher prices to producers will be needed to stimulate production, but lower prices will probably be needed to stimulate consumption. Subsidies on the scale implied would be highly anti-developmental, but the proposal does not raise this issue.

Nor does it raise the question: What price import-substitution? Senegal has comparative advantage in groundnuts. Senegal's national income, rural sector-generated income, government revenue (and hence development spending) and the rate of economic growth are higher with specialization on groundnuts than they would be if the groundnut/food crop mix is shifted in favor of food crops. This can change and may not matter anyway, since reduced dependence and food self-sufficiency have high social priority. However, to minimize the social cost of an import substitution program, the targets should be modified, the timing stretched out, the concept of "self-sufficiency" broadened to include imports from neighboring states, and research and extension efforts should be lavished on rice and millet production, so as to relax the technological constraints which exist. This would allow a more soundly-based import-substitution process.

34. Storage arrangements are an essential component of marketing systems, and storage policies closely related to issues of marketing and price policy. Total grain storage capacity in the region is poorly known. The on-farm/village-level storage element is most critical, yet its volume, its methods, its costs are little studied. Traders hold small stocks. National grain agencies have more, particularly in states where government has been especially important in the grain market - e.g. Mali. There has been a general tendency for the volume of these facilities to increase in recent years.

35. From the point of view of storage strategy, on-farm or village-level storage should be given greater attention than it has yet received. Little systematic research has been done on such matters as volumes of holdings, time-release patterns, economics of stockholding, losses, decisions on infrastructure investment and technical aspects of storage practices. There may be room for important technological advances in storage facilities. "Losses" in traditional granaries are said to be as high as 25% annually, though studies in Northern Nigeria indicate they may be as low as 5%. In any case, given the magnitudes involved, substantial returns could be realized through technical improvements in pre-storage handling, grain treatment, etc., as well as through possible improvements in physical facilities.

36. Emergency reserve stocks are being established everywhere in the Sahel, to provide a "first line of defense" against drought. These aim to protect "at-risk" populations for 1-3 months. Planned emergency reserves, as of 1975, were in the order of 200,000 tons for the Sahel as a whole - approximately 5% of annual production. Size of these reserves is constrained by cost (investment in facilities, purchase of grain, annual operation costs) and by needs to coordinate price, marketing and storage policy. Costs due to losses and the management

burden can be significant. In the absence of an appropriate long-term storage technology, the "loss" or "spoilage" rate has tended to be high in less developed countries. On the marketing side, a "too large" reserve stock - which must be rotated every two or three years - can require interventions not in line with stabilization goals. Also, if a reserve stock is "too large," it may reduce the competitiveness of the grain stabilization agency: the need to rotate stocks could force it to sell only year-old grains, less preferred by consumers.

37. Each state's storage strategy should differ according to its particular needs. Coastal states, for example, have quicker and easier access to emergency imports and hence may require smaller stocks. Countries with positive foreign accounts balances and high levels of liquidity in terms of foreign exchange have a highly effective form of emergency reserve: purchasing power over foreign grain. All these considerations should go into the making of a national storage policy. Elaboration of such a policy requires much more information and research - on on-farm storage volumes, practices, technology, economics; on the costs of emergency reserves relative to other security-providing options; on the links between price stabilization and storage programs, on the economics of storage location.

I. DESCRIPTION

A shared history and geographical proximity give the Sahel countries many common features -- in agricultural systems, patterns of economic development, administrative institutions, and policy orientations in matters of grain marketing and price policy. But there exist also variations in geography and in levels of development which differentiate the region. In this chapter, we outline some of the similarities and differences of the Sahel's agricultural economies, summarize existing data on production, marketed output and prices, and describe briefly the nature of the grain marketing and price-making arrangements typical of the region.

A. The Sahel's Agricultural Economies

The agricultural systems in the Sahelian countries have much in common. In all of them, rainfed agriculture is predominant. Irrigated acreage is significant only in Mali; even there, it amounts to less than 5% of the total cultivated area. The vast majority of farmers follow "traditional" cropping patterns, the main features of which are well known:¹ gradual land clearance and stump removal; "half" shifting cultivation (villages are permanent, the fields change, with fallow periods breaking the cropping cycle); little mixed farming, though livestock may be present, hence no deep tillage; multiple cropping (presence of different plants on same field -- e.g., millet and groundnuts); relatively little use of selected varieties, fertilizers, other off-farm inputs.

¹See C. Charreau, "Systems of Cropping in the Dry Tropical Zone of West Africa -- With Special Reference to Senegal," paper from a series of lectures on "Soil Management in the Dry Tropical Zone of French Speaking West Africa," delivered at Cornell University, Spring, 1974.

Although still dominant, these traditional cropping patterns are hardly stagnant. They have undergone much change, particularly as a result of population increases and the introduction of cash crops (cotton and groundnuts). Fallow periods have become shorter and the ratio of cultivated to fallow land has increased. Moreover, while fertilizer use is still uncommon in most of the region, other signs of change are everywhere, in particular the widespread adoption of new implements, such as seeders, plows, multi-purpose implements and carts. In the main groundnut-growing regions of Mali, for example, more than one third of the farmers in most districts use fertilizer and fungicide and about the same number use selected seeds. In 6 out of 10 districts in the area of the groundnut "Operation" (OACV), over a third of the farmers have plows.¹ In southern Chad, similarly, the past few years have witnessed an unusually rapid spread of new techniques and implements.

Holdings are typically small. Average farm size is 3-5 hectares. The typical holding devotes 60-70% of cultivated acreage to millet/sorghum; the rest is distributed between such crops as rice, maize, cowpeas, cotton and groundnuts.²

In the aggregate, acreage to food crops is overwhelmingly predominant. In Niger, Upper Volta and Chad, for example, the ratio of food to cash crops acreage is 7-10:1.³ In Senegal, however, which is by far the

¹See Center for Research on Economic Development, Mali; Agricultural Sector Assessment, University of Michigan, December 1976, p. 211.

²Cf., Volume II, Country Studies, Upper Volta, p. 3; Niger, pp. 3-4.

³See John A. Becker, An Analysis and Forecast of Cereals Availability in the Sahelian Entente States of West Africa, (AID), 1974.

most monetized of the Sahel states, more acreage is in groundnuts than in millet: 46% as compared to 42%, in 1968-1972.

Rural incomes are low -- between 10,000 and 20,000 CFA per capita per year (\$US 40-80) in most of the region. There is considerable variation in average incomes between regions within each country. Areas favorable to export crop production enjoy substantially higher average money incomes than those where production is almost entirely for self-consumption. Income differences within villages can be sizeable, but for most of the population income differences are small.¹

Agriculture absorbs some 60% of the population of the region, and livestock herding about 25%. The variation among countries is large -- with Senegal and especially Mauritania having smaller agricultural populations than the other Sahel countries. In terms of its contribution to aggregate output, agriculture's contribution is much smaller than its

¹The contrary is sometimes argued, particularly for Niger and Senegal. A study in Senegal in the 1960s pointed out that fewer than 2% of the farm holdings (7,400 out of 338,000) were in the hands of "large landholders," who owned 13% of the cultivated area. At the same time, 22% of the rural population was designated as "poor peasants;" these half-million people owned only 3% of the acreage. The poor peasants had average farms of less than a hectare. The average "large landowners" had 22 ha. (C.V. Diarassouba, L'Evolution des Structures Agricoles du Senegal, Paris, Cujas, 1968.) There are indeed some truly "large" owners, at least by African standards. One writer mentions holdings of 600 ha among some Marabouts, and one well-known peanut producer is said to have over 7,000 ha. (L. Behrman, Muslim Brotherhoods and Politics in Senegal, Harvard Press, 1970, p. 137). However, 76% of the rural population held 84% of the cultivated area, and an average farm holding of almost 5 ha. A more recent analysis of rural income distribution in Senegal, done in a World Bank study, comes to the following conclusions: (1) there is some rural poverty in Senegal; about 30% of the farm population finds it necessary to supplement their agricultural incomes from non-agricultural sources, particularly by migration, (2) there are some rich farmers and some very poor ones, so that the range of income distribution within the rural population is as large as it is between the rural and urban sectors -- about 4:1, (3) most rural incomes are clustered in the middle of the income distribution, with 75% of the 360,000 farm households having per capita incomes below \$100, 30% of them with about \$50 and 44% averaging \$80.

proportion of population, since so much of agricultural land and labor is oriented toward low productivity non-market activity. Table 3A and 3B in the Appendix show some recent estimates of GDP, changes in the 1960s sectoral composition of output and recent evolution.

As Appendix Table 3B suggests, the economies of the Sahel did not do well until 1974 -- at least as indicated by these economic aggregates. Much of this is, of course, the result of the bad weather, particularly the severe drought in 1972 and 1973 but economic growth has been slow for many years, even before the drought. Appendix Table 3A gives estimates of growth rates during the decade of the 1960s. The fantastic range of variation in these estimates is a good indicator of the rough state of the region's statistical endowment. They show, in any case, that the economic growth of the Sahel during the 1960s was slower than that common in LDCs generally -- 2-2.5% per annum for the Sahel countries, compared to 5% for LDCs generally. Indeed, output in the 1960s, and into the 1970s, grew less than population. Then, as a result of drought, gross output in 1973 and 1974 in most of the Sahel was about 15% below the 1972 level. The value of agricultural output in 1973 and 1974¹ was perhaps 20% below "normal" in Upper Volta, Chad and Mauritania. Output rebounded sharply in 1975 in most of the region.

¹That is, the agricultural "seasons" 1972/73 and 1973/74. Planting is normally in April and May, harvests in September/October. Since consumption (or sale) occurs during the following calendar year, bad rains and a poor harvest in one year are reflected in smaller GNP in the following year.

While in many structural features and in their recent economic experience the Sahel countries are similar, they also differ in important respects. The first has to do with differences in the degree to which agriculture is dominant. In Mauritania and Senegal, important non-agricultural sectors exist -- mining (phosphates in Senegal, copper and iron ore in Mauritania), fishing and, in Mauritania, animal raising. Thus, agriculture is a minor sector in Mauritania, in terms of both output and employment; farmers are less than 20% of the total population. In Senegal, 70% of the population is agricultural (including herders), a significantly lower proportion than is found in the inland Sahel countries.

Secondly, and most relevant here, is the difference in the degree of "openness" between the coastal economies (Gambia, Mauritania, Senegal) and the interior states. This difference is evident from the trade statistics. The coastal states export more in absolute terms, in terms of exports per capita and as a proportion of GDP. Their imports are markedly higher by the same measures. These states are thus more fully integrated into the international economy. Moreover, the interior states have always been more or less self-sufficient in food, with the exception of wheat and sugar, whereas the coastal states, especially Senegal and Mauritania, have long been dependent on imported foodgrains for a substantial share of their total consumption.

Thus, in 1969-71, pre-drought "average" years, the annual production of cereals in Senegal was about 700,000 tons; imports were over 300,000 tons. In Mauritania, production was 90,000 tons; imports were 75,000 tons. In Gambia, production was 71,000 tons, imports 15,000. The recent evolution of grain imports can be seen in Table I. Clearly, Senegal and

Tableau I
IMPORTATIONS DES CEREALES
UNITE: TONNE

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
BLE¹																
TCHAD	3,400	2,600	2,900	3,100	4,400	3,800	2,700	2,600	2,800	4,703	9,994	9,490	9,298	9,522	14,865	9,029
LA GAMBIE	2,200	1,900	2,300	2,500	2,400	2,100	2,200	2,300	2,900	3,400	3,703	3,918	3,863	3,046	4,610	4,375
HALI			4,300	6,300	9,700	3,900	20,400	12,300	9,800	10,100	6,546	16,671	16,562	16,668	20,835	20,835
MAURITANIE			600	600	700	700	600	800		16,668	9,687	6,867	8,781	11,112	12,501	19,446
NIGER	500	900	2,600		2,100	2,100	2,100	15,000	4,900	4,400	4,888	6,873	4,699	5,592	8,584	10,745
SENEGAL	94,800	65,100	74,700	57,500	67,300	63,500	61,400	77,000	65,600	63,800	96,759	113,193	113,452	96,874	131,977	116,668
HAUTE VOLTA	800	800	4,900		7,100	9,600	11,500	15,500	16,700	18,100	19,921	26,805	16,962	34,422	14,380	20,835
RIZ																
TCHAD	300	700	700		200	100		200		29	70	25	51			
LA GAMBIE	3,600	9,200	8,100	10,600	8,200	9,100	6,800	7,700	8,600	10,000	12,506	14,219	7,642	10,411	12,716	6,700
HALI			100								20,444	14,500	15,000	30,545	45,690	65,300
MAURITANIE			500	7,000		100	400	1,600		13,000	18,767	11,029	16,671	20,000	28,000	32,000
NIGER					2,100	900	2,300	1,000	1,400	8,315	56	58	30	1,120	62	100
SENEGAL	134,900	82,300	109,700	118,100	100,500	184,500	179,200	159,300	153,400	165,200	145,902	119,236	187,509	169,905	191,967	230,540
HAUTE VOLTA		300	500	2,500	3,100	3,500	3,300	4,100	3,800	1,300	1,475	2,656	1,262	139	20	
CEREALES (TOTAL)²																
TCHAD	3,700	3,300	3,600	3,100	4,800	4,200	2,700	2,800	10,700	4,732	10,190	10,080	9,390	10,120	17,870	46,030
LA GAMBIE	5,800	11,100	10,400	13,100	10,600	11,200	9,000	10,000	11,500	13,400	16,300	18,400	11,510	13,460	17,330	11,120
HALI			8,300	8,200	10,200	4,100	21,900	15,900	12,900	10,500	31,960	31,220	63,360	73,110	158,530	232,140
MAURITANIE			1,100	7,600	700	800	900	2,400		59,668	50,450	62,900	75,456	82,810	102,500	126,450
NIGER	1,200	2,200	3,900	5,500	4,200	4,000	4,400	8,500	10,800	4,400	9,900	8,050	5,760	19,370	25,650	106,850
SENEGAL	280,100	195,500	197,700	201,700	212,100	280,200	279,900	254,200	237,500	265,800	332,300	239,430	365,080	287,800	457,600	477,290
HAUTE VOLTA	800	1,100	5,400	10,200	12,800	13,800	15,200	21,700	25,100	19,600	21,600	29,880	19,100	40,560	58,400	74,840

¹ Blé, suivant FAO, comprenant: froment, et farine de froment.

² Total Céréales, suivant FAO, comprenant: froment et méteil, riz, orge, maïs, seigle, avoine, céréales n.d.s., et semoule et farine de froment ou de méteil

Source: FAO, ANNUAIRE DU COMMERCE, 1963, 1964, 1969, 1974

Mauritania and, to a lesser extent, Gambia are following development strategies in which pursuit of comparative advantage has been of high priority. These coastal countries export groundnuts, cotton, fish and minerals in return for imported foodgrains. One of the implications of their integration into the international economy is that they have a long way to go to achieve self-sufficiency -- much further than the interior states. For Senegal and Mauritania and perhaps for Gambia as well, the concept of regional self-sufficiency is probably more relevant than that of national self-sufficiency. Moreover, for Senegal and Gambia in particular, the key decisions on cereals policy concern: (a) the volume of rice imports, (b) the selling price of these imports, (c) the producer price of groundnuts. Price rises of millet (and domestically produced rice) are constrained by the (normally) relatively low prices of imported rice. Expansion of grain production depends on relative producer prices of millet, rice and groundnuts. For Senegal and Gambia, more than for the other Sahel countries, cereals policy is intimately connected to development strategy in general.

B. Production, Marketings and Prices: A Survey of the Data

1. Cash Crops

From the mid-sixties to the mid-seventies, stagnation and decline of agricultural production was typical. Production volumes for established crops do not reach their level of the mid-sixties until 1974-75. A few cash crops performed better: exports of groundnuts grew by 7% per year in Niger between 1963 and 1970 and more rapidly (though from a lower base) in Upper Volta. Exports of cotton also grew in Mali, Upper Volta and, more recently, in Senegal. However, exports of groundnuts

fell in Mali and Senegal. Agricultural production generally performed sluggishly. Table II summarizes the production data.

Marketed production of main cash crops show major declines over this period. In Niger, the peak year for groundnut marketings was 1966; the 190,000 tons marketed in that year have never since been matched. In Senegal, between 750,000 and 900,000 tons of groundnuts were marketed annually in the early 1960s; after 1966, 600-800,000 tons were common. (See Tables III and IV.)

Official producer prices for main cash crops, given in Table IV, were stable or falling during most of the period 1960-1974. In Chad, the price paid to producers of cotton remained unchanged for 14 years. In Mali, cotton prices were raised only once in 8 years -- by 18% in 1966. In Niger and Upper Volta, producer prices for cotton, in fact, fell between the beginning and end of the decade. As for groundnuts, Senegal's producer prices were constant during the 60s and, in Mali and Niger, they were lower in the late sixties than at the beginning of the decade. The large producer price rises of 1974-75 marked a new development in most of the region.

Given that the producer prices for cash crops were unfavorable and that marketings did not rise much or actually fall, rural incomes were stagnant or declining during most of this period, even in money terms. The decline in real terms was much greater, given the fact that consumer prices rose during this period, generally by 3-5% a year, and more after 1972. Thus, the return per unit of labor for cotton cultivation in Chad appears to have fallen by more than 50% during the 60s. And in Senegal, the total revenue distributed to groundnut producers

TABLE II

Production of Principal Crops, 1961-1976 (1,000 tons)
Evolution de la Production des Produits Agricoles Principaux (en milliers de tonnes)

	61-64 60/61-64/65	65 65/66	66 66/67	67 67/68	68 68/69	69 69/70	70 70/71	71 71/72	72 72/73	73 73/74	74 74/75	75 75/76	76 76/77
(moyen-average)													
<u>MIL/SORGHO-MILLET/SORGHUM</u>													
PRODUCTION													
Haute Volta	827	980	940	876	860	922	833	772	766	750	810	1,200	1,087
La Gambie	43	44	44	44	45	45	30	45	30	33	44	34	(32)
Mali	808	721	737	830	558	603	715	715	624	660	850	865	
Mauritanie	88	100	90	90	50	100	82		37	25			
Niger	1,181	1,056	1,119	1,342	948	1,384	1,101	1,226	1,127	753	1,102	835	1,503
Senegal	447	554	423	655	450	635	401	583	323	511	777	613	533
Tchad	901	614	630	647	661	651	610	639	490	430	(559)	(595)	
<u>RIZ (PADDY)-RICE (PADDY)</u>													
PRODUCTION													
Haute Volta	27	33	35	36	38	39	34	37	34	31	39	39	12
La Gambie	28	37	37	20	40	37	41	41	30	26	28	30	(30)
Mali	177	162	162	172	134	161	137	157	116	130	250	260	
Mauritanie	0.6	0.7	0.7	0.7	0.8	0.1	2.1		2.5	3.0			
Niger	10	12	21	33	39	38	38	28	32	46	30	29	29
Senegal	94*	125	125	135	59	141	99	108	44	64	117	140	112
Tchad	30 (13)	25	37	32	32	37	40	51	42	30	37	39	
<u>ARACHIDES-GROUNDNUTS</u>													
PRODUCTION													
Haute Volta	59*			75	75	78	65	66	60	63			87
La Gambie	92	118	130	120	148	135	115	125	115	137	133	135	(135)
Mali	156	153	159	119	96	136	156	152	135	132	188	205	
Mauritanie	0.7	0.8	0.8	3.0	2.0	0.8	3.0		1.0	1.0			
Niger	184	277	312	298	252	207	205	257	260	77	129*	41	90
Senegal	933	1,122	857	1,005	831	779	583	989	570	675	993	1,450	1,182
Tchad			92	88	110	115	96	75	85	70	75	82	
<u>COTON-COTTON</u>													
PRODUCTION													
Haute Volta	7*			17	32	36	24	28	33	27	31	48	67-70
La Gambie						0.02	0.03	0.04	0.20	0.26	0.26	0.29	
Mali	18	22	32	39	50	51	59	74	72	55	71	100	
Mauritanie	12	10	10	12	12	12	15		10	10			
Niger	4	7	7	6	7	13	11	9	6	4	8	10	
Senegal		0.3	1.2	4.3	9.8	11.5	11.6	21.2	23.5	33.1	42.4	31	47
Tchad	88	87	123	102	149	117	95	109	104	115	144	174	

() Estimation

* Seulement les années 61/62-64/65

SOURCE: Statistical Compilation, Part II of this volume. Compilation Statistique, 2^{eme} partie de ce tome.

Table III.
Marketed Output of Main Export Crops, 1960-76 (1,000 tons)
Commercialisation Des Cultures de Rente, 1960-76 (1,000 tonnes)

	<u>60</u> 60/61	61 61/62	62 62/63	63 63/64	64 64/65	65 65/66	66 66/67	67 67/68	68 68/69	69 69/70	70 70/71	71 71/72	72 72/73	73 73/74	74 74/75	75 75/76
<u>ARACHIDES-</u>																
<u>GROUNDNUTS</u>																
HAUTE VOLTA					5.5	5.8	8.7	10.9	10.3	12.2	17	14.7	24.7	28.9	32.7	13.1
MALI	.54	63	67	74	50	27	40	29	33	57	74	60	50	43	70	87
NIGER	0		138	171	160	234	229	274	246	247	195	218	164	39	135	6
SENEGAL	809	872	749	782	839	993	781	834	781	623	447	747	466	501		
<u>COTON-</u>																
<u>COTTON</u>																
HAUTE VOLTA					8.4	8.8	7.5	16.3	32	36.2	23.5	28.1	32.6	26.7	30.6	48
MALI	5	6	12	16	28	18	28	33	45	45	53	68	66	51	61	90
NIGER					6.8			6.2	7	10.5	9.6	8.3	5.7	1.3	11	
SENEGAL					.04		1.12	3.89	9.76	10.83	11.13	21.17	22.28	32.85		
TCHAD					99			102	149	117	95	109	104	114		

SOURCE: Statistical Compilation, Part 2 of this volume.
 Compilation Statistique, 2^{eme} partie de ce tome.

TABLE IV

Official Producer Prices, 1960-76 (CFA/KG*)
Evolution des Prix au Producteur Officiel (CFA/KG*)

	60-64 60/61-64/65	65 65/66	66 66/67	67 67/68	68 68/69	69 69/70	70 70/71	71 71/72	72 72/73	73 73/74	74 74/75	75 75/76	76 76/77
	(moyen-average)												
<u>MIL/SORGHO-MILLET/SORGHUM</u>													
Haute Volta	12.6	13	14	12	12	12	12	12	14	18	22	18	21
Mali	10.2	11	15	16	16	18	18	18	20	20	32	32	32
Niger	7						10	12.5	12.5	25	25	25	25
Senegal	15.6	16	17	17.5	17.5	17.5	17.5	17.5	17.5	25.9	30	30	35
Tchad									12	12	12	12	12
<u>RIZ (PADDY) - RICE (PADDY)</u>													
Haute Volta					18	18	18	18	18	29	35	35	
La Gambie										29.1	31.4	31.4	40.3
Mali	11.4	12.6	16	18	18	25	25	25	25	25	40	40	40
Niger		15	17	17	16.5	16.5	21.5	21.5	21.5	30	30	35	35
Senegal	19	21	21	21	21	21	21	21	25	25	42	42	42
Tchad									14	18	20	26	25
<u>ARACHIDES-GROUNDNUTS</u>													
Haute Volta		26.75	26.75	26.75	26.75	26.75	24.58	24.58	24.58	26.30	34	34	
La Gambie		14	14	13.5	14	15	17	18	20	23	31	37	41
Mali	13.8	13	16	24	24	30	30	30	30	30	40	40	45
Niger		15.2	15	12		13	14	15	16	18	40		
Senegal	21	21	21	18	18	18	19	23	23	26	42	42	42
<u>COTON-COTTON</u>													
Haute Volta	33.4	34	34	34	32	32	32	32	32	35	40	40	
Mali	34	34	34	40	40	45	50	50	50	50	75	75	75
Niger	31.7	30	28.5	28.5	28.6	28.4	28.9	29.7	31.9	37	47	47	47
Senegal			37.3	32.6	33	37.8	37.8	31	34	37	47	47	47
Tchad			26	26	26	26	26	28	29	31	43		

* sauf: la Gambie - en Butus/Kg, et le Mali - en Fm/Kg.
 except: The Gambia - Butus/Kg, and Mali - MF/Kg.

SOURCE: Statistical Compilation, Part II of this volume. Compilation Statistique, 2^{eme} partie de ce tome.

TABLE V

Indices of Producer Prices and Producer Income for Principal Crops, 1960-1975
Indices de Prix au Producteur et Revenu au Producteur des Produits Principaux, 1960-1975

			60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
			60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76
HAUTE VOLTA																		
Arachides- Groundnuts	1964/65=100	P ^a																
		R ^b																
Coton-Cotton	1964/65=100	P					100	100	100	100	100	100	93	93	93	96	126	126
		R					100	100	100	100	166	200	262	231	386	465	693	273
		R					100	113	100	200	376	424	282	329	388	347	456	706
MALI																		
Arachides- Groundnuts	1960/61-1964/65=100	P	101	101	101	101	94	94	116	174	174	217	217	217	217	217	290	290
(coques-unhulled)		R	89	103	110	122	76	41	75	82	93	201	261	211	176	151	329	409
Coton-Cotton	1960-61-1964-65=100	P	100	100	100	100	100	100	100	118	118	132	147	147	147	147	221	221
(1ere qualité)		R	37	45	90	119	209	134	209	290	395	444	582	746	724	560	1,004	1,482
NIGER																		
Arachides- Groundnuts	1962/63=100	P		106	100	--	--	108	105	84	--	91	98	105	112	126	280	--
(coques-unhulled)		R		--	100	--	--	184	174	167	--	163	138	166	134	36	274	--
Coton-Cotton	1964/65=100	P			92	100	100	92	87	87	88	87	89	91	98	113	144	144
		R			--	--	100	--	--	75	88	137	127	104	70	22	227	--
SENEGAL																		
Arachides- Groundnuts	1960/61-1964/65=100	P	100	100	100	100	100	100	100	86	86	86	90	110	110	124	200	200
		R	100	108	92	97	104	123	96	88	83	66	50	101	63	77	189	290
Coton-Cotton	1966/67=100	P					103	--	100	89	89	103	103	84	92	100	127	127
		R					3	--	100	357	892	1,130	1,130	1,759	2,022	3,300	--	--
TCHAD																		
Coton-Cotton	1967/68=100	P							100	100	100	100	100	108	112	119	165	--
		R								100	146	115	93	115	114	134	196	--

^a prix au producteur - producer price.

^b revenu au producteur - producer income.

declined by a third during the decade, with real income per unit of labor declining by much more. In Niger, similarly, money and real incomes to producers of cotton and groundnuts fell appreciably. This situation was drastically turned around in most of the region in 1974-75, when price increases coincided with bumper crops.

2. Foodgrains

a. Production

As is true everywhere for subsistence crops, production data are very poor for the Sahel's main staples -- millet and sorghum. The methodological requirements for good estimates of production -- rigorous sampling of acreage, regularity of measurement, systematic and careful crop cutting, weighing, measurement of humidity content, etc. -- are rarely met. Agricultural statistical services are small in size, overworked, burdened by daily operating problems, hobbled by lack of vehicles or fuel and generally struggling with inadequate budgets. As a result, crop cuttings are rare, field visits are irregular and official estimates tend to be based on more casual methods of acreage estimate and yields -- sporadic visits to some experimental plots, for example. Since production is mainly a function of rainfall volume and distribution, and the pattern of rainfall is very uneven geographically, such estimates can be highly misleading.

Not only are gross production estimates of highly uncertain reliability, but the definitions used in the official data are often unclear. Some distinguish between gross production and barnyard yields (i.e., take account of losses through birds, pests, etc.); while others do not. Some of the estimates fail to specify whether they include millet/sorghum

and rice only or total grain production (including minor grains like maize or fonio). Furthermore, production estimates in recent years have often been put together by multiplying a more or less theoretical figure on average annual grain consumption per person with a figure of population which is very approximate. On top of this, many production estimates since 1971 have been made to determine "grain deficits" and the volume of food aid. This leads to some understandable tendency to underestimate domestic production.

On the other hand, some agricultural sample censuses, taken on more systematic bases than the normal statistics on production, indicate that there may be overestimation in the "normal" figures. For example, a comparison of a sample survey and the official statistics in the Department of Dosso, Niger gave the following results in 1972-73.¹

Table VIA. Comparison of Official Production Estimates and Sample Survey Results, Department of Dosso, Niger, 1972-73

<u>Crop</u>	<u>Production According to Sample Survey</u>	<u>Official Production Estimate</u>	<u>Difference</u>	<u>Official Over-Estimate</u>
Millet	147,000	225,500	75,500	51%
Sorghum	4,200	40,300	26,200	872%
Cowpeas	18,400	21,000		14%

¹I. Pattinson, Une Brève Analyse des Quelques Problèmes Relatifs aux Programmes de Stabilisation des Céréales en Haute Volta et au Niger, mimeo, 1973. The investigator responsible for the sample survey commented as follows on the sorghum estimates: "It appears that the estimated acreages bear no relationship to those estimated by the Department's Agricultural Services..." The basic study still used in Niger for guiding production estimates is the 1963 SEDES report, Les Produits Vivriers au Niger, Production et Commercialisation, I. Les Mils et Sorghos, Paris, 1963. The authors of that study stressed the uncertainties in the information being furnished by the heads of agricultural sub-sectors (districts).

A similar comparison exists for Mali. Estimates of millet/sorghum production derived from an annual agricultural sample survey and those given by the Ministry of Agriculture, differed as followed in the late 1960s:¹

Table VIB. Comparison of Official Production Estimates
and Sample Survey Results, Mali, 1966-1970

<u>Millet/Sorghum Production</u> <u>(000 tons)</u>	<u>1966-67</u>	<u>1967-68</u>	<u>1968-69</u>	<u>1969-70</u>
According to Agricultural Survey	738	830	555	602
According to Ministry of Agriculture	809	881	757	913

For these reasons, production estimates for food grains have enormous variance and must be used with great caution. Although differences as large as those cited above may be rare, it is not uncommon for different bureaus in the same ministries to give production figures which vary by 20%. In order to further indicate the range of estimates and margins of error possible, we present in the "Statistical Compilation" (Part II of this volume) a sampling of the many different estimates of production for each country.

The uncertainty surrounding food production data hinders understanding and creates obstacles to the formation of sound policy. It

¹FAO, Rapport au Gouvernement du Mali sur le problème de la commercialisation des céréales (H. Panhuys), Rome, 1973, Annex 4.

makes planning difficult.¹ Generation of more solid production figures should be high on any list of priorities for information needs in the Sahel.

The best existing estimates of grain production for recent years are assembled in Table VII. Production is in the neighborhood of one million tons in Upper Volta, Niger and Mali, with normal variations of plus or minus 20% according to the rains; 800,000-900,000 tons in Senegal, with similar variations; 600,000 tons in Chad and 60,000 tons in Gambia. Mauritania, for which grain production data are particularly irregular and uncertain, probably produces 80-100,000 tons in a normal year.

Table VII. Cereals Production,^a 1970-1976
Production Céréalière,^a 1970-1976

	<u>1970/71</u>	<u>1971/72</u>	<u>1972/73</u>	<u>1973/74</u>	<u>1974/75</u>	<u>1975/76</u>	<u>1976/77^b</u>
GAMBIE	/1	86	60	58	72	64	(62)
HAUTE VOLTA	867	809	800	781	849	1239	(1099)
MALI	852	872	740	790	1100	1125	-
MAURITANIE	84	-	40	28	-	-	-
NIGER	1139	1254	1159	799	1132	864	(1532)
SENEGAL	500	691	367	575	894	753	(665)
TCHAD	649	690	532	460	(596)	634	-

^aMillet/sorghum and Rice. Mil/Sorgho et Riz.
^bProvisional.

¹In setting out future production estimates, for example, it is essential to have reasonably good base year data. If not, risks of irrelevant and incorrect projections are high. In several of the tentative planning exercises made under the auspices of the Club du Sahel, for example, projections of food grain production are made for 1985 or 2000, based on presumed production in 1970. However, some of these 1985 targets have already been met in 1977, or are close to being met. This may be due less to growth in productivity or good rainfall than to erroneous base year estimates. General uncertainties regarding the volume of grain production also make it difficult to know the true volume of grain marketings, the magnitude of on-farm stocks and other information relevant to price and marketing policies.

b. Marketings

The quantities of food grains which enter the market are known with perhaps less precision than quantities produced. Two kinds of information are available: quantities purchased and sold by the official grain marketing agencies (ONCAD in Senegal, OPVN in Niger, OFNACER in Upper Volta, OPAM in Mali, etc.),¹ which are normally a small proportion of total marketings; and quite casual assertions, based on very little systematic information, which estimate marketing to be 10-20% of total production. How these estimates are derived is rarely stated, but these are all the marketing figures available, and they are used here.

Table VIII-A shows the existing information or estimates on marketings of millet/sorghum. Table VIII-B gives production estimates and official marketings of rice. The numbers suggest the following observations.

i. If the 15% estimate is reasonably close to reality, then more millet/sorghum is marketed than any other crop, with a few exceptions such as groundnuts in Senegal and, very recently, Mali. Thus, while grain marketing figures appear small in absolute terms, the marketing

¹ONCAD - Office National de Coopération et d'Assistance pour le Développement; OPVN - Office des Produits Vivriers du Niger; OFNACER - Office National des Céréales; OPAM - Office des Produits Agricole du Mali.

of food grains is a major element in agricultural marketing in the region, and in some of the countries, the major element.

ii. It is generally assumed that grain marketings represent a "disposable surplus," i.e., that the typical Sahelian farmer plants that amount of millet/sorghum which, in a year of normal rainfall, will yield enough to feed his family, with some margin for safety.¹

Some writers, however, argue that such a view is wrong, that it ignores the substantial amount of grain buying and selling which has become a normal part of village life. In this view, the money economy has made a deep impact in every village, creating demands for money income which are general, urgent, and relatively sizeable--for tax payments, debt repayment, gifts, ceremonies, etc. Hence, grain sales cannot be viewed as representing a "disposable surplus." Most, if not all, farmers sell grain, good years or bad, and many sell at harvest only to buy later

¹Cf. John Becker, op. cit.

during the pre-harvest "soudure." These arguments have been expressed most forcefully in studies of Hausa villages in Niger.¹ In one such study it is claimed that 25% of total grain output enters the market, much of it within the producing villages.²

In the absence of intensive village-level studies of production, consumption, storage, sales, indebtedness, etc., it is impossible to properly assess this argument. It is indeed difficult to make many firm statements at all about the magnitude and nature of grain marketings in the Sahel.³

¹Claude Raynaud, "La Circulation Marchande des Céréales et les Mécanismes d'Inégalité Economique: Le Cas d'Une Communauté Villageoise Haoussa," Cahiers du Centre d'Etudes et de Recherches Ethnologiques (Bordeaux), No. 2 (1973). The Raynaud study is abstracted in: Ministère de la Coopération, Direction des Programmes, Sous-Direction des Etudes Economiques et de la Planification, Les Circuits de Commercialisation des Produits du Secteur Primaire en Afrique de l'Ouest, Etudes et Documents (Paris), No. 22 (Mars 1975). This annotated bibliography was compiled by Claude Arditi, who strongly argues against the "disposable surplus" view throughout the volume. See also Guy Nicolas, Habou Magadi, Maman Dan Mouche, Le Système Traditionnel Du Credit Dans La Region de Maradi, enquête socio-economique, CNRSH, Base de Maradi, 1969; and Polly Hill, "Hidden Trade in Hausaland," Man, Vol. 4, No. 3 (1969), pp. 392-409; Studies in Rural Capitalism in West Africa, London, Cambridge University Press, 1970; and Rural Hausa: A Village and a Setting, Cambridge University Press, 1972.

Among the many studies stressing the "disposable surplus" notion, see Phillip Couty, "Notes sur la Production et le Commerce du Mil dans le Département du Diamaré (Nord-Cameroun)," in Cahiers ORSTOM, Sciences Humaines, Vol. II, No. 2 (1965); and SEDES (Société d'Etudes de Développement Economique et Social), Les Produits Vivriers au Niger, Production et Commercialisation Etude Generale: Les Mils et Sorghos, Paris, 1963.

²Raynaud, op. cit.

³There are a number of useful studies which do have much suggestive information and should be more intensively analyzed. For example, according to the Enquête Socio-Economique au Tchad en 1965, 33% (1,553 CFA francs) out of total annual money expenditure per capita went to purchases of food. Of this only 480 francs went to millet purchases, most (56%) for millet beer, only 17% of the households surveyed purchased any millet at all. (Cited in UNDP, Groupe de Conseillers en Développement d'Afrique Centrale, Production et Commercialisation des Céréales, Tchad, Vol. I, juillet 1974, p. 153.)

iii) The official grain marketing agencies have not been major factors in marketing domestically-produced millet/sorghum in most years. As Table VIII indicates, until 1974 none of the grain agencies bought more than a quarter of total millet marketed, except ONCAD (Senegal) in 1973/74 (31%) and OPAM (Mali) in 1971-72 (27%). In 1974/75 and 1975/76, years of generally good harvests, this proportion rose and is now significant in Mali (over 50% of total purchases) and in Niger (38%); elsewhere it remains under 15%.

iv) The influence on cereals prices exercised by the grain agencies was much greater than the figures in Tables VIII A and VIII B suggest. These agencies were the main channels through which food aid was sold or distributed. During the peak drought years, 1972-74, about 1 1/4 million tons of grain entered the region as aid. Along with the substantial volume of commercial imports which they also handled, this aid allowed the grain marketing organizations to play a significant role in price moderation and stabilization. (See Appendix Table 3C for an estimate of food aid inflows and grain imports in the 1970s.) In 1972-73 in Niger, to take one example, the OPVN bought locally only 7,000 tons of cereals, but received 120,000 tons in food aid.¹ In Chad, the DC bought insignificant amounts of local grain, but marketed some 30,000 tons a year of food aid during the worst period of the drought.

¹ See Table 12 on OPVN operations in Appendix 1 of the Niger Country Study. Narrative accounts of OPVN activities are found in its annual reports, for example, OPVN, Activités de l'OPVN, 1970-74 (Niamey, Mars 1974), typescript and Rapport d'Activités, 1973-74, 1974-75, mimeo (Niamey, Juillet 1975).

Table VIII A. Estimated Production and Marketing of Domestically Produced Millet/Sorghum, 1968-1976

Tableau VIII A. Quantités Estimées de la Production et de la Commercialisation de Mil/Sorgho Local, 1968-1976

Country/Year Pays/Année	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76
<u>Gambia/Gambie</u>								
Production/Production	45	45	30	45	30	33	44	34
Aggregate Marketings* Quantités commercialisées totales*	6.75	6.75	4.5	6.75	4.5	4.95	6.6	5.1
Purchases by Marketing Authority Achats par Organisme officiel de Commercialisation	-	-	-	-	-	-	20	22
<u>Mali¹</u>								
Production/Production	558	603	715	715	624	660	850	865
Aggregate Marketings* Quantités commercialisées totales*	83.7	90.45	107.25	107.25	93.6	99	127.5	129.75
Purchases by Marketing Authority Achats par Organisme officiel de Commercialisation	8	26	12	29	11	9	40	71
<u>Niger</u>								
Production/Production	948	1384	1101	1226	1127	753	1102	835
Aggregate Marketings* Quantités commercialisées totales*	142.2	207.6	165.15	183.9	169.05	112.95	165.3	125.25
Purchases by Marketing Authority Achats par Organisme officiel de Commercialisation	-	-	-	5	3	7	25	48
<u>Senegal/Sénégal</u>								
Production/Production	450	635	401	583	323	511	777	613
Aggregate Marketings* Quantités commercialisées totales*	67.5	95.25	60.15	87.45	48.45	76.65	116.55	91.95
Purchases by Marketing Authority Achats par Organisme officiel de Commercialisation	2	11	(§)	3	(§)	30	36	12
<u>Chad/Tchad</u>								
Production/Production	661	651	610	639	490	430	(559)	(595)
Aggregate Marketings* Quantités commercialisées totales*	99.15	112.65	91.5	95.85	73.5	64.5	(83.85)	(89.25)
Purchases by Marketing Authority Achats par Organisme officiel de Commercialisation	-	.66	1.85	1.24	1.21	.91	1.78	.93
<u>Upper Volta/Haute Volta</u>								
Production/Production	860	922	833	772	766	750	810	1200
Aggregate Marketings* Quantités commercialisées totales*	129	138.3	124.95	115.8	114.9	112.5	121.5	180
Purchases by Marketing Authority Achats par Organisme officiel de Commercialisation	-	-	(§)	1	1	9	16	-

§less than 1,000 tons/moins de 1000 tonnes

*15% of production/15% de la production

SOURCES: Country Studies, Volume II/SOURCES : Etudes par Pays - Tome II

¹Official marketings were higher in Mali in the mid-1960's. Here is their progression since 1960 in thousands of tons:/ Les quantités commercialisées officielles étaient supérieures au Mali au milieu des années soixante. Les chiffres en milliers de tonnes depuis 1960 sont les suivants : 1960-61:20; 1961-62:21; 1962-63:29; 1963-64:16; 1964-65:17; 1965-66:26; 1966-67:57; 1967-68:60. FAO/F.A.O., Rapport au Gouvernement du Mali sur le Problème de la Commercialisation des Céréales, établi sur la base des travaux de H. Dubuyé. Rome 1973. Annexe 5

Table VIII-B.

Estimated Production and Official Marketing of Domestically Produced Rice, 1969-1976
Quantités Estimées de la Production et de la Commercialisation Officielle de Riz Local, 1969-1976

Country/Year Pays/Année	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76
<u>Chad/Tchad</u>							
Production/Production	37	40	51	42	30	37	39
Purchases by Marketing Authority Achats par Organisme officiel de Commercialisation	\$	1	1	1	\$	\$	\$
<u>Gambia/Gambie</u>							
Production/Production	37	41	41	30	26	28	30
Purchases by Marketing Authority Achats par Organisme officiel de Commercialisation	\$	\$	\$	\$	\$	\$	\$
<u>Mali</u>							
Production/Production	161	137	157	116	130	250	260
Purchases by Marketing Authority Achats par Organisme officiel de Commercialisation	39	40	51	30	59	84	100
<u>Niger</u>							
Production/Production	38	38	28	32	46	30	29
Purchases by Marketing Authority Achats par Organisme officiel de Commercialisation	-	-	1	26	14	-	26
<u>Senegal/Sénégal</u>							
Production/Production	141	99	108	44	64	117	140
Purchases by Marketing Authority Achats par Organisme officiel de Commercialisation	\$	1	1	-	1	4	3
<u>Upper Volta/Haute Volta</u>							
Production/Production	39	34	37	34	31	39	39
Purchases by Marketing Authority Achats par Organisme officiel de Commercialisation (ORD's)	-	1	2	2	2	4	-

\$less than 1,000 tons/moins de 1000 tonnes

SOURCES: Country Studies, Volume II/SOURCES : Etudes par Pays - Tome II

3. Prices

As with production and marketing, so too with prices: solid information is sparse. Aside from scattered and unsystematic data, five main price series of particular relevance to food grain policy are available in most Sahel countries. These are: (1) official producer prices for the main cash crops--notably cotton and groundnuts; (2) official producer (floor) prices for main foodgrains - millet/sorghum, rice and often maize; (3) official consumer (ceiling) prices for food grains; (4) actual retail prices in markets of the capital cities, as recorded by government statistical services responsible for preparing an official cost-of living index or its equivalent; (5) unpublished and unprocessed data on actual prices in rural markets, collected by local authorities, some of which is utilized in this study.

These data provide a highly uncertain basis for analysis of price policy questions. Probably the most firm set of data is for prices paid to producers of export crops. These are shown in Table V. The main lines of their movement over time were commented on earlier. These price series, good as they are, are not without ambiguities. As can be seen in the "Statistical Compilation," in Part II of this volume, different sources quite frequently give different prices for the same year. These divergences seem to arise from such factors as use of different buying points and inclusion or exclusion of taxes and rebates. In general, however, these producer price series are relatively dependable, particularly as

indicators of changes over time.¹

The official producer price for food grains is much less indicative of actual prices than the export crop producer price. The grain marketing agencies (OPAM, OPVN, OFNACER, etc.) generally pay the official price for their purchases, but as just noted they have typically bought only a small share of marketed output. Most marketed grain is therefore sold at market-determined prices, the level and movement of which are poorly known. The official prices are set out in Table IV. Fuller coverage, giving many estimates of prices from different sources, is in the "Statistical Compilation."

The third "official" price series is the ceiling price for food grains which is established in most Sahel countries. It normally is intended to prevail throughout the country and is the price at which public sector retail outlets sell grain. The volumes sold at these prices vary widely over time and between countries. Generally, in periods of poor harvest, the official ceiling price is well below the prices actually prevailing.

Finally, there are the two sources of actual prices: retail prices for food grains in the capital cities, as gathered by the governments' central statistical services for purpose of cost of

¹This is not invariably the case. In Upper Volta until 1975, for example, the system of price determination then in effect for groundnuts, sesame and sheanuts, relied on private traders who worked within broad price ranges ("fourchettes"). The system induced traders to pay producers more than the official groundnut price when world prices were beyond the upper range of the fourchette, and less when world prices sank below the lower end. The magnitude of the possible differences between prices actually paid and official prices was very substantial. In 1970-71, for example, one trading firm then in business claims to have paid producers almost twice the existing official producer price. (See Volume II, Upper Volta Country Study).

living measurement; and scattered data on prices prevailing on markets in smaller towns, which we were able to compile during the field surveys. We have these latter data only for Upper Volta, Niger, and Chad. They are promising sources of market information, though uneven and generally of low quality. Four elements of weakness are especially worrisome. First, traditional units of measures are used by the price-takers: tines in Upper Volta (about 16 kg), tiyas in Niger, coros in Chad (about 2.5 kg). These units are observed and their price noted. Their contents are assumed to be of the same weight, though they are rarely, if ever, weighed to see whether this is so. Since all of these traditional measures are "rounded-dome" units, there is considerable scope for weight variation.

Secondly, observations are sometimes taken in terms of 100 kg. sacks and these are not always differentiated from prices recorded in smaller units. Thus, there may be some merging of wholesale and retail level prices.

Thirdly, differences in quality of grain are ignored in these price quotations. Yet we know that prices vary widely for grains of different quality. In both Upper Volta and Niger, it was observed a few years ago that year-old sorghum sold for 8-10 CFA francs per/kg, while new sorghum at the same time and place sold for 15-19 CFA francs per kg.

Finally, the price data are collected by non-specialized and frequently changing personnel, and are collected irregularly.

Just how critical the irregularity of data collection might be is suggested in Table IX which shows weekly quotations of prices of different grains in the market in Kao, north of Tahoua, Niger. These are unusually interesting data, unique in many respects.

Firstly, they are by week; no other such intra-monthly data exists, to our knowledge. Secondly, they show prices by weight, under varying conditions with respect to size of purchases. Finally, the inquiry was carefully supervised by a researcher from the University of Michigan, who was resident in Kao on another study.

The figures indicate wide intra-monthly swings, and much variation according to size of purchase. Thus, millet prices in January 1977 varied by 15-33% during the month, even for the same size purchase, and the highest January price was 60% above the lowest. Diagram 1 shows, in summary fashion, a longer series of price variations by week, using average prices - i.e., averages of prices by different sizes of purchases.

For these reasons, these data on prices actually prevailing on rural markets must be used very cautiously. Even the data on actual prices in the capital cities, which are contained in cost of living indexes and are the longest and, in general, the most reliable grain price series, can be questionable. For example, in Upper Volta, there are two series of retail millet prices actually prevailing on the central Ouagadougou market; the "official" Service de Statistiques-collected series and an unofficial set of price quotations taken by the Research Bureau of the Banque Centrale in Ouagadougou (BCEAO). The differences between the two are distressingly large - in some cases 50% - as can be seen in Diagram 2A.¹

¹It is not clear how these differences can be explained. Legal price controls have existed and, at least since 1972, the enforcement agency, the Inspection des Prix, has had a small staff: 15 controleurs in Ouagadougou and 6 in Bobo, in 1976. But this should, if anything, make the BCEAO price quotations, which are informally collected, higher than the statistical services quotations.

Diagram 1
Retail Price of Sorghum, Millet, Beans and Wild Grains - Kao Market, 1976-77

Prix de Détail de Sorgho, Mil, Niébé et Fonio - Marché de Kao, 1976-77

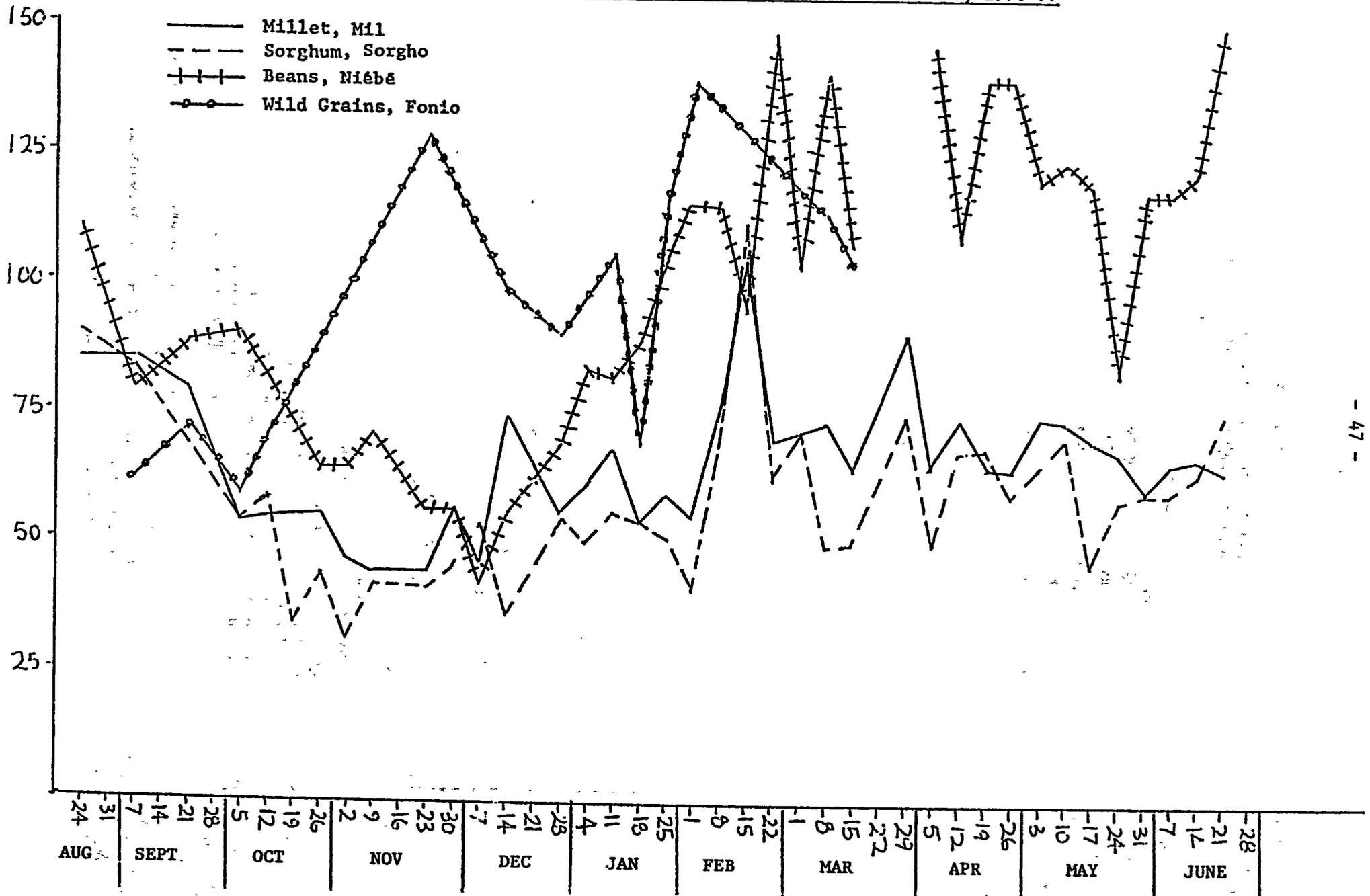


TABLE IX

Weekly Retail Prices of Cereals: Kao, Niger Aug. 24, 1976-Jan. 25, 1977^a
 Prix de Détail Hebdomadaire des Céréales: Kao, Niger 24 Aout, 1976-25 Jan. 1977^a

Date*	Millet Mil	Sorghum Sorgho	Cowpeas Niébé	Wild Grains Fonio
Aug. 24	85	90	110	—
31	n.a.	n.a.	n.a.	n.a.
Sept. 7	85	83	79	62
14	n.a.	n.a.	n.a.	n.a.
21	78	68	88	72
28	n.a.	n.a.	n.a.	n.a.
Oct. 5	53	53	90	58
12	54	58	82	70
19	n.a.	34	n.a.	n.a.
26	55	43	64	—
Nov. 2	47	32	64	—
9	44	42	71	—
16	n.a.	n.a.	n.a.	n.a.
23	44	41	56	128
30	56	43	56	—

Date	Millet-Mil				Sorghum-Sorgho				Beans-Niébé			Wild Grains Fonio
	1	3	4	5	1	3	4	5	2	3	4	
Dec. 7	44	48	46	40	56	51	53	30	42	43 ^b	42	—
14	62	86	74	n.a.	30	42	36	n.a.	58	52	55	98
21								n.a.				
28	46	66	56	n.a.	49	59	54	n.a.	68	68	68	91
Jan. 5	54	71	62	n.a.	47	54	50	n.a.	87	79	83	—
11	52	84	68	53	63	49	56	43	90	74	82	111
18	56	53	54	60	47	61	54	50	89	89 ^b	89	69
25	59	59	59	60	45	57	51	40	100	109	105 ^b	115

Symbols-Symboles:

n.a. = not available, non disponible
 — = commodity did not appear on the market, produit non paru sur le marché

Column Headings-Titres des Colonnes:

1 = Size of purchase: 50 F: Valeur de l'achat
 2 = Size of purchase: 75 F: Valeur de l'achat
 3 = Size of Purchase: 100 F: Valeur de l'achat
 4 = Average of prices per kg. obtained from two different size purchases.
 Moyenne des prix par kg. obtenue à partir de deux achats de différente valeur.
 5 = Price per kg. of 100 kg. sack of grain. Prix au kg. de 100 kg. de grain.

Notes:

*Prior to December, no distinction in the size of purchase was made. Avant décembre, pas de distinction pour la valeur de l'achat était faite.

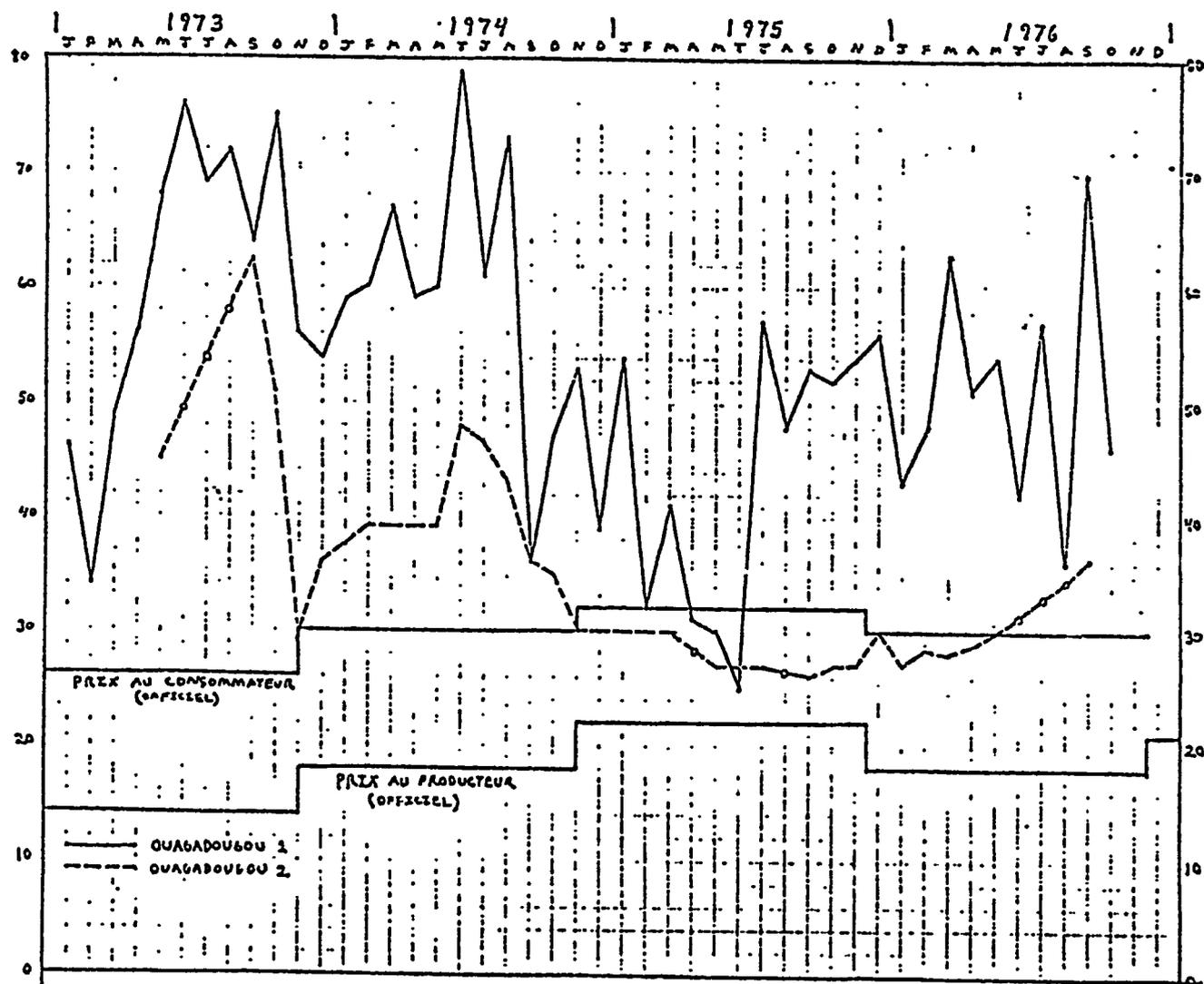
a - Data from- Données provenant de: E.D. Eddy, Center for Research on Economic Development, University of Michigan.

b - Size of purchase: 50 F: Valeur de l'achat.

Diagram 2-A

Retail Prices of Millet in Ouagadougou Compared With Official Prices, 1973-1976

Comparaison entre les Prix de détail du Mil a Ouagadougou et les Prix Officiels, 1973-1976



1. Bulletin de Statistique, Haute Volta.
 2. Banque Central des Etats de l'Afrique de l'Ouest.
 SOURCE: Appendix I, Table 4.

Diagram 2-B

HAUTE VOLTA: Prix du Mil sur les Différents Marchés Ruraux, 1968-69, 1973, 1976
(prix en CFA/kg)

UPPER VOLTA: Millet Prices, Various Rural Markets, 1968-69, 1973, 1976
(prices in CFA/kg)

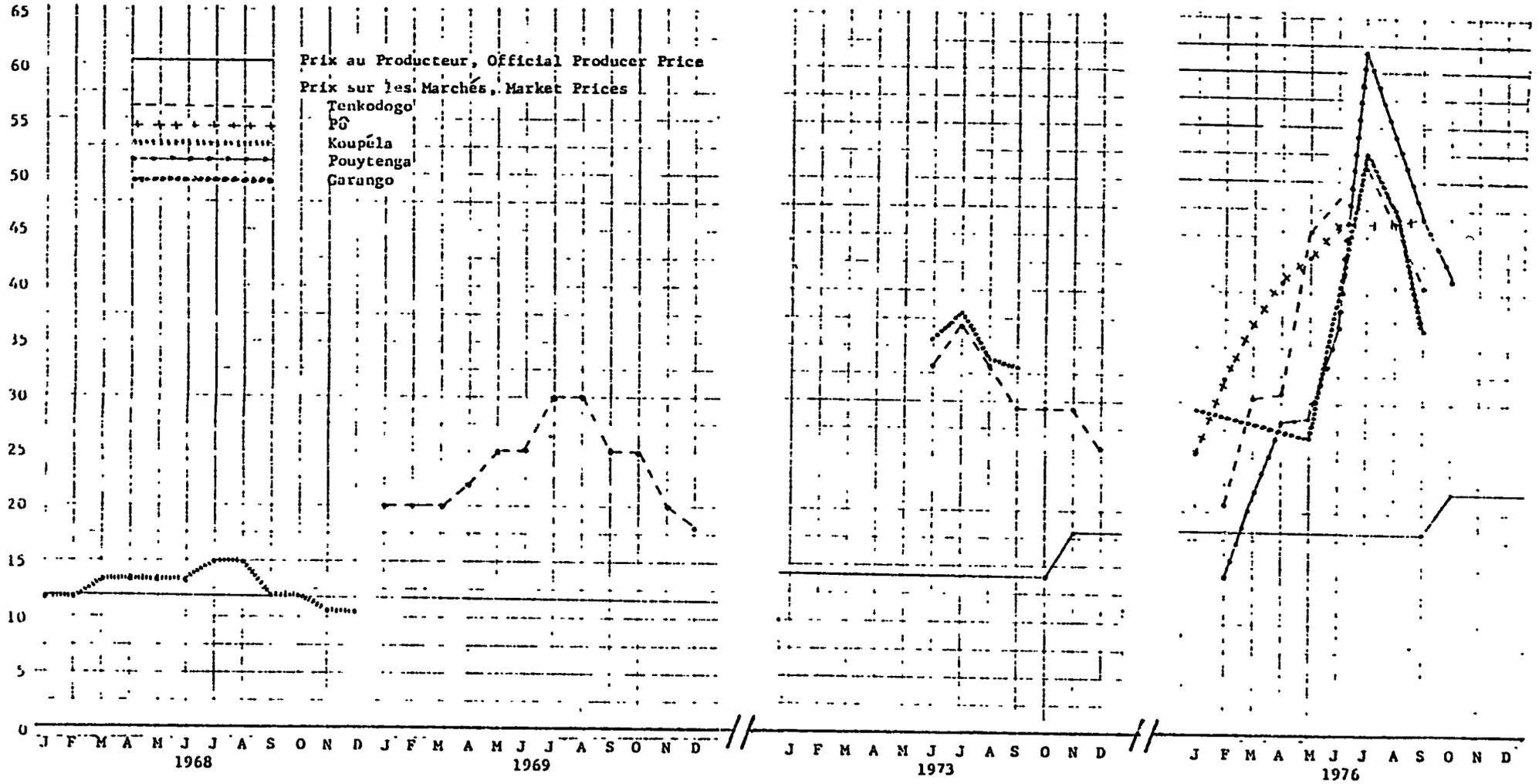


Diagram 3

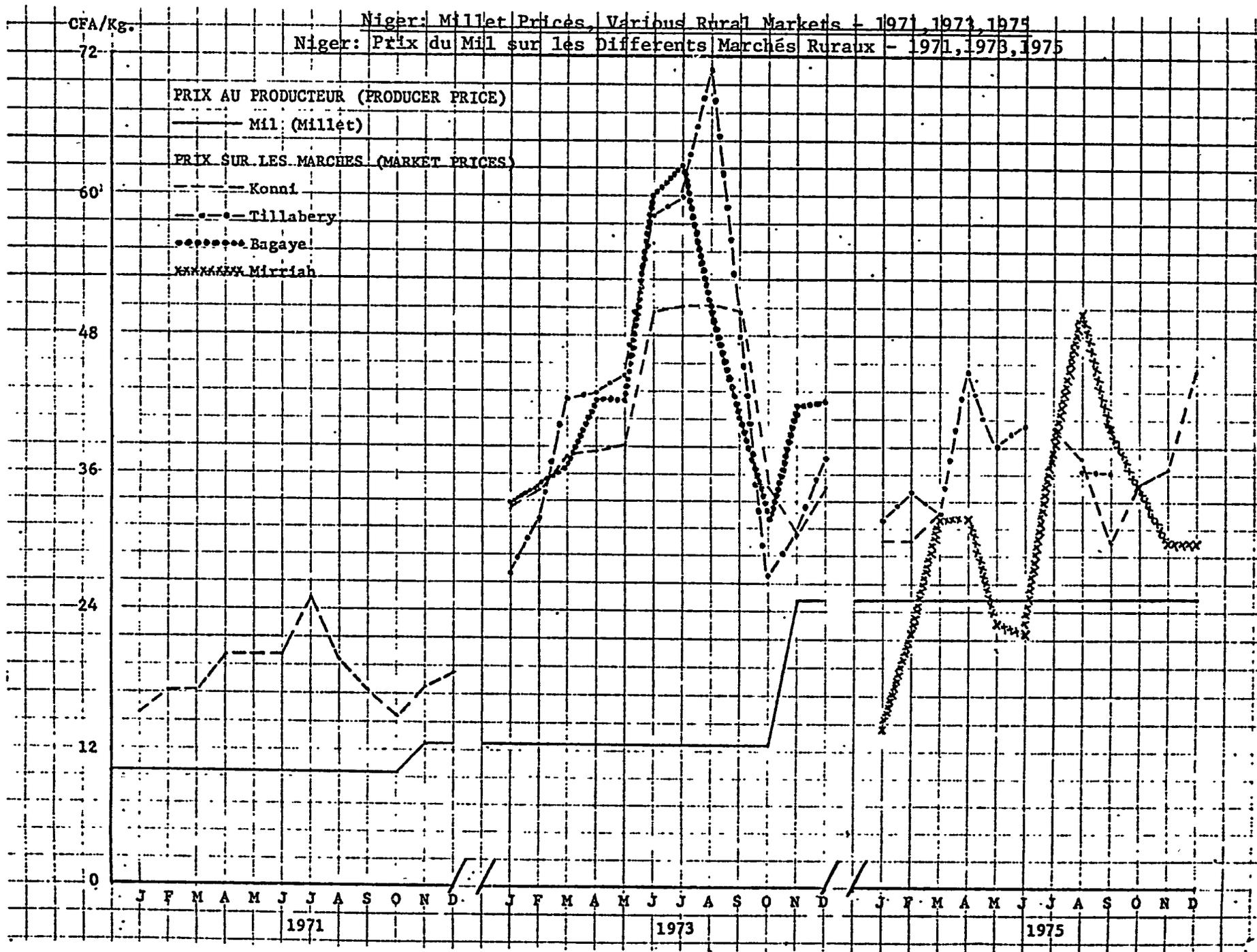


Diagram 4

Millet and Rice, Upper Volta; Official Producer Prices, Official Consumer Prices and Market Prices Ouagadougou, June 1971-Oct. 1976

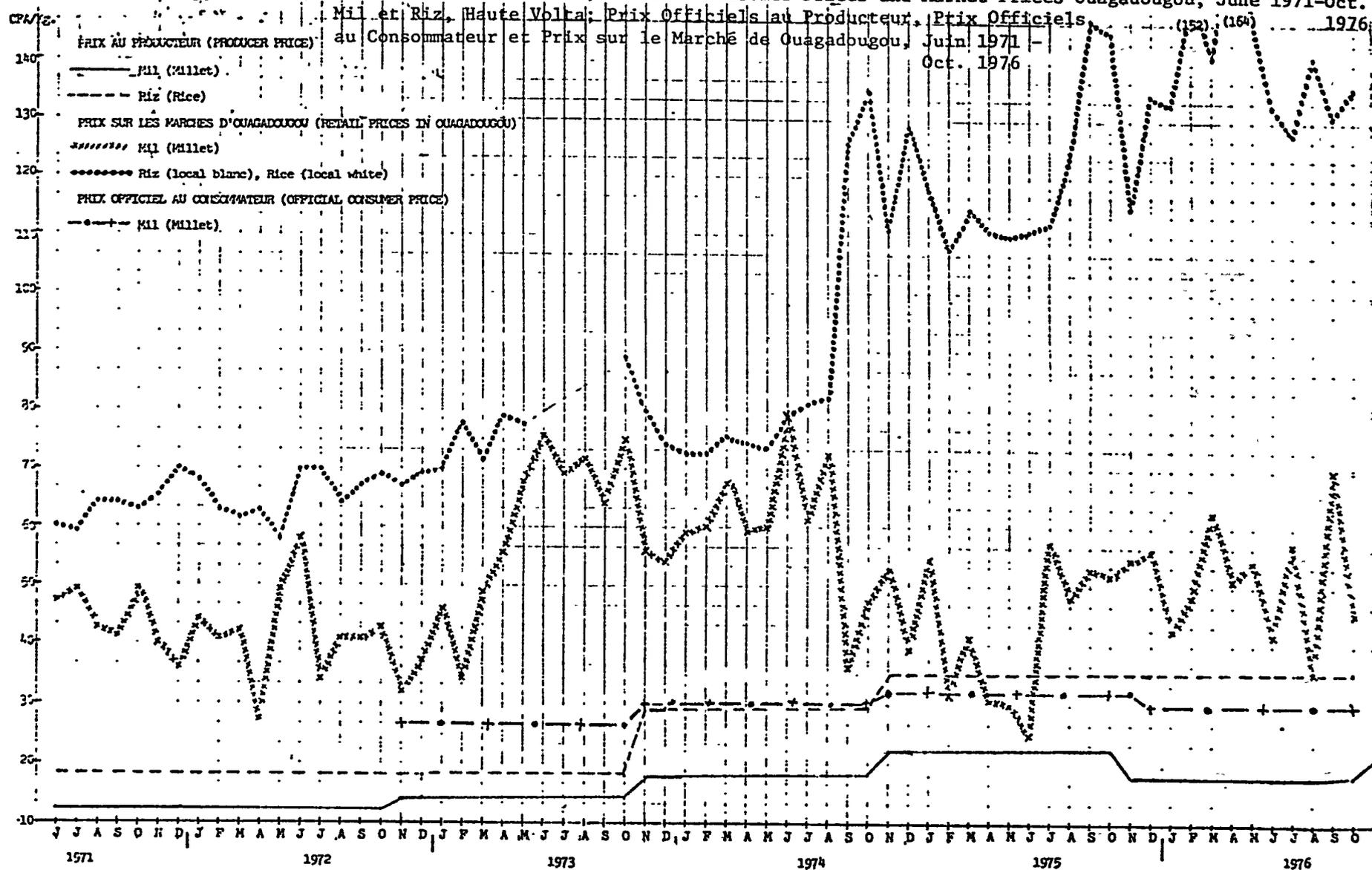
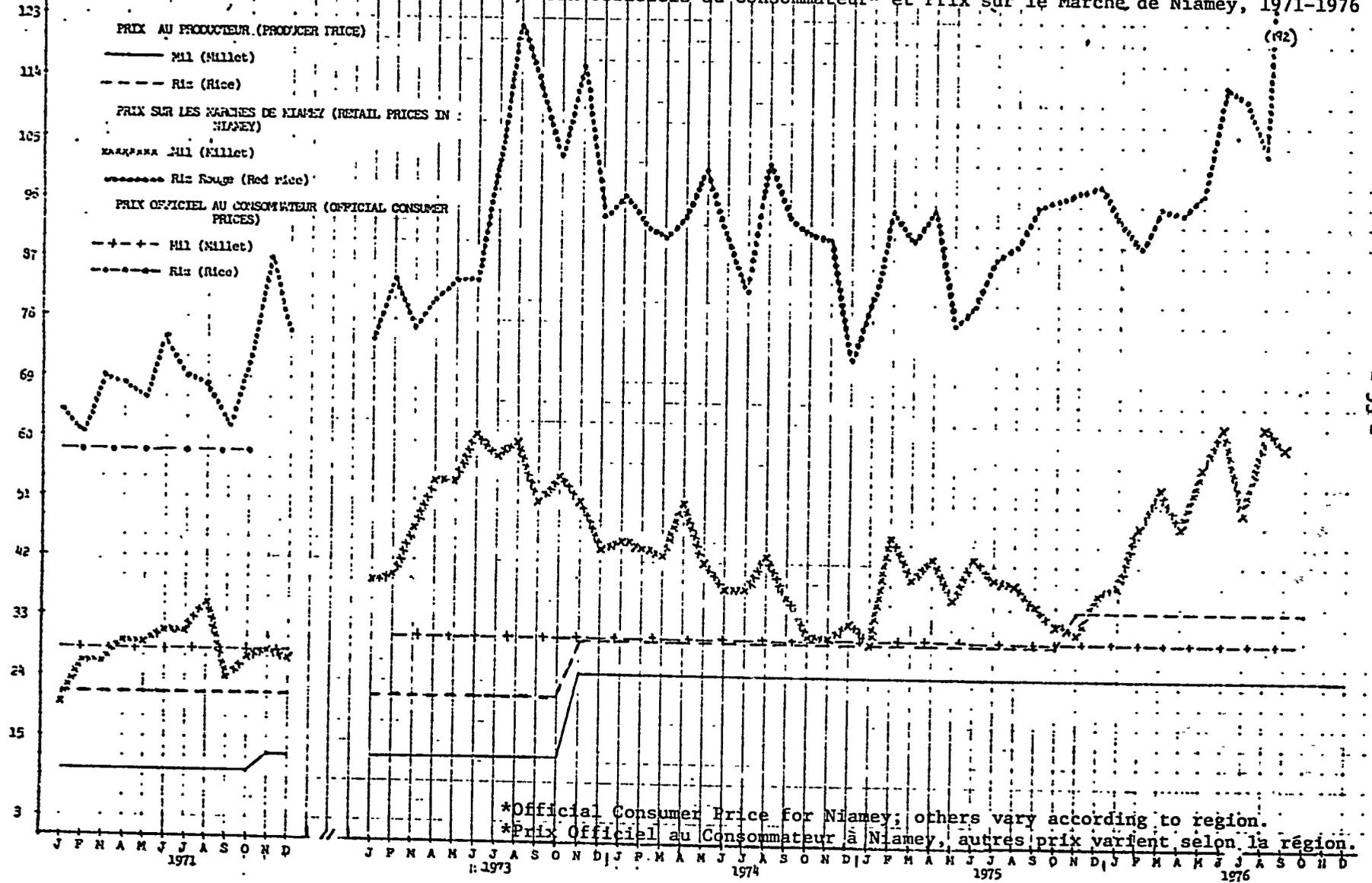


Diagram 5

Millet and Rice, Niger; Official Producer Prices, Official Consumer Prices* and Market Prices in Niamey, 1971-1976
 Mil et Riz, Niger; Prix Officiels au Producteur, Prix Officiels au Consommateur* et Prix sur le Marché de Niamey, 1971-1976



*Official Consumer Price for Niamey; others vary according to region.

*Prix Officiel au Consommateur à Niamey, autres prix varient selon la région.

Diagram 6

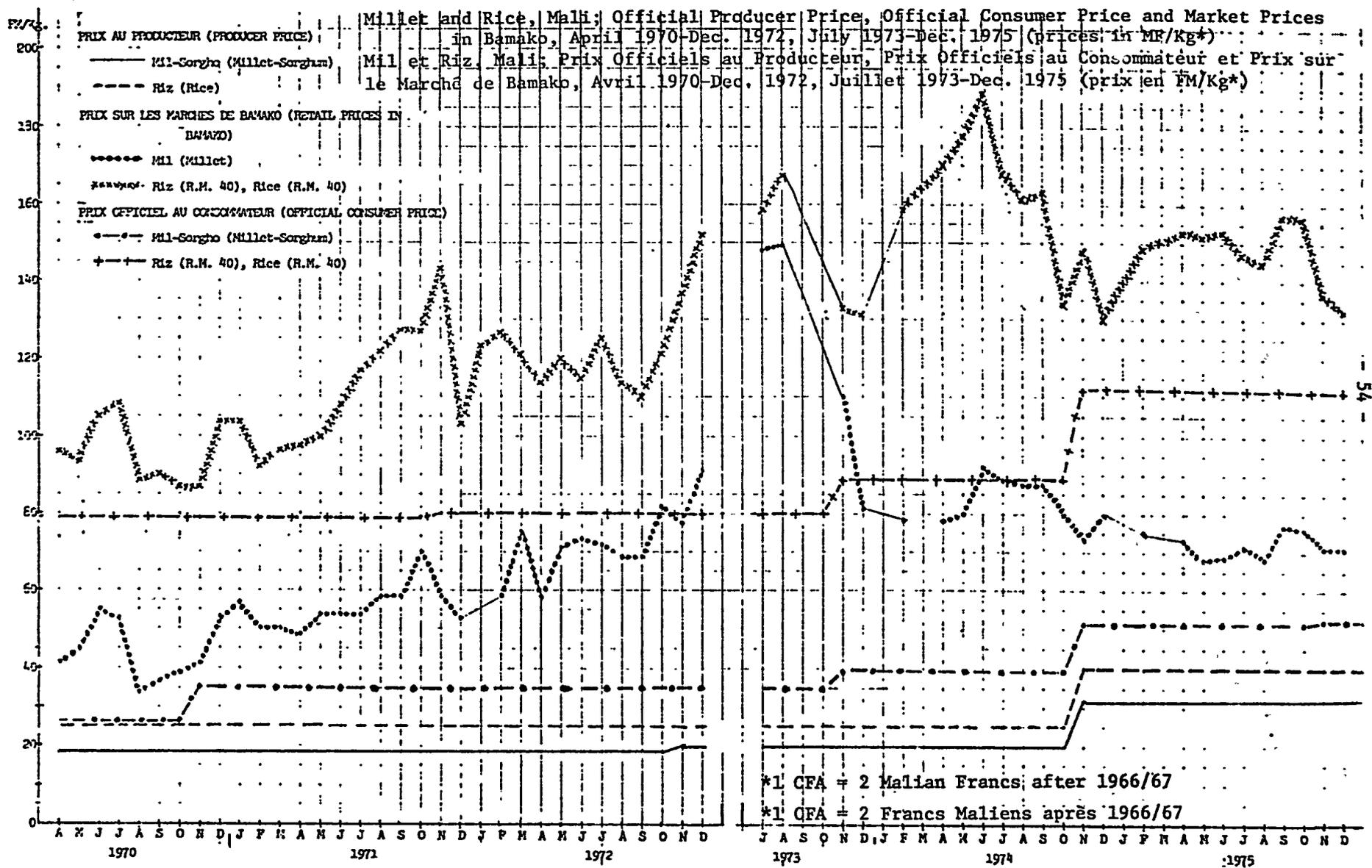
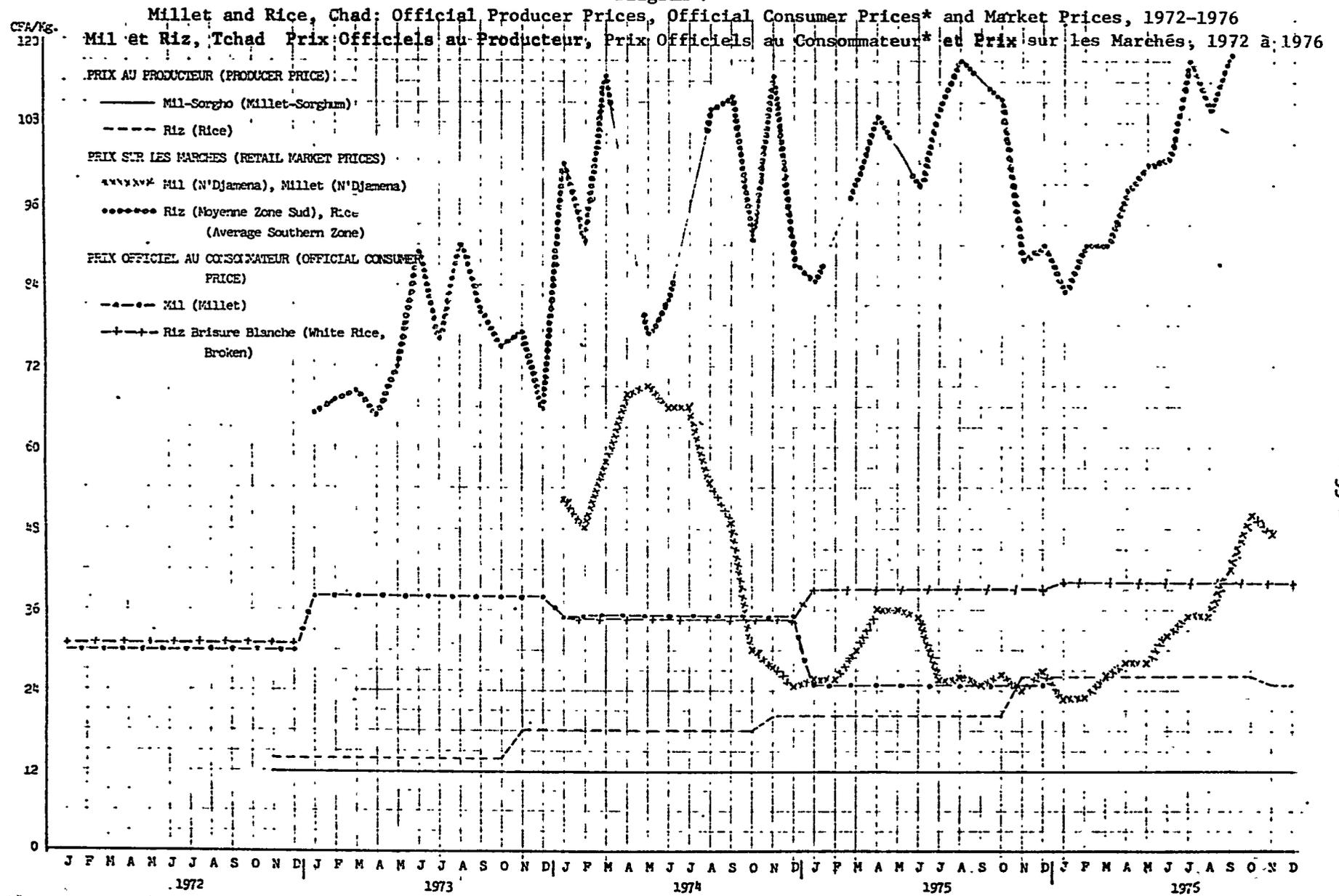


Diagram 7



* Official consumer price 1972-74 from the Director, FDAR, in "Réponse au Questionnaire CILSS, juillet 1976." The official price of 25 CFA in 1970 was derived from interviews in N'djamena and is difficult to confirm in official reports.

* Prix officiel au consommateur 1972-74 obtenu dans "Réponse au Questionnaire CILSS, juillet 1976 par le Directeur de la F.D.A.R. Le prix officiel de 25 CFA dans 1975 obtenu lors d'interviews à N'djamena et nous ne sommes pas certains de la valeur de ces renseignements.

Diagram 8

Mil et Riz, Sénégal; Prix Officiels au Producteur Prix Officiels au Consommateur et Prix sur le Marché de Dakar, Jan.1972-Fev.19

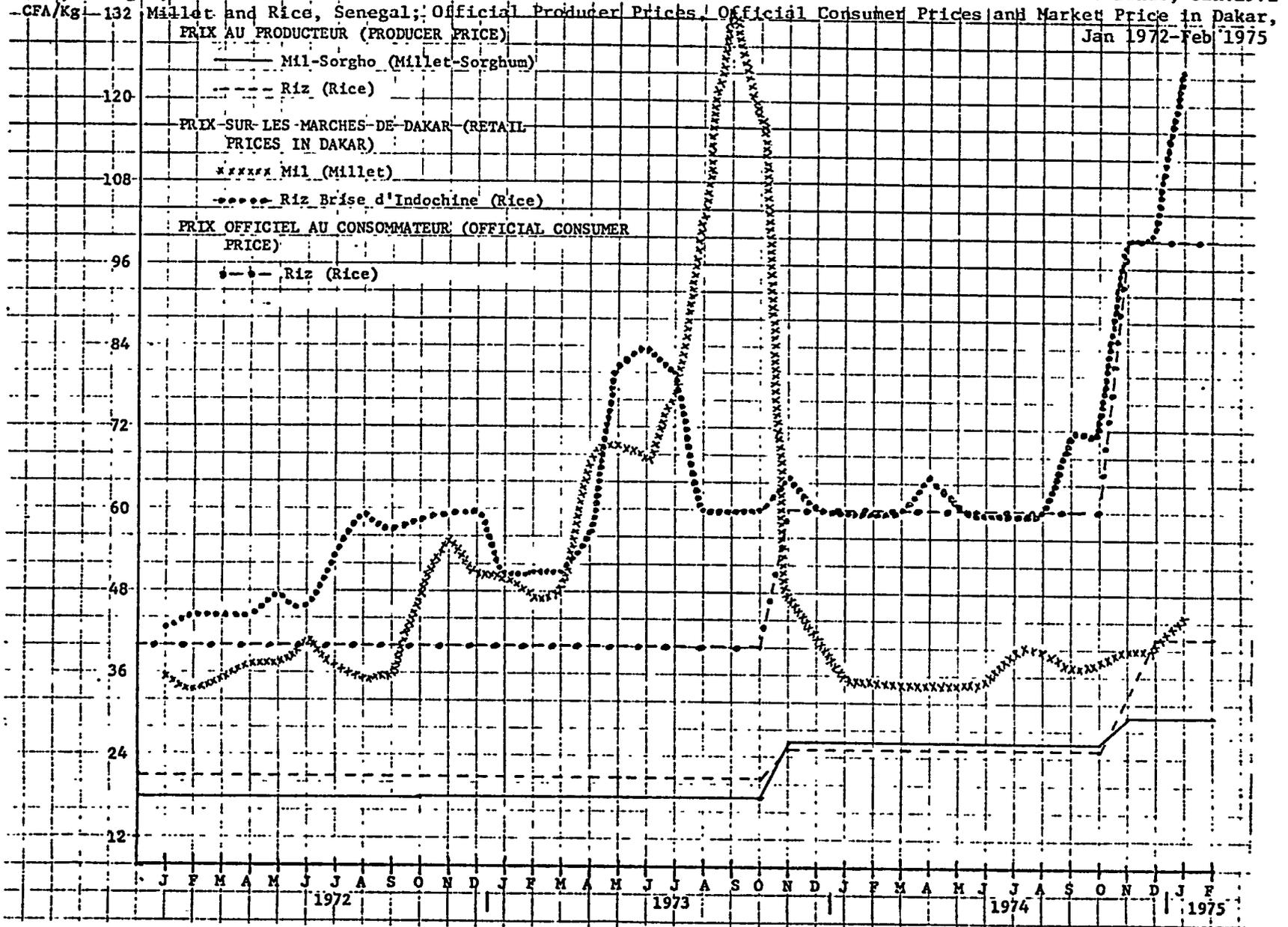
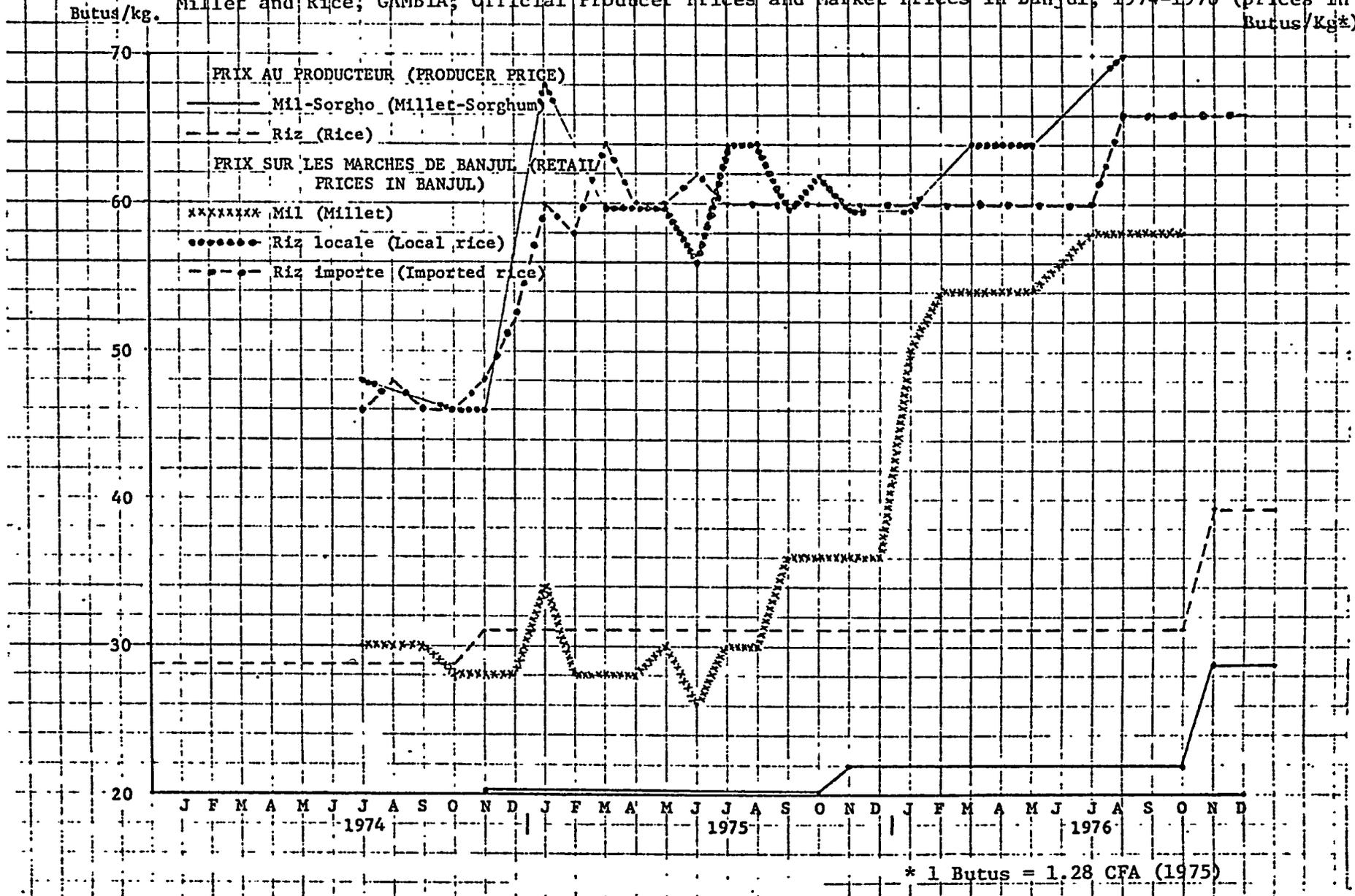


Diagram 9

Millet et Riz, la GAMBIE; Prix Officiels au Producteur et Prix sur le Marché de Banjul, 1974-1976 (prix en Butus/Kg*)
 Millet and Rice, GAMBIA; Official Producer Prices and Market Prices in Banjul, 1974-1976 (prices in Butus/Kg*)



Diagrams 2B through 9 show the relationships between official producer prices (for millet/sorghum and, in most instances, rice) and prices actually prevailing on various markets in recent years. A number of observations can be made on the basis of these data.

1. There seems to be no clear trend in the retail price of millet in the 1970s, though there are obvious rises in 1973, presumably due to the drought's impact on production. Food aid and commercial imports appear to have moderated millet price rises throughout the region. Rice prices, on the other hand, show a generally strong upward trend over these years.

2. Actual prices in retail markets are almost invariably higher than official consumer prices for all the grains. In addition, changes in official prices do not seem to bear much systematic relationship to what has been happening to actual prices.

3. For Upper Volta and Niger, we have charted prices on rural markets - or at least markets in smaller towns closer to producing regions. (See Diagrams 3 and 4.) These figures show a generally substantial difference between actual market prices and the official producer price. With a few exceptions, the market prices are substantially above the official producer price - sometimes twice or three times as high. This suggests that prices actually received by producers, in the two countries concerned and over the years for which the data are presented, were higher than the official price.¹ This

¹There are many reasons to believe that marketing margins - the spread between price by producers and retail price - are very low in rural markets. There are many small sellers on these markets, distances from growing areas are small, the producer can, and often does, sell his own grain directly to buyers.

is contrary to the common belief in Upper Volta and Niger, as well as in the other countries that, at least in years of "normal" harvest, producers receive less than the official price. In years of good harvests, it would be expected that these producer prices would, indeed, fall below official prices, and there is much testimony to this effect for 1974/75, for example. However, such systematic price evidence as we have been able to find does not confirm the belief that this is generally true.

4. The impact of food aid and commercial grain imports does not emerge from the charts as strongly as one would expect, given the volume of these grain inflows. Part of the reason may be the summary nature of the data - rural market prices being presented only for Upper Volta and Niamey, for example. There is, nonetheless, some hint of the food inflow in the general mildness of the price reaction to the catastrophic crop failures of 1972/74. The fact that urban food prices appear to be lower than prices on rural markets in a number of instances provides another suggestion of the effect of grain inflows.¹

C. The Marketing System

Throughout the region three types of marketing organization can be found, frequently coexisting within the same country; a structure to handle export crops, largely governmental in character; a state

¹Dr. Richard Maxon suggests, in a forthcoming report on grain marketing in Chad, that, from October 1974 through September 1976, N'djamena market prices were consistently lower than prices in southern markets. It became unprofitable to transfer grain from the southern producing areas to N'djamena. There is some reason to believe that, since N'djamena was the target of much food aid since 1972, food aid essentially replaced southern grain sales to N'djamena. It is likely that this southern grain found new markets in the Cameroon and Central African Empire, where prices are above those in Chad.

structure for food crops; and a private structure for food crops,

1. Export Crop Marketing

In all the Sahel states, export crop marketing is the responsibility of public agencies. In some cases, these are state monopolies, such as the groundnut marketing agency SONARA (Société Nationale d'Arachides) in Niger, or the Gambian Produce Marketing Board. In other instances, the purchasers are private traders, buying agents licensed by the government to act for a special agency which is responsible for export crop marketing, such as the Caisse de Stabilisation des Prix de Produits in Upper Volta. In still other cases, national or regional development agencies are responsible, such as ONCAD (Office National de la Coopération et d'Assistance au Développement) or the development corporations (sociétés d'intervention) in Senegal,¹ the "Operations" in Mali, the FDAR (Fonds de Développement et d'Action Rurale) in Chad. In most of the states, cotton is separately promoted and marketed, the responsibility of a specialized cotton agency -- SODEFITEX in Senegal, COTONTCHAD in Chad, the CFDT (Compagnie Française pour le Développement de Fibres Textiles) in Upper Volta.

Table 3D in the Appendix summarizes the existing institutional arrangements for the purchase of main export crops.

2. Grain Marketing

The marketing of food grains is handled differently. In all the

¹These normally concentrate on single crops, in a specific area, and operate as state enterprises -- i.e., with much greater autonomy than government agencies. Examples are the Société d'Aménagement et d'Équipement des Terres du Delta (SAED); the Société pour le Développement des Fibres Textiles (SODEFITEX); and the Société d'Aide Technique et de Coopération (SATEC), which promotes rice in the Casamance,

Table X. Millet Production, Estimated Total Marketing and Volumes Marketed
Through Official Channels, 1969-1976

<u>Country/Year</u>	<u>1969/70</u>	<u>1970/71</u>	<u>1971/72</u>	<u>1972/73</u>	<u>1973/74</u>	<u>1974/75</u>	<u>1975/76</u>
<u>Chad</u>							
Production	651	610	639	490	430	(559)	(595)
Aggregate Marketing ^a	113	92	96	74	65	84	89
Commercialisation ^a							
Purchases by Market Authority (Commercialisation Officielle)	1	2	1	1	1	2	1
<u>Gambia</u>							
Production	45	30	45	30	33	44	34
Aggregate Marketing ^a	7	5	7	5	5	7	5
Purchases by Market Authority	x	x	x	x	x	x	x
<u>Mali</u>							
Production	603	715	715	624	660	850	865
Aggregate Marketing ^a	90	107	107	94	99	128	130
Purchases by Market Authority	26	12	29	9	10	48	(57)
<u>Niger</u>							
Production	1,384	1,101	1,226	1,127	753	1,102	835
Aggregate Marketing	208	165	184	169	113	165	125
Purchases by Market Authority	-	-	5	3	7	25	48
<u>Senegal</u>							
Production	635	401	583	323	511	777	613
Aggregate Marketing	95	60	87	48	77	117	92
Purchases by Market Authority	11	§	3	§	30	36	12
<u>Upper Volta</u>							
Production	922	833	772	766	750	810	1,200
Aggregate Marketing	138	125	116	115	113	122	180
Purchases by Market Authority	x	x	2	1	3	15	26

^a Defined as 15% of production
() Estimation
§ Less than 1

SOURCE: Country Studies

Francophone Sahel states, there exists a public agency with major responsibility for grain marketing: the Office de Produits Alimentaires du Mali (OPAM); the ONCAD in Senegal; the Office National de Céréales (OFNACER) in Upper Volta; the Office des Produits Vivriers du Niger (OPVN); the Department Cerealier of the FDAR in Chad; the Office de Céréales de Mauritanie (OCM), in Mauritania. In four of these six states (Mali, Niger, Upper Volta, Senegal), the grain agency has a legal monopoly on the grain trade. Laws exist in these states which prohibit private trade in food grains except as specified by the authorities.¹

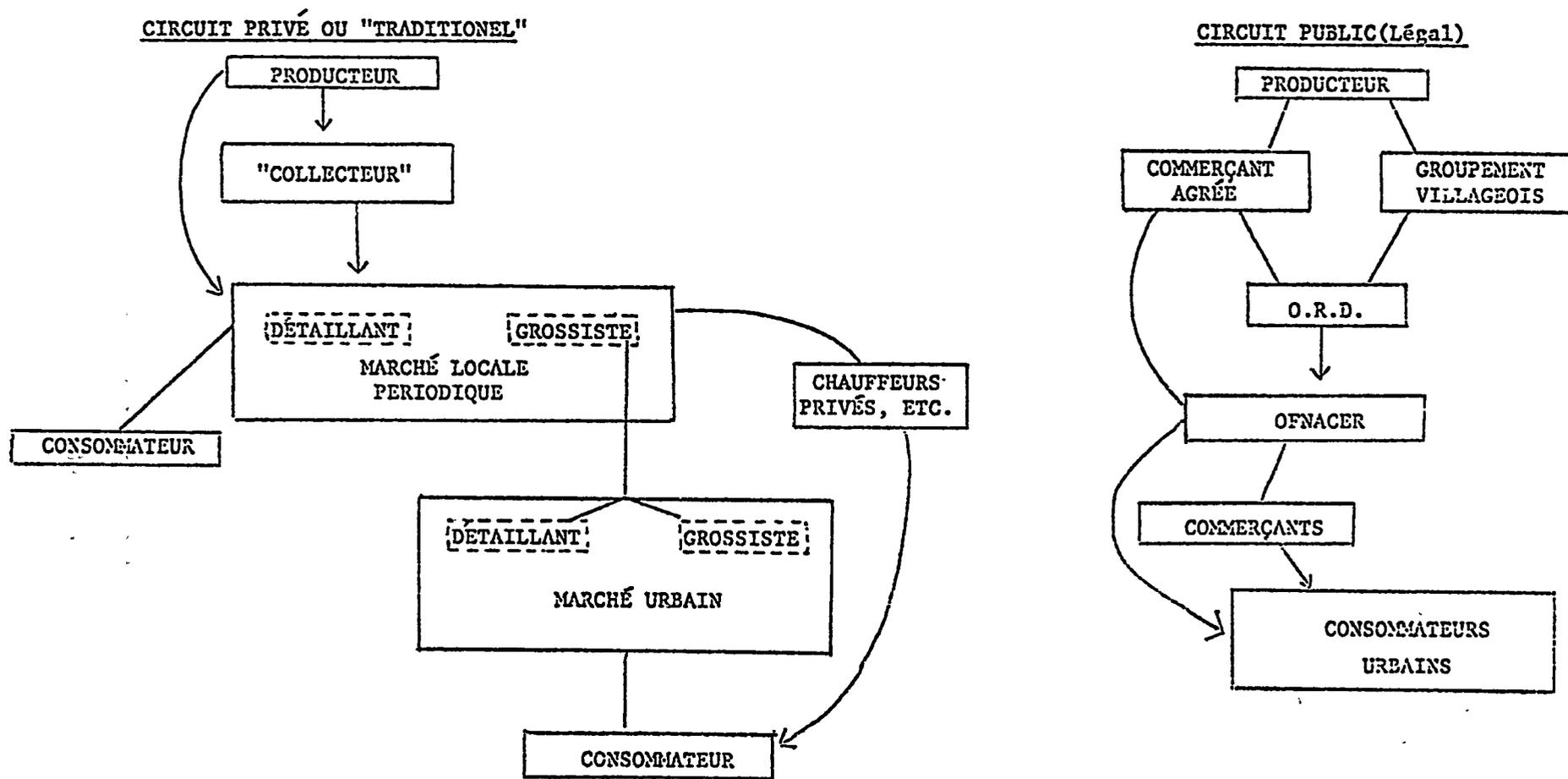
In reality, the legal monopolies are not implemented, as already noted. In each of the Sahel states which prohibits private grain trade, an extensive and active private marketing system exists. In all cases, these handle more than half the volume of grain traded, and in most instances, much more than half. (See Table VIII A-B).

Diagrams 10-12 depict the structure of the cereals trading channels in different countries. It should be stressed that, in the Sahel cases, these diagrams rest on relatively short study visits, and hence are subject to misinterpretation or error. Even where the essence of the trading structure is faithfully captured, it is a highly simplified reality.

Diagram 10 shows, for Upper Volta, the coexistence of the public and private structure. Diagram 11 is a detailed description of the private structure in Chad, provided by Richard Maxon, from a forth-

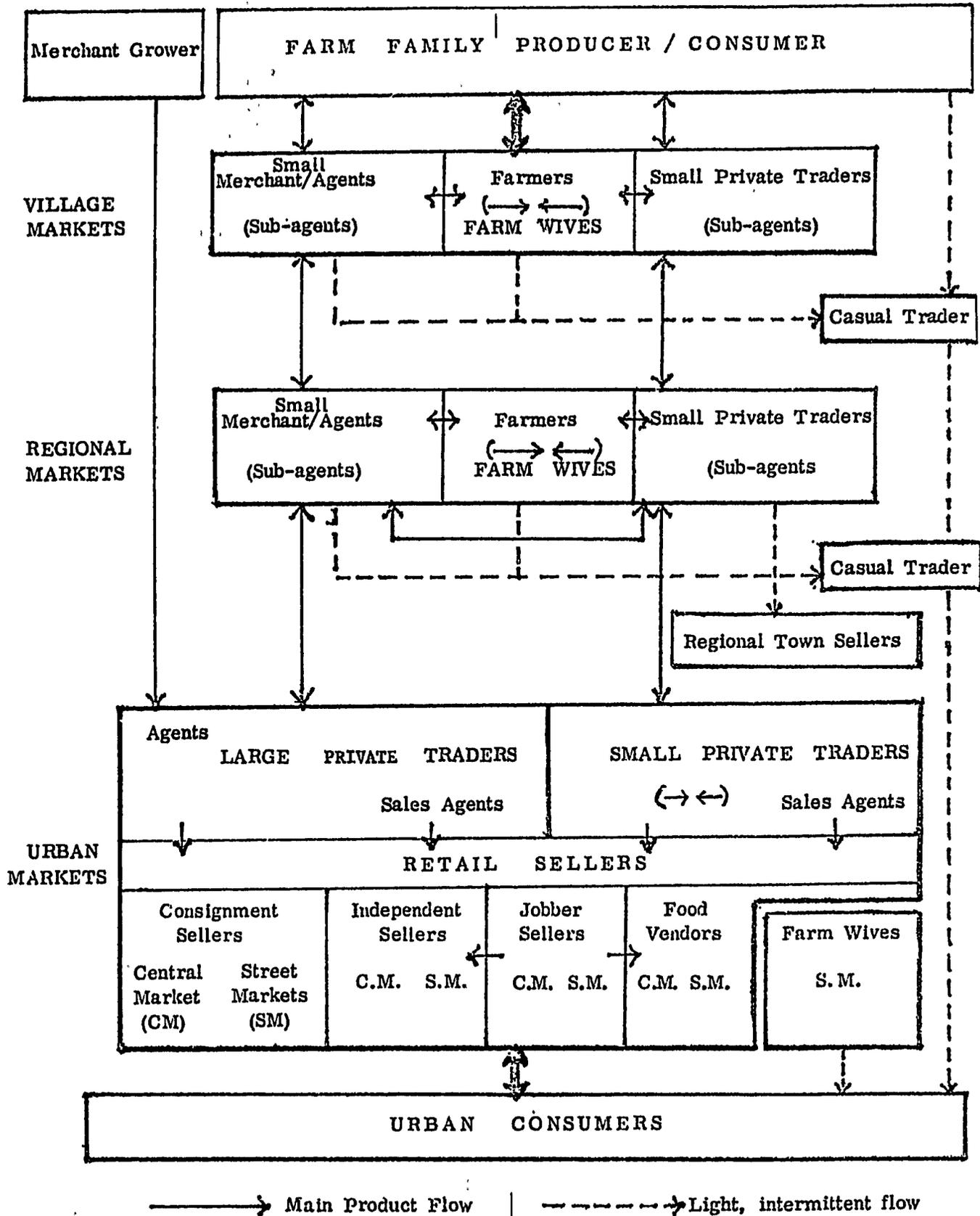
¹In Niger, Arrête No. 36. SEP/AI/CI/DCI of September 24, 1975 states: "marketing of millet and sorghum...remains the exclusive jurisdiction of the OPVN..." It states also that "any purchase of these cereals by private traders is forbidden..." In Upper Volta, Ordonnance No. 74-067/PRES/CDIM of 17 October 1974 gives the exclusive right to engage in trade to state organisms and establishments. A similar regulation was issued in Senegal in November 1975.

Diagram 10
 UPPER VOLTA: MARKETING CIRCUIT - MILLET AND SORGHUM.
 HAUTE VOLTA: CIRCUITS DE COMMERCIALISATION
 MIL ET SORGHO



SOURCE: Volume II, Upper Volta Country Study

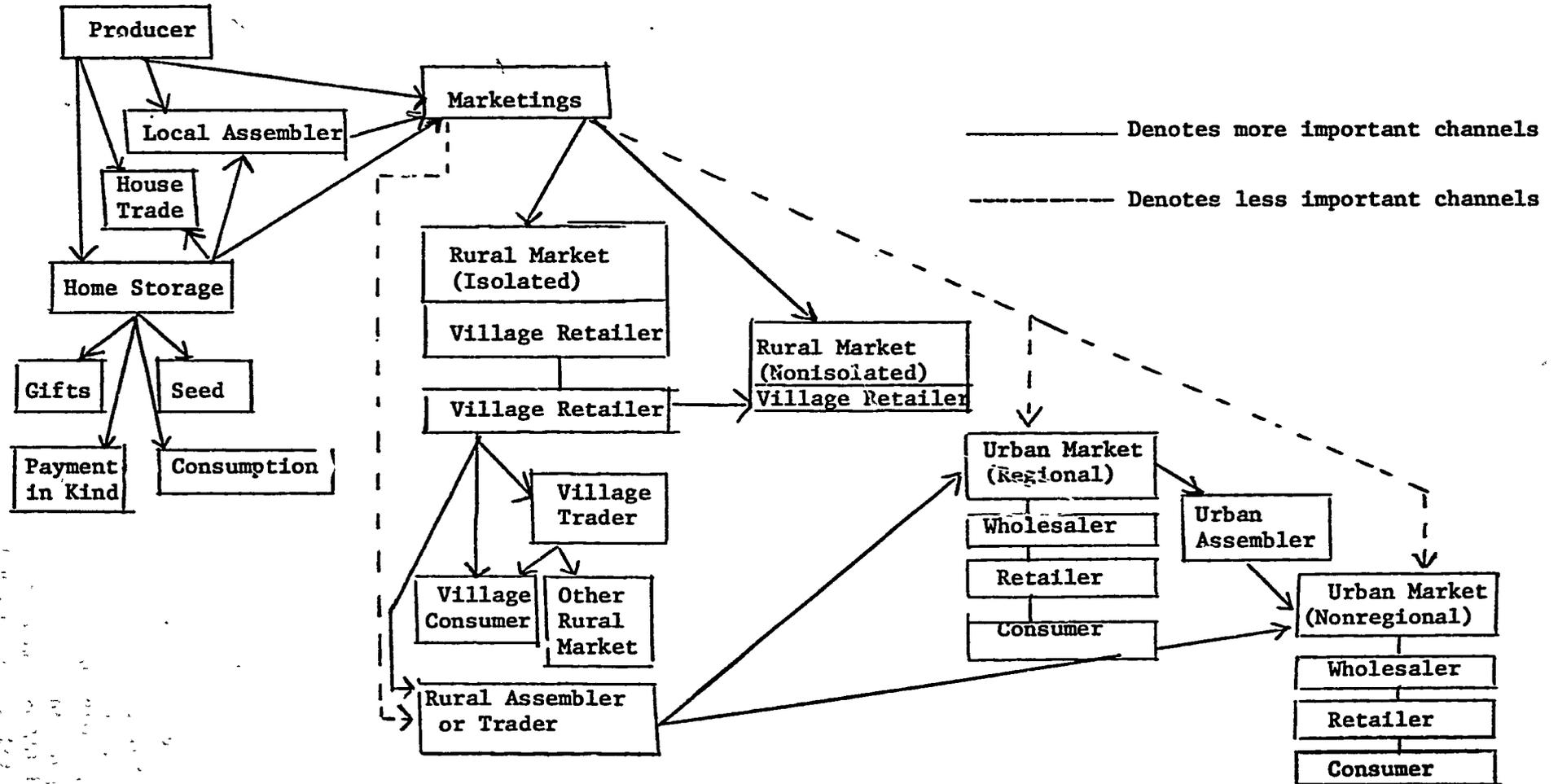
CHAD: MARKETING CHANNELS FOR SORGHUM AND MILLET
IN PRIVATE COMMERCIAL TRADE



SOURCE: Richard Maxon, Iowa State University, and Vol. II, Chad Country Study.

Diagram 12

Northern Nigeria: Traditional Channels of Millet and Sorghum Marketing



Source: H.M. Hays, Jr., Marketing and Storage of Food Grains in Northern Nigeria, Samaru Miscellaneous Paper 50, Institute for Agricultural Research, Ahmadu Bello University (Samaru, Nigeria), 1975.

coming report on marketing in Chad; it is also based in part on the Chad country study in Volume II of this report. Diagram 12 is a detailed description of the millet/sorghum marketing channels in Northern Nigeria. It includes disposition of the crop to seed, gifts, storage, etc., and so is more general than the others. It comes from Professor Henry Hays' study, and hence rests on much more prolonged and intensive investigation.¹

The roles of the various agents are described in the respective country studies.² Much of the mechanism is fairly self-evident and emerges from the diagrams.

a. Public Sector Buying Agents

In the public sector circuit, there are several types of primary buying agents - i.e., those who deal directly with the producers. The first is the cooperative organization or its equivalent -- the "groupement villageois" in Upper Volta, the cooperative organizations in Senegal and Niger, and groupements ruraux in Mali. The second is the regional development organization or the specialized development agencies: the "sociétés d'intervention" in Senegal, the ORDs in Upper Volta, the specialized grain "operations" in Mali. Thirdly, there are the licensed buying agents (acheteurs agréés), private traders who

¹Hays worked for more than two years on his study. See: Henry M. Hays, Marketing and Storage of Food Grains in Northern Nigeria, Samaru miscellaneous paper 50, Institute for Agricultural Research, Ahmadu Bello University (Samaru, Nigeria), 1975.

²See also, UNDP, Groupe des Conseillers Economiques pour l'Afrique Centrale, La Production et Commercialisation de Céréales, Vol. I: Tchad. This useful report will be cited extensively below. For Mali, see: FAO/PNUD, Le Problème de la Commercialisation des Céréales, Rapport au Gouvernement du Mali, FAO No. AT 3157, Rome, 1973; and IDET-CEGOS, Etude des Structures de Prix et des Mécanismes de la Commercialisation des Mils et Sorghos. (3 tomes), République de Mali, Institute d'Economie Rurale, 1976.

are given exclusive rights to trade in some regions and/or crops. These are usually small in number -- about 100 in recent years in Upper Volta, fewer in Mauritania. The public sector circuit, finally, includes the main grain marketing authority (OFNACER, OPVN, OPAM, etc.), which in some cases purchase grain directly from producers (e.g. rice purchases by the Departement Céréaliier of the FDAR in Chad).

b. Private Sector Buying Agents

In the private sector channel, there are five main agents. The individual producer, first of all, sells millet/sorghum directly to consumers in the village or on local markets -- sometimes via his wife who sells mashed grain or cooked millet products to other villagers.

Second, there are the assemblers (collecteurs or rabatteurs). They are local people, almost always small farmers themselves. They act sometimes for themselves, sometimes as commission agents for farmers, sometimes as agents for wholesalers. They purchase in villages, or on local periodic markets, and generally perform the bulking function -- bringing small quantities of grain together into larger lots more suitable for transport to regional or national markets.¹

The third group consists of the wholesalers. Normally, they are located in the regional markets and the main city. They sometimes

¹It does not appear that these small traders, the assemblers, commonly purchase at farm gate or village level, though this was perhaps more frequent formerly. This, at least, appears to be the case in Mali. The recent CEGOS study found that traders visited only 15% of the villages they sampled before the harvest, and in only 30% of the villages did they come after the harvest. About 80% of sales to merchants take place in rural markets. IDET/CEGOS, op. cit., tome III.

purchase directly, using their own trucks, but they seem more commonly to rely on buying agents and hired transport. Fourthly, there are the retailers in local, regional and central market towns. In the periodic markets, the retailers are sometimes the farmer and/or his wife. In all markets they often sell the grain in small quantities - e.g., by the cup, or tiya, or tine (16 kg), or similar measure - and in husked form. Few full-time grain retailers appear to be present on the rural markets. A fifth group consists of what we call "informal" or "casual" traders. These are rural passers-by, with access to transport: chauffeurs of bush taxis, travelling civil servants or their chauffeurs, bus drivers, occasional private travellers. They buy grain in rural markets when rural-urban price differences make it worthwhile.

c. The Merchant-Grower

The Chad diagram shows a player not much mentioned in the other countries, but who may well be significant there as well: the "merchant-grower." These are farmers or traders who hire casual labor to grow millet on land along main roads. The merchant-growers arrange for transport, storage and sale of the crop to urban wholesalers or retailers. According to some estimates, they may be responsible for 10-15,000 tons of annual marketed supply, some 5-6% of Chad's total urban offering.¹

¹It is also stated of Chad that, in the smaller urban areas (i.e., all towns except N'Djamena), the bulk of civil servants have their own millet fields in the neighboring country side. See UNDP, Production et Commercialisation des Céréales au Tchad, Vol. I, p. 150.

d. Options for the Producer

It's clear that in most Sahel countries the producer has many options in disposing of his grain crop at harvest time and throughout the year.

a. He can sell it to the primary buying agents in the state marketing channel -- the cooperative organization (e.g., the groupe-ment villageois in the Upper Volta case); a licensed buying agent, either public (the regional or specialized development agencies, for example) or private (a licensed trader). For some crops, in some countries, he can sell it directly to the grain agency's buying teams -- e.g., rice in Chad, or at its buying depots, as in Senegal.

b. He can sell it to a local trader, or assembler, either in the producing village or at a local periodic market nearby. The sale to the assembler might be on consignment, on a commission basis, or a more conventional sale.

c. He can retail his grain himself, selling directly to consumers in the village, in the local market or (less commonly) in the regional market. Direct sales in the village have been shown to be especially important in Haussa communities, but seem significant everywhere in the region.

d. He can sell it to an "informal" or "casual" trader, either in his own village (if it is accessible by road) or in a nearby periodic market.

e. The farmer can postpone sale, storing his grain for later consumption, sale, gift-giving, etc.

The information available is scattered and sometimes refers to different time periods. It suggests that most grain sales -- a

common estimate is 80% -- take place on rural periodic markets, to which the farmer himself brings his grain.¹

3. The Underdeveloped Private Marketing Structure

The private traders in the Sahel have a long history of trade, especially long-distance trade. They have proven skillful, durable, tenacious, and highly inventive. Not even the most severe critic of private trade and traders denies that much energy, shrewdness and competence is to be found among them. In Mali, where they operate under many constraints, the private traders after all supply some two-thirds of total grain purchases and about half the grain needs of the Sixth Region, the northern grain-deficient region which is furthest from grain surplus areas. Everywhere the private traders organize a sizeable clandestine frontier traffic in grain, which is very complicated and requires significant organizing abilities, whatever its moral or social implications. A recent report has this to say of Mali's private traders:²

"...Their trading sense and management touch are remarkable. The OPAM tried several years ago to utilize these abilities in the millet trade and agreed to prefinance their purchases. These traders succeeded not only in buying their millet quotas but also managed to turn over three times the working capital thus financed, by buying and selling other commodities."

Despite this, the trading system can only be described as "undeveloped." Even where entry into trade is free, the number of

¹See; IDET/CEGOS for Mali (cited in previous note); UNDP, op.cit., Vol. I, p. 147 for Chad; and SEDES, Les Produits Vivriers au Niger; Production et Commercialisation, Paris, 1963, for Niger.

²IDET/CEGOS, op. cit.

traders working exclusively as traders is very small.¹ More important, there is extremely little specialization in foodgrains. All studies of grain markets in this region emphasize the fact that, just as there appear to be very few traders who are full-time traders and nothing else, so there are few traders who work at the grain trade alone.² Most buy and sell consumer goods and other crops. All this means that the distinction between producers and traders is frequently obscure, as is the distinction between traders and consumers. The person who acts as millet assembler also trades in consumer goods, in rice, in groundnuts, and in gum arabic.

The following description from a recent study in Chad is probably applicable to the region as a whole.

Throughout the area we studied it can be said that everybody engaged in a little millet trade. We searched unsuccessfully for a trader who was a specialist in the millet trade. The private buyers of millet (aside from consumers) can be:

¹This does not mean that the number of those who engage in trade are small. A recent study in Upper Volta found that, in 1974, 3,000 traders paid the license fee indicating they had a fixed establishment. Another 10,000 paid the patente par anticipation, a fee which permits petty trading - hawking in towns or villages, for example. Another 10,000 traders were believed to be unregistered. Thus, they estimate 23,000 traders in Upper Volta - one for every 240 inhabitants. (IDET/CEGOS, Etude des Circuits de Distribution de la Haute Volta: Situation Actuelle et Projets de Reforme, December 1974).

²The CEGOS Report on Mali (Ibid) states categorically: "There are no private traders in Mali who deal in millet alone; millet purchases at the farmer level and at wholesale and considered by the main agents only as a supplement to marketing of other products (especially sheanuts and groundnuts)."

1. Transporters who wish to make some money in using their empty cargo space in their trucks or on their donkeys or camels; camel drivers of Largeau, for example, transport natron (salt blocks) to the South-East and return with millet. The transporters of N'Djamena who carry general consumer goods to the East return also with millet;
2. Chauffeurs who want to earn a little money by buying in the rural areas a few sacks of millet which they can sell with profit.
3. Travelers from rural areas who visit town for personal affairs;
4. Urban travelers who visit villages for private matters and who wish (like rural travelers) to earn a little cash to help pay their travel costs;
5. Traders who sell staples to peasants on credit before the harvest and who are paid in millet at low prices;
6. Moneylenders who lend money to peasants before the harvest and who also are repaid in millet, at even lower prices;
7. Speculators (traders or others) who see that millet sells cheaply in a given place or time and think they can sell it at a higher price later or in another place;
8. Producers who are in a comfortable situation, and liquid financially, buy their neighbor's millet as a speculation.¹

In addition to small scale and lack of specialization, the grain marketing system is characterized by poorly developed rural credit arrangements. For cash crops, credit is normally available via the cooperative structure. The private traders do provide credit, but it is unclear how much. Although it is widely believed that a substantial proportion of producer millet sales are made to pay off pre-harvest debts, such evidence as exists suggests that this is a relatively minor factor.

¹UNDP, Groupe des Conseillers en Développement d'Afrique Centrale, Production et Commercialisation des Céréales, Volume I, Tchad, p. 158.

In Chad, for example:

"...The system of crop loans in advance of the harvest seems to be rather rare. It seems that at least half of all grain sales take place at the markets. The other half is divided approximately equally between direct sales at the farm and reimbursements to creditors and traders..."¹

It appears to be the same for Mali. The IDET/CEGOS study found that in only half the villages they surveyed do traders buy any part of the harvest sur pied (before harvesting). They report that most of the sales which occur in the villages come from reduction of stocks as the new harvest approaches.² The 1973 FAO/Panhuis Report estimated - very roughly - that perhaps 5,000 tons of millet/sorghum were sold to traders in debt repayment at harvest time. This would be less than 5% of marketed output.

Similarly, very limited amounts of grain are stored by traders. It is rare in most of the region to find private traders with a storage capacity of as much as 50 tons. Most storage, like most trading activity, is mixed - i.e., grain and other commodities, frequently including consumer staples like sugar, will be stored in the same place, generally a room or two in a rather rudimentary building.³

¹UNDP, op. cit., Vol. I (suite).

²IDET/CEGOS, op. cit., Tome III. In Niger, a study in the late 1960s found extensive and complex credit arrangements to be prevalent in the Hausa villages surveyed. However, only 22% of all the lenders were traders; almost half were farmers - neighbors or kinsmen. The study also found that while almost half the villagers were borrowers, very little was borrowed for the purpose of paying taxes, or for "production loans" (8%). The main needs were: to buy food (27%), to give gifts (22%), to set up a business (23%). Nicolas, Magadi, Mouche, op. cit.

³UNDP, op. cit., p. 158.

This partial and uneven emergence of a private trading infrastructure has its explanation in history. It has only been a matter of a few generations since the broadening of the money economy opened up extensive opportunities for trade in foodstuffs and export crops. However, more than this, government policies have done little to encourage and much to frustrate the development of private trading skills. In the colonial period, compulsory membership organizations of producers, which had a highly paternalistic cast, were created to perform marketing functions on both input and output sides: Sociétés de Prévoyance first, then the Sociétés Mutuelles de Production Rural. These might charitably be called "pre-cooperatives," but really were more in the order of administrative extensions of Government.

Until the mid-1950s, big foreign trading "houses" had control of agricultural exports, using African collectors and sub-agents. This represented some entrepreneurial development but, in most of the region, few trade entrepreneurs emerged in the modern sector. In the Upper Volta, for example, there was no Voltaic trader doing his own exporting until the late 1950s.

After independence in 1960, all the trading initiatives focussed on extending the control of the state sector, along with some attempts to develop real cooperatives. The large foreign trading firms and the Lebanese traders, who formerly were scattered throughout the region, withdrew from most trading activity, and especially the grain trade, leaving it mainly to the various state agencies which developed and to the pre-cooperatives which were being encouraged by the newly independent states.

In none of this historical evolution was there much chance for private African traders to elaborate more complex trading institutions, develop larger capital stock, or acquire more advanced trading techniques, except perhaps in Senegal.

4. Market Integration: Some Tentative Measures

It is conventional in studies of marketing systems to assess the "efficiency" of the market by measuring the degree of "market integration." This is done by analyzing prices and price changes in different localities, to see how closely related the prices are.¹

We did an analysis of this sort for three countries - Chad, Niger, Upper Volta. The full results are recorded in the country studies (see Volume II). Here the approach is briefly described and the results summarized.

In an efficient market, prices act as signals to sellers and buyers. Traders buy in the market where prices are lowest and sell in the market where prices are highest. In this way, in effectively integrated grain markets, grain will flow from deficit to surplus areas as a consequence of price differences. This will tend to raise the price in the first market and lower it in the second. As a consequence, one would expect prices to be closely related in different markets. In a well integrated market system, prices move in parallel fashion over time.

¹See Uma Lele, Food Grain Marketing in India: Private Performance and Public Policy, Cornell University Press, 1971; and W. O. Jones, Marketing of Staple Foods in Tropical Africa, Cornell University Press, 1972.

The closeness of this relationship can be measured quantitatively by means of correlation analysis. A correlation coefficient (r) measures the relationship between two variables. The range of the coefficient is between +1 and -1. A high positive value indicates that the variables move closely together. A large negative coefficient indicates that the variables move opposite to one another. A coefficient of zero or near zero indicates there is no measurable relationship.

Suppose we have, for example, series of monthly prices of millet in two different markets. We can then calculate the correlation coefficient of these two price series. Suppose we find the correlation coefficient to be .80. How do we interpret this? There are two problems, one of a technical-statistical kind, the other more substantive.

First of all, even if there were no real relationship between millet prices in two markets, we might, in taking a sample of prices from the two towns, get as high an r as .80 purely by chance. How likely such an occurrence is depends on the size of the sample. It is taken into account, in any case, by specifying a "level of significance" in the analysis. When it is said that an r of .80 is "significant at the 5% level," it means that there is a 5% probability that the relationship observed (.80) could have occurred by chance alone. The higher the level of significance, the more likely that we are accepting as "genuinely related" two variables which, in truth, have little or no relationship to one another.

The second problem concerns the interpretation of any given level of correlation coefficients. Suppose we find an r of .90. Are we to take this to indicate a "close" relationship between price movements

in the two towns in question? How high should the r 's be before one can say that they indicate "efficient" market performance? This is a question which is common to all "market integration" analyses of this type, and for which there are no easy answers.¹

The results for the three countries for which the available price information permitted correlation analysis are summarized in Table XI. They are rather poor. Only the results for Niger (1973 and 1971/73) and for Chad show a highly significant correlation between prices of the different markets. The majority of the correlation coefficients turn out to be insignificant.

These results do not "prove" anything about the degree of integration of grain markets in the Sahel. Given the costs and difficulties of transport, the generally underdeveloped state of private marketing services, the recentness of state marketing operations and their inadequacies, one would expect lesser degrees of market integrations in the Sahel than in smaller regions with better transport, information and marketing networks. These data seem to bear out this expectation. They nonetheless do show considerable linking of prices in different cities. They cannot, in any event, be leaned on too heavily for various reasons given in detail in the relevant country studies and only mentioned here:

i) Series of only 12 observations are too short to allow a valid correlation analysis. This point is emphasized by the fact that the combined series (Niger 1971/73, Chad and Upper Volta 1962/63)

¹ See Peter Timmer's review of Uma Lele's book, in Economic Development and Cultural Change, Vol. 22, No. 3, April 1974.

show considerably higher coefficients than the short series.

Table XI. Summary of Results of Correlation Analysis

<u>Markets</u>	<u>Year</u>	<u>Number of Observations</u>	<u>Total Number of Coefficients</u>	<u>Significant at 5%</u>	<u>Significant at 1%</u>
Upper Volta					
	1962	12	55	9 (16.4%)	3 (5.5%)
	1963	12	10	4 (40%)	1 (10%)
	1962/63	24	10	4 (40%)	3 (30%)
	1976	9	21	14 (66.7%)	9 (42.9%)
Niger					
	1971	12	21	10 (47.6%)	4 (19%)
	1973	12	91	90 (98.9%)	78 (85.7%)
	1971/73	24	6	6 (100%)	6 (100%)
	1975	12	120	25 (20.8%)	8 (6.7%)
Chad					
All available data between 1968 and 1976		12-57	41	35 (85.4%)	29 (70.7%)
Total			375	162 (43.2%)	112 (29.9%)

ii) It turns out that the really poor correlation coefficients are between markets which are linked by especially poor road connections. In these cases, one would naturally expect a lower than average correlation. Transport costs are generally high relative to the value of the millet and sorghum commodities which are heavy in weight and large in bulk relative to their value. Bad roads magnify the transport cost component. This means that there can be very wide swings in millet/sorghum prices before movement occurs from the relatively low to the relatively high price locality. (See W. O. Jones,

"Agricultural Marketing Policies for the Drylands of Africa," paper presented at the International Symposium on Rainfed Agriculture in Semi-Arid Regions, University of California (Riverside), April 1977, p. 39.)

iii) The quality of the data is unsatisfactory. Their deficiencies were outlined previously. As a consequence, the results of the correlation analysis can only be taken as suggestive, and as indicative of the kind of analysis possible in more intensive future studies.

The same is true for other tests of market performance which were attempted in the course of this study, and which are reported on in three of the country studies (Chad, Niger, Upper Volta) -- notably an analysis of price differences between markets in relation to transport costs. That analysis suffers not only from weaknesses in the underlying price series, but from inadequacies in transport cost data as well. The results are ambiguous. (See Upper Volta, Niger, Chad country studies.) Given all the data drawbacks it is, nonetheless, somewhat surprising how strongly the evidence from this analysis suggests that grain markets in the Sahel work with reasonable effectiveness.

D. The Price System

Public and private price systems parallel the public and private marketing structures just described. For export crops, prices to producers are government-determined and effective in the sense that, for the main cash crops--groundnuts and cotton, the official producer price represents a close approximation to prices actually received. Marketing board-type agencies or stabilisation funds fix domestic prices and handle the financing, transport and export of

the crop.

There is a parallel market even for export crops, however, and hence a parallel price structure. This market exists across national frontiers, and is activated or enlarged whenever producer price differentials between neighboring countries stimulate smuggling. The volumes involved can be substantial. In some years, during the 1960s, it was said that as much as 60,000 tons of groundnuts were smuggled across Niger's frontier to Nigeria. Senegal's relatively low producer price stimulated, for many years, a significant movement of illicit trade to the Gambia.

For cereals, it is the private price system, the market-determined structure of grain prices, which is the most important in terms of incomes of farmers and consumers and also in terms of influence on production decisions. The price determination process and the structure and behavior of prices in the private markets are poorly understood and little-studied. Here we will outline some of the outstanding characteristics of the public price-making system.

Five of the seven Sahel countries being discussed in this report have sets of official consumer and producer prices which are government-determined. The Gambia and Mauritania are the exceptions. The degree of significance of these official prices varies between countries and over time. For example, in Chad, there is a recorded official producer price for millet of 12 francs CFA/kg. It has remained unchanged for many years, but has virtually no significance. It is not even clear to those concerned with marketing that the official price still exists. In other countries, the official price for producers is the actual price paid by public marketing

agencies for that share of domestic production which they purchase. As noted, these purchases are usually a small share of total domestic production and marketings and, in any case, where the grain agencies use licensed buying agents (private traders), there is no necessary relationship between the price received by producers and the official price.

Official consumer prices, similarly, are of varying relevance. As the actual market prices in capital cities show (see above, section on price data), the official consumer price is usually well below the officially-recorded market prices. In recent years, the volume of food aid and commercial grain imports and the price at which these cereals inflows have been sold by the government agencies responsible, have had the most impact on the price structure. Aside from this, the official consumer price governs transactions in public sector retail outlets, though these do not commonly sell much locally-produced grain.

1. Public Price-Setting Institutions and Procedures

Many of the Sahel governments have special committees responsible for making recommendations or evaluations on cereals prices: the Comité des Grands Produits Agricoles in Senegal, the Comité Nationale des Céréales in Niger, the Agricultural Season Planning Conference in Mali, similar interministerial bodies in Chad and Upper Volta.

The existence of the formal structures does not allow easy insight into the actual decision-making process, either in the Sahel or anywhere else. It is not at all clear, for example, how much real price setting authority resides in these price commissions. In Senegal, the Comité des Grands Produits Agricoles clearly has only an

advisory function; the final price decision is made by the Prime Minister. In Niger, the Supreme Military Council has to approve all prices. In Upper Volta, price decisions have been changed by the higher echelons of government, without much participation by either the formal committee structure or OFNACER.

The operation of these committees is weakened by certain general problems. They are chronically understaffed. Even though large numbers of administrators tend to be present at their meetings, usually the heads of all sections of the administration affected by governmental marketing, including the transportation departments, there are virtually no staff aides available to prepare the crucial supporting documents and studies which might help the commissions' deliberations. Because the commissions have little data or analytic support, many of their decisions are overruled by higher-level government bodies more easily perhaps than they would be were more evidence available.

The effectiveness of the price setting commissions is also reduced by the fact that they meet only once (in Mali, twice) each year. This gives them an "ad hoc" character, with little influence in the permanent administrative institutions, especially the ministries concerned. Moreover, it appears in at least some cases, that the voice of the minister of economic affairs (or minister of commerce

in some countries) carries the most weight in the price discussions. Often he chairs the price commission deliberations. Producer interests tend to be less effectively represented than consumer interests.

2. Timing

Official prices of cereals are usually announced in the fall of the year - October and November most commonly. We will comment in the next chapter (Chaper III, Section G2) on the validity of the criticism - almost universal - that this is poor timing if the purpose of price policy is to affect planting decisions. Here it should be noted that, for the years and countries for which we were able to find information, no price announcements are made at planting time. In Mali, July is a common month of announcement, which means it is at the same time too early to fix prices with some indication of crop size, and too late to influence planting.

3. The Barèmes

Since most Sahel governments fix official producer prices and official consumer prices, they must also fix the various cost components between the two. The official cost structures thus derived are known as the "barèmes." Table XII shows official barèmes, for Mali and Upper Volta, and an unofficial barème for Niger. The latter represents OPVN's requested barème, which was not granted by the cereals price committee. The result is that the total exceeds the official consumer price.

The size and composition of the barèmes reflect political and administrative bargaining as much as true costs. Frequent complaints are presented by agricultural cooperatives and other agents responsible for primary marketing that their reimbursements do not cover their costs.¹ In Upper Volta, many ORDs, the semi-autonomous regional

¹See below, Diagnosis, and Volume II, country study on Mali.

development offices which were to buy the grain from farmers for OFNACER, refused to participate in 1976 after it had become apparent in 1975 that their revenues could not cover their costs.¹ OPVN's balance sheets for 1974 indicate that its transportation operation cost the agency more than twice the amount listed in the official barème.²

Table XII. Official Barèmes for Millet (1975/76) in CFA francs

	<u>Mali</u>	<u>Niger</u>	<u>Upper Volta</u>
Producer price	16	25 ^a	18 ^c
Collection costs	2.8	(1.1)	3.55
Disinfectant treatment	-	(.15)	-
Losses	.4	-	.34
Bags, strings, etc.	n.m.	-	2.0
Interest charges	1.2	-	.35
Transport costs (including handling)	2.0	(2.4)	2.25
Storage costs	-	(.1)	.7
Amortization of Warehouses	-	(2.0)	-
Phostoxin treatment	-	(.5)	.06
Retail margin	.8	-	} 2.75
Management, overhead	2.5 ^d	(2.0)	
Taxes	25	-	
Consumer price	25.7	30 ^{a,b}	30

^aSorghum 5 CFA/kg less

^bWholesale price, including bag, 5 CFA/kg more. The full cost price excluding the bag amounts to 33.25 CFA/kg.

^cMillet, Sorghum and Maize.

^dThis is the "Taxe OPAM."

¹See country study on Upper Volta.

²See country study on Niger.

4. Undifferentiated Character of Public Prices

Sahel government prices and price structures tend to be considerably less complex than prices and price structures in the private market. Official producer and consumer prices are most commonly specified for millet and sorghum on the one hand, rice on the other. There are thus only two main prices on the producer side and two on the consumer side. Only in Niger is there evidence of any distinction made in official prices between millet and sorghum.¹ In Upper Volta, there is one price established not only covering millet and sorghum, but maize as well. Official rice prices are somewhat more complex, with several types and grades sometimes very distinguished. In none of the countries do the official prices make quality distinctions for millet or sorghum.

The public price structure also has a tendency to be uniform geographically. Only in Niger and Chad do the official producer and consumer prices vary according to locality. In Chad, for example, official consumer prices vary between 15 and 55 CFA francs/kg, according to location, but this is rare. Government preferences for price uniformity seem general and strong. Off-farm inputs for example - notably fertilizer - are charged at a single rate to farmers. Consumer goods distributed by the state trading circuits often tend to have uniform prices. The Mauritanian government has made considerable efforts in the past to impose a uniform consumer price for sugar.

¹Both consumer and producer official prices were higher for millet than for sorghum, at least until 1974.

II. DIAGNOSIS: WHAT'S WRONG

A. Introduction

Up to now, we have attempted to summarize existing information and describe the general context and background within which marketing and price policy questions must be understood. We turn now to an assessment of the existing situation.

This is not a simple matter. We are dealing with seven countries, each unique in some aspect of its cereals problems and policies. Moreover, in the Sahel as elsewhere, events and policies are always changing, so that what was true in 1972 or even 1976 may no longer be true in 1977.

Finally, there is the problem of conflicting opinions as to what is wrong. In economics more than in medicine, diagnosticians frequently differ among themselves, and these differences, of course, generate different remedies. Actually, this is not so troublesome a problem in the Sahel case. On most of the deficiencies mentioned below, virtually all technicians seem to agree.

We try here to make the discussion general and relevant to the Sahel states as a group. Some issues are evidently less relevant for particular countries. The Gambia gets less attention than the Francophone states in part because its marketing arrangements for coarse grains seem at the same time less developed and less troublesome. Gambia has no special grain marketing agency, nor does it have much direct public intervention in marketing or prices of millet and sorghum. Relatively little is said also about Mauritania, in part because of the special features of grain economics there (little domestic production, heavy imports), in part because the government's role in marketing and price policy has been relatively less

prominent there. The generalizations made below will be most applicable to the continental Sahelian states - Mali, Upper Volta, Niger, Chad - though most will apply also to Senegal and should not be too far wide of the mark for the other states.

The discussion is critical in tone. Critical and frank analysis is, after all, a major purpose of this study. When things go smoothly, they do not require much comment. What demands attention is that which works poorly. There is a risk in this, however. It can leave an impression of unremitting criticism. This is not intended. The critical analysis reflects the inescapable fact that the Sahel's marketing and price policy arrangements work poorly in many respects.

In this, the Sahel countries are by no means alone. Many other countries are struggling with similar problems. Most of them succeed imperfectly in resolving them. Almost all manage to adopt policies which economists find questionable. (See Appendices 2A and 2B).

B. Lack of Information

Everyone concerned with Sahel grain production, marketing, prices and storage is unanimous in deploring the sparseness, irregularity and uncertainty of basic statistics, as well as the scarcity of basic studies, especially intensive farm-level surveys. The information gap forces hesitancy in any policy analysis. We do not know with sufficient precision how much grain is produced in any given region or year, how much is consumed, stored, traded, given away. We know extremely little about farmer responsiveness to price changes, about basic constraints on expansion of production, about grain production and marketing in relation to size of holdings, about who

sells and who buys grain in the villages, and why. We know extremely little also about the production economics of Sahel farms, about input and output relationships for major crops, constraints to output expansion. Nor is much known about on-farm storage - how much of it there is, how it is managed, costs of construction, losses over time. The structure and functioning of the "traditional" grain markets are also unstudied. There are some relevant anthropological studies.¹ There are also the valuable studies of SEDES.² There are some useful reports, such as the CEGOS report on Mali (1976) and the UNDP Tchad report (1974), cited frequently in Chapter II. But there are, to our knowledge, no intensive, micro-level studies of how these markets work - the nature and number of traders, transport costs and arrangements, buying and selling prices, trader's margins, etc. Somewhat more information exists on how large urban markets are supplied with food, but most of these studies are quite dated and are, in any case, few in number.³ Basic surveys of consumer behavior, particularly in towns, are almost non-existent.

The knowledge gap is a critical obstacle to more effective policy. For example, Sahel governments (like governments elsewhere) regard grain price policy and urban wage or income policy as part of a common package. But in the absence of good consumer expenditure surveys, it is not known

¹See Ministère de la Coopération, Direction des Programmes, Les Circuits de Commercialisation des Produits du Secteur Primaire en Afrique de l'Ouest: Analyse Bibliographique, Claude Ardití, ed. (Paris, 1975).

²See: Société d'Etudes pour le Développement Economique et Social, (SEDES), Les Produits Vivriers au Niger-Production et Commercialisation. Etude Générale: Les Mils et Sorghos, Paris, 1963. Also: Marie-Michèle Ouedraogo, L'approvisionnement de Ouagadougou en Produits Vivriers, en eau et en bois, Université de Bordeaux, 1974.

³SEDES, op. cit.

what proportion of the income of the various income groups is devoted to millet, sorghum and rice. Further, almost nothing systematic is known about how urban consumers substitute between staples - a more complicated matter. Yet, grain price policy and wage policy could be made on a much sounder basis if more were known. Thus, some very approximate figures and a few heroic assumptions lead to the estimate that, in Chad, millet consumption may account for no more than 20% of a low-income urban household's expenditure in a normal year.¹

Similarly, storage policy is being made with almost no fundamental study of on-farm storage practices and potentials. Yet on-farm storage is 90% of total capacity; in Upper Volta, there is an estimated 1.3 million tons of storage capacity at the village level, only 300,000 tons elsewhere. Price policies, also, are considered without benefit of systematically collected data on prices in rural markets. Public attitudes and the stance of government with respect to the nature and level of public intervention in grain marketing, are shaped by strong beliefs which rest on very little firm knowledge about how the marketing system actually works.

This point is so important it is worth exploring at length. There exists among most Sahelian urban people, civil servants and intellectuals, a common vision or model of farmer behavior and grain market performance. This can be described as the model of "the imprudent or powerless peasant." It sees most farmers as prisoners of a monopolized (more properly, monopsonized) grain market. According to this model, the majority of farmers have intense demands for money income at harvest time, to pay taxes and debts and to meet the costs of marriage and other ceremonies and

¹See Volume II, Chad Country Study, p. 53.

celebrations arising at that time of year. Many farmers meet their demands for cash by selling part of their grain crop. They sell it in the immediate post-harvest period when prices are at their lowest. They buy back grain later in the year when prices are at their peak. Frequently they are in debt to traders, who demand repayment at harvest time, paying the farmer ridiculously low prices.

All of this occurs, according to this view, in rural grain markets where traders conspire to keep buying prices low. Very rarely does effective competition exist among traders, which could result in the farmer receiving a reasonable price for the grain he sells. The trader easily and invariably exploits the isolated peasant, who lacks information, alternatives and the means to resist.

Here are several examples of this point of view, drawn from Upper Volta documents:

The Voltaic peasant lacks the means to defend his selling price in dealing with buyers. He needs money for his non-food needs; he lacks adequate storage facilities; the government marketing structure is non-existent in the villages. He has no alternative but to sell to whomever is willing to buy for cash, and at a price dictated by the buyer. Often he is obliged even to sell the part of his harvest which he needs for his own subsistence, in order to pay off his debts.¹

Or again:

...The farmer is normally in debt to the local trader who gives him credit during the pre-harvest period (soudure) and demands payment from the harvest, which he buys himself at very low prices. Often, the farmer is forced to sell his whole crop to the trader, then to buy back from the same trader much millet during the soudure, when prices are high. He gets deeper into debt and is thus never able to free himself from this yoke...²

¹ République de Haute Volta, Ministère du Développement Rural, Sous-Commission de la Production Végétale, Definition d'un Politique Céréalière, Mimeo, 1976, p.3.

² République de Haute Volta, Ministère du Développement Rural, Note Ministerielle, Une Politique de Stabilisation et de Soutien de Prix de la Production Céréalière en Haute Volta, Mimeo, 1976, p.2.

And the CEGOS report, in discussing farmer revenues from grain production in Mali, asserts the following:¹

....when crops are short, (farmer) incomes are cut, due to the shrinkage of marketed volume...; the rise of prices on the parallel market does not reestablish the level of income from food crops because only a small part of the increased retail price is transmitted to farmers, because of agreements among traders.

The belief that grain markets work this way is extremely widespread, not only in the Sahel but elsewhere.² However, there exist very few empirical studies which confirm this belief. The number of studies of the structure and functioning of grain markets, particularly studies which are conceived and executed in a scientifically acceptable way, is extraordinarily small, even in places like India where these questions have been the subject of heated controversy for decades.³ One experienced observer's comment is widely applicable:

¹IDET/CEGOS, Op. Cit. It should be noted that no reference to such price agreements are found elsewhere in this report, nor are any other studies cited as evidence.

²Cf. United Nations, Economic Commission for Asia and the Pacific, "Problems of Marketing of Small Farmers in the ESCAP Region," Economic Bulletin for Asia and the Pacific, Vol. XXVI, no. 2-3, September-December 1975, p.2. "The stereotype of indigenous marketing systems for the small farmer is that it is exploitive, collusive, economically inefficient and operating with high profit margins for the trader. At the bottom is the small farmer, poor, often illiterate and unorganized, whose small volume of business is of poor quality, unstandardized, costly to handle and relatively unimportant to the trader. The general poverty of the small farmers and their chronic indebtedness to money lenders, who are often the traders who buy their produce, weaken the farmer's bargaining power, especially at harvest time. This weakness is aggravated by the farmers' lack of knowledge about prices and alternative marketing procedures.. The inherent weakness of the small farmer means that he is an easy target for exploitation - underweighing or under-assessment of the produce, charging high interest rates, etc....."

³See Uma Lele, The Marketing of Food Grain in India, Cornell University Press, 1971. See also, G. R. Spinks, "Myths about Agricultural Marketing," Monthly Bulletin of Agricultural Economics and Statistics, Vol. 19, No. 1, Jan. 1970.

Much of what passes as analysis in the marketing literature represents little more than a repetition of the conventional wisdom regarding middlemen behavior with little or no empirical content...

This absence of empirical studies supporting the model of the imprudent peasant and the monopsonized market is true of the Sahel. To our knowledge, there are only two Sahel studies which focus more than casually on the functioning of grain markets - those by Raynaut and by Nicolas and his colleagues in several Hausa villages in Niger.² These deal in only a marginal way with marketing. They do not even lend strong support to the indebted peasant hypothesis since, as shown earlier, Nicholas found a widespread incidence of indebtedness in his villages, but of small magnitudes and only a minor share of it involving merchants. It is interesting that in the CEGOS study in Mali, it was found that in only 50% of the villages surveyed was any part of marketed cereals output sold sur pied ("on the stalk"). Most of the sales which took place in the village came from

¹Vernon Ruttan, "Agricultural Product and Factor Markets in Southeast Asia." Agricultural Cooperatives and Markets in Developing Countries. D. K. R. Anshel, R. H. Brannon and E. D. Smith, editors. New York: Praeger, 1969, p. 83.

²C. Raynaut, "La Circulation marchande des céréales et les mécanismes d'inégalité économique: les cas d'une communauté villageoise Hausa," Cahiers de Centres d'Etudes et de Recherches Ethnologiques (Université de Bordeaux), No. 2 (1973). C. Nicolas, H. Magadi, M.D. Mouche, Le système traditionnel du crédit dans la région de Maradi, enquête socio-économique, CNRSH, Maradi, 1969. This is not to deny the usefulness or importance of many other works bearing on village economic life and particularly marketing such as the SEDES study of Niger (1963); Société d'Etudes pour le Développement Economique et Social, L'Approvisionnement des Villes dans les pays Francophones d'Afrique, 5 volumes, Paris, December 1972; the CEGOS report on millet-sorghum marketing in Mali; the UNDP 1974 study of marketing in Chad; or Mme. Ouedraogo's study of food supply for Ouagadougou, all cited previously. But these cannot be compared in scope or intensity to marketing studies such as those sponsored by W. O. Jones, and summarized in his book Marketing Staple Food Crops in Tropical Africa (Cornell, 1972), the Lele book, or other works cited below.

stocks which were sold off as the harvest approached.¹

It is no exaggeration to say, then, that the "imprudent peasant-monopsonized market" model is at best unproved, at worst pure myth.

There exists an alternative model, a different way to see farmer behavior and market performance. This can be called the "prudent peasant-competitive market" model. The "typical" or "average" peasant, in this view, reflects in his behavior hundreds of years of cultural experience and social adaptation. He plants the grain he will need to feed his household on the assumption of normal rains, with some safety margin. He maintains, at the village or household level, a storage capacity equal to at least one year's consumption, and perhaps two years, in order to protect himself against the bad rains he knows will come periodically. He knows very well that he will need cash income at the time of the harvest. He prepares for it during the dry season - by migrating or engaging in some local income-earning activity. He prepares for it also in his production decisions - by growing cash crops, for example. He knows very well that grain prices will be lowest at harvest time and highest during the soudure, and tries to arrange his purchase, sale, and storage decisions accordingly.

According to this way of looking at things, similarly, the grain market is characterized by reasonably effective competition. Entry is easy. Anyone can become a petty trader; little is required in terms of capital

¹IDET/CEGOS, Op. cit., Tome III. Panhuys mentions a Malian trading circuit of what he calls a "usurious" type, on which debts are reimbursed in kind at harvest time. Typically, he notes, 1000 MF were borrowed, and 100 kg. of millet were given as repayment at harvest time. (This refers to the early 1970's). He estimated that perhaps 5,000 ton entered the market this way - less than 5% of total market millet/sorghum. (FAO, Rapport au Gouvernement de Mali sur la Commercialisation des céréales (The Panhuys Report), Rome, 1973, p. 12.

capital or skill. Since incomes available in other rural occupations are relatively low, the elasticity of supply of traders' services is surely very high. Even the most isolated farmer need not sell his grain at an unsatisfactory price; all he has to do is journey to the nearest periodic market to sell it there, either selling it himself or giving it to a small trader to be sold. In the rural markets, there are always those passers-by we earlier called casual traders, who are anxious to fill empty cargo space with grain to sell in the larger towns and whose presence gives a strong presumption of competition on the buying side; such a presumption would exist anyway because of the large number of traders in the market.

This second model of a calculating peasant and a competitive market is, of course, congenial to the preconceptions of many economists. But it is more than that. It also seems to fit well with what has been discovered by a number of recent studies in countries with socio-economic and ecological structures similar to those of the Sahelian countries.¹ There are also many indications of a less systematic kind that is in accord with what is observed in the Sahel itself. For example, the Director of the Caisse de Stabilisation

¹Especially the important study by Henry M. Hays, Jr., op. cit. See also, P. H. Giles, Storage of Cereals by Farmers in Northern Nigeria, Samaru Research Bulletin No. 42, Institute for Agricultural Research, Ahmadu Bello University (Nigeria), 1965.; W. O. Jones, op. cit. and the studies on which it is based, particularly, E. Gilbert, Marketing of Staple Foods in Northern Nigeria: A Study of the Staple Food Marketing Systems Serving Kano City. Ph.D. Dissertation, Stanford University, 1969. The operation of cowpea markets in Northern Nigeria is the subject of a recent Cornell University thesis, which did intensive analysis of price behavior, marketing margins, storage etc. Like the Hays study, the study concludes that there is "no evidence of monopolistic or large scale exploitative practices." Nathaniel Omatai Okiloko Ejiga, Economic Analysis of Storage, Distribution and Consumption of Cowpeas in Northern Nigeria, Ph.D. thesis, Cornell University, 1977.

des Prix de Produits in Upper Volta, noted that, in the early 1960's, cash crop marketing was marked by a "great anarchy"..., a "...multiplicity of middlemen who were largely uncontrolled, which favored an instability of prices paid to producers because of a savage, bitter competition...."¹ The main point, in any case, is that, despite strong preconceptions about how grain markets function in the Sahel, there is little in the way of valid empirical evidence one way or the other. More basic knowledge, systematic and careful study of the operation of grain markets and related questions of farmer production, storage and marketing decisions, is a precondition of better policy. Generating such knowledge is a matter of urgency.

C. Inadequacies in the Policy-Making Process

Such information and knowledge as is available is often not utilized effectively in cereals policy-making or indeed in economic policy-making generally. We note in the country studies that in most Sahel governments there is an interministerial committee which discusses agriculture prices - the Comité des Grands Produits Agricoles in Senegal, for example, and the National Cereals Commission in Niger. It seems to be the case that technical staff are rarely, if ever, attached to these committees, that very little staff work goes on in the participating agencies, that memoranda bringing together facts and policy arguments are not common. Given the scarcities of manpower and especially the scarcity of staff personnel, this is not surprising. What it means is that, too frequently, decisions with widespread economic (and political) ramifications are made without benefit of systematic fact-finding and analysis. This is perhaps less true in Senegal, where the CGPA is said to have access to analytic memoranda, and in Mali where, at least in 1973,

¹ Republique de Haute Volta, Ministère des Finances, Caisse de Stabilisation des Prix de Produits, Budget, Exercice 1974/75, p.7.

and 1974, the Commission Nationale de Planification d'Economie Rurale, (CNPFR), located in the Institut d'Economie Rurale, prepared a strongly-argued and well-documented case for general producer price rises. However, there seems to have been less use of such staff work in the past three years. In 1972, the Finance Minister of Mali publicly noted what he considered to be one of Mali's main problems: "...the making of important decisions without the aid of quantitative estimates of costs and benefits of the choices made."¹ This problem, of course, exists everywhere, but it is particularly striking in the Sahel.

D. Poor Marketing Services

Marketing services are deficient by comparison with the services which are provided for export crops, for example. It seems to be the case that traders in grain do not extensively visit the villages, seeking to buy from farmers at the farm-gate. The image of the travelling, small trader hawking basic consumer goods for cash crops (including foodgrains) no longer appears to present a true picture - at least in some of the Sahel states.²

This means that the farmer himself, or (in Mali, Niger and - less clearly - Senegal) his cooperative organization, must arrange for transport of grain

¹ République du Mali, Budget d'Etat 1972, Récapitulation Générale.

² Cf. IDET/CEGOS, Op. cit., which found in a survey of Malian villages that village-level transactions between traders and farmers relatively uncommon. That this was not always so is suggested by the following description of the earlier system: "African merchants, who knew the country and had personal relations with the peasants..would roam the countryside looking for peanuts.. They would offer consumer goods at the same time..." Nicholas Hopkins, Popular Government in an African Town: Kita, Mali, University of Chicago Press, 1972, p.41.

to market for first echelon storage, in the state marketing circuit. In at least some cases - Mali and Niger are best documented¹ - the cooperatives are paid too little by the national grain buying agencies; costs of transport from village to the arrondissement level are not fully covered. Sometimes, the local cooperatives are not paid at all. In Mali, moreover, they must bear the costs if inadequate storage and transport delays cause losses of stored grain.

Illustrative of the differences in marketing services provided for cash crops and those for food crops in Mali is the fact that the Operations will send trucks to bring groundnuts to main storage points whenever a village or group of villages can assemble 80 sacks - and this at no cost to producers.²

It is much the same with other services normally provided by a marketing system: credit, trader-provided storage capacity, off-farm inputs. Credit is available via the export crop promotion agencies, as are fertilizers and other inputs. However, with a few exceptions (e.g., the Operation Mil Mopti in Mali), food growers must rely on "traditional" credit, little of which appears to be provided by traders.³ And few input-provision schemes

¹IDET/CEGOS, Op. cit. and, Nicolas, Magadi and Mache, Op. cit. In its village survey, the IDET/CEGOS team notes that almost 40% of the villages "spontaneously" declared that their costs of transport of grain to the arrondissement chef-lieux were not paid for. The FGRs take the rebate that OPAM gives for this purpose, to meet their own expenses. IDET/CEGOS, Op. cit., Tome III, p. 41.

²Center for Research on Economic Development, University of Michigan, Mali: Agricultural Sector Assessment, Dec. 1976, p. 119-120.

³In the Niger study mentioned earlier, only 20% of all lenders were traders. It is true that little solid information exists on rural indebtedness. But Niger is the most closely studied Sahel country in this respect. (See Nicolas et. al., op. cit.) Recent socio-economic surveys in Mali, as yet unpublished, do not appear to reveal much rural indebtedness, though full results are not yet available.

are available except for export crops.

E. Policy Objectives Not Met

In the four Sahelian states where there are de jure state grain marketing monopolies, the stated objectives of public policy are being met imperfectly. The most common of these objectives are:

- a) to control ("maitriser") the grain market, so that producers can be guaranteed a remunerative minimum price.
- b) to assure grain supplies for deficit regions, including urban areas.
- c) to stabilize prices to both consumer and producers, reducing or eliminating seasonal fluctuations by buffer stock operations.

However, the state marketing agencies have not been able to "control the market." As already noted, even in Mali, one half to three quarters of the total volume of marketed millet passes through the "traditional" or private sector. In addition, the grain agencies have not been able to purchase all millet/sorghum offered at official prices, thereby guaranteeing payment of official prices and they have not stabilized prices seasonally or interannually.¹

The private traders everywhere supply most of the grain consumed in urban centers. They can undersell the state grain agencies in part because they concentrate their sales on the most accessible region, just as they buy in the most accessible producing areas. The state agencies, in principle, are obliged to buy grain everywhere in the country - regardless of access costs, pay the same producer price - regardless of transport cost and quality

¹Since the grain agencies have had such limited presence on the market in most years, it would be unrealistic to expect that their domestic grain purchases and sales should have had noticeable effect either on price levels or stability. For a comparison of millet price stability in one country before and since a grain stabilization agency came into existence, see Niger country study.

differentials, and sell at the same price everywhere.

It is not only in the capital cities that private traders make their presence felt. Frequently, they supply deficit regions far from producing regions - as in Mali, where some half of the grain supplies in the sixth region is privately supplied.

The state grain trading agencies do not protect the producer against presumed "exploitation," as they were designed to do. Frequently, they are not even present at the opening of the buying season. In Mali, for example, OPAM commonly does not begin purchases until January, two or three months after the season opens. Similar lateness in market entry occurs with ONCAD in Senegal and OFNACER in Upper Volta.

The notion that state grain marketing could and would impose a more orderly and efficient organization on the grain trade has not been borne out.

In most of the countries, there is considerable administrative confusion and frequent bureaucratic struggle over cereals marketing responsibility. The clearest case is probably Upper Volta where, in recent years, there have been at least five major agencies active, or interested in becoming active, in grain marketing - the ORDs, the OFNACER, the "Sous-Comité" (a grain distribution organization concerned with drought relief), the SOVOLCOM (a state retail trading organization with claims in the area of rice distributions,) the Caisse de Stabilisation des Prix de Produits (concerned with export crops). Jurisdictional and other differences have created a welter of conflicting claims of authority, divided the responsibility for marketing in ways occasionally confusing to farmers, and prevented elaboration

of more coordinated and cogent policies.¹

In Mali, ambiguity over marketing jurisdiction has recently arisen between the cooperatives, the national grain agency (OPAM) and operation Mil Mopti, which has taken over responsibility for grain marketing in the area of its activity. A recent evaluation report comments:²

After the beginning of the 1976-77 campaign the government suddenly decided that in the Bankass and Djenné cercles the existing cooperatives would take over the grain collection and deliver directly to OPAM. It is, however, expected that this was only a temporary measure (the reason of which is not officially known) and that in the coming season Operation Mils will again be charged with commercialisation in its whole intervention area.

In Niger, each of the past three crop seasons has seen a different set of legally authorized grain buyers. In 1974-75, the OPVN, the cooperatives (UNCC) and private traders were allowed to buy from producers. In 1975-76,

¹See Volume II, Upper Volta Country Study. Uncertainty over rice marketing jurisdiction has been such that it has led to social unrest among rice growers in the Kou Valley. Both OFNACER and SOVOLCOM claim a legal monopoly over rice marketing. SOVOLCOM is legally authorized to import rice and to distribute it at retail level. OFNACER has a general cereals mandate. SOVOLCOM, a retail chain, claimed responsibility for purchase of rice in the Kou Valley where a large rice growing program exists. However, SOVOLCOM performed this function poorly, so the Conseil des Ministres gave the monopoly of paddy marketing in the Kou Valley to OFNACER. The peasants of the Kou Valley meanwhile grew so dissatisfied with all these arrangements that, during the 1975-76 crop season, police intervention was necessary. (République de Haute Volta, Ministère du Commerce, Caisse de Stabilisation des Prix de Produits, Budget de la Caisse de Stabilisation des Prix de Produits Agricoles, Exercice 1975-1976, p. 61).

²Mahamadou Berthe and G. Olaf Meyer-Ruhlé, Report on the First Joint Evaluation of Operation Mils-Mopti, Mopti/Bamako, April/May 1977, p. III - 10.

the private traders were excluded and only OPVN and UNCC were authorized buyers. In 1976-77, the OPVN was not allowed to buy while private traders were once more present, with UNCC. It's scarcely surprising that not only farmers and traders, but occasionally even the government, were unclear as to who could and who could not buy grain.¹

F. Inefficiency

The operating efficiency of the grain agencies is acknowledged to be deficient in many respects. Cases of storage losses are widely mentioned.

Transport deficiencies commonly delay movements of grain stacked outdoors under tarpaulins, exposing it to the first rains. The CEGOS Report mentions that, in Mali, OPAM's storage practices lead to substantial losses. The burden of these losses is passed on to producers and cooperatives, removing any direct incentive for OPAM to improve its performance.² In other cases, grain stored indoors suffers heavy losses because of insufficient or improper fumigation, infested sacks, failure to rotate properly.

The grain marketing agencies tend to have large operating deficits - at least, this is true of two of the most active: OPAM and OFNACER. According to one recent estimate, OPAM has had "losses" of 21 billion Malian Francs and an accumulated indebtedness of 38 billion - this to other public sector agencies. Annual losses in recent years are estimated to

¹See Volume II, Niger Country Study.

²...if not stored properly, grain delivered to OPAM deteriorates rapidly. Each year important quantities (several thousand tons) can't be carried away before the onset of the rainy season and are thus rendered unfit for consumption. The loss is absorbed by the producers, if OPAM hadn't already paid them and by the cooperatives, if OPAM's funds were distributed, since OPAM demands repayment. (IDET/CEGOS, Op. cit.)

average 4 billion MF out of a total volume of sales of 6-7 billion.¹

In Upper Volta, OFNACER ran a deficit of 120 millions CFA in 1973, due mainly to losses on sales of imported grain. In 1974, its deficit was 216 million CFA, arising from sales of locally-produced grain. In 1975, the deficit was 381 million CFA, again attributable to sales of local cereals. Since only 18,000 tons were sold in that year, the deficit was more than 21 francs CFA per kg. sold.²

¹ République du Mali, Institute de Productivité et de Gestion Previsionnelle, Rapport Final de la Commission Interministerielle sur la Restructuration de l'OPAM, Août, 1976, p.6. The causes of these losses have been summarized as follows:

- financial charges arising from previous debts and from financing of permanent grain stocks (2 billion MF);
- underestimates in the barèmes for costs of sacks, transport, handling charges and normal storage losses;
- too-low allocations for OPAM's general operating costs, which are currently running at 1.2 billion MF annually. These costs are supposed to be covered by the "taxe OPAM" included in the price of cereals sold by OPAM. But the volume of sales that would be required to cover the general overhead of OPAM is 240,000 tons - some six times the present volume;
- bad management of stored grain which has led to substantial write-offs, (about 1 billion MF);
- the abnormally long period over which financing of crop purchases is required (18 months instead of the expected 6 months.)

²To place this deficit in context, the official producer price for millet in 1975-76 was 18 CFA francs, the official consumer price 30 francs. The actual average 1975 retail price in Ouagadougou (according to the official statistics) was about 50 francs. Total grain marketings were probably in the neighborhood of 150,000 tons.

The financial results of the other grain agencies are less readily available and/or are too ambiguous to allow analysis. In Niger, for example, the OPVN 1974/75 balance sheet shows a deficit of only 17 million CFA. However, the meaningfulness of this figure is obscured by the fact that considerable food aid passed through OPVN, at least some of which was sold, thus enlarging OPVN's operating revenues.

Similarly, some of the true costs of most of the region's cereals marketing agencies are not shown on their operating accounts. In most countries, the administrative authorities play an important uncompensated role in marketing grain. The financing of public grain purchases is frequently handled by the prefects and sub-prefects, for example. Transport is commonly provided by the administrative authorities. In the cases of Chad and Senegal, the grain agencies are integral parts of larger organizations. Thus, the Department Céréalière in Chad is integrated into the Fonds de Développement et d'Action Rurale and, in Senegal, cereals marketing responsibilities are part of ONCAD's overall marketing functions. In both cases, overhead costs and many direct costs of grain marketing do not show up in the accounts of the marketing body.

In any case, the operation of grain marketing agencies in Sahelian conditions is extremely demanding; it requires substantial inputs of trained manpower, information, coordination capacities, organizational and administrative flexibility. These management-related inputs are extremely scarce throughout the Sahel. Also, the general administrative and financial systems within which the grain marketing agencies work do not lend themselves easily to decentralized and flexible organizational behavior. For these

reasons, the grain marketing agencies can easily be overwhelmed by events and most of them suffer from well-recognized administrative deficiencies. Accounting is probably the area of greatest weakness. Even in the case of Senegal, which has in ONCAD the most experienced and best endowed of the marketing agencies, the income statements and balance sheets of that agency do not permit evaluation of its activities. One assessment of the operation of OFNACER in Upper Volta, made by a "diagnostic mission" in 1974, was perhaps unduly severe, but their remarks illustrate the general problem. The mission concluded that, in general "the operation of the office leaves much to be desired.." They pointed out that the sales office is unable to provide statistics on incoming and outgoing merchandise; no physical inventory has ever been made; shortages of warehouses has meant open-air storage, with considerable grain spoilage; only one financial statement has been prepared in almost four years, and it had many errors; supervision of retail outlets was inadequate; out of five shops visited, only one manager was present.¹

* * * * *

This list of problems and deficiencies is generally accepted by most observers of Sahel grain marketing activities, though of course the degree of relevance of particular items varies from country to country. There are also issues about which there are strong differences of view. The most general and fundamental of these has to do with beliefs about how farmers behave and how grain markets work. The difference between viewing grain markets as monopolistic, exploitative and inefficient in nature and seeing them as reasonably competitive, offering reasonable option to producers.

¹Republique de Haute Volta, Mission Diagnostic de l'Office Nationale des Cereals, 1974, mimeo., p. 4.

This difference of diagnosis is absolutely fundamental. It shapes policy attitudes and ideas. When more knowledge and understanding of how grain markets work has been generated by basic research, these different perceptions can be better reconciled.

G. Price Policies

With price policy, as with marketing policy, there is, on the technical level, a wide area of diagnostic agreement. There are also basic differences of opinion about some aspects of price policy. Those elements of cereals price policy which most technicians criticize are: the consumer orientation of price policy; the unsuitable timing of announcements of official price changes; the divorce between cost components in the official barèmes and actual costs; the overly undifferentiated character of public prices. The major issues of technical disagreement relate to the question of whether seasonal price fluctuations are "excessive" and -- most important -- of whether grain prices to producers are "too low."

1. Consumer-Biased Policies

Throughout the world, there is a powerful propensity to favor urban consumers in matters of food price policy, and the Sahel has been no exception.

Most of the Sahel governments fix "official" consumer prices for foodgrain and other staples. These are meant to be ceiling prices. Where there are state retail outlets, such as SOMIEX in Mali, SONADIS in Senegal or SOVOLCOM in Upper Volta, they sell to consumers at these prices.

Official ceiling prices of foodgrains are almost invariably set "too low." They often fail to cover producer (or market) prices and marketing costs. They are rarely high enough to cover the operating costs of the state marketing agencies. The substantial operating deficits of OFNACER, OPAM, OPVN - described earlier - are one indication of this consumer bias.

Despite contrary wishes of aid donors, some Sahel governments tended during the drought years, to sell at relatively low prices sorghums imported via food aid. Table XIII shows, for example, that food aid in Upper Volta was sold not only below landed costs but -- more relevant -- far below prevailing prices. It was the same in Niger. In 1971, the Niger Government fixed the selling price of US PL480 sorghums at 11 CFA francs/kg. In 1973, the target price was 15 francs. The actual price at which the grain was sold was 10 francs, and this in the face of prevailing market prices for local sorghums of 40-80 CFA/kg. The result in both cases was that consumers -- at least some consumers -- were heavily subsidized.¹

There is general reluctance to raise official consumer prices in line with rising costs. This is perhaps best seen in the way that official barèmes are sometimes adjusted to take account of changes in costs. In 1975, for example, the cooperative organizations in Mali convinced the government that the margin they received for primary marketing was inadequate. It was, therefore, raised from 5,050 MF/T to 5,788 MF/T. However, the retail price was not correspondingly raised, since this was regarded as politically unacceptable. Instead,

¹Both governments claimed that the deep discount for U.S. sorghums was a reflection of the low consumer preference for these grains. There was, in fact, a consumer preference for local sorghums, but it was probably not strong enough to justify so large a differential in price.

the "weighted transport cost" element¹ in the barème were reduced from 5,000 to 4,000 MF. The actual costs of transport were not reduced, however.² They were, if anything, higher than before.

Table XIII.

Price of U.S. Sorghum in Upper Volta, 1972. (CFA Francs)
Prix de Revient de Sorgho Americain au Haute Volta, 1972. (Francs CFA)

1. Price per ton, sacked, U.S. port (\$49) Prix par tonne en sac f.o.b. départ Etats-Unis (\$49)	12,250
2. Ocean Freight, c.i.f., per ton Abidjan (\$40) Transport Maritime, c.i.f., (\$40) par tonne Abidjan	10,000
3. Transport Cost, Abidjan - Ouagadougou Transport Abidjan - Ouagadougou	10,000
4. Miscellaneous Cost (port charges, loading, losses) Frais divers (frais portuaires, chargement, déchargement, pertes et dechets)	2,700
cost, delivered OFNACER Rendu Magasin OFNACER	35,000
selling price Prix à la vente	13,000

SOURCE: I. Pattinson, (advisor to Entente Cereals Project). Une Brève Analyse des Quelques Problèmes Relatifs Aux Programmes de Stabilisation des Céréales du Haute Volta et au Niger, mimeo 1975, p. 24.

Evidence of consumer-oriented price policies can also be found in Sahel government responses to the 1972-1974 period of drought and world inflation. Some of the Sahel states, like so many other countries in

¹This is the weighted average per ton cost of millet transport, after taking into account subsidies.

²IDET/CEGOS, op. cit., Tome II.

the world,¹ tried to contain the inflationary pressures being transmitted from outside. In particular, they tried to shelter consumers from the rising price of staples by heavily subsidizing rice imports and other goods. For example, in 1973 and 1974, Mauritania subsidized rice prices by some 50% of their import cost. In 1974, subsidies for food imports (mainly rice and sugar) amounted to some 500 million ouguiyas(\$100 mn.) -- about 18% of Mauritania's 1974 budgeted current expenditures. In Bamako, Mali, in 1974, imported rice retailed at one-third its landed cost--85 MF/kg, while import cost was estimated to be 235 MF/kg. The total cost of the subsidy on rice in 1973-74 was 7 billion MF. Sugar subsidies came to about the same amount. Together, rice and sugar subsidies in Mali came to more than half the 1974 budgeted current expenditure of the central government.²

In Senegal, it was much the same. The Senegalese government subsidized one-third the wholesale cost of rice. Between October 1973 and September 1974, subsidies on rice and cooking oil amounted to almost 12 billion CFA francs, an amount equal to almost one-quarter of Senegal's 1973 recurrent budget and twice as much as the budgeted development expenditure for that year.

¹See Appendix 2-B.

²See Volume II, Mali Country Study. In Mali, subsidization of rice prices continued into 1974, and it appears that the decision to discontinue subsidies came about mainly because prices paid to producers of local rice had been raised. The Council of Ministers had decided in August 1974, when the decision to raise producer prices was taken, to allow official consumer (retail ceiling) prices to rise to 115 MF/kg. However, this decision was not applied until February 1975. Government allowed the consumer price rise at that time because it was unwilling to take further "losses" on sales of locally produced rice, which would have been necessary had the official retail price been allowed to remain at 85 MF/kg.

Wheat price policy in Senegal provides another example of the consumer orientation of price policies. Senegal imports over 100,000 tons of wheat annually. The millers sell flour to bakers at a price determined by the Government after negotiations with the millers. In the early 1970s (until 1973), the landed cost of wheat was about 20 CFA/kg and the cost of wheat flour 42 CFA. In 1973-74, the landed cost of wheat in Dakar had risen to 31 CFA/kg, the price of wheat flour to 58 CFA/kg. However, the price of bread was not correspondingly increased until November 1974. For over a year, bakers tried to adapt by adjusting weight and content of their bread. Many reduced the scale of their operation. Some went bankrupt. The official consumer price of bread was finally raised by 30% in November 1974.

In 1975 and 1976, wheat flour prices were subsidized. Millers charged bakers less than the total cost of wheat flour and were subsidized through the Stabilization Fund. At the end of 1976, the subsidized price of wheat flour was below the price of millet flour, which had risen as rice prices climbed. This was clearly damaging to the objective of stimulating millet consumption and, in particular, made the use of millet flour in bread an unattractive proposition. The wheat subsidy was abolished in December 1976.

The negative consequences of these subsidies to imported grains and other foodstuffs are well known. They encouraged the consumption of rice over millet and of imported over domestically produced rice. They thereby discouraged millet consumption and production and put additional pressure on the balance of payments. They absorbed resources in current consumption which might have been used for development purposes, thereby reducing the rate of growth of the economy. The impact on income distribution was clearly unfavorable in that more advantaged

urban consumers benefited while the rural sector lost.

2. Timing

Official producer (and consumer) price changes are generally announced in October or November - i.e., at harvest time. This is widely criticized by many outside observers and local officials on the grounds that such timing of price change announcements is poorly designed to influence farmer production decisions which are made at planting time, around May. This is true, but not altogether relevant. In few cases have national grain marketing agencies had the financial resources, transport capacity or storage facilities to buy more than a minor share of marketed grain production. Moreover, in some recent years, prices actually obtainable on rural markets appear to have been higher than official prices, as noted in the previous chapter.

It is true, in any event, that the proper timing of price announcements depends on the objectives of the marketing agency. If influence over planting decisions is the objective, then it is obviously desirable to announce price levels and relative prices before planting in March or April. However, if the objective is support of producer prices under severe financial and storage constraints, it's better to announce prices after the authorities have some indication about how big the crop is likely to be.

3. The Barèmes Problem

The "barèmes," putative cost structures which are used as input cost and marketing margin "norms," have been previously discussed in several contexts.

The main problem with the barèmes is that, in many instances, they do not reflect reality. There are several reasons for this.

First, each of the elements in the barème is an average; the cost of sacks, for example will be delivered cost for some average distance from the capital. Sacks will cost more, however, in distant places. More important, however, is the tendency to underestimate marketing costs at the primary assembly level and to squeeze the margins of official marketing agencies so that operating deficits become common.

Finally, in some instances, the elements of the barèmes are manipulated simply to keep total costs to the level required by a fixed consumer price which does not cover costs. The official consumer price becomes a ceiling. Since it cannot be exceeded, if one element of cost rises in the barème, compensating reduction of other elements are required. The 1975 Malian example cited earlier is the clearest case: the barème item for primary marketing costs was raised, but since a retail price increase was judged unacceptable, the barèmes element for transport cost was correspondingly reduced.

The consequences of these tendencies for barèmes items to depart from costs can be far-reaching. Where public sector agencies are involved, two occur. Agencies performing functions which are inadequately remunerated in terms of real financial costs run deficits, which are usually expressed in debt accumulation - unpaid bank loans, and obligations to suppliers of inputs - or central budget deficits. This is the case notably with some of the grain marketing bodies - OPAM and OFNACER in particular. It contributes to the general and serious problem of disorderly intra-public sector financial relationships.

The second way in which public agencies finance marketing activities for which remuneration fails to cover costs is by reallocating

personnel, equipment and materials from other functions to marketing functions. This was the case, for example, for the ORDs in Upper Volta which became involved in cereals marketing in 1974/75.¹

Where private sector agents are involved, a different kind of problem arises. How can their services be obtained if the barème allocation is too low? The problem has perhaps arisen most clearly with transport in Mali. OPAM relies on private truckers and the state transport organization to move its grain. But the rate structure, as specified in the barème, is not remunerative enough to induce truckers to voluntarily take OPAM business, especially for the more inaccessible regions. The result is that OPAM "requisitions" the private truckers - i.e., the administrative authorities force the truckers to serve OPAM at the official rates specified in the barème.²

4. Overly Undifferentiated Official Price Structure

Prices can be powerful instruments of economic and social policy. They are many-sided instruments, with potentially far-reaching ramifications. Government producer and consumer price setting, for example, can effect not only production responses of farmers and real incomes of urban consumers, but also the distribution of income, the government budget, the balance of payments, the rate of economic growth, the market share of public and private marketing circuits, among other things.

Because of the potentially pervasive effects of price policies, it is important that they be reasonably precisely formulated. Yet, as seen earlier, the public grain price structure is relatively sketchy and

¹Upper Volta Country Study, Volume II.

²One consequence is that many private truckers send their trucks into neighboring countries as the buying season opens. (Sidiki Tenintao, Analyse du Système de Commercialisation des Céréales au Mali, mémoire, Ecole Nationale d'Administration du Mali, 1977, p. 54).

undifferentiated. This, by itself, is a source of many problems. Government pricing policies, therefore, frequently have effects not altogether in line with Government's objectives or expectations.

Four specific examples of inadequate government price differentiation will be considered below: (a) absence of price distinction between millet and sorghum; (b) absence of price differentials for quality; (c) uniform country-wide official producer prices; (d) uniform country-wide official prices for consumer goods.

a. Millet-Sorghum Differentiation

Although priced the same in most government grain price structures,¹ millet and sorghum are different on the production side as well as the consumption side. In at least some of the countries of the region, yields per hectare are higher for sorghums than for millet. This is partly because sorghum tends to be grown relatively more extensively in higher rainfall areas. However, it appears that sorghum yields are higher even in predominantly millet-growing zones.² Sorghums also appear not to require much more labor input per hectare than millet.

At the same time, consumers favor millet. Sorghums are clearly and universally less preferred. Thus, the setting of one official producer price for millet and sorghum (to the extent that these prices are effective) gives an excess return to sorghum and encourages sorghum production. Moreover, since the two grains differ substantially in price in the private trade, there is a wide gap between the prices prevailing on the two

¹Only in Niger does the official price structure appear to make a distinction between millet prices and sorghum prices.

²See IDET/CEGOS Report, op. cit.

marketing circuits, with the private circuit reflecting more faithfully the interplay of production costs and consumer preferences.

b. Lack of Quality Differentiation

No quality differentials exist for millets or sorghums. Yet, some varieties - especially of millet - are much more in demand than others. In Mali, for example, there is a strong preference among most consumers for white millet, as compared to red millet which is grown mainly because it is an early maturing crop and is safer to grow in areas of short rainy seasons. Moreover, the private market makes many distinctions, reflected in widely differing price discounts for year-old millet or sorghum, for example.

Among the many consequences of this lack of public price quality distinction, one is especially significant. The public grain agencies invariably get the worst quality grains for several reasons. First, the private market pays premia for higher quality grains and more preferred varieties. Secondly, old grain is less preferred than new grain; we mentioned earlier cases where year-old grain sold on local markets at half the price of fresh grain. Each fall, when the harvest is coming in, there is naturally an emptying of granaries, a sell-off of stored grain. Old grains fall in price on the market, but not in the official price structure. This undermines the competitive position of the national grain agency vis-a-vis the private traders, and affects consumer preferences in predictable fashion.

c. Uniform Producer Prices

A uniform, nation-wide price is so frequently adopted in the Sahel because it is one of the few instruments available to subsidize distant

and disfavored regions. Differences in transport costs are averaged out through "perequation." But this is a blunt and uncertain instrument, and has many negative economic impacts.

Uncertainty arises because it is not clear that paying all producers the same price, regardless of location, in fact favors the disinherited regions. In at least some instances, it appears to favor many of the better-endowed regions. In Senegal, for example, instead of subsidizing producers in regions of low and variable rainfall, the uniform price subsidizes those in areas of better, more stable rainfall. This is so since these better-watered areas are, in general, further from Dakar.

The disadvantages of a uniform producer price policy are well known.¹

-It stimulates production in regions which are relatively unsuitable. In Senegal, for instance, farmers in Casamance appear to be reducing irrigated rice production and increasing groundnut cultivation - a trend surely encouraged by the uniform price policy which subsidizes transport and marketing costs of Casamance groundnuts.

-It further strains transport facilities, to the extent that the uniform price encourages production for sale in areas far from main consumption centers.

-The uniform price represents a subsidy to producers far from consuming points. The subsidy must be financed. In some systems, the financing is done by "perequation," or cost averaging, which means that the producers in better-located areas receive lower prices than they otherwise would. As a result, incentives to produce in the most suitable regions are reduced. In other cases, financing comes from profits on

¹Throughout this analysis, a qualifying phrase is implicit: to the extent that official prices are effective.

export crops. This means lower incomes to export crop growers (and reduced incentives to grow more) and/or fewer resources available for non-agricultural - including developmental - expenditures. A third source of financing is the general budget of the state, via grain agency deficits and hence indebtedness to the banking system and other public sector agencies. But there is in the Sahel - Mauritania excepted - no industrial or non-agricultural sector which can finance these budget costs. Directly or indirectly, they come from the agricultural sector.

-The obligation of state grain purchasing agents to pay the uniform official price, regardless of location and despite big differences in costs of access and primary marketing expenses, means that open competition with private traders is scarcely possible. The private traders will happily leave to the government grain agency purchases in areas of high transport and collection costs, while they concentrate on the most accessible areas. The result is that private marketing costs tend to be much lower than those of the public grain agency.

-Local grain storage is discouraged, since there is no price incentive to store locally. Farmers and small traders are given no incentive to increase their storage capacity, or even to so arrange their storage and transport activities so as to reduce transport costs.

d. Uniform Consumer Prices

Some of the same drawbacks apply to the policy of setting uniform official prices for consumer goods.

-The private sector will adopt one of two postures: (1) it will abandon the isolated, relatively small towns and regions served by bad roads, distant from capital cities and surplus grain producing regions;

(2) it will arrange to purchase from state distribution outlets at the subsidized consumer price and resell on the parallel market at much higher prices.

-transport facilities (notably trucks) will be more intensively and inefficiently used on runs which are of unusually high cost because of poor roads and the absence of back-hauls.

-Smuggling will be encouraged, to the extent that consumer goods on two sides of a frontier retail for very different prices.

Examples of these effects abound. In Niger, in 1975-76, the OPVN sold almost 8,000 tons of grain in Agadez. The population in the arrondissement of Agadez is about 11,000, mostly Tuareg. If average consumption was 150/kg. per year - very high for Tuareg people, according to casual observations and the 1963 SEDES study - then OPVN's sales would have fed more than 51,000 people. It can be assumed that a substantial proportion of the surrounding nomad population ate OPVN's grain.

The income distribution implications of this episode may be positive: (1) to the extent that the incomes and amenities of the nomads and others in the Agadez area are smaller than those enjoyed by most other Niger citizens; (2) to the extent that the subsidized sales did not give rise to extensive purchases at the official price for resale at higher prices elsewhere.

Mauritania provides an example of unforeseen and undesirable consequences of uniform prices for consumer goods. The Mauritanian Government has tried several times in recent years to set a uniform sugar price throughout the country. The results of this policy were:

(1) Encouragement of sugar consumption in regions far from the coast and the encouragement of smuggling, since sugar prices in, for example, southeastern Mauritania were far cheaper than across the frontier with Senegal.

(2) Encouragement of fraud between transporters and traders, who were able to arrange false papers, allowing them to collect the subsidy on transport of sugar.

(3) Greatly increased uncertainties in Nouakchott about the real state of sugar stocks in distant regions; because of trucker/trader fraud and smuggling, real stocks always were smaller than stocks officially recorded.

On most of the matters thus far considered, the great majority of technicians and other observers would be in general agreement. But on the two most fundamental questions related to price policy there is considerable disagreement. The first has to do with the level of grain prices, the second with price fluctuations.

5. Are Grain Prices Too Low?

It is widely believed that prices to producers of foodgrains are "too low." Many reasons are given in support of this argument. Two of the most common - that prices are too low to stimulate the level of production or marketing which is desired; and that they are too low in an incomes policy or income distribution sense - are contained in the note, "Proposals for a Strategy for Drought Control and Development

in the Sahel," prepared by the Club du Sahel Synthesis group.¹

As the note suggests, analysis of whether cereals prices are or are not "too low" is a complicated matter. There are many different senses in which prices can be "too low." We explore these below, and attempt to make some general assessments of the situation in the CILSS states in the light of available empirical evidence.

Four dimensions of this question will be considered, (1) are there significant "distortions" in the general economy which stem from grain-related economic policies and programs and which depress the level of grain prices? (2) are grain prices "too low" in a "production-ist" sense - i.e., too low to stimulate output to some level specified by public policy? (3) are food grain prices "too low" in an incomes policy sense - i.e., are grain producers doing less well than other groups? (4) are prices lower than in neighboring countries?

¹Club du Sahel, Working Group, Proposals for a Strategy for Drought Control and Development in the Sahel, November 1976, p. 18. It must be noted that this document is rather ambiguous in its price policy argument. Drawing on the FAO Etude Perspective, the authors, first of all, observe that per capita rural income stagnated or fell during the 1960s, while average per capita income rose. They conclude that the rural-urban income gap has grown wider. They then say: "It is clear that the success of a policy of rural development requires the reversal of this tendency. To make the rural sector dynamic, stem the outflow of the best rural people, make it worthwhile to use off-farm inputs and increase food production, it is certain that a necessary condition is the introduction of a new policy on prices of food crops and of inputs, which will be more favorable to producers..."

These observations refer, at the same time, to changes in aggregate rural income, relative rural-urban incomes, price policies for food crops and cash crops. If rural incomes fell during the 1960s, it was due much more to price policies followed for export crops than for food crops. The most direct way to increase rural incomes is to raise producer prices for export crops. These, after all, are the source of the mass of rural money income. The taxation (via price policies) of these crops weighs heavily on the rural sector. A policy of higher producer prices for export crops, however, would make production of export crops relatively more attractive than food crops. Some of these complications are considered in the next chapter.

1. The Existence of "Distortions"

Grain prices on the Sahel countries are primarily market-determined. We have seen that relatively small proportions of marketed cereals output are purchased by state grain authorities at official prices - probably less than 20% in the region as a whole. We have noted also that the sparse evidence on actual market prices suggest that, in many places and years, market prices are substantially above official prices.¹

One sense, then, in which grain prices can be "too low" is that they do not accurately reflect underlying market forces of supply and demand. They are affected (depressed) by "distortions" existing throughout the economy. Millet prices, for example, may be "too low" because government is subsidizing rice or wheat imports, reducing consumer demand for millet; because food aid is being absorbed on the domestic market; because government is setting too low an official grain price for urban consumers; because monopolistic exploitation by traders or uncertain public marketing arrangements and policies are discouraging producers from expanding output.

Where such "distortions" exist and are amenable to public policy influence, they should be removed or reduced. To the extent that this is impossible or undesirable for other reasons, raising producer prices of cereals is proper policy.

Many of the kinds of "distorting" factors mentioned above have been present in the Sahel in recent years. The massive inflow of food aid has been particularly significant. The impact of food aid appears

¹ Although we will be referring to cereals in general throughout this section, millet/sorghum will be the primary concern.

to have been particularly dramatic in some instances. Relatively large food aid inflows appear to have so influenced grain price levels in N'djamena that it has not been remunerative to ship local (Southern) grain into that city since 1974. In Mauritania, rice is distributed by Government, under drought-relief auspices, at a highly subsidized price. The result has been an extreme distortion of relative prices: in January 1977, rice was selling in Nouakchott for 14 ouguiyas/kg, while millet averaged 30-35 ouguiyas.¹

Given the volumes of food aid which have been imported in all Sahel countries since 1970 (see Table I, page 26) some significant price-reducing effect would be expected. It is the same with the various subsidies on foodgrains which were so substantial between 1972 and 1974.

While these considerations give analytic support to the case for higher grain prices, it is hard to know how much weight to give to them. First, many of the "distortions" were temporary - particularly the import subsidy policies of 1972-1974. Relatively little subsidization of grain imports now exists outside of Mauritania. Secondly, government policies putting ceilings on retail prices of foodgrains have not been very effective, as evidenced by the behavior of actual grain prices in urban markets.

In particular instances then, the existence of these "distortions" might point to the need for compensating grain price rises, but it would be better to remove or reduce the distortions directly, if this

¹ Volume II, Mauritania Country Study, p. 30.

is possible. Also, it is not clear how durable and pervasive these distorting influences are.

2. Stimulation of Production

Grain prices may be "too low" in the second, somewhat more concrete sense mentioned above: they may not be high enough to stimulate output to levels desired by policy-makers.

The general issue of the price elasticity of supply - the degree of responsiveness of cereals supply to price changes - is obviously highly relevant to this question. We discuss it later, in Chapter V on price policy. Here we need only note that most studies suggest that cereals production is responsive to price changes, though elasticities are relatively low and that marketed output is responsive to production changes - generally highly responsive.¹

a. Relative Prices, Food Grains and Export Crops

Most of any price-induced increase in cereals production and marketed supply would probably come from a shift in the crop mix - more foodgrains and less export crops. There might be some increase in total production, but it is not likely to be high because of all

1

See below, Chapter V, and among other references cited there: Raj Krishna, "Agricultural Price Policy and Economic Development," Agricultural Development and Economic Growth, edited by H. M. Southworth and B. F. Johnson, Cornell University Press, 1967, esp. pp. 505 ff. The studies assembled by Krishna show food grain price elasticities falling mostly below 0.1 (these are short-run, single crop acreage elasticities.) In another article, Krishna, using Indian data, found much higher elasticities for sales with respect to changes in output. (Raj Krishna, "The Marketable Surplus Function for a Subsistence Crop: An Analysis with Indian Data," The Economic Weekly, Annual Number, Feb. 1965, pp. 309-320). A more recent study in Northern Nigeria confirmed these results - though with some differences. (Peter J. Matlon, The Size Distribution, Structure and Determinants of Personal Income Among Farmers in the North of Nigeria. Ph.D. Dissertation, Cornell University, 1977).

the general obstacles which constrain agricultural expansion.

The most relevant empirical question then is whether relative returns tend to favor export crops or foodgrains. However, we don't know actual producer prices of cereals, nor is much reliable farm management or input-output data available. The best we can do is gain insights by using the rough data at hand.

We do know official producer prices. Comparing official producer prices of foodgrains to official producer prices of export crops may tell us something. Diagrams 13, 14, 15, and 16 show how the ratios of these official producer prices have moved over the past 15 years.

The following conclusions emerge:

(i) The ratio of cotton to foodgrain prices has declined everywhere except for the last few years in Chad.

(ii) The ratio of groundnut to foodgrain prices shows little significant change in most of the region.

(iii) In Upper Volta, the official price relatives have clearly moved in favor of the foodgrains.

(iv) Nowhere have the ratios moved in favor of cash crops, with the recent exception of groundnuts in Niger and cotton in Chad.

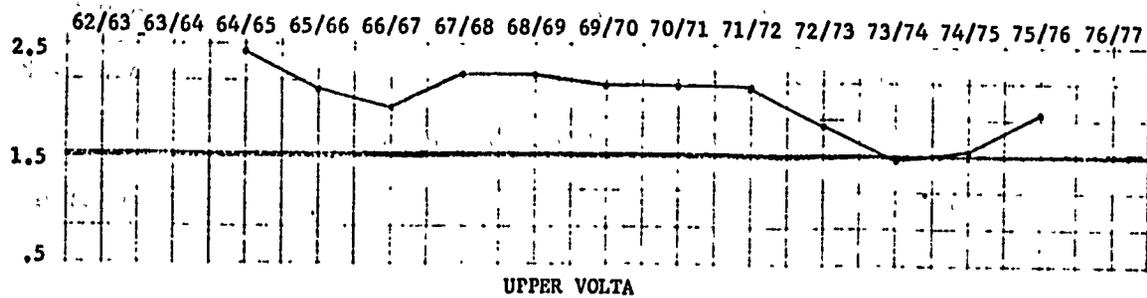
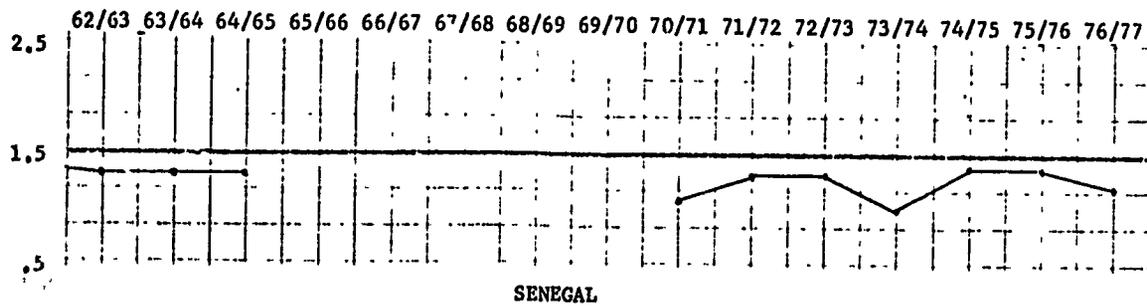
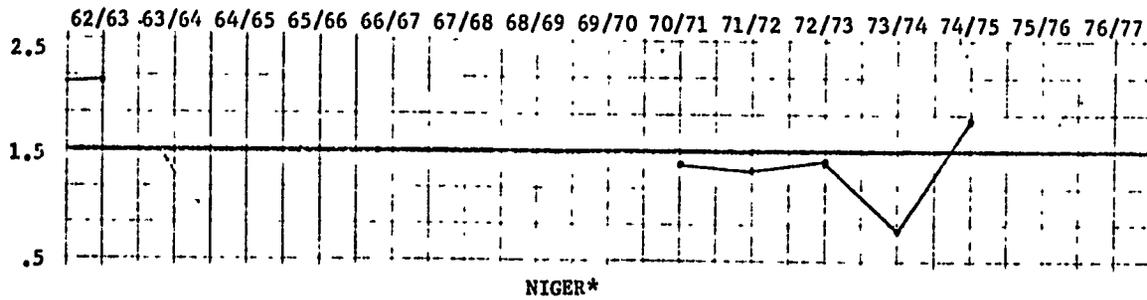
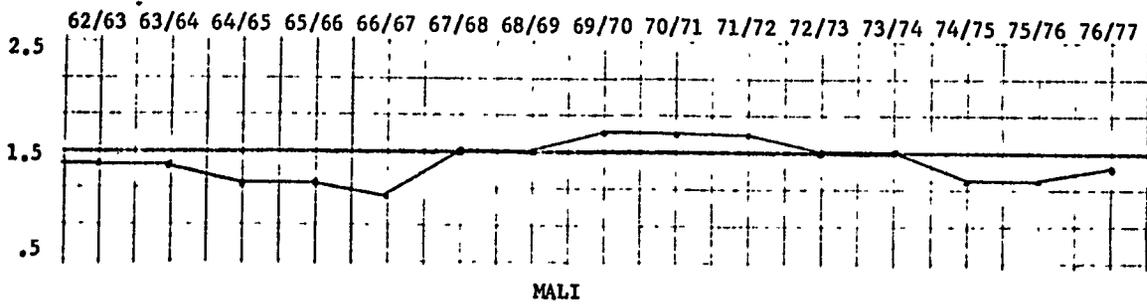
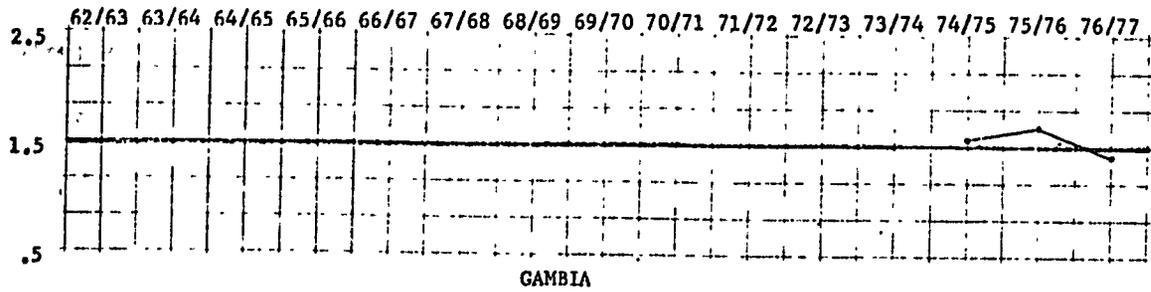
b. Cost of Production

Tables XIV, XV, and XVI, summarized in Table XVII, show very crude estimates of average returns per work day from cultivation of the main Sahelian crops. These data do not come from careful farm management ("budget-exploitation") studies. They are most often based on project data, which in turn reflect hypothetical "norms."

It emerges clearly from these tables that foodgrain production

Comparaison des Prix au Producteur, sous forme de Rapport 1962/63-1976/77
Arachides/Mil-Sorgho

Ratios of Annual Official Producer Prices, 1962/63 - 1976/77
Groundnuts/Millet-Sorghum

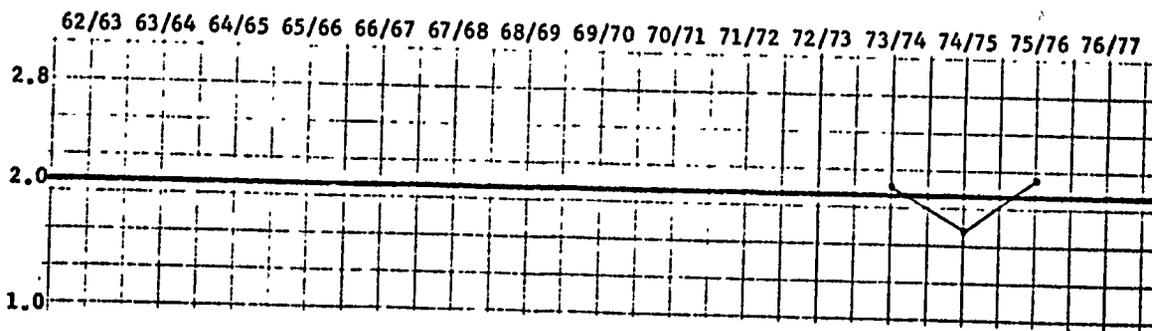


* Au Niger, prix moyen du mil et du sorgho. In Niger, the average of millet and sorghum prices

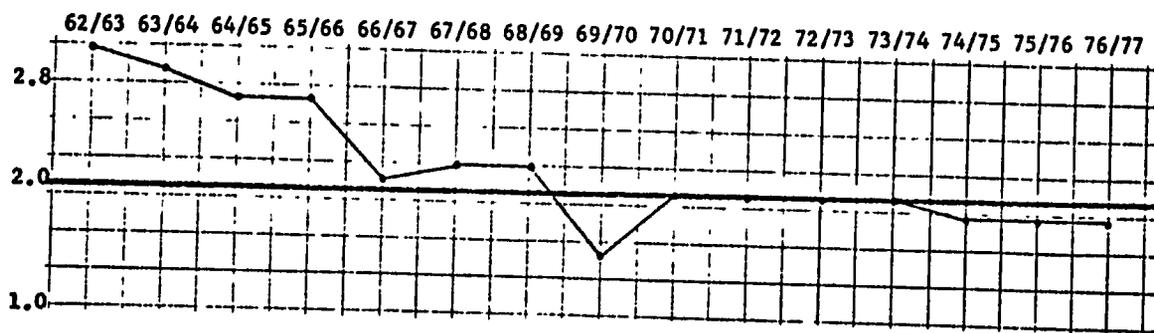
Diagram 14

Comparaison des Prix au Producteur, sous forme de Rapport 1962/63-1976/77
Coton/Riz

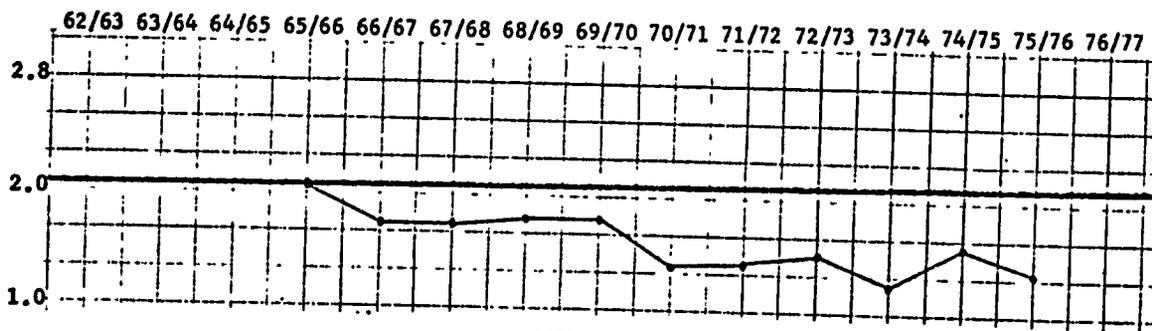
Ratios of Annual Official Producer Prices, 1962/63-1976/77
Cotton/Rice



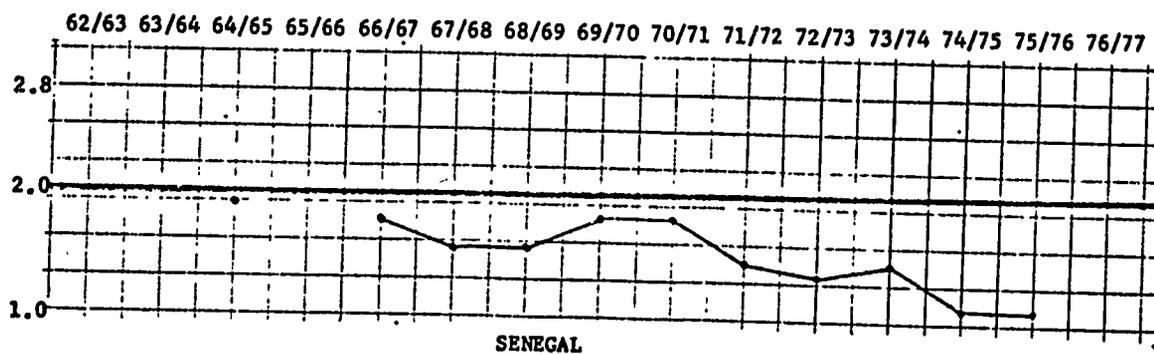
CHAD



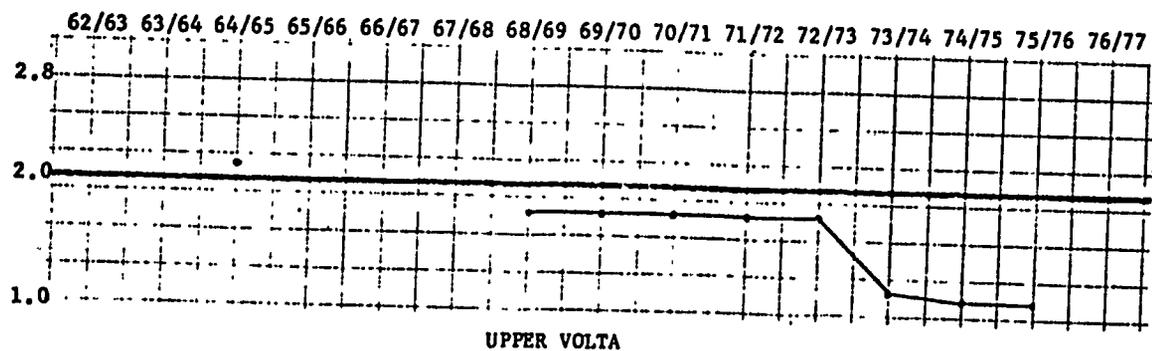
MALI



NIGER



SENEGAL

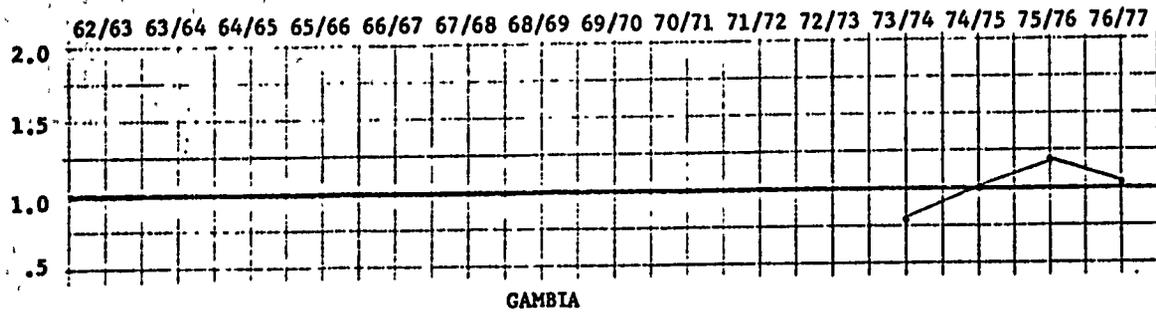


UPPER VOLTA

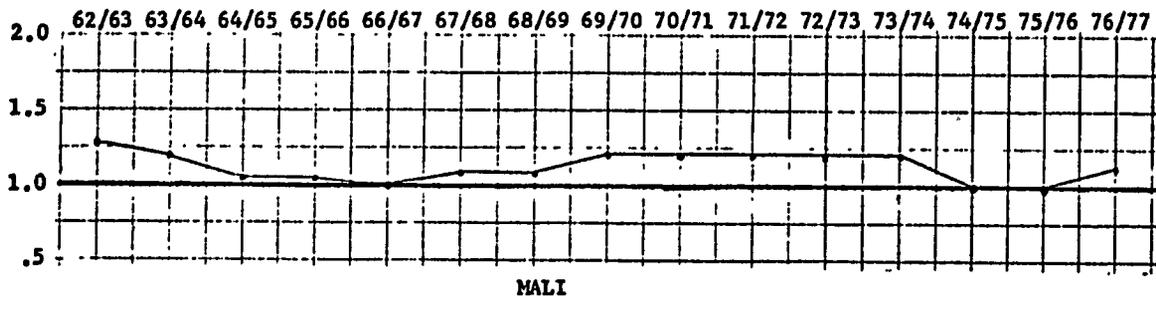
Diagram 15

Comparaison des Prix au Producteur, sous forme de Rapport 1962/63-1976/77,
Arachides/Riz

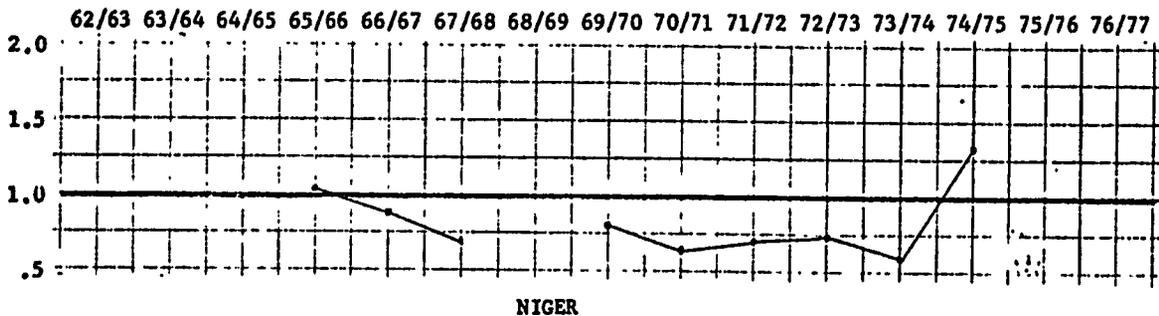
Ratios of Annual Official Producer Prices, 1962/63-1976/77
Groundnuts/Rice



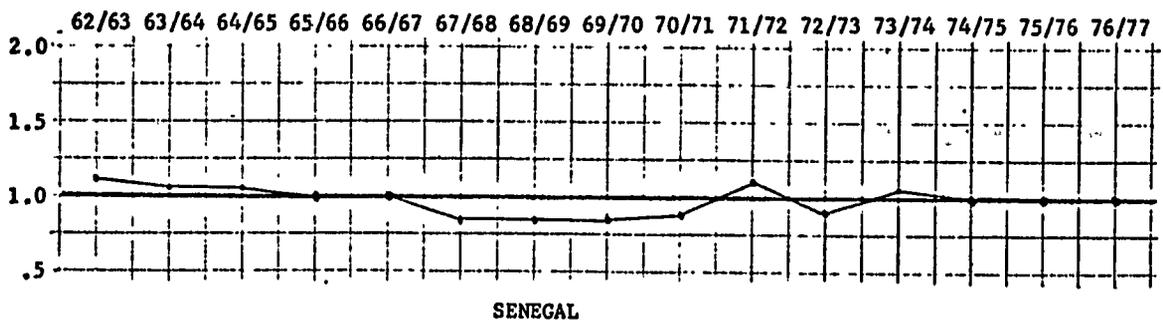
GAMBIA



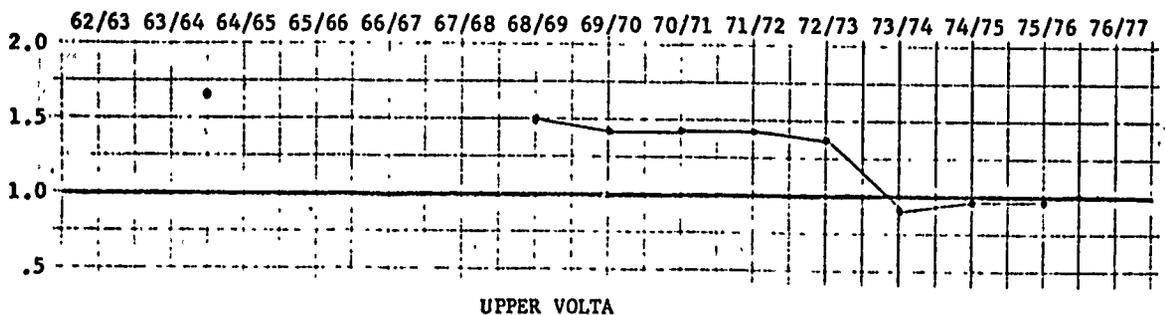
MALI



NIGER



SENEGAL

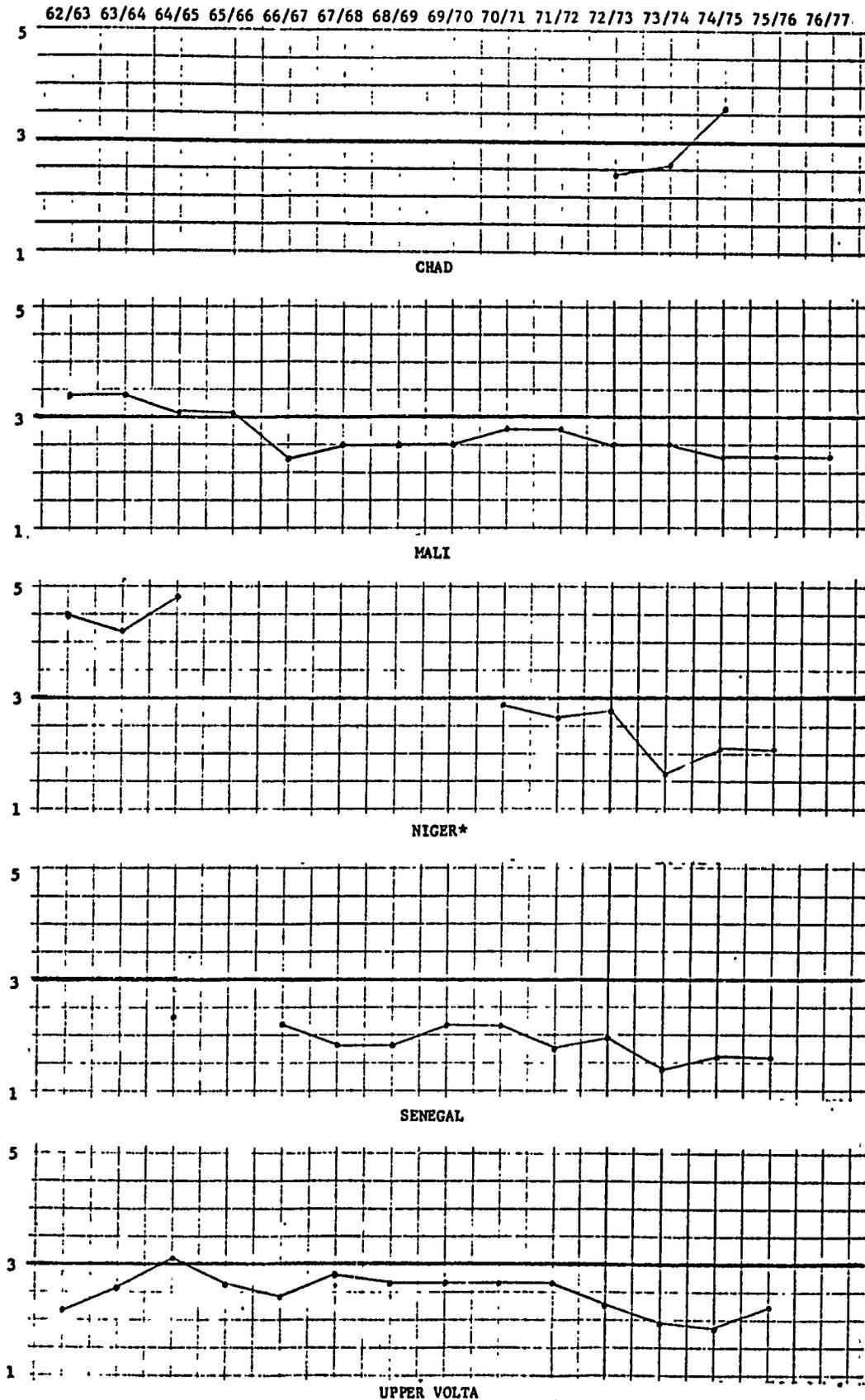


UPPER VOLTA

Diagram 16

Comparaison des Prix au Producteur, sous forme de Rapport 1962/63-1976/77
Coton/Mil-Sorgho

Ratios of Annual Official Producer Prices, 1962/63-1976/77
Cotton/Millet-Sorghum



* Au Niger, prix moyen du mil et du sorgho, In Niger, the average of millet and sorghum prices.

Table XIV. Profitability of Millet/Sorghum Production

	Chad ¹		Mali	Niger	Senegal				Weighted Average
	Traditional Method	Modern Method	Cultivation by Hand		In rotation with animal traction	Groundnut Basin (215,000 Farms)	River area (31,000 Farms)	Eastern Senegal & Casamance (104,500 Farms)	
Yield (kg/ha)	700 ³	1,000 ³	650 ³	343 ²	1,000 ³	384 ³	390 ³	779 ³	502.3
Producer price (CFA/kg)	12	12	16	25	16	30	30	30	30
Revenue (CFA/ha)	8,400	12,000	10,400	8,575	16,000	11,520	11,700	23,370	15,069
Monetary costs (CFA/ha)	-	600	635	-	3,848	841	75	300	612
Net return	8,400	11,400	9,765	8,575	12,152	10,679	11,625	23,070	14,457
Labor requirements (work days/ha)	62	67	65	55	50	72	78	75	
Return per work day (CFA Francs)	135.5	179.1	150.2	155.9	243.0	148.3	149.0	307.6	197.0

¹Southern (Soudanian) Zone only.

²Figure based on overall production and acreage estimates.

³Hypothetical estimate for production using some modern inputs.

SOURCES: See Country Studies except Senegal

Senegal: IBRD, Senegal Agricultural Sector Survey, Vol. II, 1975.

Table XV. Profitability of Groundnut Production

	<u>Mali</u>	<u>Niger</u>	<u>Senegal</u>			<u>Weighted Average</u>
	<u>In rotation with animal traction</u>		<u>Groundnut Basin (215,000 Farms)</u>	<u>River area (30,000 Farms)</u>	<u>Eastern Senegal & Casamance (104,500 Farms)</u>	
Yield (kg/ha)	1,300	448	628.5	200	854	657.5
Producer price (CFA/kg)	20	55	41.5	41.5	41.5	41.5
Revenue (CFA/ha)	26,000	24,640	26,083	8,300	35,441	27,287
Monetary Costs (CFA/ha)	11,167	negl. ¹	7,570	6,249	6,245	7,059
Net return	14,833	24,640	18,513	2,051	29,192	20,228
Labor requirements (Work days/ha)	70	60	72	86	85	77.1
Return per Work day (CFA Francs)	211.9	410.7	257.1	23.8	343.4	262.4

¹There are probably some monetary costs involved in the production of peanuts even when using traditional production methods. However, no usable figures were available. Officials confirmed these costs were very low. Nevertheless, the resulting return per work day in our calculations exaggerates the true returns.

SOURCE: See Volume II, Country Studies and I3RD, Senegal Agricultural Sector Survey, Vol. II, 1975.

Table XVI. Profitability of Cotton Production

	<u>Chad</u>		<u>Mali</u>	<u>Niger</u>	<u>Senegal</u>
	<u>Traditional Method</u>	<u>Improved Method</u>			
Yield (kg/ha)	350	900	1,000	483.7	1,268.75
Producer price (CFA/kg)	45	45	37.5	47	62.5
Revenue (CFA/ha)	15,750	40,500	37,500	22,734	79,297
Monetary costs	Negl.	6,100	22,038	Negl. ¹	22,458.5
Net Return (CFA/ha)	15,750	34,400	15,462	22,734	56,838.5
Labor requirements (work days/ha)	100	150	113	100	112
Net return per Work day (CFA Francs)	157.5	229.3	136.83	227.3	507.5

¹There is no data available on monetary production costs. Based on the assumption that cotton production in Niger is essentially comparable to traditional production in Chad, the monetary costs were taken to be negligible.

Table XVII. Returns in CFA/Work day for Various Crops in the CILSS Countries

	<u>Millet and Sorghum</u>		<u>Cotton</u>		<u>Groundnuts</u>
	<u>Traditional Method</u>	<u>Modern Method</u>	<u>Traditional Method</u>	<u>Modern Method</u>	
Chad	136	179	158	229	-
Mali	150	243	0	136.83	212
Niger	156	-	227	-	411
Senegal:					
-Groundnut basin	148	-	-	-	257
-River area	149	-	-	-	24
-Eastern Senegal & Casamance	308	-	-	508	343
-Total Senegal (Weighted average)	197	-	-	508	262

is distinctly less remunerative than export crop production. This, at least, is true using official 1975/76 prices for all the crops. In fact, there are also different degrees of uncertainty attached to the two groups of commodities. Farmers know they will get the official price for cotton and groundnuts - or something close to it. They do not know anything of the kind for foodgrains. This difference should make growing cash crops even more attractive than their relative rates of return suggest.

The only case in which millet/sorghum appears more profitable than groundnuts or cotton is in Mali, if "modern" methods of millet production are used. The calculation depends, however, on an assumed yield of 1000 kg/ha, which is very high.

c. Agricultural Terms of Trade

Cereals prices can be "too low" in the sense of providing the Sahelian peasant with too low a reward for the risk, investment and effort demanded if he is to increase his total production and sales. The distinction between this and the previous point is obvious. If the price of millet rises relative to cotton or groundnuts, there will tend to be some shift of land and labor out of groundnut and/or cotton production, into millet. Millet production will rise, but groundnut and/or cotton production will fall. For total output to be responsive to a grain price increase, the grain production increase must not be offset by a proportional decline of other agricultural outputs.

What are involved here are the overall terms of trade for agriculture. The question is whether a change in the real return to resources devoted to agriculture leads to a corresponding change in the quantity or quality of those resources - bringing new land into

cultivation, cultivating existing acreage more intensively by more careful farming practices, introduction of more capital - intensive water control techniques, more intensive use of off-farm inputs, etc.

From the empirical point of view, what is useful to know is, first, what has happened to the prices of the consumer goods farmers buy. If real returns obtainable from resources used in agriculture have declined, this is a disincentive to the expansion of effort and output. Similarly, if the real costs of off-farm production inputs have increased, this will also have disincentive effects on the adoption of new technological packages.

Data to make these comparisons are sketchy. A number of possible indicators are assembled in Tables XVIII through XXIV. These data are too numerous to allow quick or easy summary here; readers interested in individual country series, or particular comparisons between countries, may use them for such purposes. We can only address the general question here: do these data show any strong trends in agricultural terms of trade?

One such trend does, indeed, seem to be present. The official producer prices and the producer revenue series built on those prices all seem to show sluggish movement compared with indicators of consumer prices, until 1974. It is hard to avoid the conclusion that the agricultural terms of trade (output prices and farmer revenues compared to consumer goods prices) moved substantially against agriculture from the early 1960s until 1974.

After 1974, there is a sharp reversal, which is particularly clear in the tables for Mali, Senegal and Upper Volta.

With respect to prices of agricultural inputs, no clear trend emerges. Some countries (e.g. Upper Volta and Senegal) continue to

Table XVIII.
SMIG¹, Other Wage Rates, Producer Prices, Producer Earnings
SMIG¹, Niveau d'autres Revenus, Prix au Producteur, Revenu au Producteur

CHAD/TCHAD	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
Legal minimum wage, urban areas SMIG, régions urbaines	22	22	22	22	22	22	22	22	22	22	26	30	30	30			
Index/Indice 1972=100	(73)	(73)	(73)	(73)	(73)	(73)	(73)	(73)	(73)	(73)	(87)	(100)	(100)	(100)			
Producer Prices Prix au Producteur																	
-Millet and Sorghum Mil et Sorgho													12	12	12	12	12
Index/Indice 1972=100													(100)	(100)	(100)	(100)	(100)
-Rice/Riz													14	18	20	26	25
Index/Indice 1972=100													(100)	(129)	(143)	(186)	(179)
-Cotton/Coton							26	26	26	26	26	28	29	31	43		
Index/Indice 1972=100							(90)	(90)	(90)	(90)	(90)	(97)	(100)	(107)	(148)		
Producer Earnings (Cotton) 100's CFA Revenu au Producteur (Coton) en milliers de CFA								2652	3869	3042	2470	3046	3022	3550	5203		
Index/Indice 1972=100								(88)	(128)	(101)	(82)	(101)	(100)	(117)	(172)		
European Consumer Price Index (1972=100) Indice des Prix à la Consommation européens (1972=100)					66.9				81.3	83.3	91.7	97.2	100	105.4	117.1		
Footnotes following Table XXIV. Notes se rapportant au Tableau XXIV.																	

Table XIX.

SMIG¹ Other Wage Rates, Producer Prices, Producer Earnings
 SMIG; Niveau d'autres Revenus, Prix au Producteur, Revenu au Producteur

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
GAMBIA/LA GAMBIE																	
Producer Prices/Prix au Producteur																	
-Millet and Sorghum/Mil et Sorgho															20	22	29
-Rice/Riz														29	31	31	40
Index/Indice 1973=100														(100)	(107)	(107)	(138)
-Groundnuts/Arachides	12	13.5	13.5	13.5	13.5	14	14	13.5	14	15	17	18	20	23	31	37	41
Index/Indice 1973=100	(52)	(59)	(59)	(59)	(59)	(61)	(61)	(59)	(61)	(65)	(74)	(78)	(87)	(100)	(135)	(161)	(178)
Producer Earnings/Groundnuts																	
1000's Dalasis																	
Revenu au Producteur/Arachides	900	1148	1013	986	1229	1652	1764	1580	1680	1665	1921	2214	2000	3105			
en milliers de Dalasis																	
Index/Indice 1973=100	(29)	(37)	(33)	(32)	(40)	(53)	(57)	(51)	(54)	(54)	(62)	(71)	(64)	(100)			
Retail Price Index, (Banjul-1973=100)																	
Indice des Prix au Détail, (Banjul-1973=100)																	
-General Index/Indice général							77	77	81	85	83	86	93	100	109		
-Food/Alimentation							79	79	81	98	83	86	95	100	113		
-Rent, Fuel, Light/ Loyer, Gas, Electricité							71	73	77	76	80	82	91	100	107		
-Clothing/Habillement							86	90	92	94	97	97	100	100	99		
-Household Goods/Biens domestiques							64	68	75	76	78	81	86	100	106		
-Miscellaneous/Divers							82	84	93	95	92	95	102	100	105		
Farm Input Prices/Prix d'Intrants agricoles																	
Fertilizer ¹¹ /Engrais ¹¹																	
-Cereals Bag (50 lbs)/Sac de Céréales														5.5	5.5	6.7	
(50 livres)																	
Index/Indice 1973=100														(100)	(100)	(122)	
-Groundnut Bag (112 lbs)/ Sac d'Arachides														4.5	4.5	5.3	
(112 livres)														(100)	(100)	(118)	
Index/Indice 1973=100														(100)	(100)	(118)	
Footnotes following Table XXIV. Notes se rapportant au Tableau XXIV.																	

Table XXI. SMIG¹, Other Wage Rates, Producer Prices, Producer Earnings
 Tableau XXI. SMIG¹, Niveau d'autres Revenus, Prix au Producteur, Revenu au Producteur

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
MAURITANIA/MAURITANIE																	
Legal Minimum Wage, Urban Areas SMIG, Régions urbaines Index/Index 1972=100				7.04 (87)	7.04 (87)	7.04 (87)	7.04 (87)	7.04 (87)	7.04 (87)	8.1 (100)	8.1 (100)	8.1 (100)	8.1 (100)	8.1 (100)	9.52 (118)	17.8 (220)	
Retail Prices of a Basket of Mauritanian Consumer Goods/Prix de détail d'un panier de biens de consommation mauritaniens (Nouakchott) -1973=100														100	131	155	
European Family (Nouakchott) Famille européenne (Nouakchott)																	
Consumer Price Index (1973=100) Indice des Prix au Consommateur (1972=100)																	
General (excludes rent) Général (excepté le loyer)							72			80	85	92	100	111	118 ¹⁹		
Food/Alimentation							76			79	84	92	100	107	127 ¹⁹		
Retail Prices Selected Consumer Goods ¹⁸ Prix de détail de certains biens de Consommation ¹⁸																	
-Sugar (corners, 2 kg)/Sucre (2 kg)														48	52	153	
-Kerosene (1 liter)/Kérosène (1 litre)														7	11	10	
-Cigarettes (Melia)														10	20	25	
-Peanut oil (1 liter)/Huile d'arachide (1 litre)														130	150	175	
-Tea/Thé														25	30	40	
*Footnotes following Table XXIV Notes se rapportant au Tableau XXIV																	

Table XXII. SMIC, Other Wage Rates, Producer Prices, Producer Earnings
 Tableau XXII. SMIC, Niveau d'autres Revenus, Prix au Producteur, Revenu au Producteur

SMIC	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
Legal Minimum Wage, Urban Areas SMIC, Régions urbaines Index/Indexe 1971=100	27 (90)	27 (90)	27 (90)	27 (90)	27 (90)	27 (90)	27 (90)	27 (90)	27 (90)	27.75 ¹⁰ (93)	30 (100)	30 (100)	30 (100)	30 (100)	42 (140)	48 (160)	
Monthly starting rates, Civil Service ⁶ Salaires mensuels de base dans la fonction publique ⁶																	
Junior Clerical (Elementary School Grad.; Category D ₂) Employé Catégorie D : Niveau certificat d'études Index/Indexe 1971=100	17,416 (100)	17,416 (100)	17,416 (100)	17,416 (100)	17,416 (100)	17,416 (100)	17,416 (100)	17,416 (100)	17,416 (100)	17,416 (100)	17,416 (100)	17,416 (100)	17,416 (100)	17,416 (100)	17,416 (100)	20,299 (117)	
Middle Level Clerical/Technical (Category B) Catégorie B : Niveau 2 ^{ème} Bac, Employé technicien Index/Indexe 1971=100	38,317 (100)	38,317 (100)	38,317 (100)	38,317 (100)	38,317 (100)	38,317 (100)	38,317 (100)	38,317 (100)	38,317 (100)	38,317 (100)	38,317 (100)	38,317 (100)	38,317 (100)	38,317 (100)	38,317 (100)	42,849 (112)	
University Grad (Licence; Category A ₂) Catégorie A ₂ : Niveau universitaire licencié Index/Indexe 1971=100	52,250 (100)	52,250 (100)	52,250 (100)	52,250 (100)	52,250 (100)	52,250 (100)	52,250 (100)	52,250 (100)	52,250 (100)	52,250 (100)	52,250 (100)	52,250 (100)	52,250 (100)	52,250 (100)	52,250 (100)	54,475 (104)	
Producer Prices/Prix au Producteur:																	
-Millet/Mil -Index/Indexe 1971=100		7.1 (57)	6.3 (50)	6.3 (66)	7.2 (58)						10 (80)	12.5 (100)	12.5 (100)	25 (200)	25 (200)	25 (200)	25 (200)
-Sorghum/Sorgho Index/Indexe 1971=100		7.2 (72)	7 (70)	7.2 (72)	6.2 (62)							10 (100)	10 (100)	20 (200)	20 (200)	20 (200)	20 (200)
-Rice/Riz Index/Indexe 1971=100						15 (70)	17 (79)	17 (79)	16.5 (77)	16.5 (77)	21.5 (100)	21.5 (100)	21.5 (100)	30 (140)	30 (140)	35 (163)	35 (163)
-Groundnuts, unshelled/Arachides, coques Index/Indexe 1971=100		15.2 (101)	14.3 (93)	15.5		15 (103)	15 (100)	12 (80)		13 (87)	14 (93)	15 (100)	16 (107)	18 (120)	40 (267)		
-Cotton/Coton Index/Indexe 1971=100		30 (101)	32.6 (110)	32.6 (110)	30 (101)	28.5 (96)	28.5 (96)	28.5 (96)	28.6 (96)	28.4 (96)	28.9 (97)	29.7 (100)	31.9 (107)	37 (123)	47 (158)	47 (158)	
Producer Earnings (000's CFA) (Groundnuts and Cotton) Revenu au Producteur (Arachides et Coton) Index/Indexe 1971=100								6,843 (100)	6,071 (89)	6,823 (100)	5,749 (84)	6,843 (100)	5,440 (79)	1,437 (21)	10,867 (159)		
Consumer Price Indices, Wisney (1971=100) Indices de Prix au Consommateur, Wisney (1971=100)																	
-African/Africain						77 ²⁰					96	100	110	123	127	144	
-European/Européen							81 ²⁰	89 ²⁰	91 ²⁰	92	96	100	103	106	112	125	

*Footnotes following Table XXIV
 Notes se rapportant au Tableau XXIV

Table XXIII, SMIC¹, Other Wage Rates, Producer Prices, Producer Earnings
 Tableau XXIII, SMIC¹, Niveau d'autres Revenus, Prix au Producteur, Revenu au Producteur

SENEGAL/SENEGAL	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
Legal Minimum Wage, Urban Areas SMIC, Régions urbaines Index/Index 1964=100					44 (100)	44 (100)	44 (100)	44 (100)	47.30 (108)	50.60 (115)	50.60 (115)	50.60 (115)	50.60 (115)	53.76 (122)	72.97 (166)	107.06 (243)	
Minimum Hourly Rate, Middle Level Clerical Worker, Private Sector ⁷ Taux horaire minimum, Cadre moyen des Secteur privé ⁷ Index/Index 1964=100					238.87 (100)	238.87 (100)	238.87 (100)	238.97 (100)	239.28 (100)	239.70 (100)	229.70 (100)	239.70 (100)	239.70 (100)	239.70 (100)	280.47 (117)	322.52 (135)	
Civil Service monthly entry rates ⁸ Salaires Mensuels de base dans la fonction publique ⁸																	
-Clerical Worker (Primary School Grad., Category D) Catégorie A : Niveau certificat d'études - employés Index/Index 1964=100					18,090 (100)	18,542 (102)	22,833 (126)	30,935 (171)									
-Middle Level Clerical/Technical (High School Grad., 2ème bac Category B4) Catégorie B4 Niveau 2ème bac, employés-techniciens Index/Index 1964=100					37,239 (100)	41,684 (112)	50,745 (136)										
-University Grad. (Licence, Category A3) Catégorie A3 : Niveau universitaire licencié Index/Index 1964=100					64,598 (100)	70,433 (109)	78,324 (121)										
Producer Prices/Prix au Producteur																	
-Millet and Sorghum/Mil et Sorgho Index 1964=100	15 (94)	15 (94)	16 (100)	16 (100)	16 (100)	16 (100)	17 (106)	17 (106)	17 (106)	17 (106)	18 (113)	18 (113)	18 (113)	26 (163)	30 (188)	30 (188)	35 (219)
-Rice/Riz Index/Index 1964=100	18 (90)	18 (90)	19 (95)	20 (100)	20 (100)	21 (105)	25 (125)	25 (125)	42 (210)	42 (210)	42 (210)						
-Groundnuts/Arachides Index/Index 1964=100	21 (100)	21 (100)	21 (100)	21 (100)	21 (100)	21 (100)	21 (100)	18 (86)	18 (86)	18 (86)	19 (90)	23 (110)	23 (110)	26 (124)	42 (200)	42 (200)	42 (200)
-Cotton/Coton Index/Index 1964=100					38 (100)		37 (97)	33 (87)	33 (87)	38 (100)	38 (100)	31 (82)	34 (89)	37 (97)	47 (124)	47 (124)	
Producer Earnings (000's CFA)(Groundnuts) Revenu au Producteur (Arachides) Index/Index 1964=100	16,989 (96)	18,312 (104)	15,729 (89)	16,422 (93)	17,619 (100)	20,853 (118)	16,401 (93)	15,012 (85)	14,058 (80)	11,214 (64)	8,493 (48)	17,181 (98)	10,718 (61)	13,026 (74)	32,256 (183)	49,392 (280)	33,600 (191)
Implicit Price Deflator 1964=100 Indice de correction des Prix 1964=100		81	85	96	100	131	115	101	103	115	145	149	166	184	182	190	
African Consumer Price Index, DAKAR Indice des Prix au Consommateur Africain, DAKAR																	
General Index/Index général					100												
Food Component/Composante Alimentation					100				105	107	112	115	123	138	161	185	
Farm Input Prices/Prix d'intrants agricoles									106	109	113	120	129	153	166		
Fertilizer ¹¹ /Engrais ¹¹											12	12	12	16	16	20	

⁸Footnotes following Table XXIV
 Notes se rapportant au Tableau XXIV

Table XXIV.

SMIG¹, Other Wage Rates, Producer Prices, Producer Earnings
 SMIG¹, Niveau d'autres Revenus, Prix au Producteur, Revenu au Producteur

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
UPPER VOLTA/HAUTE VOLTA																	
Legal Minimum Wage, Urban Areas (SMIG) SMIG, Régions urbaines Index/Indexe 1972=100					29 (93)	29 (93)	29 (93)	29 (93)	29 (93)	29.50 (94)	31 (99)	31 (99)	31.25 (100)	34 (109)	42 (134)	47 (150)	
Monthly Rates, Private Sector ⁹ (starting rates) Salaires mensuels de base, Secteur privé ⁹																	
-Junior Messenger; Watchman (FSL8) Garçon de Service; Portier (FSL8) Index/Indexe 1972=100													11000 (100)	11000 (100)	13000 (118)	21000 (191)	
-Middle Level Clerical/Technical Worker (FSL5) Employé 2ème Niveau/Technicien (FSL5) Index/Indexe 1972=100													24000 (100)	24000 (100)	26000 (108)	42000 (175)	
-Secretary/Translator, Accounting Assistant (FSL2) Secrétaire/Traducteur/Assistant Comptable (FSL2) Index/Indexe 1972=100													100000 (100)	100000 (100)	106000 (106)	130000 (130)	
Producer Prices/Prix au Producteur:																	
-Millet and Sorghum/Mil et Sorgho Index/Indexe 1972=100	12 (86)	12 (86)	15 (107)	13 (93)	11 (86)	13 (93)	14 (100)	12 (86)	12 (86)	12 (86)	12 (86)	12 (86)	14 (100)	18 (129)	22 (157)	18 (129)	21 (150)
-Rice/Riz Index/Indexe 1972=100					16 (89)				18 (100)	18 (100)	18 (100)	18 (100)	18 (100)	29 (161)	35 (194)	35 (194)	
-Groundnuts/Arachides Index/Indexe 1972=100					27 (108)	27 (108)	27 (108)	27 (108)	27 (108)	27 (108)	25 (100)	25 (100)	25 (100)	26 (104)	34 (136)	34 (136)	
-Cotton/Coton Index/Indexe 1972=100 000's CFA	34 (106)	33 (103)	33 (103)	33 (103)	34 (106)	34 (106)	34 (106)	34 (106)	32 (100)	32 (100)	32 (100)	32 (100)	32 (100)	35 (109)	40 (125)	40 (125)	
Producer Earnings (Groundnuts and Cotton) Revenu au Producteur (Arachides et Coton) Index/Indexe 1972=100					434 (26)	468 (28)	515 (31)	841 (50)	1294 (77)	1476 (88)	1193 (71)	1271 (76)	1681 (100)	1699 (101)	2362 (141)	2362 (141)	
Consumer Price Index, Single, Unskilled African Laborer in Ouagadougou (1972=100) Indice des Prix à la Consommation, pour Célibataire non qualifié, Ouvrier africain à Ouagadougou (1972=100)																	
General Index/Indexe général	72	85	87	92	94	93	95	92	91	98	101	103	100	108	117		
Food Stuffs/Alimentation	74	84	85	87	82	80	86	80	75	91	96	100	100	122	140		
Clothing/Habillement	58	88	98	65	113	112	108	109	111	112	116	116	100	94	96		
Taxes/Impôts	45	45	45	45	85	85	85	100	100	100	100	100	100	100	100		
Furniture/Mobilier	69	88	85	90	86	86	92	90	90	88	86	86	100	103	107		
Consumer Price Index, European Family in Ouagadougou (1972=100) Indice de Prix à la Consommation, Famille Européenne à Ouagadougou (1972=100)																	
General Index/Indexe général					81	83	89	91	92	96	98	98	100	101	111		
Farm Input Prices/Prix d'Intrants agricoles:																	
Fertilizer/Engrais Index/Indexe (1972=100)							27 (77)	36.8 (105)	30.6 (87)	29.7 (85)	29.5 (84)	35 (100)	35 ¹¹ (100)	35 ¹¹ (100)	35 ¹¹ (100)	35 ¹¹ (100)	
Insecticides Index/Indexe (1972=100)							375 (94)	352 (88)	337 (84)	346 (87)	392 (98)	391 (95)	400 ¹¹ (100)	400 ¹¹ (100)	400 ¹¹ (100)		
Sprayer/Pulvérisateur Index/Indexe (1972=100)							10500 (140)	10500 (140)	6500 (87)	7500 (100)	7500 (100)	7500 (100)	7500 (100)	8800 (117)	9000 (120)		

FOOTNOTES: Tables XVIII-XXIV

- 1 SMIG in per hour
- 2 All prices in CFA francs with the exception of Mali, Gambia and Mauritania which are in Malian francs, Butus, and Ougiyas respectively
- 3 Year 1960 refers to 1960/61 crop year, etc. where applicable
- 4 Number in parentheses is index
- 5 Includes 3,000 housing allowance; excludes family allowance of 2,000 per child per month (first 6)
- 6 Includes 10% residence allowance
- 7 As specified in collective wage agreements
- 8 "solde brute totale": includes pensions but excludes family allowances
- 9 from U.S. Embassy, local personnel
- 10 Annual Average; SMIG raised from 27 CFAF to 30 on Oct. 1, 1969
- 11 Subsidized price
- 12 Before 1972 the index was based on a basket of 125 products consumed by European household with monthly income greater than 100,000 CFAF. After 1972 the index is based on a basket of 120 products including 35 locally produced goods and 85 imported.
- 14 First two quarters only
- 15 Official prices
- 16 Market price
- 17 CRED index
- 18 January
- 19 January-June
- 20 Sept.

subsidize some inputs (such as fertilizer) up to the present, despite the sharp post-1972 rises in their landed cost. In Mali, there has been since 1974 a particularly sharp rise in prices paid by farmers for these inputs.

There are, then, some apparent differences from country to country on this question, with one dominant trend: a strong decline in the agricultural term of trade between the early 1960s and the mid-1970s, which was reversed by the price changes of 1974/75. All of this, it should be stressed, rests on analysis of official prices, not actuals. As far as foodgrains are concerned, actual prices received by farmers undoubtedly differed from official prices. The magnitude of these departures, and in some cases even the direction, is, however, very sparsely documented.

d. Cereals Prices and Urban Wage Rates

It is sometimes argued that foodgrain prices are too low in an "equity" or income distribution sense. Other groups, particularly urban wage earners, are said to have benefited more from economic growth than have the rural masses.

Analytically, the use of foodgrains price policy as an instrument of incomes policy presents serious inconveniences. Price changes tend to induce production responses. It is, moreover, not clear who benefits from higher producer grain prices; it may be that bigger, hence richer, farmers provide disproportionate shares of marketed output and would thus benefit disproportionately.¹ It may also be the

¹ Evidence is slight and mixed. See below, chapter on Price Policy.

case, as is widely asserted, that traders benefit disproportionately. This would obviously run counter to the equity objective. Finally, an effective higher producer price will call forth more production of foodgrains, which can be sold to consumers only at a reduced price (probably a sharply reduced price, because demand elasticities are very low), stored, or exported. The equity effects of the higher producer price will then depend on who consumes the cereals and who pays the costs of the price support operation, as well as on the income distribution of sellers of grain. If, for example, grain price supports are financed by lower prices paid to growers of groundnuts and cotton, it may be that the equity effects will be neutral, though the production effects will clearly be to shift resources out of export crops into foodgrains.

Empirically, in any event, the available evidence does not show an urban wage earner advantage over sellers of foodgrains. The urban legal minimum wage, which is a representative wage, is shown in Tables XVII through XXIV, with some other wage rates. Comparison of these rates with official producer prices and estimated farmer revenues does not indicate a tendency for wage earners to have done better than farmers in recent years.

In Mali, the figures are sharply in favor of farmers. In Niger, Senegal and Upper Volta, there are no clear or consistent tendencies. All this, once again, rests on the highly uncertain measuring rod of official prices.

e. Comparative Prices

There is another criterion by which the "adequacy" of price levels can be judged: comparison with prices in neighboring countries. This

is shown in the form of ratios of Malian prices to other countries' prices, in Table XXV. Mali was chosen as the illustrative base because its producer prices have recently been so much lower than its neighbor's prices, as is indeed shown strikingly in the table. The ratios for recent years, as well as the overall trend, give some indication that Mali's prices may, in fact, be "too low."

6. Price Fluctuations

It is widely asserted that grain price fluctuations in the Sahel are "excessive." Sharp swings in prices from year to year increase farmer uncertainties. Reduction of these uncertainties via government guarantee of a stable inter-annual price is frequently said to be necessary to induce greater grain production for the market. The following statement is typical. It comes from a planning committee document on cereals policy.¹

...to encourage the peasant to make plans -- at least one year in advance -- to expand his acreage in foodgrains or to raise his yields, he must be able to count on receiving a minimum price, on being able to sell all his disposable surplus at that price, and on receiving this minimum price for several years ahead so as to be able to liberate himself from the demands of trader/moneylenders...

Intra-annual (seasonal) price fluctuations are believed to have wider impact. They affect consumers as well as producers and can be particularly damaging for smaller farmers and lower income groups generally. Poorer farmers, it is argued, must sell grain at harvest time, when prices are lowest, and buy grain later in the year, at

¹Republique de Haute Volta, Commission du Plan, Sous-Commission de la Production Vegetale, Definition d'Une Politique Céréalière (Ougadougou, 1976) mimeo. For a general statement along these lines, see J. C. Abbott, "The Role of Marketing in the Development of Backward Agricultural Economies," Marketing and Economic Development, edited by C. J. Miller. University of Nebraska Press, 1967, esp. pp. 4-10.

TABLE XXV

Inter-Country Ratios of the Producer Price of Millet and Sorghum, Rice, Groundnuts and Cotton
in Mali and Other Countries

Comparaison des Prix au Producteur du Mil et Sorgho, Riz, Arachides et Coton
entre Mali et Autres Pays, sous Forme de Rapport

	1960 ^a	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
MILLET-SORGHUM																	
MIL-SORGHO																	
Mali/Niger ^b		1.40	1.50	1.29	1.64						.90	.80	.89	.44	.71	.71	.71
Mali/Senegal	.67	.67	.63	.63	.69	.69	.88	.46	.46	.51	.51	.51	.57	.38	.53	.53	.46
Mali/Tchad													.83	.83	1.33	1.33	1.33
Mali/Haute Volta	.83	.83	.67	.77	1.00	.85	1.07	.67	.67	.75	.75	.75	.71	.56	.73	.89	.76
RICE-RIZ																	
Mali/Niger						.84	.94	.53	.55	.76	.58	.58	.58	.42	.67	.57	.57
Mali/Senegal	.78	.44	.58	.58	.63	.63	.76	.43	.43	.60	.60	.60	.50	.50	.48	.48	.48
Mali/Tchad													.89	.69	1.00	.77	.8
Mali/Haute Volta					.79				.50	.7	.7	.7	.7	.44	.57	.57	
GROUNDNUT-ARACHIDES																	
Mali/Niger		.92	.98			.84	1.07	1.00		1.15	1.07	1.00	.94	.83	.50		
Mali/Senegal	.67	.67	.67	.67	.62	.62	.76	.67	.67	.83	.79	.65	.65	.58	.48	.48	.54
Mali/Haute Volta					.49	.49	.6	.45	.45	.58	.58	.58	.61	.57	.59	.59	
COTTON-COTON																	
Mali/Niger			1.13	1.04	1.04	1.13	1.19	.70	.70	.79	.87	.84	.78	.68	.80	.80	
Mali/Senegal					.89		.92	.61	.61	.59	.66	.81	.74	.68	.80	.80	
Mali/Tchad							1.31	.77	.77	.87	.96	.89	.86	.81	.87		
Mali/Haute Volta	1.00	1.03	1.03	1.03	1.00	1.00	1.00	.59	.63	.70	.78	.78	.78	.71	.94	.94	

^aThe year 1960 refers to the crop year 1960/61 - and similarly for each year. L'année 1960 concerne la saison agricole 1960/61 et de même pour chaque année.

^bIn Niger, the average of millet and sorghum prices. Au Niger, prix moyen du mil et du sorgho.

NOTE: After 1966/67, the exchange rate of 1 CFA = 2 Malian Francs was applied. Le taux de change 1 CFA = 2 Francs Maliens a été appliqué après 1966-67

times of peak prices. Traders make large "speculative" profits.

The following citation gives the flavor of the argument:¹

...Marketing of the subsistence crops was left to petty traders who profited from extreme seasonal fluctuations in prices. Each year during the several months prior to the single annual harvest, known as the period of "sou-dure," food supplies are scarce if not exhausted. Prices of cereals in the local markets, if cereals can be found at all during this time, soar. It is not uncommon for foodgrain prices to range from 8 CFA/kg. at harvest time to 40 CFA or more in the months immediately preceding harvest.

In one of the studies preceding the West African Grain Stabilization Project, it is asserted: "Differences of 800% to 1,000% are not unknown; 300 to 400% price differences are rather common..."²

It is difficult to assess this argument. The data on actual prices are sparse, uncertain, mostly indirect. As has been so frequently pointed out, there are very few farm-or village-level studies which could offer systematic qualitative insights. Moreover, it is not obvious what the proper yardstick is. Inter-annual fluctuations in price would be expected to be large in Sahelian conditions: rainfall variations are large, and hence the size of harvests and marketed supply are highly variable. Thus, "normal" inter-annual variation would be greater in the Sahel than in ecologically more even environments.

Similarly, there are reasons to expect seasonal or intra-annual price variations to be relatively wide. Markets may be poorly

¹Frank Ellis, Report on the West Africa Grain Stabilization Project, USAID, mimeo, May 1972.

²Weitz-Hettelsater Engineers, A Grain Stabilization Study of the Entente States and Ghana, Entente Council Fund, March 1969, p. 149.

integrated because of large distances, restricted transport availabilities, deficiencies in information flow and institutional obstacles to free movement of grain. The volume of off-farm storage capacity is small. Capital costs are high.

When officials and others say that seasonal price fluctuations are "excessive," they usually have two meanings in mind: that prices vary over the year by more than the costs of storage; and that these fluctuations are related to "speculation" — that "speculators" either cause prices to move so strongly over the year, or that trader/speculators enjoy windfall profits as a result of the price changes.

To assess these possibilities, we have brought together the available data on actual retail grain prices and have analyzed their variations. The purpose is, first, to determine the intensity of price variations and, second, to try to determine whether these variations are such as to indicate the existence of opportunity for excess profits.

Table XXVI gives an overview of the data for the six capital cities for which monthly millet price series are available. It shows two conventional measures of price variability. One is the "coefficient of variation," which is the standard deviation divided by the mean of the series. It shows by how much (%) prices on the average diverge from the annual average price. For example, a value of .18 means that, on the average, monthly prices are within 18% of the year's average price.

More dramatic, but also more sensitive to inaccuracies in the data and therefore less reliable, ¹ is the ratio of a year's maximum price to

1

This measure is "inefficient" in econometric terms because it does not utilize all the data provided by the price series. Furthermore, if one of the extreme values, minimum or maximum, should be incorrect, the maximum-minimum measure will not reflect the price increase correctly. In the coefficient of variation, such inaccuracies tend to cancel each other out.

Table XXVI. Measures of Seasonal Price Variations in Cities

	Year	Min.	Max.	Mean	Std. Dev.	Std. Dev. Mean (Coefficient of Variation)	Max. Min.
Banako	69	15	33	22.33	4.71	.21	2.20
	70	24.5	35	27.71	2.81	.10	1.43
	71	28	45.5	35.58	5.12	.14	1.63
	72	39.5	74.5	51.54	14.34	.28	1.89
	73	37	44.5	41.58	3.04	.07	1.20
	74	34	38.8	36.31	1.63	.05	1.14
	Averages						.14
Banjul	74 ¹	28	30	29.00	1.10	.04	1.07
	75 ²	26	41	31.92	4.56	.14	1.58
	76 ²	50	58	55.4	2.68	.05	1.16
Averages						.08	1.27
Dakar	72	33	55	39.83	7.27	.19	1.67
	73	50	133	72.42	30.15	.42	2.66
	74	35	40	37.00	2.34	.06	1.14
Averages						.22	1.82
Ouagadougou	62	18	33	26.75	3.60	.13	1.83
	63	20	34	25.50	4.06	.16	1.70
	64	19	30	24.75	3.04	.12	1.58
	65	19	29	22.92	3.29	.14	1.53
	66	19	31	26.08	3.50	.13	1.63
	67	22	32	27.13	3.22	.12	1.46
	68	16	28	20.33	3.98	.20	1.75
	69	18	36.5	28.13	5.28	.19	1.96
	70	26	39	32.00	3.52	.11	1.50
	71	3	49	39.92	6.52	.16	1.63
	72	27	58	40.75	8.02	.20	2.15
	73	34	76	59.92	12.96	.22	2.24
	74	36	79	57.75	12.64	.22	2.19
	75	25	57	44.42	11.87	.27	2.28
76	36	70	51.00	10.30	.20	1.94	
Averages						.17	1.82
Niamey	61	13	31	20.50	5.35	.26	2.39
	62	15	25	18.98	2.80	.15	1.67
	63	13	23	16.50	2.94	.18	1.77
	64	14	19	15.55	1.38	.09	1.36
	65	14	22	16.71	2.38	.14	1.57
	66	17	54	33.08	10.85	.33	3.18
	67	15	23	21.08	2.57	.12	1.53
	68 ¹	14	17	15.50	1.05	.07	1.21
	71	20	35	27.75	3.79	.14	1.75
	73	39	61	51.17	7.35	.14	1.56
	74	31	51	39.67	6.11	.15	1.65
	75 ²	30	46	38.08	4.80	.13	1.53
	76 ²	39	63	53.56	8.05	.15	1.62
Averages						.16	1.75
N'djamena	67	16	51	36.50	11.97	.33	3.19
	68	12	17	14.33	1.56	.11	1.42
	69	21	49	34.71	7.75	.22	2.33
	70	20	71	33.67	14.20	.42	3.55
	74	25	69	51.17	15.95	.31	2.76
	75	23.16	36	28.46	4.55	.16	1.55
	76	22.16	50	33.39	9.68	.29	2.26
Averages						.26	2.44
Overall Averages						.17	1.83

¹Incomplete data series, first nine months of the year only.

²Incomplete data series, first eight months of the year only.

For sources of basic price data, see individual country reports.

its minimum price. Reducing this ratio by one gives the percentage increase of the maximum price over minimum price. A number such as 1.58, therefore, means that the year's maximum price is 58% higher than its minimum price.²

The data indicate that, in the majority of cases, prices on the average diverged by less than 20% from the annual average price. The average for all the observations stands at 17%. While this still suggests rather large fluctuations of prices, it can hardly be termed extraordinarily high.

The highest price within one year is, on the average for the six cities, 83% higher than the minimum price. N'djamena's prices varied most (average: 2.44, maximum:minimum price over the years 1974-1976). Prices in Banjul were seasonally the most stable -- maximum:minimum price 1.27. Seasonal price variability seems about the same in Dakar, Ouagadougou, Bamako and Niamey -- maximum:minimum ratio from 1.58 to 1.82. These are substantial seasonal price changes. However, they are far from the tripling and quadrupling of prices which many observers claim to be the usual occurrence. In less than 28% of all the cases listed did prices more than double, despite the fact that a large proportion of the observations fall in the drought years when one would expect unusually violent price variations.

These Sahel figures seem close to data from other countries. A study of maize marketing in Uganda found differences between

² It should be noted that this measure overstates the price increase between post-harvest and soudure prices. It is not always the case that the highest price is observed during the soudure months and that the lowest price is right after harvest. The size of this upward bias can best be seen by comparing the figures for N'djamena with the ones in Text Table XIII of the country study on Chad which comes from the same base data.

maximum and minimum of the monthly average prices, over the period 1961-1968, of 37% of the mean market price in Jinja and 39% of the mean for Kampala.¹ The figures for the only two Sahelian markets for which we have data for a comparable time period, are 45%² for Niamey and 17% for Ouagadougou. The results of other studies (i.e. Uma Lele,³ William O. Jones,⁴ R. W. Cummings⁵) cannot be directly compared because they use slightly different methods of estimating seasonal price differences. But their data do not indicate that the Sahel's seasonal grain price increases, as given in the official price statistics of the CILSS countries, are exceptionally high in comparison with other predominantly agricultural countries. It is only when one abandons average figures and looks at extreme cases alone, Niamey in 1966 or N'djamena in 1970, that seasonal price rises seem very large. But there are, of course, parallel cases of very slight seasonality, such as Bamako in 1974.

Price increases offer opportunities for speculative profits only if they can be foreseen by the speculators so that they know when to buy and sell. However, in the Sahel countries, seasonal price movements are very unpredictable. Not only do they vary greatly in size from year to year (see Table XXVII) but also in their time of occurrence. Post-harvest price increases are the rule, but can reach their lowest

¹Bernd Schubert, "Some Considerations for Evaluating Marketing Systems for Agricultural Products," Eastern Africa Journal of Rural Development, Vol. 6, Nos. 2 & 3 (1973).

²The figure for Niamey turns out that high only when we include the year 1961, for which the data are particularly shaky.

³U. Lele, Grain Marketing in India, Cornell University Press, 1973.

⁴W. O. Jones, op. cit.

⁵R. W. Cummings, "Effectiveness of Pricing in an Indian Wheat Market," American Journal of Agricultural Economics (Menasha, Wisc.), Vol. 50 (Aug. 1968).

point during any one of the four to six months following the harvest and their highest point any time from six months to one month before the next harvest. Even this very general rule has occasional exceptions.

In trying to assess the profitability of speculation, we cannot, therefore, use the differences between a year's minimum and maximum prices as an adequate measure of gross margins. We have to look at the price increase which takes place between post-harvest time and soudure, since we want to calculate the profits of traders buying after the harvest and selling during the soudure. The following table (Table XXVII) shows these increases for cities and years for which data are available.

These price increases are considerably less than the differences between a year's minimum and maximum prices. A weighted average figure would be only about 25 to 29%, depending on which form of calculation we use (see footnote 4, Table XXVII). Either way, the average increase is considerably less than the overall average price difference (maximum: minimum) of 80%.

Gross margins calculated by using such price differences are of limited meaning unless they can be seen in relation to prevailing storage costs. Very little is known about storage costs, particularly costs of trader storage, which would be most relevant here. Even the few estimates which exist for costs of modern sector storage vary enormously, according to type and location. As a rough guide -- very rough -- we can use estimates made in a recent Entente Fund Study which attempted to evaluate the costs of storing cereals in Niger.¹ Their figures show

¹ Entente Fund, Etude relative à la constitution d'un stock de réserve en céréales pour le Niger, 1975. For details see Niger Country Study.

Table XXVII. Millet Prices after Harvest (November) and at "Soudure" (August) in the Capital City Markets of the CILSS States

Crop Year	Bamako			Banjul			Dakar			Ouagadougou			Niamey			N'djamena		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
61/62																		
62/63																		
63/64									27	31	14.8%		17	21	23.5%			
64/65									22	26.5	20.5%		17	23	35.3%			
65/66									22	29	31.8%		14	19	35.7%			
66/67									23	28	21.7%		15	18	20.0%			
67/68									26	32	23.1%		17	54	217.6%			
68/69									31	18	-41.9%		20	23	15.0%			
69/70	21.5	26	20.9%						17	29	70.6%					20	17	-15.0%
70/71	21	27	28.6%						39	32	5.8%		15	43	86.7%			
71/72	29	36	24.1%						39	49	44.1%		30	31	3.3%			
72/73	38.5	74	92.2%				55	103	87.3%	40	34	-15.0%						
73/74	55	44.5	-19.1%				47	40	-14.9%	32	69	115.6%						
74/75	37	35.5	-4.0%	28	30	7.1%				56	61	8.9%	51	38	-25.5%			
75/76				36	58	61.1%				53	57	7.5%	31	40	29.0%	27.5	20	-5.5%
Averages	33.7	40.5	20.2%	32	44	37.5%	51	71.5	40.2%	33.6	39.5	17.6%	23.8	31.8	33.6%	23.2	34.2	47.5%
(4)			(23.8%)			(34.1%)			(36.2%)			(21.5%)			(45.2%)			25.5%
																		(23.4%)

(1) Price after harvest (November) in CFA/kg.

(2) Price at soudure (August) in CFA/kg.

(3) Price increase in % of harvest price; speculators gross margin.

(4) The average price increase will be different, depending on whether we average the annual price increases (= figure in parentheses) or whether we calculate the percentage increase of the average harvest to average soudure prices (= figure on first line). This is due to the fact that each year's price increase is calculated on a different base value, the November price of the particular year and the overall price increase on the basis of the average November price. Note that November and August are not the months during which the average prices are lowest (or highest respectively), but are the months during which prices most frequently reach their annual minimum (or maximum) values (mode of the sample distributions of maxima and minima).

that, in 1975, under Sahelian conditions, 5 CFA/kg is a reasonable approximation of storage costs (including losses and deterioration) for nine months storage from November to August. Five francs CFA/kg is a little less than 25% of recent average post-harvest prices. These estimates, therefore, suggest that a speculator who buys after the harvest (November) and sells during the soudure (August) on the average earns a relatively small net profit after his storage costs are deducted. The average "speculator's gross margin" is between 24% (Bamako) and 45% (Niamey). In some years (i.e. 1972-73), profits would be extremely high. In some years, they would have been negative (i.e. 1973-74).

When storage costs are taken into account or, more generally, the high rates of interest normally prevailing on traditional transactions, grain speculation hardly seems suitable for fortune-hunters. This is, indeed, in accord with casual observations indicating that private off-farm grain storage capacity is small (merchants not engaging much capital in stocks), and that the profits in the grain trade are insufficient to attract many traders into full-time specialization.

In sum, the seasonal price variations, as documented by the available price statistics from 1961-1976, can be characterized as follows:

- i) They are unpredictable, both in size and timing.
- ii) By any measure applied (% difference between maximum and minimum, coefficient of variation, increases from harvest to soudure), they are not as large as frequently claimed. The average price difference between annual maximum and minimum prices, a measure which overestimates the extent of price fluctuations, is about 83%. The average increase from harvest to soudure is only about 1/3 of this amount.

iii) If we use rough modern sector figures for storage costs, seasonal price variations appear to exceed storage costs by only about a few percentage points. There is, in these numbers, little evidence that there has been much opportunity during the past 15 years to reap large profits by speculating in cereals.

III. MARKETING REFORM: AN ASSESSMENT OF THE OPTIONS

Marketing policies and price policies obviously come together at many points, and both touch on storage policy issues. We will nonetheless address marketing and prices separately, to the extent possible. Storage policy issues will be considered in a later chapter.

In the organization of their marketing systems, Sahel Governments can choose from among three broad directions of policy: a retention, with improvements, of the existing arrangements; a stronger move toward fuller public sector control; a move toward lighter, more indirect forms of public control.

A. An Ameliorated Status Quo

In this option, governments would keep the basic marketing structures and policy orientations which now prevail. The state grain marketing agencies would be given additional financial assistance, more manpower, more and better storage. In those countries with dual grain marketing structures (Mali, Niger, Senegal, Upper Volta), the state and "traditional" or private sectors would continue to coexist. The state sector's market share would be increased--perhaps to the 25% of marketed output which is commonly said to be the share necessary if price stabilization efforts are to be successful. In these countries, the private traders' legal position would remain ambiguous, as at present. In Gambia, Mauritania and Chad, the private sector would, under this option, retain its legality and operate under the same regulations that now exist.

In both groups of countries, efforts would be made to address many of the problems outlined in the previous chapter: proper and timely

financing of crop purchase, better timing of announcements of price changes, maintenance of consumer prices at levels more closely related to costs and adjustment of norms in the barèmes to changes in real costs; introduction of more differentiated price structures, including quality differentials, etc.

The choice of this option would imply a benign view of the problems of present marketing arrangements in the four "dual structure" countries. Nothing fundamental is seen to be wrong. What is needed is more of the same, only better done. In fact, in the major expressions of this view, which is widespread in the Sahel, especially among officials concerned with cereals marketing, most of the problems and deficiencies outlined above exist mainly because the grain marketing agencies lack resources. Political price-setting and diversions required by the drought are also acknowledged to be relevant, but, with more resources, they could have met their major objectives and can do so in the future.

This option, strengthening and improving the present marketing arrangements without altering the basic structure of the system, has important advantages.

(a) It is politically and administratively appealing. Since it threatens few interests and allows continuity with existing institutions and policies, it lends itself to quick and easy implementation.

(b) At least some aid donors would probably be receptive to proposals for financial and technical assistance aimed at the improved functioning of the state grain authorities--for transport, for storage, and for grain price stabilization efforts.

(c) It should be possible to make significant improvements in the operations of the existing marketing institutions, bringing their performance more in line with the objectives of government. With more

money, trained people, trucks and warehouses, the grain agencies would probably operate more effectively. It may be possible to gradually do away with the stubborn problems which have typified the state grain marketing effort up to now.

These are formidable advantages. There are, however, certain fundamental problems with this "status quo" option.

(a) It rests on optimistic assumptions about the degree of intractability of public sector marketing deficiencies. It is not clear that more resources for the national grain authorities will allow them to overcome such problems as the delays in transfers of funds from the banking system for financing of the crop; the strong indeed probably inevitable pressure to favor low prices for consumers; the lack of price differentials for quality and for location; the inadequacies of grain stock management. All these changes demand - in addition to more money - administrative flexibility and trained manpower - both of which are very scarce.

(b) The "improved status quo" model presumably retains, in the states with dual marketing structure, an illegal private trading sector. This leads to reduced protection and services for peasants. Competition among buyers, stimulated by free entry into trade, is not legally encouraged or even allowed, but no stable and effective state-provided alternatives exist. One of the main justifications for public intervention in marketing is the presumed inequality of bargaining power of the peasant vis-a-vis the trader, but the "improved status quo" model does not balance the bargaining situation. A small share of output will still

be bought at the official price by the grain agencies. The bulk of primary marketing would still be in the hands of private traders. The outcome, in fact, worsens the economic position of the peasant. Given the risks and uncertainties of the legal situation, there are fewer traders than there would otherwise be, and the price demanded by traders for their services is probably higher than it would otherwise be. The practice in many states of licensing buying agents has the same effect; government creates local monopoly (monopsony) power for the merchants it licenses or authorizes.

From a longer-term and development point of view, the present arrangements do not encourage, perhaps do not even allow, the strengthening of private marketing skills. The ambiguity of the present arrangement discourages technical progress in trading practices and techniques, the growth of trading capital, and the emergence of more complex entrepreneurial skills.

(c) The private traders operate at lower unit costs than state trading agencies. Therefore, they have the capacity to pay higher prices to producers and charge lower prices to consumers as compared to the state trading bodies. The reasons are several.

-The private traders buy where and when producers offer cereals for sale at relatively low prices - i.e. in the more productive regions, better served by transport, during harvest time. They sell, similarly, in the most attractive markets, especially the capital cities and other main towns, where access costs are also relative low. State agencies are obliged to buy and sell everywhere. The purchase of small quantities of grain in areas of difficult access leads to high unit buying costs,

and delivering to dispersed populations in remote regions raises average selling costs.

-The partial and selective buying and selling which the private traders can do would give them an inherent cost advantage over the public sector agencies, even if there were no official price policies aimed at price averaging ("perequation"); i.e., even if there were no uniform national producer and consumer prices. However, such nationally homogeneous official prices do exist in most of the Sahel. In general, however, it is only the state trading agencies which buy and sell at these official national prices. Private traders buy and sell at market-determined prices. This intensifies the cost disadvantages of the public agencies.

-The private or "traditional" grain trade operates at lower costs for other reasons. Private trade is, for many thousands of Sahelians, a part-time activity. Farmers, urban workers, school children, women, all may take part in some grain trading. They tend to do so in slack periods of the year. They also trade in connection with local market activities which have a social component. In such circumstances, the opportunity costs of engaging in trade are very low.

Similarly, we stressed earlier the importance of the casual or informal trader, particularly chauffeurs and others with command over empty cargo space. This means that these traders' services are being offered in relative abundance and at low cost.

Even those who are full-time traders do not deal in grain alone. The volume of trading activity and the rate of return from grain trading seem too low to encourage specialization. Thus, costs of trading operations are shared by general trade - in cash crops and consumer goods,

as well as in foodgrains.

Since cereals are heavy in weight relative to their value, transport costs are critical and it is in the transport area that the private trade has enormous cost advantages. First, some considerable part of the private' sold grain is brought directly to local periodic markets by the farmer or a member of his household. Secondly, some grain is moved between local and regional or national markets by the informal trader mentioned above. Most important, the specialized state grain trading agency normally faces fearsome cost problems because of lack of return cargo. Especially in the remote regions, there is little cargo brought by truckers carrying grain from local chefs-lieux or wherever the primary bulking point is located. The private trade is much more economical in its use of transport - for example, by search for two-way cargo, bulking delays, mixture of cargo, etc. Some insight into the process can be obtained from this description, for Chad.¹

...The marketing circuit can be complicated. Suppose, for example, that millet has come to Oum-Hadjer. It does not go from there directly to N'djamena. It goes through a trucker who has agreed to transport a load of gum arabic to Ati and who sees that millet is selling at a higher price in Ati than in Oum-Hadjer. This truck is empty at the time, so he buys millet in order to make his trip to Ati worthwhile. He sells the millet in Ati. Another trucker coming from the east to Ati, proceeds to fill his empty truck with millet to sell in N'djamena...

What is true of transport is true of other inputs. The traditional trade uses human and physical capital more efficiently than the public trading structure. The latter requires formally trained manpower -

¹UNDP, op. cit., p. 158.

managers, accountants, clerks - whereas the traditional trade relies on human energy and skills developed informally, in the market place. Because it tends to be of larger scale and more complex, the state structure requires physical facilities - offices, warehouses, trucks, cars, etc. - which are more modestly provided in the traditional trade.

There are a great many well-known, general reasons why small private organizations or individuals tend to be more efficient than larger organizations, especially state organizations: speed and flexibility in making decisions; freedom to hire, dismiss and reward; detailed and specialized knowledge of the activity in question; the stronger spur of material incentives. We have mentioned some specific aspects of these differences in Volume II - for example, the difference between public and private responses to a situation of deteriorating grain stocks in a warehouse. The private trader would surely be likely to prevent infestation or improper rotation, find out more quickly if infestation existed, respond immediately by forced sale at the best price. On the state side, incentives and capacities to prevent infestation are limited by personnel and budget constraints, the flow of knowledge to managers is slow and uncertain, the capacity to respond to unforeseen situations limited by lengthy administrative procedures, and centralization of authority.

(d) The maintenance of the present mixed marketing arrangements puts certain constraints on related aspects of public policy. One of these has to do with price and quality differentiation. The state marketing organizations must set down much more refined price structures.

if there is to be any hope of sustained competition with the private traders. The various millets and sorghums will not only have to be distinguished from one another in price, but the introduction of complex quality grading will be necessary. Unless this is done the official price structure will not only be impossibly remote from the complexities of actual market prices, but without quality grading, the state sector will continue to receive the lowest quality grains.

Most important are the price policy implications. As things now work, all or nothing is the rule: if the official producer grain price is below the market-determined price, farmers sell most grain in private channels. If the official producer price is above the market-determined price, farmers will sell to the state grain agency. Thus, in years of bountiful harvest, the state agencies can buy all the grain they want; or for which they have financing and storage capacity. In lean years, they can buy little.

This tendency can be clearly seen in the pattern of purchases of national grain agencies in recent years: they are able to buy in insignificant quantities in years of poor harvest and high market prices. It is almost always during the bumper crop year that their peak purchases are made.

This all or nothing tendency can be avoided only in one of two ways. Government's official producer price can be adjusted each year in accord with harvest size - i.e., government's price can follow actual free market prices more closely. This presents an obvious inconvenience: it means abandonment of any inter-annual price stabilization goal.

The second solution is to make available the financial resources and storage capacity required to implement a true price stabilization effort. Government could then buy for a buffer stock in bumper crop years and sell from the buffer stock in lean years.

Intra-annually, similarly, the grain agency would support grain prices near their desired level during the post-harvest period by buying and would sell during the soudure.

Peaceful coexistence between state and private trading sectors thus depends on effective price stabilization - which is, of course, a primary raison d'etre of the state grain trading agencies existence. The question then becomes: is such stabilization feasible and desirable?

This question will be taken up below, when price policy issues are discussed. Here it can be noted that inter-annual price stabilization is certain to be very expensive in Sahel conditions because of (i) wide swings in rainfall, output and especially - in marketed supply; (ii) a possible tendency for farmers to substitute public storage for some village-level private storage; (iii) risks of heavy storage losses.

Its desirability is also open to question on the grounds that if successful, it will destabilize producer incomes from foodgrain sales, a result not exactly in line with public policy objectives. Most important, if price stability encourages production of foodgrains for the market, and/or if - as is likely - the stabilized price¹ is higher than the average market-determined price,¹ then there is serious doubt about

¹i.e. that the price stabilization scheme is not a "pure" stabilization effort (averaging over time what market-determined prices would be), but has price-raising intent.

the long-term feasibility of price stabilization efforts. The reason is that additional supply is likely to be called forth in volumes extremely burdensome to the economy.¹

In any event, the main point from the perspective of marketing policy options is that effective price stabilization is a necessary condition for coexistence between state trading agencies and private traders. It is not a sufficient condition, however.

(e) Whenever state trading institutions act as buying and selling agents, many farmers and traders, and some consumers, can more profitably buy and sell cereals by dealing with each other directly - i.e., without passing through the state channels. This will happen whenever actually prevailing prices are higher than official consumer prices.

Stable coexistence of private and public trading sectors thus requires that many conditions be satisfied, and presents many problems in any event. Most of these are due to the difficulties experienced by public grain agencies in competition with private traders.

One consequence is general throughout the region. In their struggle to survive, national grain agencies push in several directions. They seek a bigger share of the grain market, and enlarge their purchases to the extent that financing allows. They argue - not without reason - that part of their operating deficits derive from a volume of turnover too low to cover their overhead costs.²

¹This is perhaps less relevant to the heavy grain importing states of Senegal and Gambia, which can import-substitute. The others can escape from accumulating grain stocks by export or new uses. But, as will be pointed out later, export outlets are not readily available at this time and prudent policy would be to develop such markets gradually, before storage granaries are full.

²Cf., I. Pattinson, op. cit.

Secondly, they look for activities more profitable than the trade in cereals, which might allow them to balance their losses on cereals. The OPVN, for example, has exported cowpeas to Nigeria and seeks the right to export more of it. In Upper Volta, OFNACER purchased 15,000 tons of Ghanaian corn in the hope of making some profit. Finally, the grain agencies tend to become partisans of food aid, which generates operating capital.

None of these activities can be called central to Government purposes in grain policy. Unnecessary food aid in fact discourages higher local producer prices and more domestic production. Also, the profit-making efforts of grain agencies have tended to turn out badly.

B. Greater State Control

The second possible option is for government to move more fully into grain marketing, to make the legal monopoly more effective in practice. This is the main thrust of proposals for change at least in several of the Sahel countries. In the Upper Volta, for example, the Government's directives for the preparation of the 1977-81 Development Plan, reaffirm as government policy an extension of the state marketing monopoly on food crops. The Planning Sub-Commission on crop production asserts the following:¹

In order to guarantee an adequate price to peasant producers (of grain) a monopoly policy is necessary. This monopoly can be located at any of various levels. Setting up a monopoly which would buy at a minimum producer price at the level of primary collection is too difficult to apply because of farmer dispersion, big distances, lack of roads, etc., which puts each peasant in a different market. But the monopoly could be given to a national grain marketing agency which would be the only body authorized to purchase from the ORDs, or the Coops (Unions de Groupements Villageois)

¹ Sous-Commission de la Production Végétale, "Définition d'une Politique Céréalière" mimeo, 1976, p. 6.

at a national minimum price. This kind of monopoly is easier to enforce.

In Mali, also, recent reform proposals emphasize reinforcement of the grain marketing monopoly. The CEGOS report proposes elimination of the private sector throughout the distribution chain except at the retail level. An Inter-Ministerial Committee in August 1976 proposed a reinforcement of the state monopoly in years of moderate or short crops, which they estimated to mean three years in five. In these years, no private cereals shipments of more than one ton would be allowed beyond arrondissement level, though private traders would continue to work at the retail level.¹

Many arguments are advanced in favor of this option.

-It would cut the trader-peasant nexus, ending the (actual or potential) exploitation involved. It would - as the Upper Volta citation argued - "guarantee" that the officially-set prices would be received by the farmer, not drained away by the trader.

-It would make the state grain agencies' operations more economic. They would handle larger volumes and reduce their unit costs.

-More important, the "contradictions" of competition with private traders would disappear. As the CEGOS Report on Mali observes, it would end the anomalous situation whereby public trading agencies buy and sell cereals in remote and disfavored regions at a financial loss, leaving the zones of easy access and good profit to the private traders. An effective monopoly could average prices and costs more equitably - i.e., engage in "peréquation."

¹ République Du Mali, IPGP. Rapport de la Commission Sur La Restructuration de L'OPAM (Bamako, August 1976) mimeo.

-The experience with state monopolies in export crop marketing has been satisfactory. There is no reason why the same approach can't be adopted for trade in cereals.

The problem with the monopolization option relate both to feasibility and desirability.

-Foodgrain market structures do not lend themselves to state monopolization. Grain is grown over much of each national territory. It is traded in thousands of villages and hundred of rural periodic markets. As a result of tens of thousands of small transactions, the bulking function is performed: small traders put together marketed supply virtually bag by bag. The distinction between traders and farmers or consumers is generally fuzzy, and the informal or casual traders, who utilize transport capacity for small adventures into grain trading, play an important role. Moreover, the smuggling problem exists with cereals as with export crops.

In these circumstances, it is difficult to see how a state grain trading monopoly could be made operative. At the heart of effective monopolization is prohibition of shipments from surplus to deficit regions. No scheme could prevent some small movement of grain beyond the district level, but how much? In the Malian proposal, the figure was 10 sacks (one ton). In Sahel conditions, a great deal of illicit grain could move across the country even with a ten sack limit. In any event, the registration of all grain shipments and checking of all truck transport would be essential. Moreover, movement by carts and private vehicles might have to be controlled as well.

-These questions suggest the second disadvantage of the monopoly option: the administrative and social costs of the control system required if grain monopoly is to be made effective. The registration of trucks which are legally carrying grain would require much additional work for administrative agents. Various papers would have to accompany each truck, specifying cargo and destination. These would have to be cleared at the receiving end. Along the way there would presumably have to be multiple check points.¹ Some surveillance and control over grain transactions in local periodic markets would be necessary - and there are thousands of market days each year. These periodic markets are institutions central to village social and economic life, and relatively little is known about them. Enforcement of a state grain monopoly would surely involve risks of arbitrary acts by state agents.

-Complications related to price policy arise in a monopoly situation. In a year of bad rains and short crops, cereals prices in local transactions will tend to be higher than the state agency's price. (Prices will perhaps also be higher in neighboring countries). Farmers may, therefore, prefer: (i) to store more grain; or (ii) to sell only at higher than official prices (i.e., in a parallel market). It could conceivably become necessary to impose quotas for grain delivery at official prices, with the potential elements of coercion implicit in all such policies.

¹This would, incidentally, magnify opportunities for corruption, as it has in other parts of the world where transport controls of this sort exist.

-The monopoly option raises the particularly critical question of primary marketing. Which organization should be given this fundamental task? At present, private traders are responsible for 65-90% of the cereals marketed. The question is: who will replace them?

Three alternatives exist:

a. The basic organizations of producers could be made responsible--the cooperatives, such as the Groupements Rural in Mali, the Groupement Mutualiste de Village, grouped in the UNCC in Niger, the "groupements villagois" in Upper Volta, etc. In Mali and in Niger, these are already the main agents of primary grain marketing in the official circuit,

b. The rural development organizations are also possible candidates--the ORDs in Upper Volta, the "Operations" in Mali, the "sociétés d'intervention" in Senegal, etc.

c. The national grain agencies (OFNACER, ONCAD, OPVN, etc.) could establish their own buying points or mobile buying teams.

The most plausible candidate is the cooperative organization. The cooperatives are indeed the most desirable agents of primary marketing from many points of view. Their utilization could contribute to decentralization of decision-making and execution, for example, and to more democratic participation of rural people in economic activities which concern them. It is not surprising that in many proposals for marketing reform involving elimination of the private sector, the cooperatives or their equivalent are named as replacement institutions. This is the case, for example, in reform proposals currently circulating in Upper Volta and Mali.

There are, however, many obstacles in the way of a transfer of grain marketing responsibility to the cooperative organizations.

(i) Cooperatives or approximate counterpart organizations on the village level scarcely exist in several of the Sahel states: Chad, Mauritania, Upper Volta. In Upper Volta, there were said to be some 300 "groupement villageois," which are para- or pre-cooperative institutions, in 1976. They, therefore, cover only a tiny proportion of villages. Their organizational strength is uncertain and their activities uneven.

(ii) Where they exist, most of the coops have a strong connection to the administration. In Mali, for example, the cooperative structure is intertwined with the administrative structure at many points. The head of the Conseil d'Administration of the Groupement Rural is often the head of the village council, for example. The Federations de Groupements Ruraux (about 250 in number) were, at least until very recently, under the strict control of the administrative authorities. They were chaired by the chief administrator of the arrondissement. Membership is obligatory, as are "dues" payments, part of which (the "cotisation régionale") is collected at the same time as taxes.

(iii) In some of the countries, the principle of organization has been collective responsibility. Thus, in Niger, where the cooperative movement is probably furthest developed, the basic unit is the Groupement Mutualiste Villageois, in which all villagers are represented. Five or six villages associate to form a cooperative, in the framework

of which they all work, especially in marketing. (They share a common scale for example).¹

The main functions of the cooperative structures are in the area of marketing and credit. With respect to credit, the GMV is the responsible entity, not individual villagers. The village is made responsible for the debts of its members. This concept has been severely criticized by some writers as a fundamental "sociological error."² In practice, it has given rise to problems of debt repayment.

¹M. Brah Mahamane, "Un Examen de la Structure et le Role des Coopératives au Niger et Quelques Problèmes Eprouvés dans leur Fonctionnement," paper given at OECD/FAO International Seminar on Critical Issues on Food Marketing Systems in Developing Countries, Paris, 18-22 October 1976.

²One recent evaluation notes that repayment rates of the GMV have fallen from the late 1960s to the early 1970s, and that these and other difficulties "derive from an erroneous sociological analysis of the function and structures of the village, according to which the 'basic sociological unit' contained members with common interests who would provide guarantees for each other." Jean-Marie Funel, Le Développement Regional et sa Problematique: étudiés à travers l'expérience de Tahoua (Niger), République Française, Ministère de la Cooperation, Série Methodologie de la planification, (Paris, 1976), p. 117. The author of this study proceeds to cite Guy Nicolas, as follows:

Another important fact which must be underlined is the extreme complexity of local society, in particular at the village level. This fact is contrary to one of the basic principles of rural development policy, according to which the village collectivity is the natural framework of all cooperative work and extension activity... this is an idyllic view...the village is often the site of the most radical confrontations and violent conflicts of interest.. The community spirit is located most often below and above the village level...

(Nicolas, G; Doumesche, H.; Dan Mouche, M., Etude Socio-Economique de Deux Villages Haoussa, IFAN, NIGER-CNRS, Niamey, 1968, p. 256.)

Funel' remarks are relevant: "Can one seriously imagine that the village notables should be concerned about the debts that the "Talaka" (poor people) have contracted from the administration? Or that the "Talaka" have capacity to "pressure" the notables who themselves do not always believe it necessary to repay the loans they have received from the government... (Funel, op. cit., p. 118.)

Funel reports non-payment rates of 30-40% of total credit allotted through the GMVs in the Tahoua region. Repayments are supposed to be made directly from the proceeds of marketed groundnuts and cotton. When non-payments exist in a village, the payment of the rebate (which is part of the purchase price but withheld at the time of sale) is held back until those who have paid their debts put pressure on the non-payers. Funel comments on what happened:¹

....the peasants quickly saw the limits of this method: payment of the rebate couldn't be put off indefinitely, and its total was often lower than the indebtedness of the GMV. In the end, the UNCC ended by remaining in debt to the National Agricultural Credit Bank.

In Senegal, a somewhat related difficulty has been present. As in Niger, credit of the cooperative is covered by the collective guarantee of all its members. The Banque Nationale de Developpement Senegalais (the rural credit institution) collects amounts owed from the cooperatives' groundnut sales. Payment of a portion of the producer price is deferred, with the cooperatives' debts having first claim on the proceeds. Once various payments are made from this deferred portion of the producer price, the balance is distributed to the cooperative. In theory, the cooperative should allocate it to individual members on the basis of their contribution. In fact, many cooperatives find it difficult to keep accounts by individual farmers, of what is owed to the credit institution. This tends to lead to distribution of the rebate in proportion to groundnut sales, without taking into account arrears on credit. Bad payers are thus

¹Ibid., p. 113.

treated no differently than members who have paid off their debts.

This principle of collective guarantee is the basis of all of Senegal's rural credit system. It allows automatic collection of debts from the portion of purchase price withheld, but it is unpopular. A 1970 survey found only 23% of the villagers questioned favored the system, while 72% were opposed. (The rest didn't reply.)¹

(iv) Even in those countries in which the cooperative organizations are most solidly implanted--Senegal and Niger--their coverage is limited and restricted to cash crops. Thus, in Senegal in 1974, there were 2,153 recorded cooperatives. Of these, 1,664 were groundnut cooperatives. The rest were specialized consumer and producer organizations. There were only 171 cooperatives of millet producers. In Niger, where the cooperatives do the primary marketing of all paddy, almost all cotton and half of groundnut production, they cover only 25% of the country's population, and are highly concentrated geographically. Thus, of the 215 cooperatives, 165 are exclusively groundnut organizations (in the Zinder and Maradi regions); 35 cotton cooperatives exist in Tahoua, 15 rice cooperatives in the Niamey area.²

The operation of Sahelian cooperatives have run into difficulties in addition to those mentioned above--many of them familiar throughout the Third World. Manpower scarcities, particularly scarcities of accounting and financial skills, create enormous problems of management and control. There have been some accounts of bad experiences with fraudulent weighing and similar practices by cooperative officials and

¹Italconsult, Rapport général sur la coopération, Annex 1, Novembre 1970.

²M. Brah Mahamane, op. cit., p. 3.

weighers; in Senegal, ONCAD has been given power to investigate and to prosecute such offenders. Perhaps most significant from the point of view of their potential role in cereals marketing is the general problem of inadequate payments for marketing costs. Some of the cooperatives are not remunerated sufficiently to cover their costs. Others get inadequate shares of marketing proceeds so they are unable to accumulate capital for operation and investment. In Mali, for example, the Groupement Rural is responsible for transporting cereals from village to arrondissement, but the transport payment allotted them in the official barème is inadequate to hire private transporters. In Niger, SONARA, the groundnut marketing agency, has captured for its own activities the lion's share of the "agricultural surplus" generated in the groundnut sector.¹ Funel points out that the payment to the cooperatives for marketing costs of groundnuts was better than for cotton.²

He attributes the different treatment to differences in marketing conditions: the cooperatives had to compete against private merchants in groundnut marketing. SONARA had to pay the state agencies the same amount it paid to induce private traders to undertake primary marketing of groundnuts. In cotton, there was no competition.

¹"...the margin paid by SONARA to the cooperatives has been virtually unchanged between 1963 and 1974. It was 2,100 f/t in 1963/64 and 2,000 f/t in 1973/74. Meanwhile, the net margin accumulated by SONARA rose from 3,500 f/t in 1963/64 to 29,600 f/t in 1973/74, a rise of 800%. (M. Brah Mahamane, op. cit., p. 5.)

²In the late 1960s, the cooperatives received, as payment for primary groundnut marketing, 1,900 f/t, while actual costs were estimated to be 832 f/t. Out of the "net profit," a rebate of 750 f/t was given to producers, and the rest was allocated to UNCC and other agricultural agencies. For marketing cotton, however, the cooperatives received 900 f/t, not enough to generate any surplus. Funel, op. cit., p. 315.

Marketing was always 'administrative.'¹

It is difficult to avoid the conclusion that, however desirable, it does not appear feasible to transfer the primary grain marketing function to the cooperative organizations. The demands on manpower and organizational capacity which exist for the marketing of export crops strains even the Senegalese cooperative movement, which of all those in the region, is probably most experienced and best endowed with manpower. The primary marketing of foodgrains is much more delicate and demanding. So the cooperatives would be put under near-impossible burdens. This is especially so for the countries in which the cooperative movement is especially young or even embryonic, as in Upper Volta.

A recent paper produced by the FAO is worth citing at some length, since it bears so directly on this issue.²

Any close examination of cooperatives often reveals that they get into financial difficulty, partly because they do not apply sound accounting and management practices, but also because there is a tendency to link them to official credit and repayments often fall sadly into arrears because members try to get more from their society than they put in. Experience suggests that societies become more viable if subjected to rigid control and discipline. In Tanzania, for example, where the cooperative movement was once seen as the main engine of rural development, and some 1,600-1,800 societies were formed within about ten years of independence (1971), there has been a dismal record of failure, particularly among all-purpose marketing societies. The structure of the movement, which provided for strong central unions in each region, was responsible for ensuring that some of the return from marketing scheduled crops was skimmed off, which reduced the sum available to the society member and this was a contributory factor, but poor financial and

¹Ibid.

²UNFAO, Agricultural Services Division, "The Catalytic Role of Various Types of Marketing Enterprises in Stimulating the Expansion of Local Production," paper presented at OECD/FAO International Seminar on Critical Issues on Food Marketing Systems in Developing Countries, Paris, 18-22 October 1976.

and operational management, heavy society expenses and a lack of management ability were also prime causes. Government, in an effort to reduce expenses of marketing and to improve efficiency, has now gone over to a system of direct trading between the marketing boards or cooperative authorities and the cooperative societies for the marketing of produce. Whether this will be an effective decision remains to be seen....

... cooperatives as forces for the encouragement of rural development, while offering such promise, tend to disappoint and too much must not be expected of them. Given good management and a clearly defined and limited role they can perform well.... When they are allocated too many responsibilities they tend to sink beneath the burden...

The regional development organizations have the technical capacity and administrative structure that is frequently lacking among the cooperative organizations. They also have marketing experience, since many of them are responsible for marketing the cash crops which are their major focus. Frequently, they have large numbers of buying points¹ and substantial transport capacity. They are, therefore, possible candidates for taking on the task of primary marketing.

Were they to do so, however, certain problems can be anticipated.

(1) The development agencies have shown themselves capable of attracting considerable resources from aid donors, and this explains their relatively strong administrative and financial position. Their success in attracting assistance has also allowed them to operate with relative autonomy. It has allowed them to attract and hold capable staff, by payment of better remuneration (especially fringe benefits) than is available in the Civil Service. The access to technical assis-

¹See Volume II, Mali Country Study.

tance in some cases has also helped. Also, access to non-budgetary funding has allowed these agencies financial flexibility beyond what is usual in the public sector.

Despite their strengths, then, the development agencies are vulnerable. It remains unclear how they will find internal sources of self-financing on a long-term basis. Their work of agricultural extension, combined with other activities that nowadays make up "integrated rural development" thus has a certain urgency. The hope must be that, whatever happens in the decades ahead, the efforts of the development agencies will bring about irreversible and self-sustaining changes in agricultural practices, in the direction of modernization and improved productivity.

The basic task of these agencies is the stimulation of production, providing the rural population with trained cadres, introducing new methods, more and better education, more and better equipment. The production task alone makes enormous demands on available resources in money and manpower. It might be imprudent to further burden these agencies with the marketing function.

This is especially so since past experience, virtually without exception, attests to the existence of price-making priorities which give low consumer prices high ranking. A policy of low consumer prices for foodgrains, combined with rising costs of marketing, can be expected to put pressure on the primary marketing agents, who can find that marketing of foodgrain is costing them more than they are being paid by the other agents further along in the distribution chain. This was the experience in Upper Volta in 1974-75, when the regional development

organizations (ORDs) were made responsible for cereals marketing. The policy was partly inspired by the hope that the ORDs would find in grain marketing a reliable source of funding. In fact, most of them found the margin they were given was too small to cover money outlays, much less make a "profit." The result was an allocation of resources - people, trucks, administrative energy - to the grain marketing exercise, away from the production-oriented tasks to which the ORDs are primarily dedicated. After 1975, most ORDs refused to become involved in grain marketing.

It is much the same with "Operation Mil-Mopti," a regional development agency focusing on increasing millet production in Mali. The OMM buys the grain from farmers and transports it to OPAM storage depots in arrondissement-level chefs-lieux. The following quotations indicate the kinds of diversions and problems which have arisen:¹

OPAM is supposed to receive the cereals at the chefs-lieux of the arrondissements, OMM being responsible for the transport from the collection points to the chefs-lieux. However, since OPAM does not dispose of agents and storage facilities in most of those places and of sufficient (owned or contracted) transport capacity the rule is that OPAM receives the merchandise only in the capitals of the cercles, thus increasing the transport volume of OMM.

There are major difficulties in handling the grain after delivery by the farmers:

- insufficient transport facilities to meet the increased transport requirements,
- no storage facilities at the collection points (whenever OMM disposes of storage capacity - thought for storage of production inputs - it is used to the possible extent for temporary grain storage).

¹Mahamadou Berthe and G. Olaf Meyer-Ruhle, Report on the First Joint Evaluation of Mils-Mopti, Mopti/Bamako, April/May 1977.

-delays in discharge and weighing at the OPAM reception points in the peak season (at the end of the campaign).

These shortcomings are causing losses of grain because of open-air storage with serious damages when evacuation is delayed beyond the start of the rainy season. Last year, OMM was involved in grain transport until the month of August which considerably affected their extension activities for the new season. However, since damages and losses are at the risk of OMM until the grain is handed over to OPAM, evacuation of the cereals constitutes a priority activity to the Operation.

OMM tries to recuperate sacks and money from farmers who have not delivered the envisaged quantities. Sometimes one or both of them cannot be recuperated. Figures of those losses were not available.

OMM receives from OPAM for its services:

2.786 MF/kg for collection
3.000 MF/kg for evacuation to the OPAM agency at the cercle's chef-lieux.

These receipts are to enter the revolving fund.

The OMM Director claims that expenditures incurred by them for those services are not covered by these margins which should be increased. He says that they will prepare a study to show actual costs including losses which should be reimbursed by OPAM.

This suggests a final consideration: the impact on farmers. Grain marketing is an uncertain business. Transfers of funds to finance crop purchases can be delayed or reduced. Transport, storage, advances of credit for purchase of inputs - all can create the kinds of pressures indicated in the OMM case. Good rains can create a tremendous disposable surplus which cannot be marketed at announced official prices or transported and stored appropriately. Bad harvests will unloose producer pressures to sell on parallel markets for higher than official prices. Unless an effective price policy is introduced, these price problems

will be inevitable.

The involvement of the development agencies in primary cereals marketing thus sets loose a whole array of potential conflicts - or at least adversary relationships - between the development organization and its clients, the rural producers. There are high risks that resulting distrust could affect peasant attitudes toward the development agency, its personnel, its productionist efforts.

* * * * *

The third possible public sector agent of primary marketing is the national grain agency itself - OFNACER, OPAM, OPVN, etc. These agencies could set up their own buying points and/or dispatch their own agents throughout the country to buy directly from producers. The DC/FDAR in Chad already has done some of this for rice. It is occasionally put forward as a general solution.

The main advantage is administrative simplicity. The national grain authorities would have responsibility for marketing - from farm gate to retailer. This would encourage the development of specialized cereals trading skills in the public sector, with consequent healthy effects on performance and productivity.

Such an alternative, however, would put the primary marketing function in an organization far removed from rural life and with little direct rural involvement. It would have to take account of regional differences, unforeseen climatic changes, storage emergencies. If it introduces the reforms necessary for its survival - quality grading, for example - a high degree of local knowledge and competence will be essential. A public sector organization, working in a tradition of

centralized administration, may not be able to achieve this kind of differentiated and flexible performance.

It would in any event involve considerable duplication. Various organizations are already in close contact with rural producers - the development agencies, for example, public retail shops in some of the states, the cooperatives. A primary marketing network would have to be put on alongside these other rural agencies. Moreover, bureaucratic conflict could ensue. In some instances, the national cereals marketing agency is the responsibility of the Ministry of Commerce. This is a reflection of the fact that the protection of urban consumers has always been one of their principal objectives, if not the principal objective.

In any event, duplication of effort and facilities would probably be required, with heavy cost in human and physical capital.

Finally, such a monopoly would face many of the problems the grain agencies now face. They would undoubtedly find it difficult to maintain the monopoly, in the face of ubiquitous "traditional" small scale trade, which would continue. They would have to introduce massive reforms along the lines suggested in the "Diagnosis." They would continue to run high risks of large deficits, and shortages of working capital. In addition, as a primordial condition for survival, this option, like all varieties of the state monopoly option, requires a price policy which will prevent the all or nothing problem now prevailing. Government must either have flexible prices which in effect follow the market, or it must introduce an effective price stabilization scheme.

C. "Light" Intervention

The final direction which government marketing policy might take is one of light and indirect intervention. This would involve improving the functioning of grain markets, reducing monopolistic tendencies or practices, influencing prices by such means as open market operations via buffer stocks.

More specifically, this option involves explicit linking of rural development programs to the goal of improved market integration: rural road construction and maintenance projects would give high priority to "disenclavement" of isolated areas. Crop information services would be expanded. The generation of better and more rapid estimates of crop size, prices, local variation in market conditions would be essential, as would its diffusion by radio and other forms of public communication. When more knowledge exists about the nature and extent of rural credit, the problem should be addressed with vigor, reducing actual or potential dangers of moneylender dominance. Priority would be given, also, to the spread of on-farm storage, as protection against bad weather and moneylenders alike.

On the legislative side, the prohibition of engaging in trade would be abandoned. Regulations limiting the number of licensed buyer (acheteurs agréés) would also be dropped, as would other restrictions on free entry into the grain trade.

Price intervention, to the extent judged necessary, would take the form of purchases and sales from a state buffer stock. The national

grain agency would execute these price stabilizations actions, and would play a residual or emergency role in supplying deficit regions, should it be demonstrated that the private sector, after encouragement and a little time, does not perform this service adequately. The grain agency would also be responsible for storage of the national emergency reserve and the distribution of food aid. Except for its emergency operations, the grain agency would act indirectly - releasing grain to private wholesalers or to retailers when prices are "too high," buying in the market when they are "too low."

The advantages of this option are its simplicity, and its economy. It utilizes the best source of trading skills available to Sahel economies. It economizes on capital, both human and physical. It avoids most of the contradictions and difficulties inherent in government attempts to "dominate" ("maitriser") the market. It would encourage the emergence of entrepreneurial talent and skills.

Disadvantages of problems are present in this policy option, as in the others.

-It may be unattractive doctrinally and politically.

-It would probably work slowly and indirectly to strengthen the farmers' bargaining power vis-a-vis the trader. How heavy a disadvantage this is depends on the facts - on how unequal the relationship really is and to how much "exploitation" it leads. As stressed throughout the report, these are matters about which there is very little solid information. The weight of this disadvantage also depends on whether alternative options are more promising.

-Reforms which entail a contraction of the direct government presence in marketing can only be introduced in times of good harvest. Poor crops and consequent upward pressures create strains throughout the economy and society. It also creates an environment rich in opportunities for profiteering (e.g. smuggling) which some traders will pursue.

-Similarly, a reform involving a greater role for private traders cannot be expected to work if government sets up conditions which made "undesirable" trader action economically irresistible. In the 1968/69 liberalisation of trade in Mali, the government fixed official grain prices which were low relative to export crops and to prices in neighboring countries. Traders proceeded to use government funds, advanced to them to finance purchase of the grain crop, for purchase of the much more attractive cash crops, and to smuggle out cash crops and food crops. The reform was abandoned immediately. Liberalisation of marketing systems thus requires ancillary policies which will give it a chance at success.

IV. PRICE POLICY: ISSUES, OPTIONS, CONSTRAINTS

In this chapter, we first comment briefly on those aspects of price policy which were described in the "Diagnosis" discussion (Chapter III). We then explore some major questions of price policy: (i) what is the appropriate level of cereals prices; (ii) what kinds of cereals price stabilization schemes are necessary, desirable or feasible; (iii) what price policy implications are there in plans for expansion of rice production and consumption, particularly in Mali; (iv) what price policy implications are there in recent Senegalese proposals to undertake programs of massive import-substitution for cereals imports?

A. Reform of Deficiencies in the Public Price System

Some of the chief problems of public pricing were described earlier:

(a) Consumer prices of cereals have been subsidized either directly or by maintaining an official consumer price below the market-determined price, and below official farmgate producer price plus marketing costs.

(b) Announcements of price changes are made at inappropriate times of the year, from the point of view of affecting planting decisions.

(c) The cost structures or barèmes which govern marketing margins, transport costs and costs of other inputs on the distribution chain are based more on political or administrative bargaining than on true costs.

(d) Public prices are too homogeneous in terms of quality grading, and in terms of regional differentials,

There is not much to be said about most of these problems. Few observers would disagree that these deficiencies should be corrected. The question is not what to do, but how to do it. In some instances, the chief obstacle is political -- changing the consumer orientation of price policy. In others, it is a matter of administrative feasibility -- the introduction of quality differential in the price structure. In others, it is perhaps doctrinal -- the removal of uniform national pricing to which there seems to be a deep attachment.¹

The timing question is the only one about which there might be some analytic disagreement. It is not clearly desirable to announce before planting, as often urged, unless the grain agency stands ready to buy all cereals offered at the announced price. The late fall -- November or December -- is in fact a better time, since the pricing decision should be made by comparing estimated crop size with available financing and storage capacity.

B. The Appropriate Level of Grain Prices

Higher grain prices will increase production, from two directions. First, foodgrains will become more attractive than competing crops.²

¹In the CEGOS Report on Mali, for example, there is not the slightest doubt raised about the concept of "perequation". Indeed, the discussion of marketing policy alternatives is shaped by the necessity to maintain (and finance) uniform national pricing. Although price uniformity is referred to as a problem, the Report makes no recommendation on it.

²This assumes, of course, for purposes of analysis, that other things, including prices of competing crops like cotton and groundnuts, remain the same.

The crop mix will tend to shift in favor of cereals. Secondly, with higher returns per unit of land, labor and other inputs, more and better factors of production will be devoted to production.

While the direction of the production response is very likely to be positive, its magnitude is uncertain. A priori, one would expect relatively high single crop acreage or production elasticities. Foodgrains and annual cash crops (like groundnuts and cotton) are often grown on substitutable soils, with common techniques, but the empirical evidence around the world shows surprisingly low price elasticities of supply for foodgrains.¹ There may be something wrong with the basic methodology in these studies. Even if the empirical estimates faithfully reflect underlying reality -- i.e., generally sluggish farmer responses to intercrop price relatives -- there are still reasons to believe that responsiveness would be relatively high in the Sahel. This is so because export crops and foodgrains are readily substitutable over much of the region and because many bits of unsystematic evidence point in this direction, such as shifts from groundnuts to millet/sorghum in Upper Volta and Niger in the early 1970's as prices moved dramatically in favor of foodgrains.

¹Cf. Raj Krishna, "Agricultural Price Policy and Economic Development." Agricultural Development and Economic Growth, edited by H. M. Southworth and B. F. Johnson, (eds.), Cornell University Press, 1967, esp. pp. 505 ff. The foodgrain supply elasticities as assembled by Krishna were mainly below 0.1. None was above 0.4. These refer to single crop acreage elasticities and are short-run. A later compilation of supply elasticity studies confirms these results. Out of some 200 studies of foodgrain supply elasticities only about 30 yielded elasticity of over .4. What is even more surprising is that, of over 250 estimated long-term supply elasticities, only 23 were greater than unity. (Hossein Askari and John Thomas Cummings, "Estimating Agricultural Supply Response with the Nerlove Model: A Survey," International Economic Review, Vol. 18, No. 2 (June 1977), pp. 264-270.

Moreover, the price responsiveness of marketed millet/sorghum supply is likely to be greater than price responsiveness of production. This is because a large proportion of price-induced production increases will be for the market, it being reasonable to assume, in Sahelian conditions, that most producers satisfied their household demands at the previous level of production. So the income effect on farmer demand for consumption of the crop should be relatively low.¹

The question for policy-makers, then, is not whether higher grain prices will increase marketed supply. It can safely be assumed that they will, though there is room for debate about magnitudes. The interesting analytic issue is the extent to which price policy can and should be used to encourage increases in cereals production. This is not the same as the issue of whether cereals prices have been or presently are "too low" -- which was discussed in Chapter III. At any moment of time, there will be, in each country, a different answer to that question. As the economy evolves, as world and domestic prices

¹Matlon finds high sales elasticity with respect to output-unity for lower income groups, 2.6 for upper income producers. (Peter J. Matlon, The Size Distribution, Structure and Determinants of Personal Income Among Farmers in the North of Nigeria, Ph.D. Dissertation, Cornell University, May, 1977, p. 274.) This provides suggestive, indirect evidence of the responsiveness of marketed output to price increases. Similar indirect evidence can be found in Raj Krishna, "The Marketable Surplus Function for a Subsistence Crop: An Analysis with Indian Data," The Economic Weekly, Annual Number, Feb. 1965, pp. 309-320. See, for a contrary view, T. N. Krishnan, "The Marketed Surplus of Foodgrains: Is it Inversely Related to Price?," Economic Weekly, Vol. 17 (1965), pp. 325-328. For a recent empirical study showing positive and relatively high price elasticity of marketed output, see A. I. Medani, "Elasticity of the Marketable Surplus of a Subsistence Crop at Various Stages of Development," Economic Development and Cultural Change, Vol. 23, No. 3 (April, 1975), pp. 421-429.

change, as economic and social objectives are modified, producer prices for foodgrains have to be re-assessed. Some of the principal criteria useful in making such price reviews were set out earlier: whether other policies and programs (e.g. taxes and subsidies, food aid) have led to "distortions" resulting in an under- or over-pricing of cereals; relative prices of cash crops and foodgrains; relative costs of production, general agricultural terms of trade; comparisons with prices in neighboring countries; comparison between farm prices and incomes and urban wage rates and incomes.

What we will do here is explore some of the analytic implications of, and constraints on, a "positive" cereals price policy -- one which attempts to set higher-than-market price levels in order to stimulate production.

Certain elements in the physical and economic environment are of central importance in understanding the constraints on a positive price policy.

(i) Grain production is highly variable from year to year because of wide annual swings in rainfall and the close dependence of harvest size on the volume and distribution of rainfall. According to FAO estimates for the Sahel Region, variations in total rainfall explain 50-70% of the variation in millet and sorghum production.¹

Moreover, the lower the average rainfall, the greater its annual variation. Comparisons over the years 1965-74 indicate that average cereal yields were twice as volatile in Senegal and Chad as in Ivory

¹IBRD, West African Foodgrain Study, Sept. 1976, p. 25.

Coast and Ghana - 17-19% variation in the Sahel countries as compared to 7-9% in the coastal states.¹ About one-quarter of the Sahel's total population -- 6 million people -- live north of the 600 mm. isohyet. Many of them are engaged primarily in millet/sorghum cultivation. Yet, this is a region of very high rainfall (and hence output) variability: one year out of five a rainfall deficiency of 33% can be expected.²

(ii) Marketed grain output -- the "disposable surplus" -- varies by even more than total output. A good harvest increases the surplus available for sale by a multiple of the increase in total production.³

(iii) The price elasticity of demand for foodgrains is relatively low -- i.e., consumption does not increase by much as price falls, nor fall by much as price rises. This means that changes in marketed output lead to sharp inverse changes in grain prices.

(iv) In normal years, domestic production almost entirely satisfies domestic demand, i.e. foodgrain imports and exports are marginal. Opportunities for import substitution are small, since wheat is the only significant grain import, and is imported in relatively small quantities.

¹Ibid, p. 26.

²This estimate is derived from a "Rainfall Probability Diagram" constructed by Cocheme and Franquin, An Agro-Climatology Survey of a Semi-Arid Area in Africa South of the Sahara, reproduced as Figure 4.1, IBRD, West African Foodgrain Study, 1976.

³If production is one million tons, of which 150,000 are marketed, a rise in production to 1.1 million tons will increase the saleable surplus by as much as 67%. Of course, some of the increase in production will be consumed by the producers, either because they formerly produced too little to meet their own needs or because they want to consume more grain as part of the general increase in income implied by the larger harvest. But it is probably that most of the increase will be sold.

Obviously, this last condition is not applicable to the region as a whole, but rather only to the continental states -- Mali, Upper Volta, Niger, Chad.

Let us suppose that a private trading sector exists along with state trading organizations and that the fundamental problem of supporting grain prices at levels above the market-determined price is posed in this context. Suppose there are bad rains and a poor harvest, and the supply of marketed grain falls off sharply. The market-determined price in this case will be above the official price paid by the grain marketing agency or the cooperatives. Peasants will, therefore, tend to sell their grain to the private traders. The state trading agency will be able to buy little or no grain, or only grain of low quality.

Now assume the rains are good, the harvest abundant, and the marketed cereals supply plentiful. In this case, the market-determined price will be below the official price, and almost everybody will sell to the state grain trading agency. The question will have to be faced: what to do with the grain which is in "excess supply" at the official price. There are four main possibilities: the grain can be sold to consumers at a subsidized price; it can be stored for stabilization or emergency reserve purposes; it can be used in new ways -- forage, for example; or it can be exported.

If there is scope for import-substitution, or for exports of this grain, there are opportunities rather than problems. However, except in the coastal states, import substitution prospects are presently limited. So only exports offer a theoretically easy and happy way out. We consider export potentials in detail later.

1. Domestic Sale

The first possible use of the price-induced "excess" cereals supply (sales on the domestic market) founders on the troublesome barrier of sluggish demand. Given the low price elasticity of demand for millet and sorghum -- the basic grains -- the consumer price would have to fall very low in order for consumers to absorb significant quantities of additional output. However, this implies subsidization if the "positive" producer price policy is to be maintained, and subsidization raises questions about equity, incentive effects and macroeconomic consequences for which there are no obvious answers in the present state of knowledge. The question of who benefits and who pays, for example, depends on the socio-economic position of those who buy grain and those who sell. If it is true, as sometimes claimed, that the bulk of marketed millet output comes from a relatively small number of larger farmers, while pastoralists and deficit peasants in poor regions buy much of the marketed millet, then what is involved is a transfer of income from relatively poor to relatively better-off groups.¹ Even many of those who benefit from higher prices via higher money returns from cereals sales, must also pay higher prices for the grain they buy -- since many farmers are both seller and buyers -- so their net gains are reduced.

¹There exists -- to our knowledge -- no study of this question in any of the Sahel states, nor indeed are there many studies of it elsewhere. The CEGOS Report suggests that better-off farmers are responsible for much of marketed output. Peter Matlon (op.cit.) found that, in his Northern Nigerian sample of villages, the sales elasticity of grain supply in relation to production charges was much higher for higher income producers. This tends to support the argument that richer producers benefit more from higher grain sales than poorer farmers. Raj Krishna (op.cit.) came to the opposite conclusion in his analysis of Indian data.

On the incentive side, the higher food grain price may lead not to an expansion of aggregate agricultural production, but to a change in the crop mix, with millet and sorghum being substituted for cotton and/or groundnuts. The macroeconomic effects of this change may not be positive -- e.g., national income will probably be lower and the balance of payments less favorable as a result. There are also budgetary implications, with revenues declining and expenditures rising as a result of the grain price and subsidy policy.

2. Storage

If the "excess" grain that is purchased one year can be stored and then sold the following year when the harvest is poor, the problem will be reduced but not eliminated. For what is at issue is not a "pure" buffer stock scheme, a smoothing out of price fluctuations without changing the average level; a rise in producer prices over the long-run average market-determined price is the objective. So there remains the problem of what to do with the induced increase in grain supply in the face of highly inelastic demand. Moreover, it is not possible to postulate a nicely oscillating cycle of good years and bad. It is highly likely that there will be three successive good years before a bad one and, in any event, if price stability as such provides incentives to higher production, there will be more output than otherwise. In the absence of export markets, the accumulation of grain stocks is the most likely consequence. The costs of this storage,

including costs of losses through infestation, spoilage and quality deterioration, are likely to be considerable.¹

3. New uses

Surplus foodgrains could conceivably find other uses, particularly given the relatively low prices at which they might be offered for non-food consumption. The most obvious and frequently mentioned possibility is in the area of feedgrain for poultry and cattle. This is certainly an interesting and important possibility, which merits close study. At present, however, and for the immediate future, it is not clear that the potential feedgrain market is capable of absorbing more than a relatively small volume of grain.

4. Exports

Of the CILSS countries, only two -- Mali and Upper Volta, presently appear to have any real export potential in grains. The others, with the

¹Current experience in India provides some interesting lessons. India has had good monsoons for three consecutive years: 1974-1977. The 1977 harvest is expected to amount to 120 million tons, equal to the 1975 record crop. The New York Times reports as follows: "According to officials of the food corporation, who are concerned about preserving the 20 million ton grain reserve, the monsoon has left much of the stocks lying in the open unfit for humans. Most of it is sold as cattle feed... The loss so far, they say, is a very small percentage of the total in storage. But a desperate effort is on to reduce the stocks to a manageable 10 million tons. The excess grain stacked outdoors covered only by polyethylene sheets is damp and the moisture can cause much damage if it stays in the open much longer...The previous Government, under Indira Gandhi, in its anxiety to avoid a recurrence of the severe food shortages of the early 1970's allowed heavy imports even as the local output was breaking records. As prices on the open market fell, farmers unloaded their surplus yield on the Government Food Corporation which was offering a "support price" that was 20% higher. The result was stocks that overflowed warehouses and caused mounting storage costs... (The New York Times, August 28, 1977, p. 11.)

exception of Niger, were, even before the drought (1961-1965), net importers of grain in considerable quantities and, barring radical changes in policy, are expected to remain that way at least for a decade. Table XXVIII shows past performance and future expectations with regard to grain self-sufficiency, on the assumption that present trends continue.

Table XXVIII. Cereals Self Sufficiency Rates for 1961-65, 1969-71 and Projections for 1985

<u>Country</u>	<u>% of Domestic Cereals Consumption covered by Domestic Production</u>		
	<u>1961-65</u>	<u>1969-71</u>	<u>1985</u>
Mali	99	97	92
Upper Volta	98	96	91
Niger ^a	105	99	92
Mauritania	67	51	49
Senegal	70	66	59
Chad	99	98	89
Gambia	83	80	73

^aThese figures for Niger are disputed. Other studies (e.g. IBRD Country Report, 1975) predict that the self sufficiency rate may drop to only 85% in 1985 and, unless dramatic productivity increases occur, will fall below 80% by 1990. Whether Niger is developing a structural deficit in cereals or not is unclear. (For a summary of the arguments, see the 1975 IBRD Country Report on Niger.).

SOURCE: IBRD, Western African Foodgrain Study, 1976. The underlying data all from FAO.

These self-sufficiency rates indicate little potential for export. Even Mali and Upper Volta are projected to be importing more of their cereals by 1985. However, these figures are somewhat deceptive. "Self-sufficiency" includes wheat which, in these projections, is assumed to be imported by all countries in increasing proportions because of its high income elasticity of demand. It is, therefore, possible that Mali and Upper Volta will be able to produce exportable surpluses in some cereals (rice or millet) while still being net importers of cereals, particularly wheat.

The potential export market for Mali and Upper Volta, for the near term, must be regarded as restricted to West Africa for several reasons.

(a) Transportation costs to the coast from producing regions in the two landlocked countries are very high. Rail is the cheapest available mode. Minimum railroad freight costs from Bamako to Dakar presently amount to 25 MF/kg or about US\$56 per metric ton. Adding the presently guaranteed producer price for millet and sorghum (32 MF/kg), the minimum costs for Malian millet or sorghum delivered in Dakar come to US\$88 per metric ton. To this would have to be added primary marketing costs, general administration costs, and other items. However, average prices of U.S. sorghums f.o.b. Gulf ports, averaged \$50 per ton in the 1960's; recent projections put forward a 1985 U.S. sorghum price of \$85.¹ Despite its higher quality, West African sorghums clearly would have a hard time competing in the world market.

For rice, the picture looks about the same. The price ex-mill for standard Malian rice ("merchant quality") was about 110 MF/kg in 1976.

¹IBRD, Price Forecasts for Major Primary Commodities, July 1975 and June 1976.

This makes the cost of Malian rice delivered in the port of Dakar more than US\$300. The 1976 world market price for 25-35% Broken (a comparable quality) f.o.b. Bangkok was in the neighborhood of \$200. Since transport costs between Ouagadougou and Abidjan are not notably lower, Upper Volta faces the same problem.

(b) World market prices are quoted for standard quality commodities [U.S. #2 sorghum, Thailand 5% (or 25-35%) broken, etc.]. Malian products do not conform to these standard qualities. Malian millet is preferred for its taste by African consumers and, therefore, commands a domestic premium, which it probably could not fetch in the overseas trade, where different preferences prevail and where the coarse grains are also used as ingredients in feedgrains.

(c) The relatively small exportable surpluses and their large variability due to weather uncertainties place Mali and Upper Volta at an additional disadvantage. International brokers have little interest in small and uncertain lots, especially if they are not of standard qualities. In addition, small volumes would make it hard to take advantage of lower bulk shipping rates.

These major drawbacks diminish Mali's and Upper Volta's export potential to overseas destinations, at least for the near term. The problems are of lesser importance when it comes to exporting to destinations within West Africa. The neighboring countries, Senegal, Mauritania, Niger (if we accept the structural deficit hypothesis), as well as the coastal countries along the Gulf of Guinea, offer the best opportunities as potential importers of Malian and Voltaic grain. These are the markets toward which an export-oriented cereals policy would have to direct itself.

Table I (page 26) sets out the pattern of West African rice imports. It shows average 1970-74 recorded rice imports in the 13 countries of the region (Guinea not included) as 500,000 tons, of which Senegal accounts for 180,000, the Ivory Coast, 104,000; Ghana, 41,000; Liberia, 45,000 tons and Sierra Leone (35,000) most of the rest.

From the point of view of Malian export potential for rice, its CILSS partner states (Senegal, Mauritania and the Gambia) which together imported in 1970-74 over 220,000 tons of rice (excluding food aid) and the Ivory Coast would seem to present special possibilities. But there are special obstacles in both areas. Even in the fifties and sixties, when Mali was a net exporter of rice, it didn't export significant amounts to Senegal, Gambia or Mauritania.¹ The main reason is believed to be the strong preference of Senegalese (and Gambian and Mauritanian) consumers for Asian broken which sell at deep discounts from standard quality rice -- normally at about half the price. Higher quality rice accounts for less than 10% of the Senegalese, Gambian and Mauritanian imports. As a result, Mali could sell its rice in the markets to its west only at a considerable loss, as is shown in Table XXIX.

Exports to the Ivory Coast, Mali's former chief market, fell to nothing in the mid-sixties, for various reasons: first, competition from cheaper, surer Asian sources of supply; more recently, as a result of the expansion of the Ivory Coast's domestic production.

¹Total recorded Malian rice exports averaged 12-15,000 tons a year in the early 1960's, almost all of it going to the Ivory Coast.

Table XXIX. Comparison of Projected Returns from Exports of Cereals with Producer Prices (Mali) in MF/kg.

<u>Returns from exports to overseas markets</u>	<u>1976</u>	<u>1978</u>	<u>1980</u>	<u>1985</u>
Sorghum	20	19	15	15
Maize	24	24	22	22
Rice	96	90	81	81
<u>Cost of Production^a</u>				
Sorghum	37	37	37	37
Maize	37	37	37	37
Rice	105	105	105	105
<u>Profit^b per kg</u>				
Sorghum	-17	-18	-22	-22
Maize	-13	-13	-15	-15
Rice	-9	-15	-24	-24
<u>Returns from exports to Senegal</u>				
Sorghum	32	31	27	27
Maize	36	36	34	34
Rice	72	68	61	61
<u>Profit^b per kg</u>				
Sorghum	-5	-6	-10	-10
Maize	-1	-1	-3	-3
Rice	-33	-37	-44	-44

^aIncluding cost of bulking and bagging and 2% losses for sorghum and maize; cost of Office du Niger in the case of rice (1974/75 actual cost not updated)

^bA negative profit implies a net loss is that amount.

SOURCE: IBRD, Review of Agricultural Investment Plans, (Mali), 1976.

Some attempts have been made recently to measure Mali's potential export returns from various cereals. An IBRD estimate is given in Table XXIX. It shows clearly the dim present and future prospects of overseas exports. It indicates also that, on the basis of the present structure of production and transport costs, exports even to Senegal would not now be profitable. Nor do 1985 export prospects look better. The table also indicates that sorghum export potentials are much better than are those for rice.

These figures are rough and can be contested,¹ but few observers disagree with their main thrust -- that cereals exporting will be difficult and that it will be more difficult for rice than for millet/sorghum or maize.

Grain exports within West Africa are nothing new. In addition to Mali's exports to the Ivory Coast, the eastern part of Upper Volta traditionally formed part of the millet supply zone for the city of Niamey. In recent years, these grain flows have slowed. Establishment of border controls has made millet exports from Upper Volta cumbersome (in some years, even illegal), so that this flow has also dried up. Today, one can still find some smuggled Malian and Voltaic millet on the markets in Niamey, Tillaberry and Ouallam. The quantities are small, however. Trading Mauritanian cattle for Malian millet appears to remain quite frequent along the Mali-Mauritania border and the illicit trade across

¹Michailof, for example, estimates that Malian sorghum can be delivered in Kaolack at 64,000 MF a ton, a little less than U.S. sorghum. The difference comes from transport costs to Kaolack from Dakar, (S. Michailof, Remarques Générales sur la Commercialisation et la Politique du Prix des Céréales au Mali, Caisse Centrale de Coopération Economique, Services d'Etudes Economiques et Financières, Mars, 1977, p. 26.)

the Chari River and Lake Chad is quite prominent.¹ The persistence of these "natural" trade patterns in the face of many obstacles suggests that intra-West African trade does have important potentials, despite the ominous numbers in Table XXIX.

For millet exports from Mali and Upper Volta, there exist at least three potential markets:

1. Millet prices in Niamey are high compared to prices in neighboring countries and the road connections from Eastern Upper Volta and Mali are short and adequate. If Niger should indeed develop a structural deficit in cereals, western Niger could become a very important market, particularly for Voltaic millet.

2. Mauritania will probably always remain a net importer of grain. However, because the population is relatively small and per capita millet consumption is low, this market may not become as important as its low self-sufficiency ratio might suggest.

3. The eastern portion of Senegal could gain in importance as a consumer of Malian millet. The grain is appreciated by the Senegalese. Mali's production zones are physically close and a railroad connection exists.

The southern countries, Guinea, Ivory Coast, Togo, Benin, Ghana and Nigeria may also hold some potential as importers of grain from the Sahel countries. However, the further south one moves, the more prominent becomes the presence of broken rice, either locally-produced and

¹See Volume II, Country Study on Chad.

sometimes subsidized, or imported at very low costs. Also, wheat, rice and particularly roots and tubers seem to be preferred to millet by the populations of the Gulf of Guinea countries.¹

The conclusion on export potential can be summarized as follows:

(i) At present only Mali and Upper Volta appear to have significant export potential, particularly Mali.

(ii) Millet, sorghum and maize seem to be the most promising crops.

(iii) Cost-reducing investments (transport, storage, irrigation, transport facilities) and technological change may radically alter this assessment by making Sahelian cereals much more competitive with those grown elsewhere in West Africa.

(iv) Export expansion demands a marketing structure far more developed and flexible than now exists. Externally, penetration and retention of new markets require ability to deliver sizable lots of uniform qualities at highly specific times. Internally, it demands quality grading and quality controls, and creation of physical storage capacity and storage management skills. These marketing capacities do not now exist in Mali or Upper Volta -- the main potential exporters for the near term.

(v) In the light of these considerations, it would be imprudent to base a positive price policy on the assumption or hope that the new grain supplies thereby induced could readily find export markets.

¹ Increased urbanisation as well as rising incomes reinforce this tendency to diminish consumption of millet. An IBRD study (IBRD, Western Africa Foodgrain Study, 1976) reveals that, between 1960 and 1975, annual consumption of millet per capita in the Ivory Coast fell from 14 kg to less than 7 kg. Rice consumption increased from 37 kg to 43 kg and wheat consumption from 12 kg to 19 kg. Consumption of root crops and tubers also declined from 457 kg to 379 kg.

C. Price Stabilization

Stabilization of grain prices, as opposed to rises in their level, is more amenable to government action. In principle, price stabilization can benefit both producers and consumers, though the benefits may not be large and must be balanced against the costs. Stabilization between years is much more expensive and difficult than stabilization within each year. Both kinds of stabilization can be achieved with "pure" buffer stock arrangements, with the price fixers selecting an average price (presumably the average price which would be determined by market forces) or a price band, which they maintain by buying when market prices fall below the lower limit by some specified amount and selling when market prices rise above it. Both can also be achieved by indirect methods, that is, by a grain authority engaging in open market operation -- buying and selling grain from and to traders.

Between-year (inter-annual) price stabilization is more difficult, risky and expensive than seasonal (intra-annual) stabilization for various reasons.

First, as noted earlier, marketed supply is a small proportion of total production and is subject to especially large changes as total production changes. Thus, inter-annual stabilization efforts will require considerable storage capacity relative to the total value of marketed output. An inter-annual stabilization effort is, in this sense, likely to be expensive.

Second, inter-annual grain stabilization has certain inherent contradictions. The presumed primary purpose of attempting to stabilize prices is to reduce the producer's uncertainty; fluctuations in price

are said to deter efforts to expand production. However, a price stabilization scheme which effectively reduced uncertainties could not be maintained, for it implies a support price that would be maintained over a period of years, regardless of harvest size. Such an inflexible support price would mean large storage costs should there be a succession of good harvests. Moreover, the reduction of farmer uncertainty will presumably lead to increased grain production and marketings, which would have to be bought up by the stabilization agency in order to maintain the support price.

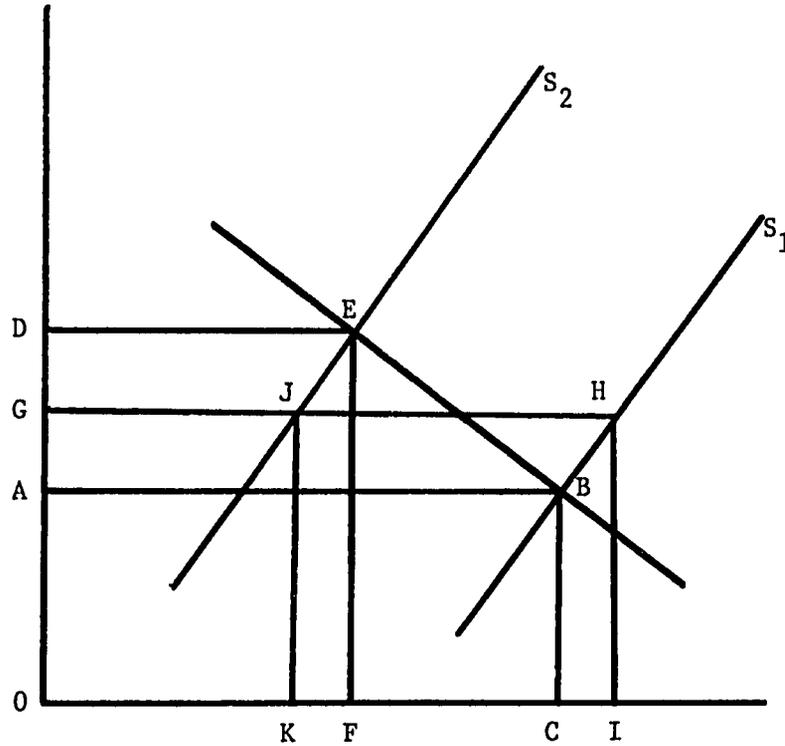
On the other hand, if the grain agency reduces its support price as annual harvests and market conditions change, it undermines its primary objective: reduction of producer uncertainty by reduction of price fluctuation.

Thirdly, price stabilization schemes can be destabilizing if the stocks held by the stabilization agency are not large. If the harvest is bad, traders may recognize that sales from the buffer stock will be inadequate to maintain the official price ceiling. They will have nothing to lose by hoarding grain, while they await the inevitable rise in price when the buffer stock is exhausted.¹

Inter-annual stabilization of grain prices also has a serious additional disadvantage. If successfully done, it will destabilize farmer incomes from grain sales. This is so because the source of price instability is changes in marketed supply. That such changes will, in a

¹The grain agency can import additional grain, but this would presumably be more costly and hence deficit-inducing, should the agency seek to maintain the stable producer price.

situation where prices are stabilized, lead to destabilized income, can be grasped intuitively: a big millet crop, other things the same, means a low selling price, and a small crop a higher price; the output (sales) changes and the price fluctuations balance each other. However, if prices are stabilized, a big crop will mean a large producer income from grain sales, while a small crop will mean a small income.¹



¹This can perhaps be seen more clearly with the help of some elementary supply and demand analysis. The marketed millet supply in year 1 is S_1 , a good crop year; in the following year, the crop (and sales) is smaller -- S_2 . Now in year one, without price stabilization, the millet price will be OA and the producers' revenue from millet sales $OABC$. In year two, the price, without any stabilization scheme, will rise to OD , and the producers' millet revenues will be $ODEF$. Now it can be seen that $ODEF$ and $OABC$ are not much different in area -- which means producers' revenues have not changed much as prices changed. (By how much revenue changes depends on the elasticities of supply and demand.)

Now suppose we have price stabilization. The stable price is OG , the average price of the two years. At this price, producer revenues are very high in year one ($OGHI$) and very low in year two ($OGJK$). Producer revenues are destabilized -- i.e., more unstable with stable prices than they are if prices fluctuate.

Intra-annual price stabilization does not have these same difficulties, or has them to a much slighter degree. So long as the grain stabilization agency is required to buy at official prices, however, there can be problems, some of which are suggested by the following account of an experience in Chad.

In 1966/67 Chad experienced a severe shortage of cereals. The Government decided to buy millet in large amounts during the time of year when prices were low, in order to guarantee a reasonable price to producers and to be able to influence the market during the soudure, selling to consumers at an affordable price. The job was given to SONACOT, a para-public enterprise, which had been created previously to market Chad's agricultural commodities (notably exports) and imports, which they sold in retail outlets scattered throughout the countryside. The millet harvest at the end of 1967 was extremely bountiful and the finances of SONACOT were limited. SONACOT was obliged to buy at the floor price of 12 francs/kg, and purchased 2,000 tons of millet. Then it had to stop buying. It had no more money. Market prices immediately fell to about 6 francs/kg - at Mongo even 2 francs. Because of its financial difficulties and lack of insecticides, SONACOT had to sell its stocks at prevailing prices without being able to wait for the high prices of the soudure. The agency lost several million francs.¹

The conclusions with respect to policy on price levels and price stabilization options are quite clear. A "positive" price policy, involving the establishment of higher than market-determined grain prices to producers, is subject to serious questions of feasibility. In the absence of adequate export outlets, it is not clear what would be done with the "excess supply" or "surplus" of grain. Since local consumption can be significantly expanded only at much lower prices, consumer subsidies would be required to cover the difference between the

¹UNDP, op. cit., pp. 168-169.

producer and consumer prices. Storage costs and losses could become formidable.

Macroeconomic consequences also appear to be mostly negative. To the extent that the "positive" grain price policy leads to changing crop mixes away from export crops, there will be reduction in public sector revenues, a reduction in export earnings, a reduction in the overall rate of investment and economic growth. Each CILSS state can assess the probability and the weight of these consequences, and balance the cost against the probable gains to be obtained from greater food-grain security and movement toward cereals self-sufficiency.

These rather bleak conclusions about the limitations of a positive price policy in stimulating cereals production are in tune with the conclusions of other studies. Raj Krishna notes that price seems to be less important in explaining output changes than technological and other changes which increase productivity per person and per acre.¹ He concludes:

¹"From the single-crop studies, however, one important conclusion does seem to emerge: that the marginal contribution of the price variable to the variance of growing output is much less than the contribution of other nonprice factors - the shifter variables in the supply functions, such as water availability, indices of varietal improvement, or progress of extension. The Punjab study, which contains elasticities of acreage with respect to relative prices as well as to other variables for a number of crops, clearly indicates that, even when the price elasticity is positive, the elasticity with respect to these other variables exceeds the price elasticity in most cases. The elasticity with respect to irrigation exceeds the price elasticity in the case of irrigated wheat, cotton, and millets; the elasticity with respect to rainfall exceeds it in the case of sorghum, gram, unirrigated wheat, and barley; and the elasticity with respect to yield (a proxy for varietal improvement) exceeds it in the case of rice." Raj Krishna, "Agricultural Price Policy and Economic Development," in Southworth and Johnson, op. cit., pp. 516-517.

In measuring the contribution of price movements to agricultural growth we must not lose sight of the fundamental truth that the transformation of traditional agriculture is primarily a techno-organizational episode. The transformation cannot be brought about only or mainly by price movements. However, the techno-organizational effort can be retarded or accelerated by price movements. Favorable price movements can speed up the diffusion of innovations, the absorption of new inputs, the utilization of idle capacity, and even institutional adjustments. Unfavorable movements can slow down or arrest all these processes.¹

With respect to stabilization, inter-annual stabilization possibilities are limited by the conditions listed above. The more feasible stabilization target is intra-annual (seasonal) smoothing out of producer and consumer prices. The existing information on price behavior, however, does not show much potential for significant gains via this kind of stabilization. This could easily be wrong. Closer study and better information on prices would allow firmer conclusions on this matter. So, in this respect as in so many other, the generation of more and better knowledge seems to be a precondition of better policy-making.

D. Substituting Rice for Millet: Some Implications of Mali's Five Year Plan

Thinking about cereals policy tends to focus on the foodgrains as a group. Much attention is given to relations between food crops and export crops, but relationships between the different foodgrains is mostly passed over.

¹Ibid. See also, for similar conclusions, John Mellor, Agricultural Prices in Economic Development: Their Role, Function and Operation, Occasional Paper #39, Cornell-USAID Prices, Employment and Income Distribution Project, Department of Agricultural Economics, Cornell University, June 1970.

Yet issues of great interest and importance are at stake. A number of Sahel countries plan large expansions of rice production, but it is not clear how the planned increases in rice production and consumption will affect millet production, consumption and prices.

The issue arises particularly in Mali. The Five Year Plan (1974-78) envisages a rise in per capita rice consumption from an estimated 20 kg. in 1975 to 79 kg. in 1990. At the same time, millet consumption is to decline from its estimated 1975 level of 150 kg. per capita to 115 kg. in 1990.

The plan gives three reasons for its advocacy of this substitution of rice for millet: the desirability of shifting to a more secure staple, one which was, or could be made, drought-proof; the greater potential in rice for income-raising productivity increases; the nutritional improvement of the population.¹

¹The nutritional improvement is to come, however, from increased cereals consumption, not from substitution of rice for millet. Actually, millet is more nutritious than rice, as the following table shows:

	Calories	Protein	Lipids	Kg. (FM)	Cost		
		(gr. per kg.)	(per kg.)		Calories	Proteins	Lipids
					-----Per FM-----		
Millet/sorghum	3,420	100	30	51.5	66	1.9	0.6
Maize	3,560	95	40	51.5	69	1.8	0.8
Rice	4,120	70	20	116 ^a	36	0.6	0.2

^aRiz Malien 25 - i.e., 25% broken rice.

SOURCE: IBRD, Mali: Review of Agricultural Investment Plans, Annex I, 7.1

Mali's production plans reflect this targeted change in cereals consumption. The Five Year Plan, 1974-78, is dominated by preoccupation with irrigated rice production - naturally enough, perhaps, since it was drafted when the drought was at its most intense. In the original plan, 97 billion MF were allocated to crop production, out of total planned investment of 395 billion. Of the 97 billion for crops, 55 billion MF was intended for food crops, and of this, 85% was for irrigated rice; only 7 billion MF were allocated to millet and sorghum programs. The spending targets of the plan have since been changed, and actual spending since 1974 has taken a shape somewhat different than planned,¹ but the emphasis on irrigated rice remains strong.

The plan projects an increase in paddy output from 210,000 tons in 1974-75 to 330,000 tons in 1978/79. Table 3G in the Appendix gives the Plan targets for both production and consumption. The source of the output expansion will be mainly from 5 large projects with the program for rehabilitation and expansion of the Office de Niger receiving 26 billion MF - a quarter of the total allocation to food crops.²

¹A 1976 revision increased the total plan size to 510 billion MF. As of January 1, 1976 financing had been acquired for 30% of the new total (155 billion MF). In the agricultural sector, financing had been acquired for 28% of planned investment, most of it in two projects, the biggest one consisting of a 12 billion MF Chinese grant for Office du Niger development, (See CRED, University of Michigan, Mali: Agricultural Sector Assessment. Ann Arbor, Michigan) Dec. 1976, pp. 181-183.

²The other four major projects are for expansion of Operation Riz Segou (13 billion MF): Operation Riz Mopti (9.4 billion); Operation Mali-Sud (cotton and cereals), 11 billion MF); the Operation Arachides et Cultures Vivrières (groundnuts and cereals) 5 billion MF.

What is not clear, however, and the plan does little to clarify this, is how the rice is to be marketed. A very rapid rate of increase in rice consumption is projected, as the Appendix table shows. But there are no indications in the plan as to how the profound transformation of Malian eating habits which is postulated, is to be effected. There is certainly no precedent for changes of this kind in Mali; since 1960, there does not seem to have been much increase in rice consumption. There is no reason to foresee a sharply accelerated rate of urbanization or a much quicker growth of income per capita - the usual main determinants of rates of increase in rice consumption.

The price policy implications of the envisaged change are monumental. At present, the price of millet is about half the price of rice. These price relatives probably understate somewhat the true differences in average costs of production of the two grains, rice being more than twice as costly to produce as millet.¹ Irrigated rice, which will require considerable capital investment will undoubtedly cost more than two times as much as millet to produce. Even if the capital investment comes in the form of grants for which there are no alternative projects at hand, and, therefore, requires no amortization, the cost of production to the Malian economy will still be much higher than millet.

¹According to one IBRD study, the true economic cost of some of Mali's rice production is substantially higher than its price. Farmers engaging in inundated rice cultivation pay a levy to cover capital costs on polder development which is below their actual costs. Under average conditions, the economic cost of paddy in newly developed polder is about 15 MF/kg above the producer price (40 MF/kg in 1976), and the cost of this rice to the economy is over 130 MF/kg, as compared to the 115 MF/kg paid by consumers for average quality rice. (IBRD, Mali: Review of Agricultural Investment Plans, 1976.

Also, this presumes that no changes will occur in the production or transformation of millet which will make it cheaper to produce and/or easier to consume. It is the latter which is presently the major bottleneck to expanded millet consumption. However, work is going on in Senegal and elsewhere which may yield an acceptable and economic millet flour. This would make millet highly attractive to consumers at today's relative prices of millet and rice.¹

If Mali could export its increased rice production, the marketing problem would be removed or alleviated, but we have seen that prospects for rice exports, except with heavy subsidies, are not bright.

To absorb the projected increases in rice output in the domestic market would demand massive changes in relative prices, with rice becoming much less expensive than it now is relative to millet. However, production costs are much higher for rice than for millet, and the relative costs may move further in this direction as irrigated rice takes a larger share of the total.

¹Millet preparation requires much more time and effort than rice preparation. Presently, millet processing takes 5-7 hours. It must be winnowed, ground, stirred, steam-cooked, soaked in a broth. This processing, once underway, can't be interrupted. This makes it especially inconvenient in urban households. The Food Technology Institute in Dakar has made substantial progress in developing a stabilized, dry millet flour, which could be sold directly to housewives, or in the form of a blended millet/wheat bread, or as an instant couscous. Production of such flour is now technically feasible.

All of this poses some fundamental questions which should receive more attention than they have so far been given. The fiscal impact of a program of rice subsidies, could be devastating.

The need for storage facilities to accumulate rice which cannot find ready markets could make significant inroads into expenditures available for development purposes. Millet production, which is labor-intensive and spread broadly through the country, will decline, according to the plan projections and will, in reality, tend to stagnate (at best) if the anticipated volume of new rice production comes into the market as now proposed.

To succeed in producing, at high cost, a food staple (rice) which can only be sold domestically by cutting its price below millet - a substitutable staple which is produced at relatively low cost - is not a particularly attractive prospect. Yet it is possible. Unless investment priorities are changed, it is, in fact, likely.

E. Grain Import Substitution in Senegal: A New Proposal

Of all the Sahel countries, Senegal is the biggest cereals importer, the country the most dependent on imported food. Table XXX, taken from the Senegal country study in Volume II of this report, shows trends in Senegal's degree of cereals self-sufficiency in recent years.

Table XXX. Proportion of Grain Consumption
Satisfied by Domestic Production, Commercial Imports
and Food Aid, Senegal, 1969-1977

	<u>Domestic</u> <u>Production%</u>	<u>Commercial</u> <u>Imports %</u>	<u>Food</u> <u>Aid</u>	<u>Total Grain</u> <u>Consumption (000 tons)</u>
1969-70	76	22	2	1,017
1970-71	60	39	1	836
1971-72	72	28	1	968
1972-73	49	37	14	757
1973-74	65	29	6	900
1974-75	79	20	1	1,131
1975-76	74	24	2	1,159
1976-77	(56)*	--	-	1,200*

*Preliminary estimates

SOURCE: "Senegal," in Volume II, this report, p. 8. See p. 7 for underlying data.

No clear trend emerges from this table; it shows dramatically Senegal's continuing external dependence on grain imports.

For many years, greater food self-sufficiency has been one of the objectives of Senegalese public policy. It now appears to have become a higher priority objective. This at least is the conclusion that emerges from a recent official statement of food policy objectives, prepared in the Ministry of Rural Development.¹

¹Republic of Senegal, Ministry of Rural Development and Water Resources, Food Investment Strategy, 1977-1985, Dakar, February 1977. This paper was presented as Document B, National Investment Strategy for Increasing Food Production: Senegal, at the Fourth Meeting of the Consultative Group on Food Production and Investment in Developing Countries, Sept. 7-9, 1977, Washington, D.C.

This important reformulation of Senegal's national food policy warrants analysis and assessment in greater detail than space permits. Only those aspects dealing most directly with price policy will be examined here.

The Report summarizes the new proposals as follows:¹

In order to improve the nutritional status of its population and to diminish its dependency on imports, Government has decided to implement a strategy which aims at import substitution. An important element of this strategy is to promote the consumption of millet, sorghum, and maize by modernizing the processing of such staples, and simultaneously to check the increase in domestic demand for rice and wheat by means of price policies.

To implement the new program the Senegalese Government plans to expand production programs for rainfed cereals (millet, sorghum, maize) and irrigated rice. On the processing side, marketing of the newly developed millet flour will be pushed. Encouraging millet and maize consumption, the Report notes, "will evidently depend a great deal upon the price policies followed." But "in the absence of much information at this stage, it is essential to determine empirically the degree of acceptability of such new cereal products. Such work, when done in urban and in rural areas will be the basis of computing approximate levels of the various consumer prices..."²

¹
Ibid.

²
Ibid. Introduction.

The Food Investment Plan will, it is argued, increase average rural intake from its 1974 level of 2,100 calories and 60 grams of protein to 2,300 calories and 70 grams of protein in 1985. In combination with a national grain storage program, it will reduce seasonal food shortages. Grain imports are to decline from 325,000 tons (the 1971-74 average) to 75,000 tons by 1985. The cost, from 1977-1985, is estimated at US\$1 billion, of which \$200 million is already secured under the present (5th) Plan.

This proposal represents a forward step in many ways.

a) It puts forward agricultural priorities with laudable clarity. In Senegal, as elsewhere, Government has many rural development objectives: higher rural incomes, increased popular participation in political and economic decision-making, greater national self-sufficiency in food, etc. This proposal stresses greater food self-sufficiency, rainfed agriculture and small scale irrigation. To the extent that this reflects a genuine consensus within Government, it is a useful ordering of priorities.

b) The emphasis is on coarse grains over wheat and rice. The statement that the substitution of coarse for "noble" grains is "the centerpiece of food policy" is strongly underlined. Rice is not ignored. It is simply that millet receives more attention. This is in accord with the relative costs of production of the two groups of grains under present technological, climate and economic conditions in Senegal.

c) It properly emphasizes the critical nature of the processing bottleneck to expansion of millet consumption. As mentioned in the previous section, the long and relatively arduous process of preparing

millet for eating is a major reason why rice is so preferred a staple, especially in urban households. The proposed food program directly addresses this problem.

d) The approach is pragmatic. It recommends, for example, that a series of exploratory studies be undertaken to help define the nature and dimension of price policy changes required to reach the targets proposed.

However, the report deals less than satisfactorily with a number of issues, some of primordial importance.

The following are relatively less central, though far from insignificant:

a) The economic rationale given for the import substitution program is very thin¹ (i) Senegal won't be able to pay for future imports; (ii) Groundnut prices have been performing badly and their future outlook is poor (iii) Senegal wants to avoid the problems arising from fluctuations in the prices of imported cereals.

But (i) and (ii) are incomplete. Whether it will be economically feasible or desirable for Senegal to pay for imports depends on future prices of its main exports compared to prices of its imports, and on the volume of its exports. According to existing projections, the outlook for the price of groundnuts is not worse than for grain prices. As for point (iii), the domestic impact of external price fluctuations can be dampened by internal stabilization schemes.

In any event, rural incomes cannot be stabilized by stabilizing grain prices.

¹Ibid., p. 3a

b) The report implies that the only problem in Government grain marketing policy and performance is that ONCAD is a bit too centralized, and a bit too inefficient. This is not correct. ONCAD's difficulties are much wider and deeper. In the grain trade it is essentially superfluous, an additional middleman. Its procedures, like those of the administration generally, are extremely cumbersome. It markets only a small share of marketed grain, despite its legal monopoly, since (i) farmers prefer not to trade with it, for fear that grain transactions will become linked to credit repayment and tax issues related to groundnut sales; (ii) farmers can get better prices if they by-pass ONCAD¹; (iii) ONCAD requires that farmers transport grain to buying stations.

c) The report fails to address price policy questions except to mention that prices will be important in effecting consumption changes. But there are many relevant issues that must be raised. Some of these relate to the policies of subsidizing fertilizer use. Fertilizer subsidies comprise about 15% of the proposed billion dollar investment program. But serious questions exist as to the economic rationale and impact of these subsidies. The Report (5.21 to 5.25) enthusiastically supports subsidization of fertilizers, though it notes that the degree of subsidy could be reduced. But more basic

¹ In most of 1975, for example, the producer price of paddy was 41.5 CFA/kg. The official consumer price was 100 CFA/kg. Transport facilities in Senegal are relatively good and cheap. Farmers could bring grain to towns for sales to traders, or even directly to consumers, and receive a good deal more than 41.5 francs. Similarly, in early 1977, the official price for millet was 35 CFA/kg. The price in Dakar was 65 francs. Traders and producers could split the difference between the 35 francs obtainable from ONCAD and the 65 francs retail price.

questions are at issue. In what respect are the social benefits from fertilizer use greater than the private benefits? If they are not greater, why subsidize at all? We earlier mentioned that the income distribution effects of such subsidies may be perverse, since farmers in good locations benefit more from these subsidies than others. It is unclear, furthermore, why one input should be so heavily subsidized. Subsidies do not reduce risk, though they make it cost less to undertake risky changes. There may be more cost-effective ways to achieve the goals for which fertilizer subsidies are used. The point is that these and other important questions of fertilizer subsidy policy are passed over in this report.

The even more critical issues are those related to relative prices and relations between production, consumption and prices.

a) The argument in the report proceeds as though Senegal can substitute domestic foodgrain production for imports without affecting its export crops -- especially its groundnut exports. This ignores several points.

(i) In most of Senegal, a key constraint to the expansion of production is labor scarcity at planting time and at the time of early weeding. In much of the rest of the country, there are land constraints. In the absence of technological changes which relax these constraints, there will be a price to be paid for import substitution. If land, labor and other inputs now devoted to groundnut production are shifted into cereals production, the output of groundnuts will fall, national income probably will fall, and the balance of payments will probably worsen.

(ii) Intercrop relative prices (groundnuts: millet; groundnuts: maize, groundnuts: rice) are favorable to groundnuts. It does not pay most Senegalese farmers to shift land and labor resources out of groundnut cultivation into cereals.¹

Technological change in the future may alter this situation. The acceptability of the new high-yielding millet strain (mil-gam) could be significant. But these changes are still in the future, and are uncertain. Presently planned production increases rely on extending the use of better implements and practices by extension work.

The point is that under existing conditions farmers will not grow more grains for market unless relative prices are changed so that it becomes more profitable to grow millet and rice relative to groundnuts.

b) On the production side, then, relative prices are to be changed in favor of millet and rice and against groundnuts. But on the consumer side, enormous changes in consumption patterns are supposed also to take place, and the shifts in relative prices implied by these consumption changes may not be consistent with the price changes required on the production side.

According to the report (par. 4.3) wheat flour demand is to fall by 50% between 1981 and 1985, though it is allowed to rise appreciably until 1981. Rice demand is to fall by 30%. Table XXXI below shows the projected changes.

¹See Tables XVI and XV above.

But the report takes no account of income rises, which will raise cereals consumption in the absence of changes in relative prices. We add column 5 to the report's table to show what 1985 grain consumption would be, given a rise in per capita income of about 4% per year. The high income elasticities of demand for wheat and rice (.7 and .4 respectively are common estimates) mean that even greater consumption changes will be required than the report indicates. The table shows the orders of magnitude involved, indicating the changes to be effected by price policies.

Table XXXI. Cereals Consumption Targets, 1981 and 1985

	1974	1981	1985	1985	Target	Percentage
	1974	1981	Without	With	Demand	Change to
	Domestic		Income -	Income -	1985	be effected
	Demand		Induced	Induced		by Price
	(000	(000	Increase	Increase	(000	Policy
	Tons)	Tons)	(000	(000	Tons)	(%)
	<u>74</u>	<u>100</u>	<u>121</u>	<u>145</u>	<u>60</u>	<u>-59</u>
Wheat Flour	74	100	121	145	60	-59
Rice	225	289	335	362	234	-35
Maize Flour	57	72	82	87	170	+95
Millet Flour	296	343	373	388	440	+13

^aIf no policy changes

^bAssumes: (a) income elasticities of demand: 0.7 for wheat flour; 0.4 for rice; 0.3 for maize flour and 0.2 for millet flour.
(b) income rise 20% in 5 years 1981-1985.

Big changes in relative prices will be required to transform demand patterns to the extent indicated. This would be true even if high cross-elasticities of demand are assumed.¹

Retail prices of millet flour will thus have to fall very low and/or the price of wheat and rice rise a great deal to effect these changes.

The report asserts that millet prices are already relatively attractive to consumers. The increased consumption will come from making millet more convenient by introducing usable millet flour and a millet couscous. But it seems unlikely that this would be enough to stimulate consumption changes on the scale envisaged. Some decline in the relative price of millet is probably essential.

It does not seem likely that millet producers would find production attractive at these implied prices. Subsidies might be given to maintain production. But these could be substantial, and it is hard to see how they could be financed other than by taxing cash crop growers. The effects on the value of groundnut and cotton production, the value of agricultural output, the balance of payments and the level of national income would be negative. If subsidization is not used, the decline in millet prices required to stimulate its consumption would probably have perverse production effects -- i.e. massive shifts from millet to

¹The problem with millet may be greater than indicated in the table. In most discussions, the income elasticity of demand of coarse grains like millet is assumed to be negative: as people's incomes rise they eat less millet and more wheat bread and rice. If true in Senegal, this would mean that far greater relative price changes would be required to get from actual 1974 to target 1985 consumption of millet.

groundnuts and cotton.

The rice problem is a little different. A rise in the price of rice will cut consumption and stimulate local production. So there is no inconsistency as in the case of millet: i.e., a higher producer price required to stimulate output, a lower price required to stimulate consumption. But up to now locally-produced rice has been considerably more costly to produce than imported rice. So to the extent that domestic rice production and not millet flour is substituted for imported rice, it will be higher priced rice. Real incomes of rice consumers will fall. Producers will shift away from cash crops (and millet) to rice.

Once the issue of relative prices of groundnuts and cereals is posed this way, the full economic implication of the import substitution program must be faced. The facts indicate that Senegal has a strong comparative advantage in groundnuts. It is argued in the Senegal country study in Volume II, and elsewhere,² that Senegal's national income, farmer income, government revenue (and hence development

¹"Incentive and Resource Costs in Senegal," unpublished working paper of the West Africa Regional Integration Project of the World Bank (Bela Belassa, Director).

expenditure) and the rate of economic growth are higher with specialization on groundnuts for export than they would be if the groundnut/food crop production mix were changed in favor of food crops. There are, of course, many qualifications to this assertion. It is true now, but may not be true in the future. Technological change can alter these relationships. Relative world price changes may make foodgrains more remunerative compared to edible oils. Anyway, income and economic growth aren't everything; food security and reduced dependence are highly valued public objectives, in Senegal as elsewhere.

But when all is said, it remains true that there is almost certainly a price to be paid for export substitution, in terms of sacrificed production of export crops, reduced income, and lower rates of economic growth.

The issue, then, that policy-makers in Senegal must confront is how to minimize the probable social costs of the grain import substitution program. The target might be modified, allowing more imports than specified in the report. The timing might be changed, stretching out the period over which the import substitution process is to occur. The concept of self-sufficiency might be shifted more in the direction of regionalism; Senegal might count as "domestic" all or part of its imports from Mali and other CILSS countries. And most important, increased research effort should be given to millet and rice production. If the technological constraints can be relaxed, millet and rice production will become privately and socially more profitable and a more solidly-based import substitution can take place.

V. CEREALS STORAGE

This analysis looks at foodgrain storage in the context of the development of a cereals marketing strategy for the CILSS states. Holdings of commodity stocks enter into the marketing process first, in the physical transfer of goods from production points to ultimate consumers. This requires facilities for the short term holdover of stocks in process of collection and transport. A second, and the most important role of storage in the marketing institution is to serve as a buffering system, i.e., a mechanism which smooths out temporary excesses in supply and demand in time and space. All markets require buffers in order to adjust the rhythm of the production of output to the pace of consumption demand. Market efficiency is enhanced by the holding of inventories which permit short-run variations in supply and demand to affect the size of the inventory rather than the price of the commodity. The convenience and the contribution to marketing efficiency provided by inventories of commodities impose costs which take the form of managing and maintaining stocks.

Traditionally in Sahelian economies, the farm-village unit has assumed the responsibility for maintaining and managing the greatest proportion of national foodgrain stocks of locally produced cereals. The primary impetus for cereals storage derives from the necessity of providing for carryover stocks until the next harvest--and, for the longer term, in the event of shortfalls in production. Stocks, then, have been held primarily to meet the consumption demands of farm-village units between harvests. In general, the surplus of locally-produced grains available for marketing has been small

relative to total production. This situation reflected underlying production and consumption conditions. Farmers have tended to produce only small amounts above their own needs for current consumption, with some margin for storage and seed. Furthermore, the difficult and relatively costly transport of bulky, low-cost foodgrains and, in some cases, the different pattern of cereal consumption by urban populations as well as relative cereal prices, have tended to limit the volume marketed. Taking the long view, technological improvement in local foodgrain production and increased productivity can be expected to lead to increasing surpluses over amounts needed for consumption by local producers. Moreover, growing urban and rural markets, increased specialization within the agricultural sector, should bring about an increase in the effective demand for marketed cereals. Thus, the perspective from which issues of storage policy should be examined is that of a widening and deepening of the market for foodgrains. The costs of maintenance and management of substantial stocks of perishable commodities, for example, must be taken into account in defining a marketing strategy. The extent to which such costs can be absorbed by the private sector, and more generally the respective roles of the private and public sectors, are critical issues of policy.

II.

There has been no inventory of existing storage infrastructure in the CILSS states which would permit a detailed accounting of storage investment as a total system. For a given country, the total storage system includes medium and long-term structures on farms, at village and regional levels, as well as transit, terminal and port facilities. In this synthesis, as in the

country studies, an effort has been made to glean information from available official reports and studies. Use has been made of observations of the field team and others who have recently examined various aspects of marketing systems in CILSS countries. The CILSS country responses to the Working Group's questionnaire also yielded some information. Nonetheless, there is at hand only a minimum of detailed information on current holdings of stocks. Here, "informed judgements" are the next best alternative. This section describes private and public sector storage activities on the basis of such sources. There is, to be sure, a growing body of literature on cereals storage in African economies. However, there are some doubts as to just how far findings of studies of other West African systems have universal applicability or whether in certain respects the CILSS countries are sufficiently different to be studied as an integrated unit.

The major volume of stored cereals in each country is determined by thousands of independent decisions made by individual farm units in the private sector. The traditional sector also makes decisions on investment in storage infrastructure. The amount of existing storage capacity in traditional sectors is not known with any degree of precision but, for certain countries, some tentative estimates have been attempted. In Upper Volta, for example, the FAO has estimated that local granaries are able to store about 1.6 million metric tons. An official estimate for Niger suggests that on-farm storage capacity approaches 1.0 million tons. It is thought that perhaps 20 percent of this total represents facilities capable of storing grains for at least two years. For the present, it might be expected that the reconstitution of stocks drawn down during recent deficit production years will be a major objective of farm units. This means that, for the immediate post-drought future, the distribution, at the margin, of an increasing cereals

output as between sale, consumption and storage, will be reflected generally in an increase in on-farm storage.¹

A second, but relatively minor, source of private sector storage capacity is represented by installations owned by grain traders. For the CILSS countries as a whole, physical facilities owned by traders and amount of stocks held at a given time are low relative to total trading activity. Casual observations by the Marketing Group's field teams noted low volumes of stocks on hand. Most dealers tend to hold stocks in store outlets which limit the size of their inventories. An FAO estimate of storage capacity of all traders in Upper Volta is about 30,000 metric tons. The CEGOS Report on Mali observes a tendency for dealers to negotiate sale agreements with farmers with the stipulation that farmers will hold grain in their own facilities until the trader has arranged for transport and resale. This implies that at the time of the negotiated sale any risks of storage losses are transferred to the trader. The results of recent research on trader activities in Northern Nigeria show that, in general, monthly purchases of cereals by traders are approximately equal to sales.² If this holds true for the CILSS states, it serves to explain the observed size of dealer inventories.

All CILSS countries have assigned to either autonomous public agencies or to existing government departments the function of procurement and

¹This view of the rebuilding of stocks, at least in those areas within countries which have traditionally maintained high levels of on-farm storage, is put forward in République du Mali, Institut d'Economie Rurale, Etude des Structure des Prix et des Mécanismes de la Commercialisation des Mils et des Sorghos, IDET-CEGOS, May 1976; and, Conseil de l'Entente, Etude Rélatrice à la Constitution d'un Stock de Réserve en Céréales pour le Niger, Janvier 1975.

²H.M. Hays, Jr., The Marketing and Storage of Food Grains in Northern Nigeria, Ahmadu Bello University, Institute for Agricultural Research, Samaru Miscellaneous Paper 50, 1975.

management of cereal storage at the regional level.¹ In general, the amount of storage capacity in the public sector is higher where countries have a history of state intervention in grain markets (e.g., OPAM in Mali). However, even where the intervention of state trading agencies in local cereals markets has been minor (at least until recently this has been a very subsidiary activity of ONCAD in Senegal) or where active price support programs are not of long standing (OPVN in Niger, OFNACER in Upper Volta), there has been an expansion in public sector storage infrastructure. This expansion is attributable to the rapid build-up in warehousing as a result of international transfers of food aid during the drought years and to a continued flow of international financial assistance for the construction of storage facilities. Estimated existing capacity and that in process of construction is shown in Table I. These figures represent, in general, conventional large-scale structures with unit capacity of approximately 1,000 metric tons, located in urban centers or various regions of each country. However, little is known about the overall quality and condition of existing facilities. The estimate shown for a given country gives no indication of condition of the facilities included in the total. Except for newly constructed facilities, there is undoubtedly a wide variation in the engineering quality of storage facilities. Further, there is a lack of information on the average volume of stocks held by the public sector. Casual observations in some countries have reported low use-rates of existing infrastructure; in other cases, officials estimate insufficient capacity relative to the desired level of holdings.

There is an increasing tendency in the CILSS states to build up public sector storage in order to insure an adequate flow of cereals to off-farm populations or deficit production regions. That is to say, the increase in central storage facilities--meaning large-scale facilities, financed through

¹ONCAD in Senegal, OPVN in Niger, DC/FDAR in Chad, etc.

national budgets--is based primarily on a concern to insure supplies, year round, within some fixed range of prices. It reflects past experiences in the Sahel environment with crop fluctuation risks and the unreliability of grain harvests due to variation and timing of rainfall. This has led, in turn, to pressure on existing storage facilities and heavy transport cost to stabilize supplies when adversity occurred.

III.

Four different purposes for cereal stocks have emerged in most of the CILSS countries: 1) a normal pipeline for grain milling and distribution; 2) seasonal storage to stabilize intra-annual fluctuations; 3) buffer stocks to stabilize inter-annual fluctuations and 4) Emergency Reserve stocks.

Table XXXII. Storage Infrastructure
Estimates of Present Capacity of Cereal Storage
and
Additional Capacity Under Construction in CILSS States

<u>Country</u>	<u>Year</u>	<u>Present Capacity</u>	<u>Additional Capacity Already Financed</u>	<u>Total Capacity Present and in Course of Construction</u>
Chad	1976	17,600	-	17,600
The Gambia	1975	4,500	n.a.	4,500
Mali	1976	90,000	20,000	110,000
Mauritania	1975	16,000	n.a.	16,000
Niger	1977	35,500	35,500	70,500
Senegal	1977	25,000	60,000	85,000
Upper Volta	1977	54,000	-	54,000

SOURCES: Estimated storage capacity for the Gambia is based on: Tropical Products Institute, Storage Evaluation Commission, Report, 1975. Mali data-CEGOS, Etude des Structures de Prix et des Mécanismes de la Commercialisation des Mils and Sorgho. Capacity for Upper Volta based on estimates prepared by the FAO. Estimates of capacity for Mauritania and Senegal are derived from responses to the CILSS Storage Questionnaires. Data for Niger were provided by OPVN. Data for Chad are from DC/FDAR.

The stock requirements under the second and third categories relate to matters of price policy. The issues involved are discussed elsewhere in this report. Here we are concerned with storage strategies. We look first at the importance of private sector storage as a supporting investment to increased production and marketing of foodgrains. The Emergency Reserve Stock policy will then be examined in some detail since investment in security stocks is an important current issue in storage policy.

The weight of on-farm and village level storage in the total volume of national grain stocks has already been mentioned; and surely, if small farmers are to be encouraged to produce surpluses, some account must be taken of the need to increase the capacity and minimize the risk burden of small-scale storage. There is no systematic treatment of on-farm and village level storage in the CILSS states and a lack of systematic research exists on matters pertinent to formulation of storage strategies such as volume of holdings, time-release patterns, economics of stockholding, losses, decisions on infrastructure investment, and technical matters relating to storage practices. At this stage, it is possible only to identify some factors which enter into individual producer storage costs and possibilities for improvement in on-farm storage.

The costs of grain storage at the farm level can be divided into fixed and variable costs. Fixed costs include investment in structures, equipment, and maintenance of facilities. These costs are incurred whether or not space is fully used on a continuing basis. The level of fixed storage costs are influenced by the type of facility and the existence of alternate uses at a particular time. Variable costs are related to the grain stock. They include costs of preparing grain for storage, i.e., handling and pre-storage

treatment, and transfers of grain in and out of storage. Variable costs include also storage losses in the form of shrinkage in weight and deterioration in the quality of the stored product. The main influences affecting variable costs are the value of the product in storage and the length of time of storage. Certain monetary costs might be added to both cost categories, such as interest charges related to physical facilities and the value of stored grains. In an effectively operating, or competitive, grain market, the seasonal rise in prices should be approximately equal to total storage costs per unit.

It is generally held that, within the range of available technology, the traditional granaries which have evolved--using local construction and fastening materials--tend to minimize fixed investment costs and serve reasonably well in relation to their costs. However, some observers suggest that, under present conditions, on-farm storage imposes a heavy risk burden on primary producers in the Sahel in terms of costs incurred in the form of losses in weight or quality of grains. Although there has been no actual measurement of this element of real storage cost, in some instances losses from storage on farms are thought to run as high as 25 percent on an annual basis.¹ Given the magnitude of the loss potential, substantial returns may be realizable through the introduction, at the farm or village levels, of technical improvements in pre-storage handling, grain treatment and the like,

¹The extent of losses from on-farm storage is a subject on which widely varying opinions have been expressed. In part, the controversy may involve the definition of "losses". In addition to the observable physical state of grains, losses may also be defined to include a deterioration in the nutritional value of grains. Some research carried out in villages in Northern Nigeria estimates loss rates as low as 5 percent from on-farm storage. (See, for example, H. M. Hays, Jr., *op. cit.*). In any event, a detailed field survey of on-farm storage conditions in the Sahel states is necessary to verify this element of real storage cost.

together with some type of technological innovation in infrastructure. The latter might be combined with the extension of credit to owners of small-scale storage facilities. In addition to the reduction in physical losses and an increase in the quality of cereals offered for sale, returns from improvements in on-farm storage would include an extension of time that grains could be held in storage. This would permit the farmer to take advantage of seasonal changes in prices and promote greater efficiency in grain marketing channels.¹

A criterion to be met by any new structures introduced at the farm level is that they facilitate a decrease in storage losses significantly greater than increases in total costs of new construction methods and materials. There are present possibilities for reducing loss costs of on-farm storage through low-cost technology which would require small capital outlays per ton of grain stored. Moreover, this technology would utilize a minimum of imported materials. A major component of construction costs would be farm labor-time.²

A recent objective of storage policy in Sahel states is to establish long-term emergency reserve stocks to serve as the "first line of defense" against extensive shortfalls in production. The reserve stock concept grows

¹For a discussion of the returns to investment in small-scale storage infrastructure in other countries, as well as an illuminating discussion of the need for an integrated national storage system see, e.g., A.P. Bhatnagar, "Considerations for Grain Storage," Bulletin of Grain Technology, Vol. IX, No. 2, June 1971. Returns to investment in small-scale farm and village storage are discussed in M. Radetzki, The Swedish Grain Storage Venture in Tanzania: A Micro-Evaluation, Institute for International Economic Studies, Stockholm, Paper No. 3, 1971.

²A specific example of such low-cost technology is given by the International Bank for Reconstruction and Development, 1976.

out of the drought experience and the reasoning is that, in the case of a series of bad harvests, individual governments should be prepared to meet basic cereal requirements of affected populations for at least 1-3 months. The IBRD has prepared a preliminary staff review of emergency grain reserve stocks which provides a survey of intentions of governments, and which raises, on a preliminary basis, some basic questions with respect to the feasibility of these programs on the scale projected.¹

Reserve stock programs impose three initial requirements: a grain stock, facilities for long-term storage, and a managerial component. In most cases, the intention is to constitute reserve stocks through purchases of local grain, principally millet and sorghum. The mix of imports and local grain for a given country would depend, of course, upon the size of marketed surpluses and the ability of national grain agencies to organize sizeable purchases. Planned emergency reserve targets for six Sahelian countries are shown in Table 2. These countries plan to seek external financing for long-term storage facilities as well as some technical and managerial assistance. Storage installations with certain engineering design qualities, suitably located within each country, would best facilitate the operation of the emergency reserve program. Thus, in order to minimize operating costs, structures permitting grain to be held for a minimum of two years without loss or deterioration would be required. To reduce transport costs under the program facilities would be placed in vulnerable (chronic deficit) regions.

¹International Bank for Reconstruction and Development, 1975.

Table XXXIII. Planned Emergency Reserve Targets (in tons)

<u>Country</u>	
Chad	10,000
Mali	70,000 (including 20,000 tons of rice)
Mauritania	40,000
Niger	20 - 25,000
Senegal	50,000 (including 30,000 tons of rice)
Upper Volta	20,000

SOURCE: IBRD, 1975.

In calculating the level of emergency reserves, local planners have based estimates of requirements on the total "at risk" populations (i.e., urban and nomadic populations) which would be the primary beneficiaries of programs. Reserve target levels reflect estimated holdings of stocks required to sustain these populations for a specified period of time. In planning for the implementation of these programs, the assumption is that state grain trading agencies would have sufficient resources and would be able to make substantial purchases and sales of grains according to a prescribed schedule. In its initial review of reserve programs, the IBRD Staff Report suggests that reserve targets as indicated in Table 2 may be too ambitious and should be scaled down to reflect what a given government can realistically expect to accomplish. While there is need for further study in order to define the optimum size of stocks in each country and to develop related cost estimates, the IBRD has identified certain constraints on program size.

The major constraints on program size arise from the marketing situation, and the need to coordinate price and storage policy. Two factors fix a limit on reserve storage. The first is the total costs of maintaining stocks including, capital investment costs, annual operating costs, and the recurring risks of financial losses in the disposal of time-expired stocks. The second factor is the need to renew stocks at regular intervals. This element of control is a critical limiting factor and refers to the amount of reserves that countries would be able to secure under existing market conditions. If, given the type of storage facilities available, the maximum safe storage period is not more than two years, the grain agency charged with the management of reserve stocks must be able to purchase replenishments equal to at least one-half of the total reserve held each year. This poses the question of whether buying agencies can pick up a sufficient percentage of the total volume of cereals marketed each year to meet their requirements. Moreover, there is the issue of harmonizing price and storage policies. In countries where grain trading agencies have responsibility for operating price stabilization programs, it is assumed that grain purchases under price support programs will be directed to emergency reserves with an equivalent volume of older grains released for sale each year. For logistical reasons, this may be difficult to achieve completely in practice. Further, the efficiency of price stabilization programs could be affected if agencies were only able to offer two-year old grain on the market. The possibility of sales resistance arises since consumers would be able to purchase the current year's crop from alternative sources.¹

¹In addition to the limit on the size of reserve programs which arise from the grain agency's ability to purchase a sufficient volume of grain each year, a further limiting element would be grain agencies' ability to sell off the requisite amount of stocks held every year in order to meet its turnover requirements. Suppose, for example, in a given year a bumper cereal crop is produced; if the market for foodgrains is limited, the agency would find it difficult to dispose of an amount as high as one-half of its long-term reserve stock.

In addition to the technical matters raised in the IBRD's preliminary review, there are other fundamental issues posed by the emergency reserve concept. Specifically, there is a need to weigh the relative costs and strategic advantages of employing large, long-term grain storage schemes for "drought-proofing" purposes. Grain storage as a drought-defense mechanism has gained widespread support among policy framers in Sahelian states who, quite properly, are concerned with a constant flow of food supplies. Certain implicit assumptions and a collective attitude underlie reserve programs which should be brought forward and discussed.

Measures such as the reserve stock policy, which place emphasis on prospective short-term cereals needs--the necessity to provide the caloric requirements of x percent of the population for a given period of time--are a carryover of a crisis-oriented cereals policy which was appropriate in the context of food shortages of the magnitudes experienced between 1968-74. In view of the low probability of the recurrence of a crisis of that scale for the foreseeable future, there is time to consider investment options and to weigh the consequences of heavy investments in holdings of cereal stocks.¹

Investment in large holdings of cereal stocks as a means of providing foodgrain security imposes heavy potential real costs on countries in the Sahel. While the initial capital costs and the costs of the inventory are

¹It has been suggested in a recent study by SCET/SEDES (Essai de Reflexion sur les Strategies Anti-Secheresse Possible dans le Sahel de l'Afrique de l'Ouest, Janvier, 1976.), that the probability of recurrence of an acute drought year, such as 1973, is as low as 0.02 percent. This prospect limits both the duration and geographical range of the future-drought context for which policies are being framed. Also let it be noted, the more limited the scope of a given problem, the wider the range of options available to policy-framers. Also more round-about investments, e.g., investment in transport, and the strengthening of total national storage systems to facilitate the flow of goods, should not be precluded from consideration as "drought-proofing" measures.

not insignificant, real costs must be measured in terms of the potential for losses through storage and increased management burdens on national grain agencies. In the absence of extremely high-level technology for long-term storage, such as that found under grain storage schemes in some western countries, the record of African countries with respect to losses on long-term storage undertakings has been poor. Another important real cost of reserve programs is the heavy management burden which would be imposed on grain marketing agencies. In every country, these agencies are already under-equipped in technical and managerial expertise. Additional responsibilities of reserve programs can only lower present performance records.

With respect to the need for large-scale, individual country reserve programs, it is inappropriate to treat the Sahel as though it were a monolith. Variations in costs of grain imports due to geographical location and differing capacities among countries to finance imports of grain in the event of production deficits affect the relative advantages among countries of financing and maintaining large holdings of local cereal stocks. The interior countries might well benefit from a reasonable level of local cereal reserves since, in their cases, heavy transport costs add significantly to imported grain prices. Because coastal states bear proportionally lower costs on imported grain, a comparison of the total cost of maintaining a given volume of local stocks and an equivalent amount of grain imports should be made. Finally, for those countries linked to the exterior through export markets, there is a major alternative to cereal reserves as a drought-defense mechanism. That alternative is to pursue production in areas of comparative advantage and build up levels of foreign exchange reserves. To be sure, while exchange reserves are the most efficient method of providing for long-term grain needs in terms of costs, it is recognized that, in practice, large-scale commodity procure-

ments would require an augmentation in the capacity and skill of CILSS countries to operate in international commodity markets.

In conclusion, this report on storage in the CILSS states reveals the need for further research on a number of issues. One important research requirement is an analysis of the costs to countries of acquiring and holding security stocks, including both the absolute costs of such programs and the costs relative to other means of achieving security. A further issue to be investigated is the administrative link, or tie-in, between price stabilization and emergency reserve programs, particularly the question of the share of the market available to the public grain marketing agencies and their ability to undertake buying and selling transactions on the required scale. Finally, there is the need for studies to define CILSS government objectives and policies in the storage area and, also, on the economics of the location of cereal storage.

VI. CONCLUSIONS

Conclusions emerging from this study have been put forward in each of the chapters. We need only summarize the main points here.

1. While the Sahel states have much in common, they differ in one respect particularly important from an economic policy perspective: the coastal economies (Gambia, Mauritania, Senegal) are more fully integrated into the international economy. They export more and are more dependent on food imports. In these countries, a potential domestic market for increased domestic food grain production exists. The interior states, on the other hand, are normally self-sufficient, except for wheat, and are likely to remain so - with the possible exception of Niger.

2. The basic issue for the coastal economies is the feasibility and desirability of a strategy of import-substitution in cereals - replacing imported rice, millet and wheat with domestic rice and millet. In order to induce domestic producers to grow more millet and rice, relative returns would have to shift in favor of these crops, and away from export crops - especially groundnuts. Since it will probably be necessary to reduce the consumer price of millet relative to other grains, in order to stimulate its consumption, subsidization may be necessary, with strongly anti-developmental effects. In all events, under existing technological conditions, more domestic cereals production will mean reduced export crop production and this will have negative effects on income and growth. The import-substitution process should, therefore, be gradual - more gradual than now planned.

The concept of "self-sufficiency" should be broadened to include imports from neighboring states, and more research and extension work should be devoted to increasing the productivity of millet and rice production.

3. Economic analysis and experience in the Sahel, as elsewhere, indicate that "positive" price policy has limited usefulness as an instrument of policy. This does not mean that the present price structure is "right;" food aid and other factors have created distortions," depressing cereals prices in some countries. But it is difficult to maintain a support price because of inability to economically dispose of the incremental supply which would result. For the coastal states, import-substitution presents some opportunities. For the interior states, especially Mali, there may be export potentials, though, at present, the prospects for significant exports do not seem bright. Mali's rice is not competitive with the Asian brokens which dominate the coastal markets. Alternative uses for cereals (e.g., feed grains) are not yet significant. It would be imprudent to stimulate production increases via positive price policies without first having developed the export market potential and the capacity to absorb cereals in alternate ways.

4. Up to now, there has been little implementation of grain price stabilization objectives in the CILSS states. In Upper Volta and Niger, OFNACER and OPVN were created in 1970/71 with intra-annual price stabilization as major objectives, but they have done little, mainly because of the drought. Nonetheless, in these states as elsewhere, price stabilization is frequently stressed as an important need.

5. Intra-annual price stabilization (smoothing out seasonal fluctuations) presents no difficulty in principle and can bring benefits to both consumers and producers. Any policy initiatives in this area, however, should be made in the light of the data on seasonal price variations presented in this study. These indicate that fluctuations are sizable, but not as large as commonly asserted.

6. Inter-annual price stabilization is much more difficult and potentially costly. Proposals to introduce it should be very carefully evaluated. The main problem is the existence of a basic contradiction in this form of stabilization: the fact that prices must be stable over several years to have any effect on farmer uncertainty. But, if they were stable, the financing and storage needs of the stabilization agency would be highly burdensome.

7. It is important that the question of relative prices of millet and rice be given serious consideration in those states undertaking large rice production programs - particularly Mali, but also Upper Volta and Senegal. Alterations in production programs in the light of marketing, price and cost considerations could avoid the need to make painful and expensive adjustments in the future.

8. We have presented the main options for the reform of marketing systems and given the advantages and disadvantages of each. We made no recommendations. In a preliminary "strategy and recommendation" paper, discussed by the Club Working Group in Brussels, we put forward the proposition that the key to any effective marketing reform was "the legalization and encouragement" of the private traders. This issue was

intensely debated at Brussels, and was rejected by the majority of the Working Group.

There is no need to rehearse the issues and arguments. The discussion of marketing reform options is hopefully comprehensive enough to give readers a clear picture of possibilities and constraints.

Whatever option is chosen, it will have better prospects of success if efforts are made to integrate markets more effectively - by improving rural roads and road maintenance, by disseminating information more widely on rainfall, crop estimates, prices, etc. Encouragement of the development of real cooperatives, with solid roots, is another long-term policy suitable under any marketing option.

9. In virtually all reports on marketing, prices, storage and related issues, there is one strong and universal theme: the urgent need for more and better information. We have repeatedly stressed this point throughout this report. We have noted the sparsity and uncertainty of basic data - on grain production, marketings, prices actually prevailing. We can estimate only very approximately the evolution of rural incomes. Because of lack of information on actual market prices, and costs of production, we cannot analyze properly the movement of relative returns to farmers from production of different crops, which is crucial for policy and for undertaking farmer production responses.

However, the information gap goes deeper. Except for a few surveys and a handful of village-level studies, there exists in the Sahel very little basic information on traditional production about the pattern of sales related to the size distribution of farms, about systems, producer responsiveness to price, about farmer disposal of harvests

between sales, gifts, storage etc. Almost nothing in detail is known about village-level storage, the structure of traditional trade, or the performance of cereals markets.

One of the indispensable elements of any strategy in this matter of marketing and price policy must be, then, a broad program of information-gathering and research.

a. Agricultural statistical services and agricultural survey units should be given every possible assistance, to begin long-term programs aimed at reinforcing government statistical capacities. The improvement of basic data collection in such areas as grain production, marketings, prices in rural and urban markets should receive high priority. These should be supplemented by ongoing sample surveys aimed at specific objectives: crop yields, size of exploitation, inputs utilized, marketings by size of exploitation, etc.

b. A special survey of storage programs and policies, such as was originally planned, should be undertaken as soon as possible.

c. Village level studies are particularly needed.

-Farm management studies ("budget-exploitation") will give insight into fundamental input - output relations, "costs of production" of various crops, constraints on production.

-Crop disposal studies - how farmers allocate their output between corruption, sale, gift, storage - are essential to understanding how the grain production, marketing and storage systems are linked. Without

this kind of microeconomic study, it will be impossible to answer such questions as who buys grain and who sells it, what is the income distribution effect of grain price policies, how efficiently or inefficiently are traditional grain markets.

-Studies of cereals market structure and performance - the circuits, the agents, marketing margins, channels of supply of major deficit regions and urban areas.

-Studies of grain consumption in rural and urban areas, by income groups. These will provide understanding of the income effects of grain price changes. They will also clarify impact on income distribution of such price changes.

d. Studies of grain export potentials and constraints and possible uses of cereals for feed and as inputs for new industrial activity.

These are not intended to be all-inclusive. A similar list of research needs was approved by the Club and reaffirmed at its Ottawa meeting, in May 1977. It only need be observed that investment in more and better knowledge of rural reality promises to yield high returns over the long run.

APPENDIX 1.

COMITE PERMANENT INTERETATS DE LUTTE
CONTRE LA SECHERESSE DANS LE SAHEL (CILSS)

CLUB DES AMIS DU SAHEL

Working Group
"Marketing, Price Policy, and Storage"
Dakar, July 19-21, 1976

Document 1: Terms of Reference
(unofficial English translation)

Terms of Reference

N.B. The working group has decided to limit the scope of its investigation to cereals and -- where they are significant -- to dry legumes. Marketing, price policy and storage for livestock and fish will thus be the concern of the relevant sectoral teams.

To the extent that it is possible, the statistical information sought should cover the period 1960-1975.

I. Marketing

- 1.1 Describe and compare the marketing systems in the CILSS countries.
- 1.2 Evaluate the importance of food crops in comparison with total agricultural production in each of the CILSS countries.
- 1.3 Evaluate the importance of trade -- i.e., non-subsistence production, compared with total production of cereals in each of the CILSS countries. Estimate the proportions traded in modern marketing channels and in traditional channels.
- 1.4 Describe the methods by which marketing operations are financed, for cereals as well as cash crops; indicate also the magnitude of financing involved.
- 1.5 Describe the institutions and procedures by which the rural sector is provided with inputs (fertilizer, agricultural equipment, credit, seeds, etc.); set out the relationships between cereals marketing and provision of inputs.
- 1.6 Describe institutions and processes by which rural people are supplied with consumer goods, analyze the possible effects on cereals production and marketings.
- 1.7 Analyze the relationships between cash crops and food crops.
- 1.8 Describe the institutions and procedures involved in foreign trade in food grains (imports and exports). Estimate the volume of this trade, in both modern and traditional channels. Distinguish between inter-CILSS country trade and other.

II. Price Policy

- 2.1 Describe and analyze trends in cereals prices -- both producer and consumer prices.
- 2.2 Describe the methods by which producer and consumer prices are established.
- 2.3 Compare producer prices of cash crops and food prices.
- 2.4 Describe and analyze the impact on production of producer and consumer price stabilization systems, where these exist among the CILSS states.
- 2.5 Describe and analyze the effects of the system of price subsidies to consumers, where they exist in the CILSS states.
- 2.6 Estimate the income of the rural sector, and its fiscal contribution.

- 2.7 Describe the cost structure of main cereals, from farm gate to consumer, with special attention to transport costs.
- 2.8 Evaluate the relative weight of the various factors contributing to grain exports -- price differentials, exchange rates, ease of marketing and transport, etc.
- 2.9 Indicate if there exists a single official producer price and a single official consumer price throughout the country, in each CILSS state. Analyze the effects of this policy on production and consumption.

III. Storage

- 3.1 Describe the present situation with respect to storage capacity in the CILSS states at village, local, and national levels, as well as in the ports.
- 3.2 Summarize the CILSS states' public policies and objectives regarding storage, insofar as these can be determined from plan documents, political statements, investment patterns, etc.
- 3.3 Estimate the quantities of products now in storage, with some indication of needed capacity under various definitions of self-sufficiency. Indicate means of storage used and spoilage rates.
- 3.4 Make an inventory of storage-related projects presently underway, or in preparation.
- 3.5 Describe the means, methods and products used in treating cereals distributed for sale to consumers or for use as seed. Specify the quality norms in use.
- 3.6 Describe the mechanisms used to finance the products stored.
- 3.7 Estimate the cost of different methods of storage in use in each country. Describe the mechanisms in use for financing the costs of storage.
- 3.8 Prepare an inventory of new methods and concepts of storage and conservation of food grains, whether for consumption or for seed.

APPENDIX 2A.

GRAIN POLICIES IN SELECTED COUNTRIES

<u>Country</u>	<u>Price Policy</u>	<u>Marketing Organization</u>	<u>Utilization Policy</u>	<u>Stock Policy</u>
Egypt	Producer prices fixed by Government for requisition crops which include most grains	Requisition crops are purchased by cooperative societies - close association with Credit Bank	Wheat, flour bread maize sold at Government fixed prices. Imports by government organization	Three months supply
Bangladesh	No price regulations, no price support except for rice	Marketing function mainly by private trade. Government procurement rice only (part of crop)	Rationing of government purchased rice and imported wheat. Private trade also operates. Imports by government only	Aim is one million tons for operational stocks 700,000 tons as buffer stock
Ethiopia	No produce price support scheme	Trading mainly in private hands. The establishment of a national grain marketing and storage organization envisaged.	Price ceilings for all cereals at various marketing stages	Plans to establish a grain reserve stock of 50/100,000 tons for emergencies plus a buffer stock
Ghana	Guaranteed minimum prices fixed annually for maize	Bulk of grain crop marketed through private channels with only small quantities handled by Grains Development Board	No control of consumer prices for maize (major grain) milling industry owned partially by government	Government stocks administered by KYDEP. A three year storage expansion programme under way
Guatemala	Guaranteed minimum prices for staple grains are set well in advance of the harvest	Instituto Nacional de Comercializacion Agricola responsible for implementation of the price support scheme and purchasing of grains	Indeca sells subsidized maize through its public retail points well below ruling market prices	Indeca responsible for stock policy and management. No established stock targets
Haiti	Farm prices determined exclusively by supply and demand. There is no price support policy	Trade predominantly in private hands	Level of consumer prices determined by supply and demand. Government sometimes fixes prices in times of emergency	No established national stock policy, but under consideration. Grains held in private sector

<u>Country</u>	<u>Price Policy</u>	<u>Marketing Organization</u>	<u>Utilization Policy</u>	<u>Stock Policy</u>
India	Minimum support prices and procurement prices for major food grains established by government as incentive to expand production	Food Corporation of India is the sole agency of the Central Government for procurement, imports, transport, storage and sale of food grains. In addition private traders operate under strict licensing and control. Private inter-state trade prohibited.	Rationing in areas with large urban populations. Distribution of food grains through fair price shops to vulnerable groups in addition to supplies from open market. Flour mills supplied by state governments	Stock target 7 million tons of foodgrains to be maintained by the Food Corporation of India on behalf of government
Kenya	Guaranteed prices for wheat and maize are fixed annually to stimulate production. The Government buys through boards, the only agencies authorized to purchase grains	The procurement programme is carried out by Agricultural Cooperatives as government agents. In addition grains are traded freely in open market	Besides free market transactions grain is distributed by Agricultural Cooperatives on behalf of government. Sales prices below level of Government procurement prices	Stock target to cover two month's consumption. Government reserves are stored with cooperatives and private warehouses
Pakistan	Government guarantees minimum prices to producers by establishing support prices at which wheat and rice is bought at procurement centres located at important markets	Procurement of wheat and rice offered to government is undertaken by provincial governments who have established marketing machinery for this purpose	Retail prices of wheat for human consumption from Government stocks are determined normally by Government. Prices at present subsidized.	In order to maintain regular flow of supplies for domestic users at reasonable prices and to meet emergencies, Govt. policy is to maintain a revolving stock reserve which has recently been increased from 350,000 to 500,000 tons.
Peru	Guaranteed farm price system to stabilize producer prices	Grains are marketed through ESPA and procured at collection centres in grain growing regions	Food grains subsidized by Government. ESPA assigns quotas for milling	Minimum stock target of 120,000 tons for wheat and 65,000 tons for rice equivalent to domestic consumption for two months

<u>Country</u>	<u>Price Policy</u>	<u>Marketing Organization</u>	<u>Utilization Policy</u>	<u>Stock Policy</u>
Senegal	Guaranteed producer price scheme for all types of grain. Prices fixed annually and announced at beginning of crop year.	ONCAD holds the monopoly for the procurement of grains.	Retail prices for millet fixed by Government.	Implementation of a national stock programme not so far possible because of inadequate domestic production. Public stocks managed by ONCAD.
Somalia	Guaranteed prices fixed by Government prior to planting season to provide production incentive to farmers.	Marketing Department of Agricultural Development Corporation has the monopoly to purchase grain from farmers.	Food grain prices at retail controlled by Government and imports heavily subsidized.	To maintain grain reserve stocks of approximately 50,000 tons. The APC responsible for management.
Sri Lanka	Guaranteed producer prices for basic food grains.	All grains are purchased by the Paddy Marketing Board with cooperatives as intermediaries.	Until recently wheat flour was issued on ration but is now sold freely on open market. Bread is subsidized by Government.	The Food Commissioner is responsible for national stock policy and management of stocks. Stock target is a quantity equivalent to six weeks food consumption.
Tanzania	Guaranteed farm prices are fixed annually and are applied equally throughout the country.	National Milling Corporation is the monopoly buyer of grains. Purchases at village level now responsibility of various crop authorities.	Food Grain prices are controlled at all stages of marketing chain. Imported grains subsidized.	Responsibility for stock policies. Ownership and management is with National Milling Corporation. Government recently accepted principle of 100,000 ton strategic grain reserve.
Uganda	Guaranteed minimum producer prices for cereals set annually before planting season.	Maize, paddy and wheat handled exclusively by Produce Marketing Board.	Wholesale and retail prices for flour bread and other grain products controlled by Government.	Public stocks owned and managed by Produce Marketing Board.

Source: National Grain Policies, FAO 1975

Some International Experiences, 1972-1975¹

In order to adjust rapidly to the international food situation, the affected countries had to resort to price and credit policies. In general, they tried to prevent the cost of factors from rising and, instead of aligning product prices on world market prices, they raised them sufficiently to encourage farmers to adopt productivity-raising measures.

In seeking to maintain fertilizer prices as low as possible, they aimed at modernizing the methods of cultivation in particular by adopting higher-yielding seeds, the growth of which depends in large measure on the use of appropriate nutrients. As the price of phosphates and nitrogen fertilizers rose abruptly in 1974, in particular in some of the developed market economies, the subsidies quickly became a drag on the budget. Consequently, a number of governments, notably of countries whose government revenue did not benefit from the price hikes, reduced or eliminated these subsidies, at least provisionally.

It was easier to maintain the subsidy on credit during the course of this period. A large number of countries actually took measures to enlarge the availability of public credit by creating new rural or agricultural development banks, by expanding existing institutions or by starting new programs which, among other things, permit for example credit for poorer farmers, longer term loans, tying the grant of lines of credit to the sale of equipment or to technical assistance.

As far as producer prices are concerned, developing countries, anxious to stabilize the situation, have exercised a policy of supporting cereals cultivation. Local prices, in general, correspond to the purchasing power of salaried urban dwellers and are substantially below world market prices. Widespread adjustments occurred after the world price rises in 1972-1974.

In India, the price of rice was raised considerably (16%) in 1972 and again (nearly 50%) in 1974; while it had fallen by one half to one third of the world price, the support given rose a bit faster than the local cost of living in 1974 and 1975.

This purchasing power, permitted by the local price of rice, was raised much more in Sri Lanka. Greater self-sufficiency has been Sri Lanka's principal objective.

As a result of the price increase, Bangladesh launched an accelerated cereals production program in 1974. Among other things, an official purchasing mechanism to supply state stores selling at "equitable prices," is envisaged. The price proposed in 1975, however, was not high enough to assure the necessary supply. The State had to make up

¹Extract from: Centre de Planification, des Projections et des Politiques Relatives au développement des Nations Unies, 1976.

the balance by importing about 2.3 million tons of cereals. In India, as well, where the official purchasing system, which anticipates a minimum price guarantee, coexists with private commerce and the free market, the scarcities observed in 1972/1973 and the ensuing rapid price increase in the country made it difficult to supply state stores. In 1972/1973, it was possible to obtain only two thirds of the 2.9 million tons aimed at. The method of official purchases did not fulfill the predicted objective in Indonesia either. During the 1973/74 agricultural season in India, while the price of wheat was carried to the equivalent of \$140 per ton, the system was extended to merchants. They were asked to furnish the State Food Corporation half of what they had bought from the farmers.

In Madagascar, the producer price of rice was raised in 1973 for the first time in 12 years. In Venezuela, partially due to higher price supports, rice production rose to the point where the country was able to become a net exporter for three of the first five years of the decade. Venezuela generally remained a net importer of other cereals. Egypt, an even more important net importer of cereals, also remained an exporter of rice, a product for which the support price was relatively high. High prices tend to characterize countries which aim to reach self-sufficiency in basic staples. Even after 1973, however, the support price applied by numerous developing countries was still substantially below prices outside their country. This was the case, for example, with corn in Kenya, wheat in Morocco, and rice in Pakistan.¹

While changes in the world food market in 1972-1974 essentially led to an increase in support prices or in prices guaranteed to the national producer, they sometimes effected a reinforcement or a rationalization of marketing organization. This organizational change sometimes occurred along with construction or modernization of warehouses, opening of sales locations at retail level, or putting in place other facets of the distribution network. In order to maintain or to raise the profitability of food cultivation, we placed as much effort in reducing the cost of inputs, or preventing their increase. Certain countries diminished or eliminated the tax on agricultural implements, fertilizer and pesticides. When budgetary possibilities permitted, they furnished these inputs at subsidized prices.

Faced with a rapid augmentation of food commodity imports, Ghana launched a food self-sufficiency program to push local production. In light of this, the 1974-1975 budget continued to provide for fiscal stimulants to encourage foreign investment in national agricultural enterprises which are hindered by exchange controls. In Kenya, agricultural production was stimulated not only by the creation of a marketing system applying minimum price guarantees for various staple products (including basics such as corn, wheat and rice as well as milk and sugar), but also by launching an insurance program.

¹Like Egypt, Pakistan, despite being a net importer of cereals, is an exporter of rice at a high price. In fact, during four of the first five years of this decade, Pakistan's rice exports brought in more than the cost of the other imported cereals.

In exchange for a premium of 4 Kenyan Shillings per acre (0.4 ha), about US \$.55, the association insured, for a guaranteed minimum value, the production of all cultivation of at least 6 ha. In the cases of corn and of wheat, the amount payed out to an insured party was raised from 180 Kenyan shillings per acre in 1973 to 250 in 1974 and to 350 in 1975.

Given the rapid rise in world prices of food commodities and of production inputs between 1972 and 1974 and the general recourse to domestic price adjustments to stimulate production, most developing nations were inevitably exposed to inflation. While in 1971, nearly half of these countries registered a retail price increase for food commodities of less than 5% per year, only 5% of these countries in 1973 and 7% in 1974 were in this price category. While only one eighth of these countries had annual food commodity price increases of 15% in 1971, nearly three quarters of them had such increases in 1974. The food commodity price rises accelerated in the majority of developing countries in 1972 (61% of them), 1973 (70%), and 1974 (55%). Not until the improved harvests of 1975 did food commodity prices begin to fall in most countries (in 69% of the countries studied).

In order to slow consumer food price increases, many governments introduced or expanded subsidy programs. Trinidad and Tobago, for example, spent \$13 million in 1974 to lower wheat prices from 35 to 24¢ a pound and \$9 million to lower rice prices from 42 to 31¢ a pound. Guyana also subsidized critical food commodities and Peru spent \$120 million in 1974 to prevent a price rise of imported foods. The cost of a similar program launched in Egypt reached \$400 million in 1974 and \$500 million in 1975. Venezuela, in addition to export restrictions on food commodities like many other developing nations, opened 54 distribution centers in 1975 which sold food to 1.5 million low income people at subsidized prices. About one-fifth of Morocco's 1974 budget was allocated for consumption subsidies. Algeria accorded more than \$800 million, about one seventh of its current budget expenditures, to price subsidies in 1975. Senegal took advantage of the benefits reaped by their agency handling groundnut exports to subsidize the price of imported food commodities, rice and sugar in particular. Madagascar earmarked \$30 million to prevent consumer rice prices from rising in 1973/1974. In 1974/1975, Saudi Arabia spent the equivalent of \$230 million to subsidize important food commodities.

Even though food commodity prices dropped in 1975 on the world market¹ and subsidies became less necessary, government revenues in many countries continued to be heavily burdened. In the cases where food commodity prices diverged widely from other prices, it was

¹Between the last trimester of 1974 and the last trimester of 1975, the price index of a representative "basket" of food commodities exported by the developed countries with market economies fell by about one eighth.

The export basket of developing countries, more sensitive to variations in the price of sugar, dropped more than one third. At the beginning of 1976, the level attained by the two indexes was about double that of the average in 1971, the pre-price increase period.

evidently difficult, from a political point of view, to attempt to rapidly reestablish the previous (price) alignment without brutally cutting the subsidies.¹

Less than one third of developing countries were able to maintain the retail price increases of food commodities below an average of 10% per year during the first half of the 1970s. In more than a sixth of these countries the increase reached an average of more than 20% per year. The good harvests of 1975 ameliorated the situation somewhat; the price of rice having dropped by nearly a fifth during the course of a year on the international market. Certain countries, Bangladesh, India, Malasia, Singapore, Panama, and the United Republic of Tanzania, saw their food commodity retail prices fall in absolute value. Elsewhere, the proportion of developing countries which were able to maintain the price increases of food commodities below 10% rose, passing even 40%.

Despite the improvement in the food situation in certain large regions, in particular Southern and South East Asia,² supply problems persisted in many countries. As a result of financial austerity or due to a desire to mitigate the effect of price disparities, a certain number of governments reduced the subsidies they had accorded to food commodities such that, in 1975, food commodity prices rose in one third of the developing countries at a rate superior to the average registered for 1970-1974. The situation of certain countries with food deficits remained difficult. A marked reduction in the purchasing power of cereals aggravated the effects of the financial crisis caused by the drop in demand for these products in developed market economies, as did the continuous increase in prices of manufactured import and in the servicing of their debt. Given a base of 100 in 1970, the price on the international market of cereals they had to import was 233 in 1975, while the prices of categories of base products they exported were all notably inferior: 211 for minerals (due to bauxite), 202 for meat, 197 for fibers, 170 for oils and oleaginous grains, 157 for tea, coffee, and cocoa, and 109 for nonferrous metals.

¹Budgetary austerity had already forced certain countries to moderate their subsidy programs during the period of price increases. In 1973, Sri Lanka, for example, reduced the sale of subsidized flour, causing bread prices to rise from 0.47 to 0.76 rupees per pound. Ghana terminated milk and rice subsidies in July 1974.

²In India, for example, the estimated harvest of foodgrains for 1975/1976 reached 166 million tons, a net increase over the old record of 1971 (108 million tons). Government stocks rose from less than 5 million tons in the middle of 1975 to 15 million in the middle of 1976, which posed once again the problem of storage.

APPENDIX 3.

- 3A. Estimates of GDP Growth, 1960-1970
- 3B. Actual GDP, 1969-1975, Unofficial Estimates
 - 1. Chad
 - 2. Gambia
 - 3. Mali
 - 4. Mauritania
 - 5. Niger
 - 6. Senegal
 - 7. Upper Volta
- 3C. Food Aid
- 3D. The Marketing Arrangements for Cash Crops
- 3E. Prices of Selected Consumer Goods, Bamako - 1963-75
- 3F. Projected Production and Consumption of Grains in Mali

Table 3A. Estimates of GDP Growth, 1960-1970
 Tableau 3A. Estimations de Croissance de Produit Intérieur Brut, 1960-70
 (Taux de Croissance Moyenne Annuelle)

	<u>SOEC</u>	<u>SIEC</u>	<u>UN</u>	<u>OECD</u>	<u>IBRD</u>	<u>UNCTAD</u>	<u>OTHER</u>
Tchad	2.1	2.2	1.2	1.5	1.4 ¹ 2.2 ¹	0.5	5.5 ²
Mali	3.0	2.5	0.5	2.8	6.6	5.2	
Mauritanie	7.4	8.0	7.7	7.3	6.5	6.9	
Niger	2.4	2.0	4.7	2.0	0.9	2.4	
Sénégal	1.6	1.6	1.3	2.0	2.1	1.0	
Haute Volta	3.9	3.3	3.0	2.0	1.5	0.7	

¹Estimations de BIRD.

²Estimations du Ministère du Plan.

SOEC: Secteur des Etudes Socio-Economiques de Synthèse (Bureau des Programmes, Direction de l'Aide au Développement, Ministère de la Coopération, Paris)

SIEC: Secteur Information Economique et Conjuncture (Bureau des Programmes, Direction de l'Aide au Développement, Ministère de la Coopération, Paris.)

UN: Nations Unies, N.Y.

OECD: Organization for Economic Cooperation and Development (Development Assistance Committee.)

BIRD: Banque Internationale pour la Réconstruction et le Développement.

UNCTAD: United Nations Commission for Trade and Development (UNCTAD).

SOURCE: République Française, Ministère de la Coopération, Economie, Emploi et Formation: Evolution et Perspectives pour 14 Etats Africains et Malgache, l'Evolution du P.I.B. 1950-1970, Perspectives 1970-1990, Direction de l'Aide au Développement, Bureau des Programmes-Secteur Synthèse, Sept. 1974.

TABLEAU 3B.2 LA GAMBIE: PIB AUX PRIX COURANTS DU MARCHE PAR SECTEUR
1969-70 à 1974-75 (en millions de Dalasis)

TABLE 3B.2 GAMBIA: GDP IN CURRENT MARKET PRICES, 1969/70-1974/75
1969/70-1974/75 (in millions of Dalasis)

	<u>1969/70</u>	<u>1970/71</u>	<u>1971/72</u>	<u>1972/73</u>	<u>1973/74</u>	<u>1974/75^a</u>
PIB (GDP)	74.3 (100) ^b	84.5	91.1	98.2	147.0	156.4 (100)
Secteur Primaire (Primary Sector)	39.0 (52)	47.8	49.7	54.0	99.7	106.4 (68)
Agriculture	30.4 (41)	39.0	40.3	43.1	91.5	97.1 (62)
Elevage (Livestock)	-	-	-	-	3.1	3.2 (2)
Secteur Secondaire (Secondary)	2.7 (4)	2.5	2.5	2.8	3.1	3.6 (2)
Secteur Tertiaire (Tertiary)	32.6 (44)	34.2	38.9	41.4	44.2	46.7 (30)

^aPrévision, Forecast

^bEn pourcentages par secteur, percentage of each sector

SOURCE: IBRD 1975

TABLEAU 3B.3: MALI; PIB AU PRIX MARCHÉ DE 1972 PAR SECTEUR,

1969 - 1975 (en milliards de Francs Maliens)

TABLE 3B.3: MALI; GDP IN 1972 MARKET PRICES, 1969-1975,

(in billions of Malian Francs)

	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975^a</u>
PIB (GDP)	151.7 (100) ^b	161.3	167.8	176.8	167.5	165.1	188.4 (100)
Secteur Primaire (Primary)	65.7 (43)	70.9	72.4	75.5	60.4	53.6	71.0 (38)
Agriculture	-	-	-	36.9	-	-	-
Elevage (Livestock)	-	-	-	30.6	-	-	-
Secteur Secondaire (Secondary)	21.2 (14)	23.4	24.0	24.1	25.3	25.8	26.3 (14)
Secteur Tertiaire (Tertiary)	64.8 (43)	67.0	71.4	77.2	81.8	85.7	91.1 (48)

^aPrévision, forecast.

^bEn pourcentages par secteur, percentage of each sector.

SOURCES: IMF, 1975, 1976

TABLEAU 3B.4:MAURITANIE; PIB AU PRIX MARCHÉ DE 1969 PAR SECTEUR,

1969-1973 (en milliards de CFAF)

TABLE 3B.4:MAURITANIA; GDP IN 1969 MARKET PRICES, 1969-1973,

(in billions of CFAF)

	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>
PIB (GDP)	44.9 (100) ^a	47.1	47.4	48.7	50.5 (100)
Secteur Primaire (Primary)	17.4 (39)	17.9	17.7	15.8	12.5 (25)
Agriculture	2.8 (6)	2.7	2.5	1.0	1.5 (3)
Elevage (Livestock)	12.6 (28)	12.5	12.4	12.1	7.5 (15)
Secteur Secondaire (Secondary)	17.9 (45)	18.7	18.8	21.7	27.0 (53)
Secteur Tertiaire (Tertiary)	9.6 (21)	10.5	10.9	11.2	11.0 (22)

^aEn pourcentage par secteur, percentage of each sector.

SOURCES: IMF, 1973, 1974

TABLEAU 3B.5:NIGER; PIB AU PRIX MARCHÉ DE 1972 PAR SECTEUR,

1971-1975 (en milliards de CFAF)

TABLE 3B.5:NIGER; GDP IN 1972 MARKET PRICES, 1971-1975,

(in billions of CFAF)

	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
PIB (GDP)	108.3 (100) ^a	107.5	92.9	103.2	105.3 (100)
Secteur Primaire (Primary Sector)	61.6 (57)	59.5	42.6	50.2	48.5 (46)
Agriculture	34.2 (32)	32.7	25.8	32.0	30.0 (28)
Elevage (Livestock)	20.0 (18)	21.0	11.0	11.5	12.0 (11)
Mines (Mining)	1.2 (1)	2.4	2.7	3.0	3.3 (3)
Industrie et Bâtiments (Manufacturing and Construction)	11.0 (10)	11.5	12.1	13.0	14.5 (14)
Services	34.5 (32)	34.1	35.5	37.0	39.0 (37)

^aEn pourcentages par secteur, percentage of each sector.

SOURCE: IBRD 1976

TABLEAU 3B.6: SENEGAL; PIB AUX PRIX COURANTS DU MARCHÉ PAR SECTEUR,

1969-1973 (en milliards de CFAF)

TABLE 3B.6: SENEGAL; GDP IN CURRENT MARKET PRICES,

1969-1973 (in billions of CFAF)

	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>
PIB (GDP)	215.5 (100) ^a	234.0	217.4	260.8	230.6 (100)
Agriculture	56.3 (26)	63.4	47.9	66.4	47.9 (21)
Industrie (Industry)	37.2 (17)	41.6	41.7	48.1	46.0 (20)
Autres (Other)	122.0 (57)	129.1	127.8	146.3	136.7 (59)

^aEn pourcentages par secteur, percentage of each sector.

SOURCE: IMF 1975

TABLEAU 3B.7: HAUTE VOLTA; PIB AUX PRIX COURANTS DU MARCHÉ PAR SECTEUR,
1968, 1970-1976 (en milliards de CFAP)

TABLE 3B.7: UPPER VOLTA; GDP IN CURRENT MARKET PRICES,
1968, 1970-1976 (in billions of CFAP)

	<u>1968</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976^a</u>
PIB (GDP)	70.4 (100) ^b	82.4	87.0	89.5	104.4	118.4	139.6	154.6 (100)
Secteur Primaire (Primary)	32.1 (46)	36.4	37.4	37.0	43.5	49.3	55.8	53.0 (34)
Agriculture	20.4 (29)	22.3	22.9	21.0	29.7	33.6	39.7	36.7 (24)
Elevage (Livestock)	6.2 (9)	8.4	8.7	9.5	-	9.6	10.0	10.2 (7)
Secteur Secondaire (Secondary)	14.3 (20)	13.3	15.1	16.2	-	21.2	25.2	29.8 (19)
Secteur Tertiaire (Tertiary)	24.0 (34)	32.7	34.5	36.3	-	47.9	58.6	71.8 (46)

^aPrévision, forecast.

^bEn pourcentages par secteur, percentage of each sector.

SOURCES: IBRD 1975, IMF 1976

TABLE 3C
Food Aid (tons)
Aide Alimentaire (tonnes)

	1969	1970	1971	1972	1973	1974	1975	1976	1977
SENEGAL									
Total Cereal Aid - Aide Céréalière Totale		22,200 ¹	2,800 ¹	1,000 ¹	108,500 ¹	90,855 ²	11,700 ¹	30,000 ^{*1}	53,800 ¹
Rice - Riz		8,600	--	--	3,500	2,200 ¹	--	--	--
Wheat - Bye		4,000	--	--	43,400	5,400 ¹	6,200	--	--
Millet/Sorghum - Mil/Sorgho		--	700	--	15,000	21,500 ¹	--	--	--
Maize - Mais		9,600	2,100	1,000	46,600	28,000 ¹	5,500	n.a.	n.a.
MAURITANIA									
Total Food Aid - Aide Alimentaire Totale				84,600 ²²					
Total Grain Aid					71,250 ³	133,813 ²	29,224 ⁵		
Wheat - Blé						6,170 ⁴		13,200 ⁶	13,800 ⁶
Coarse Grain (Sorghum only for 1974)									
Mil/Sorgho (Sorgho seulement en 1974)						38,695 ⁴		7,100 ⁶	4,800 ⁶
GAMBIA									
Total Cereal Aid - Aide Céréalière Totale	8,610 ⁷	6,300 ⁷	n.a. ⁷	11,000 ³	9,932 ⁷	11,990 ⁷	7,114 ⁷		
Rice - Riz		--	--	-- ⁷	--	2,000	1,600	1,100 ⁶	
Wheat - Blé		--	--	-- ⁷	--	2,000	700	1,500 ⁶	
Coarse Grain - Mil/Sorgho		6,300	n.a.	9,500 ⁷	7,932	9,990	4,810	3,400 ⁶	
of which Sorghum - dont Sorgho		(6,300)	n.a.	(9,500) ⁷	(7,932)	(7,990)	(4,810)		
Maize - Mais		(-)	(-)	(-) ⁷	(-)	(2,000)	(-)		
MALI									
Total Cereal Aid - Aide céréalière Totale				202,800 ⁹	232,675 ²				
Rice - Riz				48,500	10,000 ¹⁰				
Wheat & Wheat Flour & Semolina (in wheat equivalent)									
Blé & Farine de Blé & Semoule (à céréale) brut				35,300			5,000 ⁶	300 ⁶	
Coarse Grain - Mil/Sorgho		26,601 ⁸		119,000	70,213 ⁴		21,500 ⁶	21,000 ⁶	
of which Sorghum - dont Sorgho		(24,601) ⁸	(32,500) ⁸	(72,000)	(29,756) ⁴				
Maize - Mais	(24,601) ⁸	(2,000) ⁸		(47,000)	(40,457) ⁴				
UPPER VOLTA									
Total Cereal Aid - Aide Céréalière Totale		33,800 ¹²	37,950 ¹²	80,750 ³	99,457 ²	24,750 ¹⁵			
Rice - Riz		150	950	4,500 ¹¹	17,500 ¹³				
Wheat - Blé		700	5,000	16,000 ¹²	4,000 ¹⁴		6,100 ⁶	800 ⁶	
Coarse Grain - Mil/Sorgho		33,000	32,000	46,800 ¹²	87,503 ¹⁴		11,400 ⁶	850 ⁶	
of which Sorghum - cont Sorgho		(19,100)	(15,000)	(20,900) ¹²	(34,683) ¹²				
Maize - Mais		(13,900)	(17,000)	(25,900) ¹²	(52,820) ¹²				
Other - Autre				1,800 ¹²					
NIGER									
Total Food Aid - Aide Alimentaire Totale	2,000 ¹⁶	13,600 ¹⁶	125,000 ¹⁶	120,000 ¹⁶	118,170 ³	197,232 ²	70,000 ¹⁸		
Total Cereal Aid - Aide Céréalière Totale						8,219 ¹⁷			
Rice - Riz							5,800 ⁶		
Wheat - Blé							17,496 ⁶	5,500 ⁶	
Coarse Grain - Mil/Sorgho							87,097 ⁶	31,000 ⁶	
CHAD									
Total Food Aid - Aide Alimentaire							36,000 ¹⁹	8,700 ¹⁹	
Total Cereal Aid - Aide Céréalière Totale				31,000 ³	62,820 ²	25,000 ²¹			
Rice - Riz					2,500 ²⁰				
Wheat - Blé					9,990 ²⁰		500 ⁶	500 ⁶	
Coarse Grain - Mil/Sorgho					12,150 ²⁰		600 ⁶	8,700 ⁶	
of which Sorghum - dont Sorgho					(5,800) ²⁰				
Maize - Mais					(6,350) ²⁰				

*estimate or projection - estimation ou prévision.
See next page for footnotes. Pour les notes, voir page suivante.

Notes for Tables 3C
Notes pour le Tableau 3C

1. SOURCE: Senegalese authorities. Except for 1977, years indicate the period from July of the previous year to June of the given year. Figures represent food aid delivered. 1977 figure represents aid committed as of February 1977.
2. SOURCE: U. S. government. Figures represent food aid delivered and include some food aid committed in 1972/73, but delivered after November 1973. (These "pipeline" amounts are 52,570 tons for Senegal; 39,269 tons for Mauritania; 63,524 tons for Mali; 38,877 tons for Upper Volta; 27,782 tons for Niger, and 17,360 tons for Chad). The total figure is partial in that another 23,500 tons of food aid had been committed to West Africa at that time, but not yet designated to particular countries, so is not included. The 1974 values for individual cereal commodities may be partial, as their sum is substantially less than the cereal aid total (for Senegal, Mali, and Chad). The 1974 total for Upper Volta may be underestimated, as the sum of the individual commodities is greater than this total.
3. SOURCE: U. S. government statistics. Figures represent food aid (predominantly cereals) that is approximate and committed only. The figures may include some concessional import sales and are partial in that another 74,370 tons of food aid had been committed to the Sahel region at that time, but not yet designated to particular countries, so are not included. The 1973 figures for individual cereal commodities may be partial, as their sum is less than the cereal aid total (for Gambia, Upper Volta).
4. SOURCE: World Food Program, as of December 31, 1974. Represents donations received in calendar year 1974.
5. SOURCE: OSRO (FAO Office of Sahelian Relief Operations). Represents food aid committed for the period of November 1974 through March 1975.
6. SOURCES: Mauritania, Gambia, Mali, Upper Volta, Niger, and Chad authorities. Wheat and coarse grain figures represent the period from July of the previous year through June of the given year. Rice figures represent the calendar year. 1975/76 figures represent aid delivered. 1976/77 figures represent aid committed as of June 1977.
7. SOURCES: Gambia Ministry of Local Government, WFP, Catholic Relief, and Tropical Products Institute. Represents food aid delivered. The 1969 figure is for the period of July 1968 through June 1969. The 1976 figures are partial, representing ten months only.
8. SOURCE: Organization des Nations Unies Pour L'Alimentation et L'Agriculture (UNFAO), with data from OPAM, PAM and SCET Cooperation. Figures represent the period from July of the previous year through June of the given year.
9. SOURCE: MAC, as of July 1973. Figures represent the period 1972-July 1973 and include concessionary sales of 10,000 tons sorghum, 15,000 tons maize, and 35,000 tons rice.
10. SOURCE: Rice Statistics Yearbook (West Africa Rice Development Association), with data from the Malian Ministry of Production. Represents rice delivered.
11. SOURCE: OSRO (FAO Office of Sahelian Relief Operations).
12. SOURCE: Upper Volta, Ministère du Plan and Office National des Céréales. The individual commodity figures for 1973 may be partial, as their sum is substantially less than the 1973 total for cereal aid.
13. SOURCE: Rice Statistics Yearbook (West Africa Rice Development Association), with data from Upper Volta Direction des Douanes et Statistiques. Represents rice delivered.
14. SOURCE: Multi-Donor Mission to the Sahel Zone. Represents food aid delivered from July 1973 through June 1974.
15. SOURCES: IMF and Upper Volta, Office National des Céréales (OFNACER). Represents food aid that is predominantly cereals. Figure represents the period from July 1974 through June 1975.
16. SOURCE: IMF. Represents food aid delivered. There is reason to believe that the figures grossly underestimate total food aid.
17. SOURCE: Rice Statistics Yearbook (West Africa Rice Development Association), with data from Niger, Direction de l'Agriculture and Direction des Douanes et de la Statistique. Represents rice delivered.
18. SOURCE: Niger authorities.
19. SOURCE: Direction de la Lutte Contre les Calamités Naturelles. Figures represent food aid delivered in the period from July of the previous year through June of the given year. There is reason to believe that the figures grossly underestimate total food aid.
20. SOURCE: Multidonor Mission to the Sahelian Zone, as of November 1974. Sorghum figure represents 2,800 tons received and 3,000 tons expected, Maize figure represents 950 tons received and 5,400 tons expected, Rice figure represents 2,500 tons expected, and wheat figure represents 90 tons received and 9,900 tons expected.
21. SOURCE: Chad authorities (MDR). Represents aid committed in 1974 but not yet delivered.
22. SOURCE: Mauritania authorities. The year given for this figure is questionable.

NOTE: In cases where the figure for one year represents food aid committed, and the figure for the following year represents food aid delivered, including some aid committed but not delivered in the previous year, there may be some degree of double counting of the totals given for both years are added together. See total cereal aid for Mauritania, Niger, Upper Volta and Chad in 1973 and 1974.

Table 3D. The Marketing Arrangements for Cash Crops

Country	Crop	Primary Collection and Bulking	Transport	Processing (if applicable)
Chad	Cotton	COTONTCHAD ¹ through mobile buying teams. Producer price fixed by govt. (presently 43 CFA/kg of seed cotton, discounted for inferior qualities)	COTONTCHAD's own trucks	COTONTCHAD owns 22 cotton gins throughout the country. Also one oil press for locally sold oil.
	Groundnuts	Primarily private traders. (COTONTCHAD buys approx. 750 tons/year.)	Private truckers of UTC ⁴ and COTONTCHAD	Small informal oil presses and COTONTCHAD oil press
	Sesame, Karkade, Gum Arabic	Private traders (Gum Arabic: SONACOT ⁵)	UTC	Private traders sell to SONACOT which assembles export lots
Gambia	Groundnuts and Cotton	Licensed buying agents and cooperatives purchase for GPMB ¹ at the official price.	Gambia River Transport Company (subsidiary of GPMB)	Gambian Produce Marketing Company Ltd. (subsidiary of GPMB) operates groundnut mills in Banjul and Kaur. GPMB operates a cotton gin at Sapu.
Mali	Cotton	CFDT ¹ through itinerant buying teams at designated village markets. Producer price fixed presently at 74 MF/kg of seed cotton, discounted for inferior qualities	CFDT's own trucks	CFDT operates 8 cotton gins (total capacity 85,000 tons). Sells lint to SOMIEX ² . Some lint sold to local industries and private artisans. Cottonseed bought and exported by private merchants.
	Groundnuts	OACV ⁴ buys through buying teams at designated buying points (official price 40 MF/kg) Comite's arachidiers, in which farmers are represented, have some control over operations.	OACV trucks pick up any lot of 80 bags or more, free of charge to producers.	SEPOM ⁵ presses peanuts for local consumption. Buys from OACV at 72 MF/kg (including taxes and levies)
Niger	Groundnuts and Niébé	Cooperatives of the UNCC ¹ buy throughout the production zones from farmers at the village markets. (Also Organismes Stockeurs buy from farmers). Official prices: Niébé = 30 CFA/kg, Groundnuts = 40 CFA/kg.	SONARA ² collects crops from Cooperatives through private trucks and SNTN ³	SONARA assembles bulk quantities
	Cotton	Cooperatives as for groundnuts and Niébé	CFDT ⁵ collects from cooperatives	CFDT gins cotton and presses the bales for export
Senegal	Groundnuts	Cooperatives buy from producers at official prices. Sell with commission to ONCAD ¹	ONCAD handles transports with own trucks	ONCAD sells to SONACOS ² which presses the groundnuts. Some oil sold locally
	Cotton	Farmers produce under contract of SODEFITEX ⁴ which also arranges for distribution of inputs and collection of outputs	SODEFITEX's own trucks	SODEFITEX operates cotton gins
	Vegetables	Private enterprises; some industrial production	Private transporters	Tomato paste factory at Ross-Bethio under control of SOCAS ⁵
Upper Volta	Groundnuts, Sheanuts and Sesame	Licensed agents ¹ (acheteurs agrees) buy in the village market at official producer prices.	Private transporters	No local processing
	Cotton	ORDs act as collection agents for the CFDT ⁴ . They buy at the official producer price and sell to CFDT for a commission	CFDT collects from ORDs	CFDT gins cotton and exports the fiber except 10% going to the local textile mill (VOLTEX)

Table 3D (Continued)

Country	Crop	Export	Financial Arrangements	(Comments):
Chad	Cotton	COTONTCHAD trucks to seaports (costs: more than 30 CFA/kg) (export only fiber)	CSPC ² collects profits from COTONTCHAD or covers losses. It channels funds to ONDR ³ to subsidize inputs and finance extension services.	¹ COTONTCHAD, semi-public enterprise; accounts for 40% of industrial activity and 10% of govt. revenues in Chad. ² CSPC - Caisse de Stabilisation du Prix du Coton ³ ONDR - Office National du Développement Rural
	Groundnuts			⁴ UTC - Union des Transporteurs Chadiens
	Sesame, Karkade, Gum Arabic	SONACOT with UTC trucks. Private traders export some Sesame to Cameroon	SONACOT buys Gum Arabic at 70 CFA/kg; (official producer price). Export duties: 12 CFA/kg; contribution to development of production: 5 CFA/kg; world market price: 200 CFA/kg.	⁵ SONACOT - Société Nationale de Commercialisation du Tchad; has official monopoly for gum arabic. It has an effective (but not official) monopoly on Sesame and Karkade in the Sannihin zones, but not in the South
Gambia	Groundnuts and Cotton	CPMB exports oil, cake and also some groundnuts and sells them through its London office. Lint exported to Europe, seed to Senegal	Profits of CPMB are used to subsidize inputs (fertilizer) which are also handled by CPMB. They have also been used to subsidize rice imports. Cotton operation is financially marginal.	¹ CPMB - Gambia Produce Marketing Board
Mali	Cotton	SOMIEX sells through brokers and ships lint to Abidjan by private trucks or CMT ³ trucks	Payment to CNDT by SOMIEX only after cotton is shipped (90-120 days after it is transferred from CNDT to SOMIEX, sometimes even later). Such delays cause serious cash flow problems for CNDT.	¹ CNDT - Compagnie Malienne pour le Développement des Textiles ² SOMIEX - Société Malienne d'Importation et d'Exportation ³ CMT - Compagnie Malienne de Transports
	Groundnuts	SOMIEX buys at 72 MF/kg from OACV. Handles export similarly to cotton (see above)	SOMIEX and SEPOM are supposed to make funds available in advance to OACV so it can finance its buying campaign. In 1974-75, however, the campaign was delayed by more than a month due to lack of funds, and OACV has sought the right to borrow directly from the Development Bank	⁴ OACV - Opération d'Arachides et Cultures Vivrières ⁵ SEPOM -
Niger	Groundnuts and Niébé	SONARA exports through brokers in Paris for groundnuts. Exports Niébé to Nigeria	SONARA has to relieve the Cooperatives of their products within 10 days. Payment is made through the prefects. The Cooperatives finance the campaign through a loan from the CNCA. ⁴	¹ UNCC - Union Nigérienne de Crédit et Coopération ² SONARA - Société Nigérienne de Commercialisation de l'Arachide/ ³ SNTN - Société Nationale de Transports Nigériens OPVM no longer handles Niébé for export
	Cotton	CFDT exports the lint	The profits and losses of SONARA and CFDT are neutralized by the CSPPN. ⁶	⁴ CNCA - Caisse Nationale de Crédit Agricole ⁵ CFDT - Compagnie Française du Développement de Textiles ⁶ CSPPN - Caisse de Stabilisation du Prix des Produits Nigériens
Senegal	Groundnuts	SONACOS exports oil primarily to France	ONCAD delivers profits to CPSP ³ which should re-fund to ONCAD subsidies on inputs. Instead CPSP up to present used most funds for subsidization of imported rice and wheat	¹ ONCAD - Office National de Coopération et d'Assistance pour le Développement. ² SONACOS - ³ CPSP - Caisse de Péréquation et de Stabilisation des Prix
	Cotton	Exports lint, retains seed to be pressed to oil locally	SODEFITEX's profits and losses equalized by CPSP	⁴ SODEFITEX - Société du Développement des Fibres Textiles
	Vegetables	Private company (BUD-Senegal S.A.) exports some fresh vegetables to Europe	No special arrangements	⁵ SOCAS - Société de Conserves Alimentaires du Senegal
Upper Volta	Groundnuts, Sheanuts and Sesame	Licensed agents handle crops from producer to export port	The CSPP ² collects part of the profits from licensed traders if world market prices exceed buying, transport and handling costs and covers the losses in the opposite case	¹ Private traders as well as public institutions (i.e., ORD) can become licensed agents. ² CSPP - Caisse de Stabilisation du Prix des Produits Agricoles
	Cotton	CFDT handles export and sale abroad	The profits of CFDT are used for subsidization of inputs (10-20%). The rest is distributed among CSPP (70%), CFDT (20%) and the ORDs (10%)	³ ORDs - Organisations for Regional Development ⁴ See comment 5 for Niger

Table 3E : Prices of Selected Consumer Goods, Bamako - 1963-1975
 Prix De Vente Au Detail Dans Les Magasins De Bamako (Moyen Annuel) 1963-1975

	1963 ^a	1964	1965	1966	1967	1968	1969	1970	1971	1972 ^b	1973 ^c	1974 ^d	1975 ^d
Lait Concentré Sucre, Concentrated Milk-Sweetened (394-450 gr) *	60	65	83	97	120	143	140	145	141	179	191	206	270
Huile D'Arachide de Cuisine, Peanut Oil (litre)	116	116	116	118	165	210	194	187	239	252	270	354	428
Sucre en Morceau Sugar Cubes (Kg)	75	97	110	115	162	149	137	141	160	233	257	405	517
Thé Vert 4011 ou 4012, * Tea 4011 or 4012 (Kg)	1229	1158	1524	1694	2005	2031	2257	2237	2224	2365	2318	2385	2490
Lampe Tempête (Grand Modèle), Storm Lamp (Big Size)	663	580	584	572	838	1252	1181	1034	1118	1234	1237	1434	1970
Boite D'Allumettes, Matchbox *	-	-	15	12	19	22	18	13	10	12	14	15	14
Pantalon Kaki, Kak'i Pants *	1250	1267	1387	1476	1848	1691	-	-	-	-	-	-	1448
Sandalettes Matière Plastique, Plastic Sandals	506	469	555	968	608	631	556	553	545	804	652	800	1023
Pagne Tissé Local, Local weaver Pagne (loin-cloth)	1070	1150	1295	1511	2065	1812	1543	1376	1396	1392	1422	1521	2269
Seau Moyen Tôle Galvanisée, Average Galvanized Steel Bucket	475	476	508	520	806	955	723	765	895	1012	1064	1585	2304
Savon au Ménage Local, Local-use-soap	134	117	82	61	101	179	171	158	206	207	262	392	497
Cigarettes Ordinaires (Coopératives), Local Cigarettes	-	45	45	65	102	125	-	-	-	-	-	-	-
Cigarettes "Liberté," "Liberty" Cigarettes	-	-	-	-	-	-	118	120	117	120	113	119	128

^a3rd trimestre.

^b3ème trimestre.

^cAverage for nine months excluding May, June and July. / Moyenne pour neuf mois ont été exclus mai, juin et juillet.

^dData an average for only January, April, November and December. / Moyenne pour seulement janvier, avril, novembre et décembre.

^eAverage for ten months excluding January and March. / Moyenne pour 10 mois ont été exclus janvier et mars.

* Apart from the usual problems encountered in such a series (e.g., sampling methods, quality control) the data above suffer from shortcomings specific to a number of items above: concentrated milk changes in weight from 450 to 394 grams; tea 4011 and 4012 are of two different qualities although listed interchangeably in the monthly bulletins; matchboxes and soap change brands during the years; pants are not listed from 1969 to 1975 when they reappear leaving some doubt as to whether they remained the same product; and the galvanized steel bucket is listed as 28 cms wide in some instances and 32 in others.

*A part les problèmes couramment rencontrés dans les séries semblables (c.f. méthodes d'échantillonnage, contrôle de qualité), les données ci-dessus souffrant de certaines imperfections spécifiques : le lait concentré change de poids, passant de 450 à 394 grammes; le thé 4011 et le thé 4012 sont de deux différentes qualités même s'ils sont interchangeables dans les bulletins mensuels; les allumettes et le savon changent de marques au cours des ans; les données sur les pantalons font défaut entre 1969 et 1975, ce qui laisse quelques doutes sur similitude de ce produit; enfin la tôle galvanisée pour le seau a une longueur de 28 cm dans certains cas et de 32 dans d'autres.

SOURCES: Annuaire Statistique 1966, 1968, 1971, Bulletin Mensuel de Statistique, 1972-1975.

Table 3F. Projected Production and Consumption of Grains in Mali

	<u>1971/72^{1/}</u>	<u>1974/75</u>	<u>1975/76</u>	<u>1976/77</u>	<u>1977/78</u>	<u>1978/79</u>	<u>1983/84</u>	<u>1990</u>	<u>2000</u>
<u>Production (1000 t)</u>									
Millet, Sorghum	705	797	840	889	931	977			
Maize, Fonio, Wheat	<u>102</u>	<u>111</u>	<u>121</u>	<u>135</u>	<u>148</u>	<u>162</u>			
Subtotal	807	908	961	1024	1079	1139	1190	1089	1100
Paddy	157	210	229	251	300	330	646	1214	1987
Groundnuts (unshelled)	152	149	171	193	217	229			
Seed Cotton	74	83	101	123	135	150			
<u>Per Capita Consumption (Kg/years)</u>									
Millet, Sorghum, Maize	142	148	150	151	152	153	144	115	92
Rice	20	26	26	27	27	28	48	79	105
Total Cereals	162	174	176	178	179	181	192	194	197

Actual
 Source: Plan Quinquennial

PART II

AGRICULTURAL PRODUCTION AND PRICES

IN THE SAHEL

A STATISTICAL COMPILATION

INTRODUCTION

1. The main purpose of this appendix is to bring together, for easy consultation, a number of statistical series related to cereals marketing and pricing. There are four distinct types of tables in this appendix.

- I. Estimates of production and marketing.
- II. Estimates of official producer price.
- III. Summary tables of the best estimates of production, marketing and producer price.
- IV. Retail prices of various cereal grains.

2. The weakness of these statistics can easily be forgotten in the presence of so abundant a presentation. One of the purposes of Tables I and II, which set out the estimates from different sources, is precisely to show how wide a range of error is possible in some of these figures. Equally reputable sources quite frequently give widely different figures, as can easily be seen by glancing at these tables. Some of this variation is due to quality differences, some to differences in crop year or calendar year specification. Another aim of presenting different estimates is to set out the range of sources, so that users of these data can see where the figures originate.

3. We have tried to confront these various series and to pick those which seemed most reasonable as "Best Estimates." The sources fall into three general categories: The Food and Agriculture Organization; The International Bank for Reconstruction and Development and International Monetary Fund; local statistical agencies, planning agencies and agencies of rural development. In general, we have relied most heavily on the local sources, with input from the Bank and Fund studies. The FAO data were used mainly for earlier years.

4. The price series for foodgrains on various markets are grouped together by country at the end of the appendix (Tables 19-24). These series are taken from two basic types of sources: published statistical bulletins and unpublished government sources. The latter were recorded locally by team members. In all of the countries, the data given are for local retail market prices. In general, these prices are computed by purchasing a specific volume of grain and weighing it to get a per kilogram price. Though the data may be inaccurate due to measuring techniques, there is no reason to suspect that it contains any systematic biases.

5. In most cases, table headings and notes are bilingual - English and French. The English system of decimals and commas is used exclusively. Where it was not possible to use both languages, for reasons of space or clarity, the following translations will be useful.

English

Millet
Sorghum
Rice (unhulled)
Hulled
Groundnuts, peanuts

French

Petit Mil, Mil
Gros Mil, Sorgho
Riz (paddy)
Decortiqué
Arachides

<u>English</u>	<u>French</u>
Edible Groundnuts	Arachides de bouche
Hulled	Graine
Unhulled	Coques
Cotton (unginned)	Coton (en grain)
Ginned	Fibre
White	Blanc
Yellow	Jaune
Red	Rouge
Mixed	Melangé
Maize (corn)	Maïs
Wheat	Blé
Barley	Orge
Dates	Dattes
Cowpeas	Niébé
Wild grains	Fonio
Sesame	Sesamé
Production	Production
Marketing	Commercialisation
Producer price	Prix producteur
Average	Moyen
Not available	Non disponible

6. A certain number of conventions have been followed.
- A. All weights are in thousands of tons and are rounded to the nearest thousand. Figures below 500 tons are considered negligible. This convention was adopted because the error in most estimates exceeds this amount of rounding. Thus, to display a more exact figure would be misleading.
 - B. The English system of decimals is used for all figures. That is, a period rather than a comma is used to denote the decimal place.
 - C. Figures for total marketing are shown simply to give orders of magnitude. They are given in parentheses to indicate that there is a large margin of error. Figures for marketing by official agencies represent only a small portion of total marketing in millet, sorghum and rice, but are believed to be more accurate than the figures for total marketing.
 - D. Retail grain prices are given in CFA/100 kg. This does not imply that these are wholesale prices. They have been converted from CFA/kg. to simplify this statistical analysis.
 - E. Prices for Mali and Gambia are given in local currency - the Malian Franc and Butus respectively. The Malian Franc was the equivalent of the CFA until the start of the 1967/68 growing season, when it was devalued by 50%.

See the following table for conversion rates.

Exchange rates and conversions

	\$/1000 Dalasis	\$/1000 CFA	Dalasis/CFA
1960	560	4.051	124.417
1961	560	4.051	124.417
1962	560	4.051	124.417
1963	560	4.051	124.417
1964	560	4.051	124.417
1965	560	4.051	124.417
1966	560	4.051	124.417
1967	550.6	4.051	135.917
1968	480	4.051	118.489
1969	480	3.875	123.871
1970	480	3.601	133.296
1971	483.333	3.640	132.784
1972	503.9	3.960	127.247
1973	594	4.510	131.707
1974	585	4.157	140.726
1975	591	4.626	127.756

Note: 1 Dalasis = 100 Butus

1 CFA = 2 Malian Francs, after 1966/67

Source: West African Rice Development Assoc., Rice Statistics Yearbook, 1975.

F. All rice figures are for unhulled rice, or paddy. Milled equivalent rates for the different countries are given in the following table.

Milled Rice Equivalentents
(percentage of rice obtained after paddy milling)

Chad	-
The Gambia	63%
Mali	65%
Mauritania	65%
Niger	64%
Senegal	66%
Upper Volta	62%

Source: West African Rice Development Assoc., Rice Statistics Yearbook, 1975.

LIST OF APPENDIX TABLES

I.	Production and Marketing of Principal Crops (various estimates)	Production et Commercialisation des Produits Principaux (estimations diverses)
II.	Producer Prices of Principal Crops (various estimates)	Prix au Producteur des Produits Principaux (estimations diverses)
III.	Production, Marketing and Producer Price of Principal Crops (best estimates)	Production, Commercialisation et Prix au Producteur des Produits Principaux (meilleures estimations)
IV.	Retail Prices of food grains on various markets	Prix de Détail des Céréales, divers marchés

INDEX OF TABLES BY COUNTRY AND TYPE

Country	I	II	III	IV
Chad	1	2	3	20
The Gambia	4	5	6	21
Mali	7	8	9	22
Mauritania	-	-	10	-
Niger	11	12	13	23
Senegal	14	15	16	24
Upper Volta	17	18	19	25

TABLE 1

CHAD: PRODUCTION AND MARKETING OF PRINCIPAL CROPS (VARIOUS ESTIMATES)
 TCHAD: PRODUCTION ET COMMERCIALISATION DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

		56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
		56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
<u>MIL ET SORGHIO</u> PRODUCTION	(1)						1036	936	900 ^F	805	800	694	674	711	651	610	585	432*				
	(2)							715			805			647	710		660			650-700		
	(10)			650																		
	(16)								896.9	710	614	630	647	661	651	610						
	(12)											630	647	661	651	610	639	490	430	559*		
	(4)									800				711	700	651	610	631	590			
	(6)													711	651							
	(5)	860	860	n.d.	n.d.	n.d.	1036	936			850											
	(8)															651	610	600*				
	(10)											805	607									
	(9)														653							
	(11)									900												
	(7)									895	708	614	630	647	661	651	610	672				
(19)																						595*
COMMERCIALISATION	(11)								(90)													
	(10)			(70)																		
Traditionnelle	12)																			(49)	(30-40)	
Traditionnelle	(2)							(50)		(56)			(45)	(50)		(46)				(46-49)		
Moderne ⁺	(18)												n.d.	.66	1.85	1.24	1.21	.91	1.78	.93	1.17	
<u>RIZ</u> PRODUCTION	(1)						23	24	34*	38	25	37	32	35	37	39	51	25				
	(5)		26	n.d.	n.d.	n.d.	23	24	34*	38												
	(2)										25		32 ^F		32		53					45*
	(3)										25	37	32	35	37	39	51	28	28*			37*
	(4)									32			32	35		39	51	25	30	35*		

For notes, see end of table.
 Pour les notes, voir fin du tableau.

suite page suivante
 See following page

TABLE 1 (CONTINUED, SUITE)

CHAD: PRODUCTION AND MARKETING OF PRINCIPAL CROPS (VARIOUS ESTIMATES)

TCHAD: PRODUCTION ET COMMERCIALISATION DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	73	75	76	
	56/57	57/58	58/59	59/60	61/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77	
RIZ																						
PRODUCTION (cont.)(6)													32	37								
(7)																						51
(8)																						
(10)																						37 38 60
(11)								32			34	37										
(7)								(3)	(3)	n.d.	37	32	32	37	39	79						
(12)											28	28	31	36	40	51	42	30	36			
(16)											37	32	32		39							
(17)															39	51	p.m.	p.m.	37	39		
COMMERCIALISATION																						
(11)								(3.45)														
(10)								(1.3)														
Total - Estimation(2)										(3)		(10.7)		(9.8)	(30.5)							(23)
Moderne ⁺ (2)														.34	.58	1 10	.80	.12	.07	.23	2.50	
(Rizerie Lai)																						

For notes, see end of table
 Pour les notes, voir fin du tableau

suite page suivante
 See following page

TABLE 1 (CONTINUED, SUITE)

CHAD: PRODUCTION AND MARKETING OF PRINCIPAL CROPS (VARIOUS ESTIMATES)

TCHAD: PRODUCTION ET COMMERCIALISATION DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
<u>ARACHIDES</u>																					
PRODUCTION	(13)												110	115	96	75	85	70	75	82	
	(12)										92	88	110	115	96	75	85	70	75 ^P		
	(14)					140	----- moyen -----				140				115 ^u	115 [*]	115 [*]				
	(4)											88	110	115	96	75	75	76	80 [*]		
	(16)										92	88	110	115	96						
COMMERCIALISATION ⁺	(17)																				(4)
<u>COTON (GRAINE)</u>																					
PRODUCTION	(13)												149	117	95	109	104	115	144	174	
	(12)										123	103	149	117	95	109	104	115	140 ^P		
	(14)					87	-----				87				104 ^u	112 ^u	120 ^u				
	(4)								99			102	149	117	95	109	104	115	121 [*]		
	(15)			98	47	94	105	99	87	123	102	149	117	95	109						
	(16)			98	47	94	105	96	87	123	102	149	117	95							
	(17)								87	123	102	149	117	95	109	104	115	145	174		
COMMERCIALISATION ⁺ (4)										(99)		(102)	(149)	(117)	(95)	(109)	(104)	(115)	(121 [*])		

F - FAO Estimation

n.d. - non disponible, not available

* - Estimation

+ - quantité commercialisé par DC/FDAR seulement (achete du 1.1 au 31.12 de chaque année, sauf pour 1976- 1.1 au 31.10 seulement)
 quantity marketed by DC/FDAR only (purchased from 1-1 to 12-31 each year, except 1976 - from 1-1 to 10-31 only)

p - provisoire, provisional

u - chiffre officieux, unofficial figure

TABLE 2

CHAD: PRODUCER PRICES OF PRINCIPAL CROPS (VARIOUS ESTIMATES)

TCHAD: PRIX AU PRODUCTEUR DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	
	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77	
MILLET AND SORGHUM																						
MIL ET SORGHO																						
(4)																						
(2)							10.00															
Petit Mil Bokoro(3)																	12.00	12.00	12.00	12.00	12.00	
Gros Mil Bokoro(3)													12.00									
Petit Mil(5)													9.00									
Gros Mil(5)																	12.00					
																	10.00					
RIZ - RICE																						
(Mayo-Kebbi)(2)																						
Prix Producteur Moyen																						
(Tandjilē)(2)																		14.00	18.00	20.00	25.00	25.00
(3)																		14.00	18.00	20.00	26.00	25.00
(4)																		14.00	18.00	20.00	27.00	25.00
(Laï)(4)								10.00					14.00									
(Kelo)(4)					10.00																	
					8.50																	
COTON - COTTON																						
coton blanc(6)													26.00	26.00	26.00	26.00	26.00	28.00	29.00	31.00	43.00	
coton jaune(6)													26.00	26.00	26.00	26.00	26.00	26.00	24.00	24.00	25.00	
(7)													26.00	26.00	26.00	26.00	26.00	28-26	29-24	31-24	43-45*	
(7)													26.00	26.00	26.00	26.00	28.00	29.00	31.00	43.00		

* Estimation

TABLE 3
 CHAD: PRODUCTION, MARKETING AND PRODUCER PRICE OF PRINCIPAL CROPS (BEST ESTIMATES)
 TCHAD: PRODUCTION, COMMERCIALISATION ET PRIX AU PRODUCTEUR DES PRODUITS PRINCIPAUX (MEILLEURES ESTIMATIONS)

	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
<u>MIL ET SORGHO</u>																					
PRODUCTION	860	860	650		1,036	963	896	710	614	630	647	661	651	610	639	490	430	559*	595*		
ACHATS DE DC/FDAR																					
ACHATS DE DC/FDAR													n.d.	.66	1.85	1.24	1.71	.91	1.78	.93	1.17
PRIX MIN. AU PRODUCTEUR																	12	12	12	12	12
<u>RIZ</u>																					
PRODUCTION		26	34		23	24	(3)	(3)	25	37	32	32	37	40	51	42	30	37	39		
ACHATS DE DC/FDAR																					
PRIX MIN. AU PRODUCTEUR (Moyenne des Prix Regionaux)														.34	.58	1.10	.80	.12	.07	.23	2.50
																	14	18	20	26	25
<u>ARACHIDES</u>																					
PRODUCTION											92	88	110	115	96	75	85	70	75	82	
PRIX AU PRODUCTEUR																					
<u>COTON</u>																					
PRODUCTION				97.8	46.7	94.2	104.9	96.3	86.8	122.9	102	148.8	116.6	94.7	108.8	104.2	115.1	143.6	174.1		
COMMERCIALISATION ++								99.1				102	148.8	117	95	108.8	104.2	114.5	121*		
PRIX AU PRODUCTEUR											26	26	26	26	26	28	29	31	43		

++ = Seulement quantité commercialisé par COTONTCHAD, quantity marketed by COTONTCHAD ONLY.
 n.d. = non disponible, not available
 * = Estimation

CHAD: SOURCES OF FIGURES ON PRODUCTION AND
MARKETING OF PRINCIPAL CROPS

TCHAD: SOURCES DES CHIFFRES DE PRODUCTION ET
COMMERCIALISATION DES PRODUITS PRINCIPAUX

1. Food and Agriculture Organization. Production Yearbook, 1958-1973.
2. Club Des Amis Du Sahel (C.I.L.S.S.), Director-Fonds du Développement Rural (F.D.A.R.). Commercialisation, Politique Des Prix, Stockage Des Céréales, Juillet 1976.
3. Nations Unies. Annuaire Statistique, 1975.
4. Berg, Elliot. The Recent Evolution of the Sahel. Center for Research on Economic Development, 1975.
5. Food and Agriculture Organization. World Crop Statistics, 1966.
6. Republique du Tchad. Annuaire Statistique, 1970, (Volume III/Fascicule II).
7. Republique du Tchad. Annuaire Statistique, 1974, Vol. I/Nouvelle Série.
8. Republique du Tchad, Ministère du Commerce et de l'Industrie. Rapport Economique Annuel, 1971.
9. International Bank for Reconstruction and Development, 1974.
10. Republique du Tchad. Annuaire Statistique du Tchad, Vol. II, 1968.
11. Republique du Tchad, Secretariat d'Etat. Comptes Economiques, 1958, 1961-63.
12. International Monetary Fund, June, 1975.
13. International Monetary Fund, Sept., 1975.
14. Food and Agriculture Organization. Production Yearbook, Vol. 26, 1972.
15. International Bank for Reconstruction and Development, 1973.
16. Republique du Tchad, Ministère d'Etat. L'Agriculture et l'Elevage tchadiéens à travers les chiffres 1962-1971. Juillet 1972.
17. Republique du Tchad, Ministère du Développement, Direction de l'Agriculture. L'Agriculture et L'Elevage au Tchad. Decembre 1976.
18. DC/FDAR, fiche interned, N'djamena, Decembre 1976.
19. Republique du Tchad, Rapport Multidonateurs, Janvier 1976.

CHAD: SOURCES OF OFFICIAL PRICES

TCHAD: SOURCES DES PRIX OFFICIELS

1. Republique du Tchad, Direction de la Statistique: Annuaire Statistique du Tchad, Vol. III, Fasc. II, 1970.
2. Club Des Amis Du Sahel (C.I.L.S.S.), Director du Fonds de Development (FDAR), Commercialisation, Politique des Prix, Stockage des Céréales. Juillet, 1976.
3. Republique de Tchad, Annuaire Statistique du Tchad, Vol. II, 1968.
4. Republique du Tchad, Secretariat d'Etat. Comptes Economique du Tchad. 1958, 1961-63.
5. Republique du Tchad, Ministère du Commerce Et l'Industrie. Rapport Economique Annuel, 1971.
6. International Monetary Fund, June, 1975.
7. Berg, Elliot. The Recent Evolution of the Sahel, Center for Research on Economic Development, 1975.
8. Banque Central Des Etats de L'Afrique de L'Ouest. Indicateurs Economique. BCEAO-UMOA #236, February 1976.

TABLE 5

THE GAMBIA: PRODUCER PRICES OF PRINCIPAL CROPS (VARIOUS ESTIMATES)*
 LA GAMBIE: PRIX AU PRODUCTEUR DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)*

		58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
		58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
<u>RIZ-RICE(local)</u>	(1)															28.6	30.8	30.8	39.6	
	(2)													13.4	15.7	24.6	31.4			
	(3)																		60	
	(5)															24.6				
	(8)									8.8	15.4	15.4	24.2	30.8						
<u>MIL ET SORGHO</u>	(1)																19.8	22	28.6	
<u>MILLET AND SORGHUM</u>	(3)																		55	
<u>ARACHIDES-GROUNDNUTS</u>	(1)															23	31	37	41	
	(2)								14	14	13.5	14	15	17	18	20	23	31		
	(4)									14	13.5	14	15	17	18	20				
	(5)							13.5	14	14	13.5	14	15	17	18	20	23			
	(6)	11	12	13.5	13.5	13.5	13.5	13.5												
<u>COTON-COTTON</u>																				

* En Butus/kg, in Butus/kg

TABLE 6

THE GAMBIA: PRODUCTION, MARKETING AND PRODUCER PRICES OF PRINCIPAL CROPS (BEST ESTIMATES)
 LA GAMBIE: PRODUCTION, COMMERCIALISATION ET PRIX AU PRODUCTEUR DES PRODUITS PRINCIPAUX (MEILLEURES ESTIMATION)

	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
MIL ET SORGHO																					
Production	nd	30	30	nd	40	44	44	44	44	44	44	44	45	45	30	45	30	33	44	34	32*
Commercialization																					
Prix au Producteur																			20	22	29
RIZ (Paddy)																					
Production	nd	20	22	24	24	25	29	30	31	37	37	20	40	37	41	41	30	26	28	30	30*
Commercialisation																					
Prix au Producteur																		29	31	31	40
ARACHIDES																					
Production	80	90	65	56	78	94	97	90	102	118	130	120	148	135	115	125	115	137	138	135	135*
Commercialisation			62	53	75	85	75	73	91	118	126	117	120	111	113	123	100	135			
Prix au Producteur		15.5	13.5	11	12	13.5	13.5	13.5	13.5	14	14	13.5	14	15	17	18	20	23	31	37	41
COTON																					
Production																					
Commercialization															\$	\$	\$	\$	\$	\$	\$
Prix au Producteur																					nd

*Estimation

\$ - Negligéable, negligible

nd - non disponible, not available

THE GAMBIA: SOURCES OF OFFICIAL PRICES

LA GAMBIE: SOURCES DES PRIX OFFICIELS

1. Central Statistics Division, Ministry of Agriculture, The Gambia. Agricultural Sample Surveys, 1973-76.
2. International Bank for Reconstruction and Development, 1975.
3. Republic of the Gambia, Ministry of Agriculture. Work Program on Cotton, Rice, Millet and Sorghum, 1976-77.
4. United Nations Organisation. Survey of African Economies, Vol 6.
5. The Gambia Produce Marketing Board, 25th Annual Report, 1973-74.
6. The Gambia Oilseed Marketing Board, 16th Annual Report, 1964-65.

THE GAMBIA: SOURCES OF FIGURES ON PRODUCTION AND
MARKETING OF PRINCIPAL CROPS

LA GAMBIE; SOURCES DES CHIFFRES DE PRODUCTION ET COMMERCIALISATION
DES PRODUITS PRINCIPAUX

1. Food and Agriculture Organization, Production Yearbook, 1958, 1972 and 1974.
2. Central Statistics Division, Ministry of Agriculture, The Gambia, Agricultural Sample Surveys, 1973-76.
3. Central Statistics Division, Ministry of Agriculture, The Gambia, Agricultural Sample Surveys, 1975.
4. Food and Agricultural Organization, Production Yearbook, 1961.
5. Quarterly Economic Review, No. 1, 1974, Annual Supplement.
6. United Nations Organization, Survey of African Economics, Vol. 6.
7. International Bank for Reconstruction and Development, 1975.
8. Republic of the Gambia, Ministry of Agriculture, 1976/77 Work Program on Cotton, Rice, Millet and Sorghum.
9. Republic of the Gambia, Ministry of Agriculture, Groundnuts Production, 1976/77 Extension Program.
10. United Nations, Statistical Yearbook, 1974-75.
11. United States, Department of Agriculture, Foreign Agriculture Services, World Agricultural Production and Trade, 1973-74.
12. F.A.O., Bulletin of Agricultural Economics and Statistics, Vol. 23, May 1974.

TABLE 7

MALI: PRODUCTION AND MARKETING OF PRINCIPAL CROPS (VARIOUS ESTIMATES)
 MALI: PRODUCTION ET COMMERCIALISATION DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

		56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
		56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
<u>MIL ET SORGHO</u>																						
<u>Production</u>	(1)					827	867	863	651	721	737	830	558	602	715	715	624					
<u>Mil</u>	(1)								336		350	390	266	222	338	384	318					
<u>Sorgho</u>	(1)								315		388	440	291	380	378	331	306					
	(2)				833	828	867	833	946	881	809	881	757	913	756	260	490	511		850	865	
	(3)								709	700	737	830	556	603	715	705	624					
	(4)				833	828	867	863	946	881	809	881	757	913	756	(917)						
	(5)				836					720	765	857	757	852	600	900						
	(6)											830	556	603	716	715	624	660	800	(850)		
	(7)												556	700	715	682	474	480	800			
	(8)											881	556	700	715	750						
	(9)											830	556	602	600	750	500					
	(10)								651			830	556	700	715	715	474	530	910			
	(18)					827	867	863	651	721	738	830	556	650	715	750	516					
	(19)					828	867	863	947	881	809	881	800									
	(22)											830	558	603	715	715	490	659		(850)		
<u>Commercialisation</u>	(1)					20	29	16	17	26	57	60	8	26	12	29					(57)	
	(2)				20	21	29	18	17	26	56	71	18	26	28			9				
	(6)											53	8	26	10	30	9	10	48	(57)		
	(7)												7	26	12	29	11	9	40	70		
	(8)											62	14	27	12	30						
	(9)											60	8	26	12	31	5					
	(10)											68	7	26	12	29	11	10	33			
	(19)					20	29	16	17	26	56	60										
	(18)											53	28	26	10	30	10					
	(22)											60	8	26								
<u>RIZ (Paddy)</u>																						
<u>Production</u>																						
<u>Office du Niger</u>	(1)	47	50	56	56	55	41	38	43	40	41	41	43	40	53	138						
<u>Total</u>	(1)						144	200	188	191	165	158	171	134	161	137	157	115				
	(2)					160	144	200	188	191	161	162	159	94	118	167	91	40	65			
	(3)									158	162	158	172	135	162	163	195	100	90	215	260	
	(4)					160	132	200	189	134	162	162	160	94	118	168	(182)					
	(5)				94						158	129	172	94	119	138	170	150				
	(6)											172	134	161	137	157	116	130	250	260		

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TABLE 7 (CONTINUED, SUITE)

MALI: PRODUCTION AND MARKETING OF PRINCIPAL CROPS (VARIOUS ESTIMATES)
 MALI: PRODUCTION ET COMMERCIALISATION DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

		56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
		56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
RIZ (Paddy) (SUITE)																						
Production	(7)													134	161	163	170	100	90	210	(163)	
	(9)													172	134	161	148	180	110			
	(10)									192				192	134	161	163	195	100	81	229	
	(11)									158	162	158		172	135	161	148	100	100			
	(12)											129	72	94	99							
	(18)						145	200	189	192	162	180	172	134	161	163	180	110				
	(22)												174	136	164	137	157	131	144	250		
	(23)					185	185	190	165	158	162	158	169	136	157	169	157	110	150	200		
Commercialisation																						
(Office du Niger)	(1)	31	31	37	37	38	23	23	27	22	25	26	30	25	36	38	46	47				
(Total)	(1)						24	28	31	27	25	26	33	35	26	39	40	51	30	59	84	100
	(2)					4	3	11	4	5	3	11	9	7	13	4						
	(6)																			4		
(Office du Niger)	(7)												35	26	34	40	52	47	59	84	100	
	(7)													1		1	5	0	5	20	30	
	(8)													12	22	19	24	20	24	24	24	
	(9)												27	28	36	40	52					
	(18)					24	28	31	28	26	33	36	26	39	51	47						
COTON																						
Production																						
(Office du Niger)	(1)	3	3	3	4	5	8	8	10	8	2	6										
Total	(18)						8	9	11	54	23	32	39	50	51	60	74	72				
	(21)																					
	(2)					9	10	18	24	31	21	28	41	49	55	57	75	78	65	75		
	(3)									33	18	28	37	55	46	56	71	72	55	71	103	
	(5)					8					11	17	28	30	35	37	42	47				
	(6)																					
	(7)												39	50	51	60	74	72	55	71	100	
	(8)													50	51	59	74	72	57	75	90	
	(9)												39	49	51	58	73					
	(10)												39	50	51	60	74	70				
	(13)												39	50	51	59	74	72	58	67		
	(14)								21	13	(20)	(22)	32	42	50	44						

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TABLE 7 (CONTINUED, SUITE)

MALI: PRODUCTION AND MARKETING OF PRINCIPAL CROPS (VARIOUS ESTIMATES)
 MALI: PRODUCTION ET COMMERCIALISATION DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
COTON (SUITE)																					
Commercialisation																					
(Office du Niger)	(1)	2	3	2	4	5	7	8	9	6	2	6	3	4	3						
Total	(18)	5	6	6	6	11	13	20	25	29	18	28	33	44	45	53	68	66			
	(2)				5	6	12	16	22	16	22	30	47	42	53	68	70	51	61	103	
	(6)											33	45	45	53	68	66	51	61	90	
	(7)												41	42	53	68	66	51	61	72	
	(8)											33	43	45	53	68					
	(9)											33	45	45	53	68	66				
	(10)							29				33	41	42	53	68	66	52	61		
ARACHIDES																					
Production																					
(O.A.C.V.)	(20)											24	28	54	68	75	67	68	110		
(Non-O.A.C.V.)	(20)											67	75	75	88	77	68	64	78		
Total	(20)											91	102	129	156	152	135	132	188		
	(2)				122	139	167	182	173	118	109	115	95	123	131	131	90	97			
	(3)								90	75	88	91	102	129	156	152	135	132	188	205	
	(5)				125					153	159	119	100	115	158	143	130				
	(6)											119	96	136	153	152	109	100	151	(200)	
	(7)												96	136	158	152	134	119	150		
	(8)											117	93	125	158	152					
	(9)											119	96	136	158	152					
	(10)							148				119	96	136	158	152		134	120	145	
	(12)							148	90	159	119	100	120								
	(15)										117	93	125	158							
	(18)							148	153	159	119	96	136	158	152	140					
	(19)							148	153	159	119										

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TABLE 7 (CONTINUED, SUITE)

MALI: PRODUCTION AND MARKETING OF PRINCIPAL CROPS (VARIOUS ESTIMATES)
 MALI: PRODUCTION ET COMMERCIALISATION DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
ARACHIDES (SUITE)																					
Commercialisation																					
(O.A.C.V.)																					
(Operation Haute Vallée)																					
Total																					
(20)												11	15	38	46	44	41	40	60	78	(95)
(20)												20	15	19	28	16	9	4	10	4	(5)
(2)	82	97	86	50	86	67	74	72	45	28	39	30	30	57	74	60	50	44	70	82	(100)
(6)					54	63	67	74	50	27	40	29	36	48	74	57	48	42			89
(8)												29	33	57	74	60	50	44	70		87
(9)													33	56	74	60	52	44	70		(87)
(10)												29	26	57	74	60					
(16)								49				29	33	57	74	60					
(17)												29	33	56	74	60	50	43	65		
(18)						66	71	75	49	27	40	29	33	57	74	60	52	43	75		

TABLE 8
MALI: PRODUCER PRICES OF PRINCIPAL CROPS (VARIOUS ESTIMATES)*
MALI: PRIX AU PRODUCTEUR DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)*

		57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
		57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
<u>MIL ET SORGHO</u>																					
	(1)					10	10	10	11	11	15	16	16	18	18	18	20				
	(2)										15	16	16	18	18	18	20	20	32	32	32
	(3)											16	16	18	18	18	20	20	32	32	
(Regions de Production)	(4)	16	11-115	10	10	10	10	11	11												
(Regions de Deficit)	(4)	16	115-16		12-14	11-14	115-14	125-155		15	16	16	18								
<u>RIZ (Paddy)</u>																					
Paddy Blanc	(1)					8-9	11	11.5	12.5	12.5	16	18	18	25	25	25	25				
	(2)										16	18	18	18	25.5	25.5	25.5	25.5	40	40	40
	(3)											18	18	25	25	25	25	25	40	40	
	(4)	12-125	12	14	8-9	11	11.5	13	13	16	18	18	24								
Paddy Rouge	(1)				7	8	8	9	9	12	12	12	16	16	16	16					
	(2)									12	12	12	12	16	16	16					
	(4)				7	8	8	9	9	12	12	12	12	16	16	16	16	16	22.4	22.4	22.4
Paddy Melange	(2)									13.5	13.5	13.5	13.5	20.5	20.5	20.5	20.5	20.5	31.2	31.2	31.2
	(4)									13.5	13.5	13.5	13.5								
<u>COTON</u>																					
1 ^{ere} Qualité	(2)											40	40	45	50	50	50	50	75	75	75
	(4)	34	34	34	34	34	34	34	34	34	34	40	40	45							
2 ^{eme} Qualité	(4)	31	31	30	30	30	30	30	30	30	30	35	35								
3 ^{eme} Qualité	(4)	25	25	25	30	30	30	30	30	30	30	30	35	35							
<u>ARACHIDES</u>																					
Coques	(2)																				
	(3)											24	24	30	30	30	30	30	40	40	45
	(4)											24	24	30	30	30	30	30	40	40	
Decortiqué (Machine)	(4)		14.8	15.8	14	14	14	14	13	13	16	24	24	30	30	30	30	30	40	40	
	(5)								23.5	23.5	28	40	40	40							
Decortiqué (à la Main)	(4)		24	25.6	23	23	23	23	25.5	25.5	29.5	40	51.5	48	48	48	48	48			
	(5)											42	53.6	50	50	50	50	50			

* Prix en FM/kg, price in MF/kg

TABLE 9
MALI: PRODUCTION, MARKETING AND PRODUCER PRICE OF PRINCIPAL CROPS (BEST ESTIMATES)

LE MALI: PRODUCTION, COMMERCIALISATION ET PRIX AU PRODUCTEUR
DES PRODUITS PRINCIPAUX (MEILLEURES ESTIMATIONS)

	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	
	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
<u>MIL ET SORGHO - MILLET AND SORGHUM</u>																				
Production				833	827	867	863	651	721	737	830	558	603	715	715	624	660	850	865	
Commercialisation				20	20	29	17	17	26	56	60	8	26	12	29	11	9	40	71	
Prix au Producteur		16	11.6	10	10	10	10	11	11	15	16	16	18	18	18	20	20	32	32	32
<u>RIZ (Paddy)-RICE (Unhulled)</u>																				
Production				160	145	200	189	192	162	162	172	134	161	137	157	116	130	250	260	
Commercialisation					24	28	31	27	26	32	35	26	34	40	52	47	59	84	100	
Prix au Producteur (Paddy Blanc)		12	12	14	8	11	11.6	12.6	12.6	16	18	18	25	25	25	25	25	40	40	40
<u>COTON-COTTON</u>																				
Production				9	10	18	24	31	22	32	39	50	51	59	74	72	55	71	100	
Commercialisation				5	6	12	16	28	18	28	33	45	45	53	68	66	51	61	90	
Prix au Producteur (1 ^{ere} Qualité)		34	34	34	34	34	34	34	34	34	40	40	45	50	50	50	50	75	75	75
<u>ARACHIDES-GROUNDNUTS</u>																				
Production				122	138	167	182	173	153	159	119	96	136	156	152	135	132	188	205	
Commercialisation				54	63	67	74	50	27	40	29	33	57	74	60	50	43	70	87	
Prix au Producteur (Coque)		14.8	15.8	14	14	14	14	13	13	16	24	24	30	30	30	30	30	40	40	45

SOURCE: Voir Tableaux 7 et 8.
See Tables 7 and 8.

MALI: SOURCES OF FIGURES ON PRODUCTION AND MARKETING

MALI: SOURCES DES CHIFFRES DE PRODUCTION
ET COMMERCIALISATION

1. République du Mali, Annuaire Statistique, 1966-1972.
2. République du Mali, Direction de l'Agriculture, mimeographed document.
3. Steedman, Charles. Le Secteur Agricole de la République du Mali. Center for Research on Economic Development, December, 1976.
4. Food and Agriculture Organization (FAO), Report on Mali, 1973.
5. U.N. Economic Commission for Africa, Document on Mali, 1973.
6. International Bank for Reconstruction and Development, 1976.
7. International Monetary Fund, 1976.
8. Banque Centrale du Mali, Rapport D'Activité, ex. 1971.
9. Direction Nationale du Plan et de la Statistique, Direction des Affaires Economiques, 1973.
10. Berg, Elliot. The Recent Economic Evolution of the Sahel. Center for Research on Economic Development, 1975.
11. Le Bulletin de l'Afrique Noire, Aperçus Sur L'Agriculture Malienne, no. 820, Avril, 1975.
12. FAO, Production Yearbook, 1970.
13. FAO, Production Yearbook, 1968.
14. La Documentation Française, Notes et Etudes Documentaires: Le Mali, nos. 4081-4083, 1974.
15. Le Moniteur Africain, Opération Arachide, 6 juin, 1975.
16. Le Secrétariat du Comité Monétaire de la Zone Franc, mimeographed document.
17. Le Bulletin de l'Afrique Noire, no. 808, 29 janvier 1975.
18. Ministère de Coopération Français, Dossier d'Information Economique.
19. International Bank for Reconstruction and Development, 1970.
20. OACV, Compte Rendu, 1974-75.
21. International Bank for Reconstruction and Development, 1975.
22. CEGOS, Etude des Structures de Prix et des Mécanismes de la Commercialisation des Mils et Sorghos, Vol. III, Mai 1976.

MALI - SOURCES OF OFFICIAL PRICES

MALI - SOURCES DES PRIX OFFICIELS

1. République du Mali, Annuaire Statistique, 1966-1972.
2. Office de Produits Agricoles du Mali (OPAM), mimeographed document.
3. International Bank for Reconstruction and Development, 1976.
4. International Bank for Reconstruction and Development, 1970.
5. International Bank for Reconstruction and Development, 1975.

TABLE 10
 MAURITANIA: PRODUCTION OF PRINCIPAL CROPS (VARIOUS ESTIMATES)
 MAURITANIE: PRODUCTION DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

		59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
		59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
<u>MIL - SORGHO</u> (Millet - Sorghum)	(1)			87	89	90	90	100	90	90	50	100	82		37	25			
	(2)	80	84	87	89	90	90	100	90	100	50	100							
<u>MAIS</u> (Maize)	(1)			3.2	3.4	3.7	4.0	4.0	3.0	2.0	4.0	4.0	.8		2.0	1.5			
	(2)	3.0	3.0	3.2	3.4	3.7	4.0	4.0	4.0	4.0	3.0	4.0							
<u>BLÉ ET ORGE</u> (Wheat and Barley)	(1)			.2	.2	.2	.2	.3	.3	.2	.2	.3	.2		.3	.2			
	(2)	.2	.2	.2	.2	.2	.2	.3	.3	.3	.3	.4							
<u>RIZ (Paddy)</u> (Rice)	(1)			.5	.5	.6	.7	.7	.7	.7	.8	1.0	2.1		2.5	3.0			
	(2)	.4	.4	.5	.5	.6	.7	.7	.7	.7	.7	.7							
	(3)	.4	.5	.5	.6	.7	.7	.7	.7	.8	1.0	1.5	2.0	2.5	2.5	3.2			
<u>ARACHIDES</u> (Groundnuts)	(1)			.7	.7	.8	.8	.8	.8	3.0	2.0	.8	3.0		1.0	1.0			
	(2)	.7	.7	.7	.7	.8	.8	.8	.8	.8	.7	.8							
<u>DATTES</u> (Dates)	(1)			13	12	11	10	10	10	12	12.5	12	15		10.0	10.4			
	(2)	15	14	13	12	11	10	10	10	12	12.5	12							

SOURCES: (1) Annuaire Statistique, 1970, 1974.
 (2) International Bank for Reconstruction and Development, 1971.
 (3) West Africa Rice Development Association, Rice Statistics Yearbook, July 1975.

TABLE 11

NIGER: PRODUCTION AND MARKETING OF PRINCIPAL CROPS (VARIOUS ESTIMATES)
 NIGER: PRODUCTION ET COMMERCIALISATION DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

		56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76		
		56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77		
MIL-MILLET	<u>Production</u>	(1)																						
		(2)		620	621	673	719																	
		(5)						781	934	977	1013	790	842	1000	733	1095	871	959	919	627				
		(6)									1013			1000	733	1095	871	958	919	648	896			
		(7)									1013	790	842	1000	733	1095	871	959	919	607	883	700*		
		(4)															871	959	919	627	896			
	(9)																				883	582	1195*	
	(11)	485	620	621	673	718	803	974	971	1013						871	959	919	627	883				
	(12)						500	500	500	560	560	560	580	580	590	610	610	580						
	<u>Commercialisation</u> T	(2)																						
		(4)																(92)	(20)					
	SORGHO-SORGHUM	<u>Production</u>	(1)																					
(2)				300	260	273	228																	
(4)								275	315	353	315	266	277	342	215	289	230	267	208	126				
(9)																						219	254	308
(10)						290	249	281	352	315	266	277	342	300	289	230	267	208	126	219				
(11)		364	300	260	273	222	249	281	352	315						337	300							
(12)							257	320	352	315	266	277	342	300 ^F	289	337	300	270						
<u>Commercialisation</u> ⁺⁺⁺	(2)																5	3	7 ^B	25	48	21		

Pour les notes, voir fin du tableau
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TABLE 11 (CONTINUED. SUITE)

NIGER: PRODUCTION AND MARKETING OF PRINCIPAL CROPS (VARIOUS ESTIMATES)

NIGER: PRODUCTION ET COMMERCIALISATION DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
RIZ(paddy)-RICE(unhulled)																					
<u>Production</u>																					
Maïs-Blé-Riz (1)		9	9	9	11																
(2)						10	11	10	12	12	21	33	39	38	37	27	32	46			
(5)									12			33	39	38	37	27	32	23	28		
(6)									12	12	21	33	39	38	37	27	32	46	30	28*	
(7)																					28*
Brut ou Paddy (8)										12	20	33	39	39	37	27	32	46	43*		
(4)																				30	29
(11)	4	5	5	4	7	10	11	10	12												29*
(12)				4	7	10	11	10	12	12	20	33	39	39	37	17	27				
<u>Commercialisation</u> ⁺⁺																					
(2)																1	26	14	26		
NIEBE-COWPEAS																					
<u>Production</u>																					
(2)									66	48	68	77	74	83	84	72	144	92	133	219	236
<u>Commercialisation</u>																					
(2)																3	8	4	19	9	
ARACHIDES-GROUNDNUTS																					
<u>Production</u> (Coque)(13)	131				150				184	277	312										
(7)									194	277	312	298	252	206	205	256	260	77	129	30 ^P	
(14)															205	257	260*	77	130 ^P		
(15)												298	252	207	205	257	260*				
(5)									184			298	252	207	205	257	(200)	75	120		
(12)						208	-----moyen-----				208				205	256	270*				
(9)	130	193	168	104	150	152	205	220	194	276	312	298	252	207	205	256	260	77			
(2)						152	205	220	194	277	312	298	252	207	205	257	260	77	129	41	95
<u>Commercialisation</u> ⁺																					
Decortiqué(13)								114	106	156	193	195*			165	130	145	110	26	90	
(7)																					
Acheté																					
par SONARA(14)															130	146	110	14	75		
(15)												183	164	165	130	146	110				
(5)									106			183	164	165	130	146	110	25	60		
(9)								92	114	106	150	191	183	164	165	130	145	110	26	90	4
Equivalent/coque (4)								138	171	160	234	229	274	246	247	195	218	165	39	135	6

Pour les notes, voir fin du tableau
See end of table for footnotes

Suite page suivante
See following page

TABLE 11 (CONTINUED, SUITE)
 NIGER: PRODUCTION AND MARKETING OF PRINCIPAL CROPS (VARIOUS ESTIMATES)
 NIGER: PRODUCTION ET COMMERCIALISATION DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

		56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
		56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
COTON-COTTON																						
Production	(13)	§				1				6	7	5										
Coton en graine	(7)									6	7	7	6	7	13	11	9	6	4	8	10 ^P	
	(14)									6	7	7	6	7	13	11	9	6	4			
	(15)												6	7	13	11	9	6	4			
	(12)												6	7	13	11	9	6				
	(2)						6	-----moyen-----					6									
Commercialisation	++						3	5	6	6	7	7	6	7	13	11	10	10*				
Fibre	(13)								2	2	1	2										
Fibre	(14)								2	2	1	2										
Graine	(15)															3	3	2	1	4		
Graine	(5)												6	7	11	10	8	5				
Fibre	(4)									7			6	7	11	10	8	5			11	
										2	2	2	2	2	4	3	3	2	1	3	4	

+ = seulement quantité commercialisé par SONARA, quantity marketed by SONARA only.
 ++ = seulement quantité commercialisé par UNCC and CFDT, quantity marketed by UNCC and CFDT only.
 § = négligéable, negligible.
 +++ = quantité de mil et sorgho commercialisé par OPVN seulement, quantity of millet and sorghum marketed by OPVN only.
 P = Préliminaire, preliminary.
 * = Estimation
 B = Commercialisation mil et sorgho, y inclus niébé pour 1972/73, chiffres séparés pas mentionnés. Millet and sorghum marketing, including cowpeas for 1972/73, separate figures not given.
 T = à titre indicatif, rough estimate.

TABLE 12
NIGER: PRODUCER PRICES OF PRINCIPAL CROPS (VARIOUS ESTIMATES)
NIGER: PRIX AU PRODUCTEUR DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
MIL-MILLET																					
Prix min. au producteur (1)															10	12.5	12.5	25	25		
Prix min. au producteur (4)	7.2	6.3				7.1	6.3	8.3	7.2								12.5	25			
Prix min. au producteur (2)																				25	25
Mil et Sorgho (5)																20-23	25	25-20	25-20	25-20	
(8)																12.5	18	25	30		
SORGHO-SORGHUM																					
Prix min. au producteur (1)																10	10	20	20		
Prix min. au producteur (4)	7.2	6.2				7.2	7.0	7.2	6.2								10	20			
(2)																				20	20
RIZ (paddy)-RICE (unhulled)																					
min. au prod.(1)															17	21	21	30	35		
(Nu), Achat(3)																21.5					
(5)																	21.5	30*	35*	35	
(8)																21.5	21.5	21.5	30		
(7)										15	17	17	16.5	16.5	17	21.5	21.5	30	30	35	35
ARACHIDES- GROUNDNUTS																					
Coques (9)															20	21	24	24	28		
(6)								23				18	18	18	20	21	24	28	55		
(5)												18	18	18	20	21	24	28	55	55	
Coques (7)	14.2	14.2				15.3	14.3			15.5	15	12		13	14	15.3	16	18	40		
Decortiqué (7)								22.5	22.8	22.8	18.5	17.8	20	21	23	24	24	55			
COTON- COTTON																					
(9)														28.4	28.9	29.7	31.9	37			
(6)							32.6					28.5	28.5	28.5	29.6	30	32	32	47		
(5)												28.5	28.5	28.5	29.6	30	32	37	47	47	
(7)						30	32.6	32.6	30	28.5	28.5	28.6		29	30	32	37	47			
NIÉBÉ-COWPEAS																					
(7)																20	25	30	40	40	30

*Estimation

NIGER: SOURCES OF FIGURES ON PRODUCTION
AND MARKETING

NIGER: SOURCES DES CHIFFRES DE PRODUCTION
ET COMMERCIALISATION

1. République du Niger, Ministère du Plan, Plan du Développement Economique et Social 1961-1963.
2. République du Niger, Direction de l'Agriculture, Rapport Annuel, Tome II, Statistiques, divers années.
3. République du Niger, Section Statistiques Agricoles, Enquête Agricole par SONDAGE, 1972-1973.
4. République du Niger Direction de l'Agriculture, Rapport Annuel, 1975.
5. Berg, Elliot, Recent Economic Evolution of the Sahel. Center for Research on Economic Development, 1975.
6. International Bank for Reconstruction and Development, 1975.
7. International Bank for Reconstruction and Development, 1976.
8. Nations Unies, Annuaire Statistique, 1975.
9. Office des Produits Vivriers du Niger, Production, mimeographed document, 1975.
10. U.S. Department of Agriculture, Foreign Agricultural Service, Trends in World Grain Production 1960-1972, Feb. 1973.
11. Food and Agriculture Organization, World Crop Statistics, 1966.
12. Food and Agriculture Organization, Production Yearbook, 1958-1973.
13. International Bank for Reconstruction and Development, 1968.
14. International Monetary Fund, 1975.
15. International Bank for Reconstruction and Development, 1973.

NIGER - SOURCES OF FIGURES ON PRODUCER PRICES

NIGER - SOURCES DES CHIFFRES DES PRIX AU
PRODUCTEUR

1. République du Niger , Office des Produits Vivrières du Niger H.F. OPVN
B.P. 474 - Niamey 1970-1975.
2. République du Niger, Le Ministère des Affaires Economiques, Sept. 1976.
3. République du Niger, Ministère du Commerce, Bulletin de la Chambre
d'Agriculture et Industrie.
4. République du Niger, Ministère du Développement Rural, Rapport Annuel,
1974.
5. Banque Central des Etats de l'Afrique de l'Ouest, Indicateurs Economiques,
UMOA, no. 236, Feb. 1976.
6. Berg, Elliot. Recent Economic Evolution of the Sahel. Center for
Research on Economic Development, 1975.
7. République du Niger, Office des Produits Vivrières du Niger, mimeo-
graphed document.
8. Organisme Economique de Coopération et Développement, OECD/FAO,
International Seminar on Critical Issues on Food Marketing Systems in
Developing Countries, Paris, October 18-22 1976.
9. International Bank for Reconstruction and Development, 1973.

TABLE 14

SENEGAL: PRODUCTION AND MARKETING OF PRINCIPAL CROPS (VARIOUS ESTIMATES)
 SENEGAL: PRODUCTION ET COMMERCIALISATION DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
MIL ET SORGHO-MILLET AND SORGHUM																					
<u>Production</u>	(1)					410	428	482	536	557	428	661	454	639	405	587	430				
	(2)	307	361	327	324	396	410	428	482	463											
	(4)								532		423	655	450	635	401	583	328	467	650*		
	(5)												447	635	402	544	323				
	(6)					392	407	424	478	532	554	423	655	450	635	401	583	323	510	777	630
	(7)					392	413	424	477	532	554	423	654	450	633	420	583				
	(8)				321	392	407	424	478												
	(9)																				
	(10)																				
	(11)				325	392	407	424	478	532	554	423	655	450	635	401	602*	511	795	715	
	(14)																				
	(19)																				
<u>Commercialisation+</u>	(7)					13	13	14	8	27	4	2	2	11	5	3	5	30	36	12	554
	(8)				1	17	13	13	14												613
(Achat)	(9)																				10 ^a
	(19)																				32
																					36
																					12
ARACHIDES-GROUNDNUTS																					
<u>Production</u>	(5)												836	798	590	999	587				
	(11)	763	900	770	829	892	995	914	952	1019	1168	923	1005	830	789	583	988	500P*			
	(12)															583	989	570	691		
	(13)																				
(Arachide de Bouche)	(13)																				594 880
	(4)								1019			857	1005	830	789	583	988	570	643P	989*	165 15
	(15)	763	900	770	816	907	995	914	952	1019	1168	950*									
(Huilerie Coques)	(1)						1010	1010	1010	1010	1010	1010				583	960	650*			
	(6)					893	995	894	952	933	1122	857	1005	831	779	583	989	570	675	993	1450 (1000)
	(17)																				1300 1000
	(19)								952	993	1122	857	1005	831	789	583	988	570	675	994	1450 1182

Pour les notes, voir fin du tableau.
 See end of table for notes.

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TABLE 14 (Continued, Suite)

SENEGAL: PRODUCTION AND MARKETING OF PRINCIPAL CROPS (VARIOUS ESTIMATES)
 SENEGAL: PRODUCTION ET COMMERCIALISATION DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	
	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77	
Commercialisation+																						
(Coque) (11)	677	808	675	718	809	872	749	782	839	993	781	834	781	623	447	747	375P*					
(4)									870		787	834	623	601	454	764	466	501				
(15)	677	808	675	718	809	872	749	782	839	984	660											
(16)											786	834	623	601	454	764	466	501	768	1176 ^P		
(19)																893	511	531	884	1320		
COTON-COTTON																						
Production																						
Coton (graine) (1)						1	1	1	1	1						11	25U	30*				
(5)																12	21	24				
(12)													10	12		12	21	23	33			
(13)																12	21	23	33			
(4)									§		1	4	10	12	13	21	23	32P		33		
(14)																						
(6)																						
(Coton) Allaine (15)									§	§	1		10	12	12	21	24	33	42	43	45	
(17)																						
(18)																						
(19)																				42	30	
Commercialisation																						
(Coton) (4)									§		1	4	10	11	11	21	22	33		42	31	
(19)																					47	
																					39	45
RIZ(Paddy)-RICE(Unhulled)																						
Production																						
(1)						83	77	106	110	122	125	138	58	163	91	108	50					
(2)		70	71	79	83	83	91	106	100													
Brut ou Paddy (3)																						
(4)										122	125	138	59	140	91	108	31	64	95			
(5)									110		125		58	56	91	108	37	50*	90*			
(6)													58	141	90	108	37					
(7)					82	84	90	106	109	125	125	135	59	141	99	108	44	64	117	144		
(10)					68	83	77	106	110	122	126	37	58	154	90	108						
(11)																						
(14)				79	86	84	91	106	110	122	125	138	58	196	91	104			64	117	140	
(19)																					140	

See end of table for notes
 Pour les notes, voir fin du tableau

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 134 122
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TABLE 14 (Continued, Suite)

SENEGAL: PRODUCTION AND MARKETING OF PRINCIPAL CROPS (VARIOUS ESTIMATES)
 SENEGAL: PRODUCTION ET COMMERCIALISATION DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	
	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77	
<u>Commercialisation</u> ⁺ (7)																						
(19)									3	6	10	7	5	5	1	1			1	4		
																			5	4	3	

P = Preliminaire, Preliminary

U = Chiffre Officieux, Unofficial Figure

* = Estimation

+ = quantité commercialisé par ONCAD seulement, Quantity marketed by ONCAD only

§ = Negligéable, Negligible

^a = en vigueur au 1^{er} février 1977, up to Feb. 1, 1977

TABLE 15
 SENEGAL: PRODUCER PRICES OF PRINCIPAL CROPS (VARIOUS ESTIMATES)
 SENEGAL: PRIX AU PRODUCTEUR DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

		56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
		56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
<u>MIL ET SORGHO - MILLET AND SORGHUM</u>	(1)																					
	(2)								16		17	17	17	18	18	17	18	28	30			
	(4)				15	15	15	16	16	16	16	17	17	18	18	18	18	25	30	30		
	(6)																17	17	18	ND		
	(3)											Fleuve: 18	18	18	18	18	18					
	(3)					19.1	19.1	19.1	19.1	19.1	20	Autres: 17	17	17	17	17	17	Total:	25	30		
	(3)																	25.9	30	30	35	
	(9)																17-18	17-18	25	30	30	35
<u>RIZ (Paddy)- RICE (Unhulled)</u>	(1)																					
	(2)								20		21	21	21	21	21	21	21	25	35	41.5		
	(4)				18	18	18	19	20	20	21	21	21	21	21	21	21	25	25	41.5	41.5	42
	(5)										21	21	21	21	21	21	21					
	(6)																					
	(2)																21	21	21			
	(3)																	25	25	41.5	41.5	
	(9)							19	19	21	21	21	21	21	21	21	21	21	25	41.5	41.5	41.5
																		21	21	30	41.5	41.5
<u>ARACHIDE-GROUNDNUTS</u> (Arachide de Bouche) (Coque) (Coque moyen)	(7)																			29.5	41.5	
	(1)																			30	38 ^a	
	(8)	20.6	20	20.5	21.5	20.5	20.5	20.5	20.5	17.9	20.5	20.5	17.9	17.9	17.9	17.9	19.4	23.1	23.1	25.5	41.5	
	(2)												18*	17.9	17.9	17.9	19.4	23.1	23.1	29.5	45.5	45.5
	(9)												17.9	17.9	17.9	19.4	23.1	23.1	29.5	41.5	41.5	41.5
<u>COTON - COTTON</u>	(7)																22	22	24	41.5	41.5	41.5
	(1)																			34 ^a		
	(2)								37.7		37.3	32.6	33	37.8	37.8	31	34	37	47			
	(9)											32.6	33	27.8	27.8	31	30	34	47	47	47	
																	31	30	34	47	47	47

a = Valeur Moyenne Suivant Qualité
 Average value according to quality

* = Estimation

ND = Non disponible, not available

TABLE 16

SENEGAL: PRODUCTION, MARKETING AND PRODUCER PRICE OF
PRINCIPAL CROPS (BEST ESTIMATES)

SENEGAL: PRODUCTION, COMMERCIALISATION ET PRIX AU PRODUCTEUR DES
PRODUITS PRINCIPAUX (MEILLEURES ESTIMATIONS)

	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
MIL ET SORGHO																					
Production	307	361	327	324	392	407	424	478	532	554	423	655	450	635	401	583	323	511	777	613	553
Commercialisation ⁺				(1)	(17)	(13)	(13)	(14)	(8)	(27)	(4)	(2)	(2)	(11)	(5)	(3)	(5)	(30)	(36)	(12)	(10)*
Prix au Producteur				15	15	15	16	16	16	16	17	17-18	17-18	17-18	17-18	17-18	17-18	26	30	30	35
RIZ (Paddy)																					
Production		70	71	79	82	84	90	106	109	125	125	135	59	141	99	108	44	64	117	140	112
Commercialisation ⁺									(3)	(6)	(10)	(7)	(5)	(5)	(1)	(1)		(1)	(4)	(3)	
Prix au Producteur				18	18	18	19	20	20	21	21	21	21	21	21	21	21	25	42	42	42
ARACHIDES																					
Production	763	900	770	829	893	995	894	952	933	1122	857	1005	831	779	583	989	570	675	993	1450	1182
Commercialisation ⁺	677	808	675	718	809	872	749	782	839	993	781	834	781	623	447	747	466	501	768	(1176)	(800)
Prix au Producteur	21	20	21	22	21	21	21	21	21	21	21	18	18	18	19	23	23	26	42	42	42
COTON																					
Production									§	§	1	4	10	12	12	21	24	33	42	31	47
Commercialisation ⁺⁺									§		1	4	10	11	11	21	22	33			
Prix au Producteur									38		37	33	33	38	38	31	34	37	47	47	

§ - Négligeable, negligible

⁺ seulement quantité commercialisé par ONCAD, quantity marketed by ONCAD only.

⁺⁺ seulement quantité commercialisé par SODEFITEX, quantity marketed by SODEFITEX only.

*en vigueur au 1^{er} février 1977, as of February 1, 1977.

SENEGAL: SOURCES OF FIGURES ON PRODUCTION
AND MARKETING

SENEGAL: SOURCES DES CHIFFRES DE PRODUCTION
ET COMMERCIALISATION

1. Food and Agriculture Organization of the U.N. (FAO), Production Year-book, 1958-1973.
2. Food and Agriculture Organization (FAO), World Crop Statistics, 1966.
3. Nations Unies, Annuaire Statistique, 1975.
4. Berg, Elliot. The Recent Economic Evolution of the Sahel, Center for Research on Economic Development, 1975.
5. International Bank for Reconstruction and Development, 1975.
6. République du Sénégal, Ministère du Développement Rural, V^e Plan Quadriennal de Développement Economique et Sociale. July, 1976.
7. Office Nationale de Coopération et d'Assistance pour le Développement. Dakar, 1976.
8. République du Sénégal, Ministère de l'Economie Rurale, Les Aspects du Problème Vivrier Sénégalais. Institut de Science Economique Appliquée Dakar, February, 1965.
9. République du Sénégal, Ministère du Développement Rural, Direction Général de la Population Agricole, Rapport Annuel Campagne, 1974-1975.
10. Regional Agricultural Office-Dakar. U.S. Government memorandum, 1976.
11. International Bank For Reconstruction and Development, 1974.
12. République du Sénégal, Ministère des Finances. Situation Economique du Sénégal. September, 1975.
13. République du Sénégal, Ministère du Plan et de la Coopération. Rapport de Mission Sur la Planification Régionale. Juin-Juillet 1976.
14. U.S. Agency of International Development. Personal Correspondence.
15. International Bank for Reconstruction and Development, 1968.
16. Banque Central des Etats de l'Afrique de L'Ouest. Indicateurs Economique. BCEAO No. 241, July, 1976.
17. International Bank for Reconstruction and Development, 1977.
18. Republique du Senegal, Societe de Developpement des Fibres Textiles, Bulletin Afrique Noire, No. 910, April 27, 1977.
19. Bulletin de l'Afrique Noire No. 912, May 11, 1977.

TABLE 17
UPPER VOLTA: PRODUCTION AND MARKETING OF
PRINCIPAL CROPS (VARIOUS ESTIMATES)

HAUTE VOLTA: PRODUCTION ET COMMERCIALISATION DES
PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

		56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76			
		56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77			
<u>MIL - MILLET</u> PRODUCTION	(1)		200	171		326	210	263	331	388															
	(4)						195	261	316	378															
	(6)				161	293	195	265	316		350 ^F	300	368	382	378	397	400 ^F								
	(7)																								
	(8)										279	330	340												
	(9)																								
	(9)																	298	266						
	(15)						195	261	316	378	410	364													
	<u>MIL ET SORGHO</u> et Fonio	(10)												330	315	362	327	298	259	257					
		(4)			596		882												793	734	810				
		(5)																							
		(7)												860	925	830	770	772	769	1138	900				
		(9)													881										
		(11)											1175												
		(12)															942	792	788	734		1084*	1079*		
(14)																					1200	1087			
COMMERCIALISATION		(7)														947	846	758	759	782		950*			
										(15)	(38)	(48)													
<u>SORGHO</u> PRODUCTION	(13)															5	1	1	9	16					
		(1)		400	425		556	411	508	718	878														
		(3)					306	411	508	718	878	750	540	604	530	547	563	576							
		(4)						411	508	460 ^F	660 ^F	530 ^F	540	604	530	547	563	576							
		(6)				125	556	411	520	718														580 ^F	
		(7)																							
		(8)									582	650	600												
		(9)																							
		(9)						411	508	720	878	780	540						474	512					
		COMMERCIALISATION	(7)																						
													546	545	560	506	474	507	493						

Pour les notes, voir fin du tableau
See end of table for footnotes

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TABLE 17 (CONTINUED, SUITE)

UPPER VOLTA: PRODUCTION AND MARKETING OF PRINCIPAL CROPS (VARIOUS ESTIMATES)
 HAUTE VOLTA: PRODUCTION ET COMMERCIALISATION DES PRODUCTS PRINCIPAUX (ESTIMATIONS DIVERSES)

	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77
ARACHIDES (Coques)																					
GROUNDNUTS (unhulled)																					
<u>Production</u>	(15)											75	75	78	65	66	60	63*			
	(4)					59	-----moyen-----				59					68	68*	70*			
	(5)											73	75	75	76	70	60	63			
	(7)							70					74								
	(12)																				87
<u>Commercialisation</u>																					
Coques	(14)													12	17	15	25	29	33	35*	
	(5)						6					10	10	8	10	10	16	18	17		
Secteur Moderne	(16)						6	6	9		11	10	10								
	(12)																				13
Coques(par les ORD)	(13)														5	5	3	10	2		
Decortique	(13)														8	2	4	5	1		
(par les ORD)	(7)+								20				26								
COTON (Graine)																					
COTTON (unginned)																					
<u>Production</u>	(14)														24	28	33	27	31	48	
	(15)											17	32	36	24	29	32	27			
	(4)					7	-----moyen-----				7				32	45	23*				
	(5)												32	36	24	28	33	22	30		
	(7)										20										

Pour les notes, voir fin du tableau
 See end of table for footnotes

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TABLE 17 (CONTINUED, SUITE)

UPPER VOLTA: PRODUCTION AND MARKETING OF PRINCIPAL CROPS (VARIOUS ESTIMATES)
 HAUTE VOLTA: PRODUCTION ET COMMERCIALISATION DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	
	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77	
<u>Commercialisation</u> (5)									9			17	32	36	24	28	32	27	29			
Commercialisé par le "CFDT" (16) (7)+									8	9	8	16	17	32								
Commercialisé par le "CFDT" (13) (14)															36	24	29	34	20	31		48
<u>RIZ (Paddy)-RICE (unhulled)</u>																						
<u>Production</u>																						
(1)		17	29		31	30	45	25	34													
(2)										34*	34	44	40	34	34	37	30	31	36 ^F			
(4)			29		31	30	45	25	34	34*	34	44	40	34	34	36	37 ^F					
(5)												28	29	31	36	37	29					
(6)				29	31	30	27	25														
(7)									24	33	35		39									
(8)																37	34					
(9)					21	45	25	34	38	52	157											
(12)																						
(15)												36	38	39	34	37	34	31				
(14)														39	36	37	29	32	39	39		
<u>Commercialisation</u>																						
T(7)									(13)	(18)	(20)		(2)									
Commercialisé (13) par les ORD															1	2	2	2	4			

* = Estimation
 F = FAO Estimation

+ = Ces chiffres sont calculés en soustrayant l'auto-consommation de la production. These figures were calculated by subtracting auto-consumption from production.

T = à titre indicatif, rough estimate

§ = Négligeable, negligible

TABLE 18 (Continued, Suite)

UPPER VOLTA: PRODUCER PRICES OF PRINCIPAL CROPS (VARIOUS ESTIMATES)
 HAUTE VOLTA: PRIX AUX PRODUCTEUR DES PRODUITS PRINCIPAUX (ESTIMATIONS DIVERSES)

	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	
	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77	
ARACHIDES - GROUNDNUTS																						
Arachides Coques et Sesamé (Prix Minimum à Ouagadougou) (11)																24.58	24.58	24.58	26.30	34.00	34.00	
Ouagadougou (12)									26.75	26.75	26.75	26.75	26.75	25.75	25.75	25.75						
Bobodioulasso (12)									28.00	28.00	28.00	28.00	28.00	27.00	27.00	27.00						
									28.00			26.80	26.50	23.40	25.70	25.70	27.10	26.30	34.00			
Coque (6)					17.00	17.00	17.00	16.00	16.00	16.00	16.00	15.00	15.00	20.00	22.00	23.00	23.00	23.00	23.00	23.00	23.00	
Decortiqué (6)														30.00	34.00	32.00	32.00	34.00	34.00	34.00		
												26.80	26.50	23.40	25.70	25.70	25.50	27.80	34.00	34.00		
COTON - COTTON																						
1 ^{er} Qualité Coton en Graine (Prix Min. à Ouagadougou) (11)																32.00	32.00	32.00	35.00	40.00	40.00	
1 ^{er} Qualité (12)									34.00	34.00	34.00	34.00	32.00	32.00	32.00	32.00						
2 ^{eme} Qualité (12)									30.00	30.00	30.00	30.00	28.00	28.00	28.00	28.00						
									34-30	-----moyen-----	34-30	32-28	32-28	32-28	32-28	32-28	32-28	35-28	40-35			
													32.00	32.00	32.00	32.00	32.00	32.00	35.00	40.00	40.00	
					34.00	33.00	33.00	33.00	33.00	33.00	33.00	31.00	31.00	31.00	32.00	32.00	32.00	32.00	35.00	40.00	40.00	

TABLE 19

UPPER VOLTA: PRODUCTION, MARKETING AND PRODUCER PRICE OF
PRINCIPAL CROPS (BEST ESTIMATES)
HAUTE VOLTA: PRODUCTION, COMMERCIALISATION ET PRIX AU PRODUCTEUR DES
PRODUITS PRINCIPAUX (MEILLEURES ESTIMATIONS)

	1956 56/57	1957 57/58	1958 58/59	1959 59/60	1960 60/61	1961 61/62	1962 62/63	1963 63/64	1964 64/65	1965 65/66	1966 66/67	1967 67/68	1968 68/69	1969 69/70	1970 70/71	1971 71/72	1972 72/73	1973 73/74	1974 74/75	1975 75/76	1976 76/77
MIL ET SORGHO																					
Production	600	596	286	849	606	785	1034	861	980	940	876	860	922	833	772	766	750	810	1200	1087	
Commercialisation ⁺								(77)	(138)	(143)											
Prix au Producteur				12	12	15	13	11	13	14	12	12	12	12	12	14	18	22	18	21	
RIZ																					
Production	17	29	29	31	30	27	25	24	33	35	36	38	39	34	37	34	31	39	39	12	
Commercialisation ⁺								(13)	(18)	(20)		(2)		(1)	(2)	(2)	(2)	(2)	(4)		
Prix au Producteur								16				17-19	17-19	17-19	17-19	17-19	28-30	35	35		
ARACHIDES																					
Production					59	-----moyen-----					59	75	75	78	65	66	60	63		87	
Commercialisation								6	6	9	11	10	12	17	15	25	29	33	13		
Prix au Producteur								27	27	27	27	27	27	27	25	25	25	26	34	34	
COTON																					
Production					7	-----moyen-----					7	17	32	36	24	28	33	27	31	48	67-70
Commercialisation								8	9	8	16	32	36	24	28	33	27	31	48	67-70	
Prix au Producteur				34	33	33	33	34	34	34	34	34	32	32	32	32	32	35	40	40	

⁺ A titre indicatif, rough estimate.

SOURCE: Voir tableaux 17 et 18, See tables 17 and 18.

UPPER VOLTA - SOURCES OF OFFICIAL PRICES

HAUTE VOLTA - SOURCES DES PRIX OFFICIELS

1. Republique de la Haute Volta, Direction de la Statistique - Bulletin Mensuel D'Information Statistique et Economique 1960-76.
2. Comite du Coordination de Developement Rural Ministre du Plan, Annex, Rapport D'Activite Aout '74 - Nov '75.
3. Banque Centrale des Etats de L'Afrique de L'Ouest (BCEAO) - U.M.O.A. #236, February, 1976.
4. Berg, Elliot, Recent Economic Evolution of the Sahel. Center for Research on Economic Development, 1975.
5. Republique de la Haute Volta, Ministere du Developpement, Comptes Economique 1964, 1965-66, 1968.
6. United Nations Development Program (UNDP); mimeographed document.
7. Republique de la Haute Volta, Ministere du Commerce du Developement Industriel et des Mines, Inspection Generale des Prix et des Affairs Economique (Arrete No 000/052/CIM/I6PAE)
8. Republique de la Haute Volta, La Ministere du Commerce du Developement Industriel et des Mines, Inspection Generale des Prix et des Affairs Economique--Arrete No (002002), (002003), (001639), (727).
9. Banque Centrale des Etats de L'Afrique de L'Ouest (BCEAO) - U.M.O.A. #236, Jan, 1976.
10. Upper Volta - authorities, 1976.
11. International Monetary Fund, 1976.
12. International Bank for Reconstruction and Development, 1975.

UPPER VOLTA: SOURCES OF FIGURES ON PRODUCTION
AND MARKETING

HAUTE VOLTA: SOURCES DES CHIFFRES DE PRODUCTION
ET DE LA COMMERCIALISATION

1. Food and Agriculture Organization. World Crop Statistics, 1966.
2. Nations Unies. Annuaire Statistique, 1975.
3. U.S. Dept. of Agriculture, Foreign Agriculture Service, Trends in World Grain Production 1960-72. Feb. 1973.
4. Food and Agriculture Organization, Production Yearbook, 1958-73.
5. Berg, Elliot. The Recent Economic Evolution of the Sahel. Center for Research on Economic Development, 1975.
6. République de Haute Volta, Ministère du Développement et du Tourisme. Rapport Economique: Echanges, 1965.
7. Ministère de Plan - Direction de la Statistique, Comptes Economique de Haute Volta 1965-66, 1964-68.
8. République de Haute Volta, Ministère du Plan et du Développement Rural Direction des Services Agricoles. Annuaire de Statistiques Agricoles, 1972.
9. International Bank for Reconstruction and Development, 1969.
10. American Embassy - Ouagadougou, Current Economic Trends Report on Upper Volta, Feb. 3, 1976.
11. Cellule de la Plantification Agricole du Secrétariat Permanent du C.C.D.R.
12. Upper Volta Authorities, 1976.
13. République de Haute Volta, Comité de Coordination. Résultats de Cinq Années de Commercialisation des Produits de Cru par les O.R.D., 1970-75.
14. International Monetary Fund, 1976.
15. International Bank for Reconstruction and Development, 1975.
16. International Bank for Reconstruction and Development, 1970.

TABLE 20
CHAD—RETAIL PRICES OF MILLET ON VARIOUS MARKETS
TCHAD — PRIX DE DETAIL DE MIL, DIVERS MARCHES

Marché Market	Année Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
N'Djamena	67	3200	3300	4100	4600	4200	4200	4900	5100	4500	2100	2000	1600
	68	1600	1400	1200	1200	1300	1500	1700	1300	1500	1500	1500	1500
	69		4000	3600	3600	4000	3200	4300	4900		2100	3000	2700
	70	3300	3100	3100	4500	7100	3700	3100	4000	2300	2200	2000	2000
	74	5250	4833	5833	6766	6900	6583	6600	5500	4883	3000	2750	2500
	75	2600	2583	3050	3600	3567	3483	2600	2600	2500	2600	2316	2550
	76	2216	2233	2600	2733	2750	3250	3416	3533	4250	5000	4750	
Sarh	68	2100	2800	2200	2100	2100	2400	2800	2800	2900	2900	2700	2700
	69	3100		4400	4500	4800	4800	4900	5000	5100	5000	5200	4500
	73	1520	2760	3180	3425	3566		4360	5266		3283	3900	2530
	74	2266	3066	3850	4500	4850	5250	5000	5125	5000		2825	2375
	75		2991	3728	3500	4416	4500	3600	5140	5020	4800	3450	2625
	76	2870	3200	3210	3350	3600	3700	3750	3900	3350			
Moundou	68	2100	2400	2500	2400	2300	2500	2500	2400	2300	2400	2100	
	69	2300	2800	3100	9500	3600	3600	3700	3800	4000	4100		
Abéché	69	1300	2300	2500	2300	2200	3600	3600	3000	3300	2300	2500	1800
	70	1900	1800	2100	2300	2200	2100	2600	2100	1800	1800	1400	1500

Pour les notes, voir fin du tableau.
See end of table for notes

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TABLE 20 (CONTINUED, SUITE)

CHAD-RETAIL PRICES OF MILLET ON VARIOUS MARKETS
TCHAD - PRIX DE DETAIL DE MIL, DIVERS MARCHES

Marché Market	Année Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Mayo-Kebbi Ouest	73	2750	2875	2920	3200	3000	3500		6500	5000	3500	3000	
	74	2875		3000	3500	3750	4333	4050	4375	3750	3166	2833	2875
	75	3225	3500	5250	3500	4610	4450	4500	5000	5000	4165	3500	3666
	76	4500	5200	4566	4583	5200	5416	5500	5583	5625			
Mayo-Kebbi Est	73	2680	2900	4500	4166	5200	5500	6666	7750	5500	4000	4850	2500
	74	3166	3000	3666	4666	4833	5333	5250	5333	4000	3750		3433
	75	3750	3750	6075	6500	5125	5938	6000	7500		2750	2433	2666
	76	3620	3562	4150	4210	4062	4450	4900	5062	4750			
Tandjile	73	2675	3043			4306	5000	6425	5750	7150	5666	2612	
	74	3380	3583	4350	5187	4937	5375	4900	4112	4125	3000	3312	2900
	75	3350	3775	3550	4400	5012	4750	5250	3876	3500	3000	2683	3300
	76	3416	3675	3750	3750	4350	4487	4880	5100	4575			
Logone Occidental	73	3000	2185	3207	3614	3778	4200	5321	5142	3600	3740	3000	2900
	74	3007	3257		4471	4883	5183	5183	4535			2720	2914
	75	3250	4028	4980	4900	5233	4930	4371	4425	4560	4203	3514	2825
	76	2918	3200	3200	3892	4314	3954	4350	4392	4285			

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TABLE 20 (CONTINUED, SUITE)

CHAD - RETAIL PRICES OF MILLET ON VARIOUS MARKETS
TCHAD - PRIX DE DETAIL DE MIL, DIVERS MARCHES

Marché Market	Année Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Logone Oriental	73	1871	2075	2438	2805	3000	3833	4755	5022	5022	4900	3916	3177
	74	2633	3488			3907	4953	4750	4857	3250		3250	3485
	75	2860	3625	3807	4061	3720	3833	3623	4385	4000	4500	3160	2681
	76	2603	3144	3331	3467	3208	6549	3520	4065	4077			
Mandoul	73	2200	2750	3000	3500	3750	4000						
	74							4500	4333	4000	4266	3100	1975
	75	1700	2946		3750	3928	4125	5000	6357	5392	4583	2840	2107
	76	2468	2571	2975	3014	3571	3857	3687	4287	4187			
Guelengdeng	73	3300	3362	3950	4300	4580	5125	6440	6483	6420	4000	3283	2780
	74	2943	3891	4575	4500	4555	4945	4025	3558	3625	2429	1906	1897
	75	1917	2050	2633	2533	2958	2541	2425	2541	2720	2350	2391	2100
	76	2566	2541	2666	2970	2416	3125	3454	3312	3541			

¹Source of data for 1967-1970; Source des statistiques 1967-1970: République du Tchad, Ministère du Plan, service de statistique, unpublished, non-publié.

²Source of data for 1973-1976, Source des statistiques 1973-1976: République du Tchad, O.N.D.R. Service vulgarisation, mercuriales zone cotonniere 1973-1976.

TABLE 21

THE GAMBIA: RETAIL PRICES OF FOOD GRAINS IN BANJUL AND BRIKAMA (BUTUS/100 KG)¹
 LA GAMBIE: PRIX DE DETAIL DES CEREALES, BANJUL ET BRIKAMA (BUTUS/100 KG)¹

	<u>Année</u>	<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>Sept</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
<u>Banjul</u>	74							3000	3000	3000	2800	2800	2800
Millet	75	3400	2800	2800	2800	3000	2600	3000	3000	3600	3600	3600	
(Sanyo)	76	5000	5400	5400	5400	5400	5600	5800	5800	5800	5800		
Rice	74							4800			4600	4600	
(Local)	75	6800		6000	6000	6000	5600	6400	6400	6400	6000	6200	6000
	76		6000		6200	6200	6200			7000			
Rice	74							4600	4800	4600	4600	4800	5200
(Imported)	75	6000	5800	6400	6000	6000	6200	6000	6000	6000	6000	6000	6000
	76	6000	6000	6000	6000	6000	6000	6000	6600	6600	6600		
<u>Brikama</u>	74								2800	3600		2400	2800
Millet	75	2600	2200	2800	2200	3000	2600	2800	2600	2800	2800	3800	
(Sanyo)	76		5800	5200	5600	5600	5400	6600	5800	5600	5600		
Rice	74							5600	5600	5000	5400	5000	6200
(Imported)	75	5600	6200	6200	5600	6000	5800	6200	6000	6200	6400	6200	
	76	6200			5800	5800		6000		6200	6800		

1 Converted from Butus per 500 Grams
 Converti de Butus/500 grammes

Table 22

Mali: Retail Prices of Foodgrains in Bamako*
Mali: Prix de Détail des Céréales, Bamako*

<u>Grain</u>	<u>Année</u> <u>Year</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sep.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>
Millet-Mil	1969	--	--	--	--	--	--	--	6600	5100	4600	--	--
	1970	3700	4200	3000	4200	4500	5500	5200	6600	5100	4600	4200	5300
	1971	5700	5000	5000	4900	5400	5400	5400	5800	5800	700	5800	5300
	1972	--	5900	7500	5800	7100	7400	7200	6900	6900	8300	7700	9100
	1973	--	--	--	--	--	--	14800	14900	--	--	11000	8100
	1974	--	7900	--	7900	8000	9300	8900	8800	8800	8000	7400	8000
	1975	--	7500	--	7300	6800	6900	7100	6900	7700	7600	7100	7100
Sorghum-Sorgho	1969	3500	3500	3500	3900	5500	5700	5900	6600	5100	4600	4500	3400
	1970	4400	4900	3700	4000	3800	4400	5100	3400	3700	3900	3800	4700
	1971	5100	5000	5000	4900	5400	5400	5400	5900	5800	8000	6800	4700
	1972	--	5600	6200	5200	6900	6600	6500	6700	7200	7700	7500	8800
	1973	--	--	--	--	--	--	14100	13100	--	--	7300	7000
	1974	--	7300	--	7300	8200	7700	8500	7000	7000	7100	6600	6000
	1975	--	6600	--	6400	7400	6800	6500	6800	6900	6400	6700	6300
Rice-Riz RM-40	1969	8600	9600	8300	8300	10000	10700	10000	10700	9500	9700	9900	9100
	1970	9600	10000	11100	9600	9400	10500	10800	8900	9000	8700	8700	10400
	1971	10400	9300	9600	9700	10000	10800	11700	12300	12700	12700	14400	10400
	1972	12400	12600	12100	11400	12000	11500	12500	11400	11000	12100	13600	15200
	1973	13600	12300	13100	15200	18100	19500	15900	16700	12000	--	13300	13200
	1974	--	15900	--	17000	17700	18900	16800	16100	16200	13400	14700	13000
	1975	--	14900	--	15300	15200	15300	14700	14500	15700	15600	13600	13300

*prix en FM/100 kg, price in MF/100 kg.

TABLE 23

NIGER: RETAIL PRICES OF MILLET ON VARIOUS MARKETS

NIGER: PRIX DE DETAIL DU MIL, DIVERS MARCHES

Marché Market	Année Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Niamey ¹ (City) (Ville)	1961	1600	1800	2000	3100	2800	2500	2300	1800	1600	2100	1700	1300
	62	1600	1900	1780	2200	2500	1700	2100	2000	1800	1500	1700	2000
	63	1600	1500	1500	1500	1500	1600	2300	2000	2000	1600	1400	1300
	64	1400	1500	1400	1600	1600	1600	1900	1700	1500	1500	1500	1500
	65	1400	1400	1400	1600	1800	1700	1800	1900	1700	1500	1700	2200
	66	2400	2700	3100	3500	4000	4200	5400	4300	3800	2600	2000	1700
	67	2200	2200	2200	2200	2300	2100	2300	2300	2300	2000	1500	1700
	68	1700	1400	1600	1600	1500	1500	--	--	--	--	--	--
	71	2000	2600	2600	2900	2900	3100	3100	3500	2400	2700	2800	2700
	73	3900	4000	4700	5400	5400	6100	5800	6000	5100	5500	5100	4400
	74	4500	4400	4300	5100	4200	3800	3800	4300	3700	3100	3100	3300
	75	3000	4600	4000	4300	3700	4300	4000	3900	3600	3300	3200	3800
76	3900	4800	5400	4800	5700	6300	5000	6300	6000	--	--	--	
Konni ²	1971	1500	1700	1700	2000	2000	2000	2500	2200	2000	1500	1750	1850
	73	3300	3500	3750	3800	3850	5000	5500	5500	5000	3500	3300	3500
	75	3000	3000	3250	--	--	--	4000	3750	3000	3500	3650	4500
Galmi	71	2000	--	2200	2250	2200	2300	2700	2300	2250	2000	2100	--
	73	3300	3500	3800	3850	3900	5500	5700	5000	5250	4000	3400	3600
Guidan Ider	71	--	1500	1800	2250	1800	1900	2200	2000	2000	1800	1650	1900
	73	3250	3500	3800	3750	3800	5000	5500	5250	4500	4000	3300	3500
	75	2500	2500	3000	--	--	--	4400	2800	3000	3600	3600	4400
Bouza	71	1500	1150	1700	2000	2000	2450	2500	--	3000	--	2000	2000
Keita	1971	1300	1750	2000	2500	2050	2000	2500	2500	3000	--	--	2500
	75	2500	2500	3750	3750	3600	3250	3750	5000	4000	3500	8000	--
Tamaske	71	1250	--	2600	--	2600	2400	2500	2200	2100	--	--	2350
	75	2500	2800	2800	3500	3750	3300	4500	4500	4000	--	8500	--

Pour les notes, voir fin du tableau.
See end of table for footnotes

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TABLE 23 (Continued, Suite)

NIGER: RETAIL PRICES OF MILLET ON VARIOUS MARKETS

NIGER: PRIX DE DETAIL DU MIL, DIVERS MARCHES

Marché Market	Année Year	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Niamey	1973	2713	2804	4289	4175	4047	4445	5160	4200	3502	2333	2837	2600
Tera	73	3490	3590	3690	3825	3875	5025	6025	5000	4530	2600	2750	2700
Felingue	73	2600	3900	4000	4150	4600	5500	6000	4500	4150	3633	3650	3666
S.M.A. Kolo	73	2950	3535	4500	4325	3810	5660	5025	4750	--	--	2400	2833
Ouallam	73	--	3700	4360	4530	--	--	--	7500	4000	3000	3300	4300
Say	73	2543	2790	2910	3500	3490	3325	3510	3890	3420	2530	2320	2550
Madoua	73	3270	3550	3750	4000	4250	4750	5500	6800	3250	3200	--	--
Takora	73	3250	3750	4000	4800	4500	5900	6250	6000	5600	3250	--	--
Tahoua	73	3300	3500	3700	4250	4250	6000	6250	5000	4100	3200	4200	4250
Mogheur	73	3300	3500	3700	4250	4250	6000	6250	5000	4100	3200	4200	4250
Bagaye	73	3300	3500	3700	4250	4250	6000	6250	5000	4100	3200	4200	4250
Tillabery	1973	2700	3200	4250	4300	4633	5833	6000	7100	5000	2750	3300	3750
	75	3200	3450	3500	4500	3850	4020	--	3632	3618	--	--	--
Doutchi	1975	3100	2500	2500	2500	2500	2950	3100	3150	3000	2250	2250	2500
Bellandi	75	2150	2300	2450	2750	2150	2050	2150	2650	1800	2500	2000	--
Gaya	75	2400	2400	2400	3000	3500	3500	3500	2500	2500	--	3800	--
Illela	75	2500	2500	3000	4000	--	2500	4600	4000	3000	3600	--	--
Mirriah	75	1400	2200	3200	3200	2300	2200	3800	5000	4000	3500	3000	3000
Guidimoni	75	--	1900	2000	3200	2700	2600	3500	2800	3400	3700	3200	3200
Takieta	75	2000	1600	2000	2200	1700	--	3200	3200	3000	3300	2700	2700
Magaria	75	--	--	1800	1500	1800	1800	3300	3000	2900	3000	2700	2700
Matameye	75	1800	2200	2400	2500	2700	3800	3600	3400	2500	3000	2500	2800
Kantchi	75	1800	2000	2000	2700	2700	3700	3600	3500	2500	2500	2500	--

- 1 Source of price series for city of Niamey, Sources des prix de Niamey (ville): République du Niger, Ministère du Plan, Direction de la statistique et des comptes nationaux. Bulletin de statistique. Various years, Divers années.
- 2 Source of price series for recent years, Sources des prix des années récentes. République du Niger, Ministère du Développement Rural, Direction de l'Agriculture. Departmental offices. Unpublished price series collected by officials, Séries des prix inédit ramassées par des fonctionnaires.

TABLE 24
 SENEGAL: RETAIL PRICES OF FOOD GRAINS IN DAKAR
 SENEGAL: PRIX DE DETAIL DES CEREALES, DAKAR

<u>Grain</u>	<u>Année</u>	<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>Sept</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
	<u>Year</u>												
Millet- Mil	72	3500	3300	3500	3700	3700	4000	3700	3500	3500	4900	5500	5000
	73	5000	4700	4800	6800	6900	6700	7800	10300	13300	11700	4700	4200
	74	3500	3500	3500	3500	3500	3500	4000	4000	3700	3700	4000	4000
	75	4500	--	--	--	--	--	--	--	--	--	--	--
Rice- Riz	72	4300	4500	4500	4500	4800	4500	5400	6000	5700	5900	6000	6000
	73	5000	5100	5100	5500	8100	8400	8000	6000	6000	6000	6500	6000
	74	6000	6000	6000	6500	6000	6000	6000	6000	7200	7100	10000	10000
	75	12500	--	--	--	--	--	--	--	--	--	--	--

SOURCE: Republique du Sénégal, Direction de la Statistique. Unpublished price series collected by officials, Séries des prix non-publiées ramassées par des fonctionnaires.

TABLE 25

UPPER VOLTA - RETAIL PRICES OF MILLET ON VARIOUS MARKETS
 HAUTE VOLTA - PRIX DE DETAIL DU MIL, DIVERS MARCHES

Marché Market	Année Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Ouagadougou ¹	62	1800	2500	2500	2700	3300	2800	2700	2700	2900	2500	2700	3000
	63	2800	2600	2100	2000	2600	3400	3100	2500	2300	2600	2200	2400
	64	--	--	2400	3000	--	2700	--	2600	--	2200	2200	1900
	65	2200	2100	2000	2200	2700	2200	2900	2200	2800	1900	2300	2000
	66	2600	2100	1900	2300	2600	2700	2800	2800	3100	2900	2600	2900
	67	2200	2700	2600	2660	2700	3000	3200	3100	2500	2400	3100	2400
	68	2500	2500	2800	1800	2400	1800	1800	1800	1800	1900	1700	1600
	69	--	--	2400	2400	2700	3200	2900	3000	3000	3100	3400	--
	70	3900	3000	3200	2700	3200	3300	3200	3200	3600	3100	3400	2600
	71	3000	3100	3400	3700	4100	4700	4900	4300	4200	4900	4000	3600
	72	4400	4100	4200	2700	4900	5800	3400	4100	4100	4300	3200	3700
	73	4600	3400	4900	5600	6800	7600	6900	7200	6400	7500	5600	5400
	74	5900	6000	6700	5900	6000	7900	6100	7300	3600	4700	5300	3900
75	5400	3200	4100	3100	3000	2500	5700	4800	5300	5200	5400	5600	
76	4300	4800	6300	5100	5400	4200	5700	3600	7000	4600	--	--	
Manga ²	62	2000	2000	2000	2000	1900	1900	1900	2000	2500	2500	2500	2000
	63	2800	2200	2500	2500	3400	4000	3200	3400	3100	3100	2200	2200
	62	1600	1600	2200	1800	--	2000	2300	2000	2000	--	1500	--
	63	1566	1600	1950	2300	2300	2300	2300	2500	2000	2000	1700	1900
Kaya	62	1400	1400	1400	1400	1400	1500	1500	1600	1600	2100	2100	2100
	63	--	1900	--	2000	2100	2900	2500	3200	2500	700	700	700
Dori	62	1000	1000	1000	1100	1100	1300	1500	1500	1100	2000	--	--
	63	1250	1300	--	1300	1300	1500	1500	1500	1500			
Fada N'Gourma	62	1400	1400	1400	1400	1400	2200	2200	2200	2200	2200	1800	1800
Ouahigouya	63	1500	2200	2200	1500	1500	2200	2800	2800	2500	--	2200	--
Bobc-Dioulasso	62	2000	1500	1800	1800	1800	1200	1900	1900	1900	1900	2000	2000
Koudougou	62	2800	2000	2000	2000	3200	--	3200	2700	2000	2000	2000	2000
Tougan	62	1000	1400	1200	1200	1200	1300	1400	1600	1600	1500	1400	1100
Dedougou	62	1000	1000	1100	1100	1100	1250	1250	1250	--	--	1500	--

Pour les notes, voir fin du tableau,
 See end of table for footnotes

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TABLE 25 (Continued, Suite)

UPPER VOLTA: RETAIL PRICES OF MILLET ON VARIOUS MARKETS
 HAUTE VOLTA: PRIX DE DETAIL DU MIL, DIVERS MARCHES

Marché Market	Année Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Koupela	1968	1200	1200	1300	1300	1300	1300	1500	1500	1200	1200	1100	1100
Tenkodogo	69	2000	2000	2000	2200	2500	2500	3000	3000	2500	2500	2000	1800
	73	--	--	--	--	--	3300	3700	3300	2900	2900	2900	2600
	76	--	2060	3030	3090	4530	--	5150	--	4120	--	--	--
Pouytenga	76	--	1440	--	2880	2880	3700	6180	--	--	4120	0	0
Garango	76	2880	--	--	--	2680	--	5150	4730	3700	0	0	0
Po	76	2550	3230	3720	4120	4310	4700	--	4600	4700	0	0	0
Kampala	76	2550	3130	3820	4070	4070	4070	5100	--	5830	0	0	0
Paunkuyan	76	2550	3130	3820	4070	4070	4070	5100	5640	--	0	0	0

1 Source for Ouagadougou price series; Source des prix de Ouagadougou: République de la Haute Volta, Direction de la Statistique et de la Mécanographie. Bulletin Mensuel d'Information Statistique et Economique. Various years, divers années.

2 Source of price series for 1962, 1963; Source des prix de 1962 et 1963: République de la Haute Volta, Ministère de l'Economie Nationale, Direction de la statistique et des études économique. Bulletin Annuaire Statistique, 1962/63.

Source of price series for recent years; Source des prix des années récentes: République de la Haute Volta, ORD offices. Unpublished price series collected monthly by officials; Séries des prix non-publiées, ramassées chaque mois par des fonctionnaires.

PART III
GRAIN MARKETING, PRICING AND STORAGE
IN THE SAHEL
AN ANNOTATED BIBLIOGRAPHY

Preface to Bibliography

This bibliography emerged as materials were collected for the research project "Study of Cereals Marketing, Price Policy and Storage in the Sahel." Secondary materials were gathered from the library of the Center for Research on Economic Development, the University of Michigan and Michigan State University libraries, as well as from other U.S. universities through inter-library loan services. Books and documents were also gathered by team members in Paris and Washington D.C. and in the Sahel countries. Included in this collection are books, journals, dissertations, and documents of the U.S. government, foreign governments and international agencies.

In general, sources were selected which pertain directly to the subjects of grain marketing, price policy and storage. Some works on other crops or more general agricultural development problems are also included; these obviously make no pretense at completeness. Because the research project concerned the Sahelian countries, the bulk of the sources collected relate to Africa. Because our specific concern was with economic and economic-related issues, this bibliography does not include much of the material on anthropological aspects of this subject area, of which an abundance is available. Readers interested in this aspect are recommended to the following works: P. Bohannon and G. Dalton, Markets in Africa, Northwestern University Press, 1962. (See Reference No. IB.3b-3); and Claude Ardit, Les Circuits de Commercialisation des Produits du Secteur Primaire en Afrique de l'Ouest: Analyse Bibliographique, March, 1975. (See Reference No. IB.2b-2).

The organization of the references is indicated in the table of contents. An index of authors is included at the end of the volume. Some of the annotations have been excerpted from the entries themselves or from other sources. Where this occurs, a reference number is indicated at the end of the annotation. These numbers correspond to the following sources:

- (1) from the text (introduction, conclusion, summary, etc.)
- (2) from the author's abstract as included in the text
- (3) from the dissertation abstract
- (4) from Agricultural Marketing in Economic Development, An Annotated Bibliography, by Pablo Torrealba, Michigan State University (See Reference No. IA.2-32).
- (5) from International Bank for Reconstruction and Development/International Monetary Fund, Joint Library, List of Recent Periodical Articles

In dealing with economic information, particularly concerning Africa, the bibliographer encounters a peculiar situation; the most abundant sources of data are the IBRD and IMF reports - many of which are not public documents. Despite this fact, these reports circulate

widely. Thus, we have included a list of the most recent and relevant IBRD and IMF publications in the documents section.

Given the enormously diffuse nature of the subject and the literature concerning it, we have undoubtedly missed many important studies concerning cereals marketing, pricing and storage. We hope that this bibliography will serve as an aid to researchers and as a basis for further bibliographic searches in this subject area.

I would like to thank all of the people who helped with the task of compiling the bibliography - abstracting sources, translating and typing. Special appreciation goes to Annick Morris and her staff of translators and typists for their perseverance and cooperation, and also to Sandra Levine, Miguel d'Acevedo and Bijan Amini for their hard work. Finally, I wish to express my thanks to Professor Elliot Berg, the project director, for his encouragement and guidance.

Aimée Ergas
Research Assistant

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I. AGRICULTURAL DEVELOPMENT, MARKETING AND PRICE POLICY

A. General Works

1. Agricultural Development Studies

- IA.1-1. ACOCK, A.M. "Policies in the Field of Food and Nutrition as Part of National Economic Policies," Agricultural Economic Bulletin for Africa (Addis Ababa), No. 6 (Oct. 1964).

The author characterizes African agriculture in general and the conditions of food supplies and nutrition. The basic policy objectives linking economic development and food supplies and nutrition are: (1) fewer farms, (2) higher productivity of farmers to supply the cities and increase exports, (3) as income per capita rises, nutrition, education and special funding programs for city and farm dwellers to further raise productivity, (4) an understanding of population relationship with food supply.

- IA.1-2. AGRICULTURAL SECTOR SIMULATION TEAM (Michigan State University). "System Simulation of Agricultural Development: Some Nigerian Policy Comparisons," American Journal of Economics, Vol. 55, No. 3 (August 1973).

The generalized system simulation approach can improve information input to the decision-making process in general. This paper illustrates a particular application to problems of planning and policy making for agricultural sector development. An overview of a simulation model of the Nigerian economy is given, and results of a series of 15 Nigerian agricultural development policy simulation experiments are analyzed in detail. The main conclusion is that, at least for these 15 experiments, a technological transformation of agricultural export crop production is necessary for sustained economic growth. The paper concludes with a discussion of the approach's general applicability. (?)

- IA.1-3. ANDERSON, James E. "Optimal Buffering Policies for a Small Trading Country," Southern Economic Journal (Chapel Hill, N.C.), Vol. 43 (Oct. 1976).

"Analyzes buffering where the utility function must satisfy only additivity over states of nature and time." (5)

- IA.1-4. ASKARI, Hossein and Cummings, John Thomas. Agricultural Supply Response: A Survey of the Econometric Evidence. New York and London: Praeger, 1976.

Study of price responsiveness of agricultural supply in less-developed countries. Reviews some of the more common governmental agricultural policies, summarizes a series of empirical investigations into supply response in less-developed agriculture, identifies probable reasons for different results across crops and countries, and discusses potential areas of further research. The authors emphasize the importance of identifying those factors affecting supply response so that the effectiveness of agricultural policies can be improved. (2)

- IA.1-5. BHAGWATI, J. and Srinivasan, T.K. "Optimal Intervention to Achieve Non-economic Objectives," Review of Economic Studies, Vol. 36 (1969).

This paper is addressed to an analysis of the optimal policies that will enable a competitive system to maximize social utility, when the economist is faced with non-economic objectives (self-sufficiency, factor employment, domestic availability). The authors assume that there is no monopoly power in trade, so that the external terms of trade are fixed throughout the analysis. They believe that optimal solutions can be found and use their analysis to this end. (1)

- IA.1-6. BURGESS, David F. "The Income Distributional Effects of Processing Incentives: A General Equilibrium Analysis," Canadian Journal of Economics (Toronto), Vol. 9 (Nov. 1976).

The major focus of this paper is on the effects of the various processing incentives on the welfare of natural resource owners and economic regions specializing in primary products. (5)

- IA.1-7. CLINE, William R. "Interrelationships between Agricultural Strategy and Rural Income Distribution," Food Research Institute Studies (Stanford), Vol. 12, No. 2 (1973).

This study examines the income distribution implications of alternative agricultural policies. It gives special attention to land redistribution, the policy most likely to increase both output and equity; improved seeds with fertilizer, the instrument of greatest current production impact; and farm mechanization, the policy most likely to concentrate rural income. Empirical estimates presented refer to rural savings as related to income distribution and to net effects of alternative policies, the study draws on previous research by the author and on the general literature. (1)

- IA.1-8. DIQUATTRO, Arthur. "Market Socialism and Socialist Values," Review of Radical Political Economy, Vol. 7 (Winter 1975).

The use of the market mechanism against the background of socialist institutions is not inconsistent with the values that define a socialist economy. The market as an allocative device neither entails material incentives of a bourgeois sort nor need it result in a radically unequal distribution of wealth and power. Contrary to the theoretically inadequate and empirically mistaken thesis of technological determinism, the market emphasis on efficiency need not result in an authoritarian organization of the workplace, fragmentation of work, or any other manifestations of alienated labor. Market socialism captures the advantages to the market minus its capitalist shortcomings. (2)

- IA.1-9. DOYLE, C.J. "Productivity, Technical Change, and the Peasant Producer: A Profile of the African Cultivator," Food Research Institute Studies (Stanford), Vol. 13, No. 1 (1974).

Doyle argues that labor is a scarce resource equally important as capital, although it is not usually considered to be so. He further argues that economic incentives in the development of African agriculture have typically not been strong enough to motivate

the African farmer to reduce leisure time. The author claims that the chief reason for the ineffectiveness of economic incentives by strategy planners and the real value attached by farmers. The article includes discussions of the utility of leisure, the value of additional earnings, the assessment of risk, a reexamination of social considerations, the importance of capital as a constraint on innovation, labor as a limiting factor, mechanization as an answer to labor shortage, and managerial ability as a limiting factor.

- IA.1-10. ECHEVERRIA, Robert P. "The Effect of Agricultural Price Policies on International Income Transfers," Occasional Paper No. 30, Department of Agricultural Economics, Cornell University, 1970.

The main purpose of the study was to draw attention to income transfers among different groups or sectors. Conclusions: (1) Aggregate results for an entire activity may lead to mistaken interpretations of a given price policy's implications, (2) It is essential to maintain the adequate proportion between the magnitude of an income transfer and the total gross income generation of each economic group effected, (3) In analyzing income transfers caused by changes in the price system, it is fundamental to consider all of the economy's prices, (4) It is inadequate to recommend price policies without adjustments to the historical and political reality of a country. The study elaborates a model which allows consideration of the redistributive effects of the price system. Such redistribution is found to be short-lived, inefficient and generative of pressures which negate any gains.

- IA.1-11. ESSANG, D.M. "Determinants of the Growth and Size Distribution of LBA's Investment Expenditures," Quarterly Journal of Administration (Ile-Ife), Vol. 11 (April 1976).

Presents some information on the growth and size distribution of investment expenditures of LBA firms (licensed buying agents) in Southern Nigeria. (5)

- IA.1-12. FARNSWORTH, Helen C. "Defects, Uses and Abuses of National Food Supply and Consumption Data," Food Research Institute Studies (Stanford), Vol. II, No. 3 (1961).

As a result of the spread of the threat of wartime food shortages during WWII, the major governments began to give serious attention to improving their national food statistics and appraising the changing food conditions of other countries. This article illustrates that national food supply and consumption estimates differ substantially in nature and quality for different countries, commodities and nutrients. Generalizations are made on this subject and on the use and possible improvement of these estimates.

- IA.1-13 GRILICHES, Zvi. "Estimates of the Aggregate U.S. Farm Supply Function," The Journal of Farm Economics Vol. XLII (May, 1960).

The purpose of this paper is to present some estimates of the aggregate U.S. farm supply elasticity, using a relatively simple econometric model. While lacking econometric numerical estimates of it, economists and politicians have traditionally thought that the responsiveness of farm output to price changes is low, and perhaps even negative. Supply elasticity estimates are difficult to determine. Griliches presents a model which accounts for the two basic problems in determination: the impact of fluctuations in "weather" and the impact of technological change on the supply functions. The conclusion points to a small but definitely positive elasticity, which appears to be getting higher over time. (1)

- IA.1-14. HAZELL, P.B.R. and Scandizzo, P.L. "Competitive Demand Structure under Risk in Agricultural Linear Programming Models," American Journal of Agricultural Economics (Lexington, Ky) Vol. 56, No. 2 (May 1974).

A method is presented for solving agricultural sector models under risk to obtain perfectly competitive levels of outputs and prices in all product markets when producers behave according to an E, v decision criterion. The nature of market equilibrium behavior is considerably more complicated under risk than in a deterministic setting. This presents difficulties in designing models which will always provide meaningful economic answers. These difficulties are overcome by stipulating conditions under which the proposed model is applicable. The resultant model is a quadratic programming problem, and linearization techniques are suggested which enable solutions to be obtained through conventional linear programming computer codes. (2)

- IA.1-15. -----, "Market Intervention Policies When Production is Risky," American Journal of Agricultural Economics, Vol. 52, No. 4 (Nov. 1975).

The supplies of many agricultural commodities involve important production risks. In analysing market intervention policies, these risks should enter the analysis as stochastic elements in the slope of the supply function and not just in the intercept term. This specification leads to the result that optimally distorted prices are more efficient for social welfare than competitive market equilibrium prices. Important gains in social welfare may be obtained with risky products through the appropriate use of production quotas and price stabilization schemes designed to optimally distort the market. (2)

- IA.1-16. ISLAM, Nurul, ed. Agricultural Policy in Developing Countries. New York: Wiley & Sons, 1974.

This book contains a collection of twenty papers presented by various economists at a conference of the International Economic Association. Interrelations between agricultural and national growth, technological progress and food supply, world trade in agricultural commodities, employment effects of agricultural policy

and the instruments of agricultural development are the subjects discussed. A summary record of the discussion which followed the presentation of each paper is provided. The basic approach is non-quantitative. Case studies include Taiwan, Argentina, Thailand, Japan, the Punjab, Ghana and Bangladesh. The book concludes with a general discussion of the economic effects of the green revolution.

- IA.1-17. JONES, David. "Food and Interdependence: The Effect of Food and Agricultural Policies of Developed Countries," Overseas Development Institute (London), 1976.

Study about food problems of the third world and the food and agricultural policies of developed countries, paying particular attention to the policies of the UK and its partners in the European community. (5)

- IA.1-18. JOSLING, Tim. The Commodities Market and the Developing World," Overseas Development Institute Review (London), No.2 (1974).

The article attempts to sketch out the policy implications of the commodities price boom for industrial and developing countries and discusses the international reaction to the problems posed. In particular, it focusses on problems arising from changes in agricultural commodity markets rather than those for oil or other minerals. (5)

- IA.1-19. JUST, Richard E. "A Methodology for Investigating the Importance of Government Intervention in Farmers' Decisions," American Journal of Agricultural Economics, Vol. 53, No. 3 (August 1973).

A methodology for empirical investigation of the importance of subsidies price supports, allotments and diversion programs in agricultural supply response is developed and applied. Inclusion of the interdependent effects of government programs for competing crops is emphasized. A substantial part of the paper is devoted to the consistent representation of differing combinations of government program provisions in a single model of supply response. (2)

- IA.1-20. KRAUSZ, Joseph P. Competition among the Root and Cereal Staples in Tropical Agricultural Development. Agricultural Economics Staff Paper No. 74-12, Cornell University, 1974.

The paper makes several points concerning the choice between staples in tropical agricultural development. The study found root crops, in relation to cereal crops, to have a higher caloric yield per unit of time, generally lower production costs, and a greater untapped genetic potential. Cereal crops were found to be more easily stored and transported, and preferable to root crops as income rose in a developing country. For the early stages of development, the author concludes that it is essential that tropical root and tuber crops be given considerably more emphasis in tropical agricultural developmental schemes.

- IA.1-21. LEWIS, S.R., JR. "Agricultural Taxation and Intersectoral Resource Transfers," Food Research Institute Studies (Stanford), Vol. 12, No. 2 (1973).

The dangers of major price distortions within the agricultural sector may be more serious than similar distortions in the non-agricultural sector. A movement away from some of the policies of price distortion among internationally traded goods is necessary if the gross transfers from agriculture are to be effective in raising growth rates of output and employment in non-agricultural areas and in sustaining agricultural growth itself.

- IA.1-22. LIPTON, Michael. "Farm Price Stabilisation in Underdeveloped Agricultures: Some Effects of Income Stability and Income Distribution," Joint Reprint Series No. 32, School of African and Asian Studies and Institute of Development Studies, University of Sussex, (1970?).

- IA.1-23. MELLOR, John W. The Economics of Agricultural Development, Ithaca: Cornell University Press, 1966.

The book examines how the development of agriculture may help the low-income country achieve higher standards of living and more rapid growth. Mellor stresses the need for new approaches to land reform, food production, private versus public ownership and a variety of other issues. Other topics are examined to find where investment will yield the greatest results.

- IA.1-24. ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT. Study of Trends in World Supply and Demand of Major Agricultural Commodities. Report of the Secretary-General, Paris, 1976.

The study examines a number of factors influencing supply and demand, such as current food consumption, food requirements, land, climatic factors, etc. The study also includes a look into future issues, specifically, at relations between developed and developing countries. A regional analysis for ten areas throughout the world is given. The study concludes with a commodity analysis examining cereals, meat, dairy products, and animal feeding.

- IA.1-25. PHILLIPS, Richard and Unger, Samuel G. Building Viable Food Chains in Developing Countries. Special Report No. 1. Food and Feed Grain Institute, Kansas State University, 1973.

This is a report on the Agribusiness Planning and Development Conference held in Washington, D.C. in May, 1973. The authors present the findings and recommendations of the conference and condense the papers and discussions presented at the conference.

- IA.1-26. SALEH, Abdulla A. "Disincentives to Agricultural Production in Developing Countries: A Policy Survey." Foreign Agriculture (Washington) supplement, Vol. 13 (March 24, 1975).

US Department of Agriculture recently surveyed more than 50 countries for the purposes of identifying type and degree of existing disincentives. This paper describes the disincentives, but does not attempt to quantify the specific impacts of such policies on agricultural production. Comparative policy tables are included. (5)

- IA.1-27. STRASSMAN, W. Paul. "Development Economies from a Chicago Perspective," Journal of Economic Issues (University Park, Pa), Vol. 10 (March 1976).

Reviews the general record of Chicago participants in development economics, appraising the durability of policy recommendations in the light of experience. A closer look is taken at three specific policy areas that have interested the group: international trade, foreign policy, and the cultivation of market institutions. (5)

- IA.1-28. TAKAYAMA, T.; Hashimoto, H. and Schmidt, S., eds. Projection and Evaluation of Trends and Policies in Agricultural Commodity Supply, Demand, International Trade and Food Reserves. Project Report No. 1 Grains-Part I and II, Department of Agricultural Economics, University of Illinois, 1976.

These reports are compilations of studies of world food needs and the supply and demand of food grains (primarily wheat) in several developing countries with some analysis of developed countries.

- IA.1-29. VALLIEANDTAS, E.G. Fear in the Countryside: The Control of Agricultural Resources in the Poor Countries by Non-peasant Elites. Cambridge, Mass.: Bollings, 1976.

- IA.1-30. WHARTON, Clifton R., Jr. "Risk, Uncertainty and the Subsistence Farmer: Technological Innovation and Resistance to Change in the Context of Survival," Studies in Economic Anthropology, AS7, 1971.

The introduction of technology among subsistence farmers encounters resistance as profit maximization may not be as important in a subsistence or barter economy as the maximization of security and survival. Previous measures of risk are inadequate when applied to subsistence farmers. The author suggests studying the interaction between two sets of variables: (1) the absolute levels of farm family living as they relate to social standards for the minimal level of subsistence and the average productivity and income levels, and (2) the farmers subjective expected variance in output associated with the proposed technological introduction.

- IA.1-31. WOS, Augustryn and Grochowski, Zdzislaw. "Agricultural Policies and General Economic Policy - The Polish Experience," Food Policy, Vol. 21 (Feb. 1977).

Agricultural planning in Poland is an integral part of the central planning process of the socialist state. For agriculture, central planning is combined with the influence of a controlled market which makes use of various market mechanisms. The authors review agricultural planning in relation to general economic policy and show that, with a largely peasant agricultural, productivity is intimately connected with the productivity of the whole economy. In planning income, the rule used is that income of the agricultural population should increase proportionally with that of the non-agricultural population. The implications of this in the present five-year plan are discussed.

- IA.1-32. ZAREMBKA, Paul. "Marketable Surplus and Growth in the Dual Economy," Journal of Economic Theory, Vol. 2 (1970).

"The development literature has emphasized that economic growth of closed economies characterized by a dual structure depends upon three factors. First, output of agricultural products must increase at a sufficient rate to feed a rapidly growing population. Second, peasants must be induced to produce and market food surpluses to urban areas in exchange for manufacturing products. Third, enough savings must be generated to allow a substantial rise in industrial investment and thus in industrial capital and output ...The major contribution of the present paper is to introduce a neoclassical model that highlights both the problems of food production and of the marketing of food. Thus, by permitting nonzero income and price elasticities of demand for food, the marketable surplus problem is incorporated into the neoclassical dual economy."

2. Marketing Studies

- IA.2-1 ABBOTT, John C. "Agricultural Marketing Boards in Developing Countries," American Journal of Agricultural Economics, Vol. 49, No. 3 (August 1967).

This article describes the different functions and powers of marketing boards and the six existing types. It discusses and illustrates the shortcomings and potentials of this kind of organization for several market intervention objectives, stating the need to find analytical tools to appraise their efficiency. (4)

- IA.2-2. ----- "Case Studies of Advances in Marketing in Tropical Countries," Monthly Bulletin of Agricultural Economics and Statistics, Vol. 19, Nos. 7/8, (July-August 1970).

The article states there are a vast number of recent advances in marketing in the tropical countries, but much more analysis and appraisal of the factors behind success is needed. Such studies would provide valuable guidance on planning and policy making for private and public agencies. Abbott describes achievements in the areas of export marketing, marketing of food grains, cooperative marketing, expansion of specialized marketing channels and government marketing services. (4)

- IA.2-3. ----- "Marketing Studies, Organizations, Methods and Services for Development and Settlement Areas," FAO Monthly Bulletin of Agricultural Economics and Statistics, Vol. 13, No. 5 (May 1964).

The main conclusion of this article is that market research in the areas of determination of the market; estimation of the probable price to the producer; obtaining marketing data for planning; and information, advisory, control and training services must be undertaken in order to coordinate effective development and settlement in specific areas within a country. The author lists several criteria for the success of such a development project.

- IA.2-4 ABBOTT, John C. "The Role of Marketing in the Development of Backward Agricultural Economies," Journal of Farm Economics, Vol. XLIV, No. 2 (May, 1962).

Abbott discusses the problem of providing the economic incentives and marketing conditions necessary to attract greater output from small farms. Three basic conditions are essential for agricultural development: (1) adequate prices for products, (2) adequate marketing facilities and (3) a satisfactory land tenure system. The discussion extends to marketing problems faced in most developing countries. Success in improving marketing systems generally depends on the performance at all levels-- production, assembly, processing and distribution-- given the close interrelationship among all these functions. Therefore, marketing improvement programs must coordinate all the activities if any of them are to result in an economic return. The training of marketing personnel is also a crucial part of these programs. (4)

- IA.2-5 ABBOTT, John C. and Creupelandt, H.F. "Agricultural Marketing Boards in the Developing Countries: Problems of Efficiency Appraisal," FAO Monthly Bulletin of Agricultural Economics and Statistics, Vol. 16, No. 9 (September, 1967).

This article points out that the problems of efficiency appraisal of marketing boards include: (1) few boards publish enough information on their own operations to provide a solid basis for efficiency analysis; (2) while the legislative action to set up marketing boards is available, there is little subsequent investigation of their success; (3) the appraisal publications available are done either by public bodies or ad hoc investigative committees. These publications lack sufficient analysis. The authors follow up with several recommendations to alleviate the problem.

- IA.2-6. ----- "Agricultural Marketing Boards: Their Establishment and Operation," FAO Marketing Guide, No. 5, Rome, 1966.

The purpose of this guide is to provide practical advice on the conditions and goals for which a

marketing board or similar organization is a useful mechanism, and on how it can be operated successfully. The text is designed primarily for use in developing countries where subsidization of marketing operations from the non-agricultural sector is rarely feasible.

- IA.2-7. ABEL, M.E. "World Market Conditions for Grains: Prospects and Problems with Special Reference to the Developing Countries," Economic Development Center, University of Minnesota, 1976.

This paper presents a global characterization of the world market situations for grains as it presently exists and as it is likely to evolve over the next five to ten years. The author recommends that efforts on the part of developing countries to reform policies and stimulate agricultural development should be supported strongly by national and international development assistance programs.

- IA.2-8 ANDREWS, Paris. "Rural Development through Agricultural Marketing Cooperatives: An Empirical Study of Vegetable Marketing Cooperatives in Cyprus," Agricultural Administration (Barking, Essex), July 1976.

The article is a case study that attempts to demonstrate how a group of farmers went about solving their economic problems through the setting up of agricultural cooperatives and therefore provides us with a model of successful cooperatives to be emulated by many developing countries.

- IA.2-9. ANSCHEL, Kurt R.; Brannon, Russell H.; Smith, Eldon D. Agricultural Cooperatives and Markets in Developing Countries. New York: Praeger, 1969.

This book comprises several papers prepared for a special seminar on the subject. The major sections of the book include: (1) a conceptual framework for cooperatives, its principles, functions and benefits of cooperation; (2) agricultural marketing in a regional and country problem setting, this includes product and input marketing; (3) cooperatives as instruments of rural development, its potential and problems, this section has articles documenting

the performance of cooperatives in many developing countries; (4) a final part discusses the adaptation of cooperatives and quasi cooperatives to market structures and conditions of less developed areas.

- IA.2-10. BREIMYER, Harold F. "The Economics of Agricultural Marketing: A Survey," Review of Marketing and Agricultural Economics, Vol. 41, No. 4 (Dec. 1973).

Three distinctive schools present diverse interpretations of agricultural marketing. One of these derives from the economics of the farm business and casts marketing as all that happens to products past the farm. A second centers on marketing's coordinative role. A third is in allegiance to market development. Contemporary problems, beginning with those of the 1920 price reductions in the United States and accentuated by the worldwide depression of the 1930s, primarily explain the periods of heightened interest in marketing. In the early 1970s, the common thread is institutional change in marketing, which originates in events as diverse as declining importance of assembly markets for price discovery, and the redesign of marketing within trading blocs such as the European Common Market. (2)

- IA.2-11. BROWNING, Edgar K. and Culbertson, William P., Jr. "A Theory of Black Markets under Price Control: Competition and Monopoly," Economic Inquiry (Long Beach, Ca.), Vol. 12 (June 1974).

The primary purpose of this paper is to use the theory of the firm to develop a partial equilibrium framework for analyzing black market behavior. The first section of the paper derives the implications for a competitive industry subjected to a price control and this penalty structure. The most novel conclusion is that excess capacity always characterizes the equilibrium. The second section adapts the same to the monopoly case and shows that the typical textbook treatment is seriously incomplete. (1)

- IA.2-12. BUSE, Reuben C. and Helmberger, Peter G. "Potential and Feasibility of Cooperatives as Instruments of Market Reform." Agricultural Cooperatives and Markets in Developing Countries. Edited by K. Anshel, R. Brannon and E. Smith. New York: Praeger, 1969.

This article attempts to evaluate the potential of cooperative organizations in developing countries used as a means of overcoming market inefficiencies. Several shortcomings of cooperatives are outlined considering them purely as economic institutions. (4)

- IA.2-13. CREUPELANDT, H. and Abbott, J.C. "Stabilization of Internal Markets for Basic Grains; Implementation Experience in Developing Countries," FAO Monthly Bulletin of Agricultural Economics and Statistics, Vol. 18 (Feb. 1969).

The article gives recommendations on how a buffer stock program should be operated - quantities to purchase, prices qualitative differences, etc. A gradual approach is recommended to complement the private trade, not replace it.

- IA.2-14. DIXIT, Avinash K. "Marketable Surplus and Dual Development," Journal of Economic Theory, Vol. 1 (1969).

This paper investigates partial planning in a dual economy with a planned "advanced" industrial sector and a "backward" peasant-owned agricultural sector. The major problems in such an economy are shown to arise owing to political and institutional difficulties of manipulating peasant behavior. Peasants dictate the supply curves of labor and food to the industrial sector. The planner must accept these constraints and devise indirect policy tools for development. Those considered here are pricing policy for food and investment in agriculture. (2)

- IA. 2-15. DUBEY, Vinod. "The Marketed Agricultural Surplus and Economic Growth in Underdeveloped Countries," Economic Journal (London), Vol. 73 (Dec. 1963).

The author studies the basis for the view that the proportion of agricultural surplus marketed by the peasant farmer behaves in unexpected ways, thus neutralizing some of the favorable effects of

increased productivity and creating problems of financing the growth of non-agricultural activities. The author proposes several considerations and examines peasant behavior in various parts of India to discredit the predominately-supposed bases of the doctrine of marketed agricultural surplus.

- IA.2-16. JOHL, S.S. "Agricultural Shortages and Surpluses: A Marketing Trap for the Developing Countries," Ohio State University, 1971.

The paper states that, since most of the developing economies have little absorptive capacity for surpluses and are too sensitive to shortages due to lack of appropriate storage and holding capacity, marginal deficits in the agricultural production are reflected in serious shortages while small increases in production create large surpluses. These developing economies need to rethink their approach and remodel their market structure to be flexible and responsive to the changing demand and supply conditions for various agricultural commodities.

- IA.2-17. JONES, William O. "Some Economic Dimensions of Agricultural Marketing Research," Regional Analysis, Vol.1: Economic Systems. Edited by Carol A. Smith. Academic Press, 1976.

The article comments on five studies of the economics of staple food marketing in tropical Africa. The studies challenge the appropriateness for market research of the concepts of market hierarchies and the perfectly competitive model. Alternative market models are offered and several types of elementary price analyses are demonstrated. The studies also illustrate the advantages of viewing economic activities through the eyes of the participant.

- IA.2-18. KRISHNA, Raj. "A Note on the Elasticity of the Marketable Surplus of a Subsistence Crop," Indian Journal of Agricultural Economics (Bombay), Vol. 17 (1962).

The author attempts to derive an expression for the elasticity of the marketable surplus of a single subsistence crop and examines the probable limits of this elasticity assuming ranges of the other relevant

parameters plausible for the Indian economy. The author concludes that the depletion of the market supplies of food crops due to crop failures is often misinterpreted as a reflection of a backward sloping market supply function. With adequate data, the author believes that the backward sloping supply function will be as rare as the backward sloping total output functions for individual crops.

- IA.2-19. LADD, G.W. and Lifferth, D.R. "An Analysis of Alternative Grain Distribution Systems," American Journal of Agricultural Economics, Vol. 57, No. 3 (Aug. 1975).

The study analyzes transshipment problems in American grain marketing, especially the question of upgrading or abandoning railroads.

- IA.2-20. LELE, Uma J. "The Roles of Credit and Marketing in Agricultural Development." Agricultural Policy in Developing Countries. Edited by N. Islam. New York: Wiley & Sons, 1974.

The emphasis for improving efficiency must remain on widening choices open to farmers and on improving physical and institutional infrastructures which cause inefficiencies. Though less tangible than policies usually recommended, this is the most effective way of fostering suitable forms of market organization.

- IA.2-21. LORENZL, Gunther. "Zur Analyse von Vermarktungssystemen in Entwicklungsländern," Berichte über Landwirtschaft, Vol. 48 (1970).

Departing from the special circumstances surrounding the marketing of agricultural products in the development countries, an attempt is made at systematizing possible starting points for analyses and demonstrating a few analytical procedures. Following the coordination of various analytical starting points with analytical domains on the basis of functional objects and functional aspects, the determination of marketing efficiency is discussed to some detail. Some criteria of efficiency are introduced, and efficiency of allocation, efficiency of exchange, and a test for improper use of market position, are explained using agricultural markets in Uganda, Nigeria, and the Philippines as examples. (2)

- IA.2-22. MELLOR, John W. "Performance of Private Trade and Cooperatives," Occasional Paper 87, Cornell University, 1975.

The paper explores questions of the appropriate balance among the various sectors of the economy in view of the radically improved view of private trade. Performance in the food grain distribution system is examined, not simply as a question of competitiveness, efficiency and productivity of the various alternative channels, but also of the effect on distribution of income, on meeting of political and economic objectives for reliability of supply and price, and on optimal uses of scarce governmental resources.

- IA.2-23. MOORE, John R. "The Causes and Consequences of Major Changes in the Organization of Agricultural Marketing Activities," Journal of Farm Economics, August 1966.

It is the thesis of this essay that the major changes in the organization of agricultural marketing activities are the result of acts of market conduct of firms in an effort to maximize their joint and individual profits (primarily the latter), that most of these changes have resulted in improved market performance, and that these changes are made possible by innovations and developments both within and outside the industry (primarily outside). It is a further thesis of this essay that the source of the dynamics of the organization of marketing activities and its impact on market performance have not generally been recognized because of the static nature of the market structure model itself and because of the limited view of what constitutes market conduct. The market structure model is static in that its chief concern is how existing structures are administered rather than what is often of more long-run importance, how the structures are created and destroyed through time. Its view of market conduct is limited in that it concentrates on price, product (design changes), and promotion policy, and generally ignores the much more important policies in a welfare sense with respect to innovation and adoption of new technology and organizations in procurement, processing, and distribution. (1)

- IA.2-24. ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT and United Nations Food and Agriculture Organization. "Report of OECD/FAO International Seminar on Critical Issues in Food Marketing Systems in Developing Countries," Paris, October 1976.

The following papers were made available for this seminar: a Background Note (5 pp.); I.A.S. Ramadhar, "Critical Issues in Planning Farmer's Markets in India," (6 pp.); M.B. Mahamane, "Un Examen de la Structure et du Rôle des Cooperatives au Niger et Quelques Problèmes Eprouvés dans leur Fonctionnement," (7 pp.); D. Weightman, "Intermediate Technology and Rural Transport," (7 pp.); S. Kakli, "Agricultural Marketing System in Pakistan-Issues, Problems, Strategies," (9 pp.); FAO, Agricultural Services Division, Marketing and Credit Service, "Characteristics of Areas where Inadequate Marketing Systems are a Major Bottleneck to Improved Food Supply Conditions and Self-Reliance," (23 pp.); D. Link, "Scope for Improving Marketing of Fruits and Vegetables in the Highlands of Guatemala for the Benefit of Small-Scale Farmers," (6 pp.); FAO, Agricultural Services Division, "The Catalytic Role of Various Types of Marketing Enterprises for Stimulating the Expansion of Local Production," (10 pp.); FAO, Agricultural Services Division, "Appropriate Post-Harvest Technology in Semi-Subsistence Marketing Systems," (15 pp.).

- IA.2-25. PEASE, Steven. "The Effects of Transportation Costs in Low-Income Agricultural Economies," Journal of Development Studies (London), Vol. 12 (April 1976).

The author argues that transport costs, in low-income agricultural economies, can easily lead to uneven intensity of cultivation across space, to technological dualism in agriculture, to the existence of surplus land in a poor country, to an urban-rural wage gap.

- IA.2-26. PRITCHARD, Norris T. "A Framework for Analysis of Agricultural Marketing Systems in Developing Countries," Agricultural Economics Research, Vol. 21, No. 3 (July 1969).

The analysis of agricultural marketing systems requires a broad analytical framework to supply essential operational questions and to indicate appropriate research methods. The elements of

this framework should be based on: (1) the theory of market structure-conduct-performance analysis; (2) a set of economic theories relevant to marketing; (3) the theory of effective competition as a dynamic process; and (4) the general theory of economic growth. The author argues that such framework is loosely fitted but sufficiently workable for research in this area. (4)

- IA.2-27. REUSSE, E. "Economic and Marketing Aspects of Post-Harvest Systems in Small Farmer Economies," FAO Monthly Bulletin of Agricultural Economics and Statistics, Vol. 25, No. 9 (Sept. 1976)

This article is based on experience gained during a decade of marketing field work, primarily in Western and Central Africa and also in other areas of Africa, Central America and the Far East. The author discusses the economic implications of the employment of alternative technologies and their integration in the overall marketing process. The focus is on agrarian economies in transition where subsistence farming is increasingly giving way and includes discussion of their comparative efficiency and effectiveness, limitations and potential. The author concludes with some specific remarks on policy implications.

- IA.2-28. SHEPHERD, Geoffrey; Futrell, Gene; and Strain, J. Robert. Marketing Farm Products: Economic Analysis (6th ed.). Ames, Iowa: Iowa State University Press, 1976.

This is a textbook that covers basic marketing principles of farm products. It is divided into three parts: (1) Analytical Approach, (2) Overall Marketing Problems, (3) Commodity Marketing Problems.

- IA.2-29. SMITH, Carol A. "Economics of Marketing Systems: Models from Economic Geography," Annual Review of Anthropology, Vol. 3 (1974).

Much of this review is devoted to recent market studies in geography and recent developments in central-place theory and methodology. The author discusses market centers as central places.

- IA.2-30. SMITH, Eldon D. "Agricultural Marketing Research for Less-Developed Areas," American Journal of Agricultural Economics (Menasha, Wis.), Vol. 54, Pt. 1 (Nov. 1972).

Marketing problems are viewed in relation to developmental objectives and conditions found in less-developed countries. Under developed infrastructures, intersectorial relations, and developmental objectives may make transferability of developed country concepts and formulations to LDC's questionable. Market performance criteria should be logically related to strategic developmental variables. (2)

- IA.2-31. SOSNICK, Stephen H. "Toward a Concrete Concept of Effective Competition," American Journal of Agricultural Economics, Vol. 50 (Nov. 1968).

By this author's standards, a market is effectively competitive if and only if it is free of 25 flaws: unsatisfactory products, underuse or overuse, inefficient exchange, inefficient production, bad externalities, spoliation, exploitation, unfair tactics, wasteful advertising, irrationality, undue profits or losses, inadequate research, predation, pre-emption, tying arrangements, resale price maintenance, refusals to deal, undesirable mergers, undesirable entry, misinformation, inefficient rules of trading and misregulation. (2)

- IA.2-32. TORREALBA, Pablo. Agricultural Marketing in Economic Development, An Annotated Bibliography. Research Report No. 9, Latin American Studies Center (Michigan State University), 1971.

This is an annotated bibliography of references on agricultural marketing in economic development emphasizing comprehensive studies which analyze "marketing activities as a whole system for a product or a region." The geographic emphasis is on Latin America, but all areas of the world are included.

- IA.2-33. TRAEI, D.; Zif, J.; Izraeli, D.N. "Marketing Boards and Initial Marketing," Journal of Rural Cooperation (Tel Aviv), Vol. IV (Nov. 2, 1976).

- IA.2-34. WARRACK, Allar A. "A Conceptual Framework for Analysis of Market Efficiency," Canadian Journal of Agricultural Economics, Vol. 20, No. 3 (Nov. 1972).

Important agricultural marketing policies and decisions are constantly before industry and government. Much market research is being supported. There is a need to "bridge" research with policy. The core of this paper is to develop a conceptual framework that spans the needed analysis of marketing efficiency. The basic point is that marketing policy must focus on both competition and physical operations. (2)

- IA.2-35. WELSH, R.S. and Wessel, K.L. "Transforming the Agricultural Marketing Structure of a Developing Country," Agricultural Economics Department, Ohio State University, 1972.

This paper analyzes the comparative advantages of private firms and cooperatives in a developing economy. The authors conclude that, if a sufficient infrastructure exists, a properly managed private firm has a comparative advantage over a cooperative with respect to market power and innovations needed to increase efficiency, improve the competitive structure and respond to changes in the marketing system. The author calls for a shift in emphasis toward private firms. After necessary marketing reforms have occurred, there may be a need for renewed emphasis on cooperatives to keep market performance in balance.

- IA.2-36. WESTERGAARD, Poul. "Primary Societies' Marketing Costs: A Case Study and Some General Remarks, Mostly on Efficiency," Paper 69.9 Economic Research Bureau, University of Dar es Salaam, June 1969.

This paper presents a detailed analysis of the marketing costs of about 100 primary societies affiliated to Mtwara Co-operative Union, with some general observations based on the case study. It is observed that the marketing costs vary greatly between societies and it is suggested that part of this variation can be explained by differences in management efficiency and honesty. If this is true, it should be possible by appropriate measures to improve the economic performance of the badly managed societies in three ways: education, control and incentives. It is discussed in some detail how an effective incentive system could be organised. (2)

3. Price Policy Studies

IA.3-1. ABOUCHAR, Alan, ed. The Socialist Price Mechanism. Durham, N.C.: Duke University Press, 1977.

IA.3-2. AUERBACH, Robert. "The Effects of Price Supports on Output and Factor Prices in Agriculture," Journal of Political Economy (Chicago), Vol. 78 (Nov./Dec. 1970).

Auerbach claims that Floyd's (1965) model showing the effects of farm price supports on the returns to the factors in farming is overdetermined. Incorrect conclusions were reached by Floyd's use of nominal prices which thereby introduces the problem of "money illusion." The author demonstrates his assertions by resolving 4 out of the 5 original equations used by Floyd.

IA.3-3. BARKER, Randolph and Hayami, Yujiro. "Price Support Versus Input Subsidy for Food Self-Sufficiency in Developing Countries," American Journal of Agricultural Economics (Lexington, Ky.), Vol. 58, Pt. 1 (Nov. 1976).

This article analyses the programs of rice price support and fertilizer subsidy for achieving self-sufficiency in rice in the Philippines. (5)

IA.3-4. BAUER, P.T. and Myint, U. "The Hidden Costs of Commodity Price Stabilization," Banker (London), Dec. 1976.

The paper argues that stabilization schemes are often no more successful than the market in smoothing out price fluctuations and they are not an effective instrument for transferring resources from rich to poor. (5)

IA.3-5. BAUER, P.T. and Yamey, B.S. "A Case Study of Response to Price in an Underdeveloped Country," The Economic Journal, Vol. LXIX (Dec., 1959).

The authors describe the measures taken by Nigerian authorities to improve the quality of cocoa and palm oil via the provision of price differentials for different quality grades of those products. The authors also describe the behavior of producers who responded to incentives in a positive manner.

- IA.3-6. BEHRMAN, Jere N. "A Model for the Estimation of the Price Elasticity of the Marketed Surplus of a Subsistence Crop," Journal of Farm Economics, Vol. XLVIII (Nov. 1966).

The author derives a model for the estimation of the price elasticity of the marketed surplus of a subsistence crop. He then compares and contrasts his model to that of Khrishna, arriving at several fundamental similarities and differences in both application and result. Finally, the author presents an application of his model, with rice production in Thailand as a basis. (1)

- IA.3-7. BIERI, Jurg and Schmitz, Andrew. "Market Intermediaries and Price Instability: Some Welfare Implications," American Journal of Agricultural Economics, Vol. 56, No. 2 (May 1974).

The welfare consequences of price instability critically depend on the type of market intermediary. Both a producer marketing board and a pure middleman will stabilize consumer prices; but the latter, unlike the producer marketing board, will find it advantageous to "manufacture" price instability for producers. (2)

- IA.3-8. BIRD, Graham. "Primary Product Price Instability; A Proposal for Financing Stabilization Schemes," Monte Dei Paschi di Siena, Economic Notes (Siena), Vol. 4 (May/Dec. 1975).

The author argues that the special drawing rights could be conveniently used for financing stabilization schemes. (5)

- IA.3-9. CHETTY, P.R. "A Study of Different Aspects of Pricing of Seed," Indian Journal of Agricultural Economics (Bombay), Vol. 26 (Oct./Dec. 1971).

This article is a study of price structure in all stages of production, based on the belief that a realistic price policy, with careful and accurate cost analysis, will greatly accelerate the growth of the seed industry. The economics of seed production

vis-a-vis grain production and the relative price structure that will attract progressive producers to take up seed production as a regular activity, is the chief factor responsible for the success or failure of seed development.

- IA.3-10. DANDEKAR, V.M. "Minimum Support Prices for Foodgrains; Guidelines for a Policy and a Programme," Artha Vijnana (Roona), Vol. 7 (Dec. 1965).

The author advocates buffer stocks as a means to even out market fluctuations and points out the difficulties in defining the support and ceiling prices. The "cost of production" is seen as irrelevant for setting the support price. It should be set as high as resources permit.

- IA.3-11. FREEBAIRN, J.W. "The Value and Distribution of the Benefits of Commodity Rice Outlook Information," Economic Record (Melbourne), Vol. 52 (June 1976).

The author develops and applies two models for evaluating the gross benefits to producers, consumers and society of improvements in the accuracy of forecasts of commodity prices. (5)

- IA.3-12. GARDNER, Bruce L. "The Farm-Retail Price Spread in Competitive Food Industry," American Journal of Farm Economics, Vol. 57, No. 3 (Aug. 1975).

Consistency with market equilibrium places constraints on the pricing policies of food marketing firms in a competitive industry. This paper examines the implications of simultaneous equilibrium in three related markets: retail food, farm output and marketing services. From equations representing the demand and supply sides of each market, elasticities are generated which show how the farm-retail price spread changes when retail food demand, farm products supply or the supply function of marketing services shift. Implications for the viability of simple markup pricing rules and the determinants of the farmer's share of the food dollars are discussed. (2)

- IA.3-13. GEORGE, M.V. and Singh, R.P. "Recent Trends in Input-Output Prices and Their Impact on Farm Income," Indian Journal of Agriculture Economics (Bombay), Vol. 26 (Oct.-Dec. 1971).

The objective of this study is to examine (1) the changing pattern of inputs use and their costs, (2) the changes in the factor-product price relationships and (3) the impact of the above two factors on yields and returns to the producer. (1)

- IA.3-14. GONENSAY, Emre. "The Theory of Black Market Prices," Economica, Vol. 33 (May 1966).

The author suggests that the accepted analysis of price formation in black markets is defective and and the conclusions based on it incorrect. Black market demand is not directly related to a change in black market supply; rather, black market price is a function of total excess demand at the original price. It remains unchanged regardless of the share of the grain output directed to the black market.

- IA.3-15. HOGG, V.W. "Response to Price in an Underdeveloped Economy," The Economic Journal, Vol. LXX (Dec. 1960).

The article criticizes an earlier article by Messrs. Bauer and Yamey as being an unfair oversimplification of the case against the well-known view that it is difficult to measure the degree of responsiveness of producers to price changes. Also included is the authors' rebuttal to Hogg's criticism.

- IA.3-16. KHAMIS, Salem H. "Statistics of Agricultural Prices; Basic Concepts and Characteristics in Relation to Uses," FAO Monthly Bulletin of Agricultural Economics & Statistics, Vol. 14, No. 1 (Jan. 1965).

This discussion shows the importance of an integrated approach to the collection, processing and publication of price statistics. A price reporting system should begin with the uses for which the prices are to be put and ensure that the operations used in the compilation and processing of the data are consistent with these uses.

- IA.3-17. KRISHNAN, T.N. "The Marketed Surplus of Food Grains: Is It Inversely Related to Price," Economic Weekly, Vol. 17 (Feb. 1975).

There are two hypotheses relating to the relationship between prices and the marketable surplus of foodgrains. The first is that the marketed surplus is inversely related to prices of foodgrains... The second hypothesis related market arrivals to prices prevailing in the past and to expected changes in prices... However, a preliminary analysis of the seasonal pattern of market arrivals seems to contradict this hypothesis. The belief that the proportion of distress sales by farmers has declined is unfounded. All evidence suggests the contrary. (2)

- IA.3-18. MATHUR, P.N. and Ezekiel, H. "Marketable Surplus of Food and Price Fluctuations in a Developing Economy," Kyklos, Vol. 14 (1961).

The paper deals with the relationship between the proportion of food grains that is marketed and the price level in an underdeveloped country where farmers live on the margin of subsistence. The argument is made that the present system of including surplus and deficit areas in each zone tends to accentuate movements in food prices. Deficit and surplus areas should be separated and surpluses of the latter should be siphoned off into the former through official channels.

- IA.3-19. MELLOR, John W. "Agricultural Price Policy and Income Distribution in Low Income Nations," Staff Paper No. 214, International Bank for Reconstruction and Development, Sept. 1965.

The author considers the effects of price changes on foodgrains. For consumers: the poor carry the burden of price changes directly because they spend a larger proportion of their income on foodgrain and indirectly because, as prices rise, the rich decrease consumption of non-foodgrain items which are usually labor intensive (income effect on the rich causes employment effect on the poor). For producers: since small producers are not consumers of foodgrains, they do not

benefit from price increases. Price stabilization profits only larger landowners and destabilizes the income of small producers. Employment programs only benefit the poor if supplies of foodgrains increase. Otherwise, increased demand (because of added employment) will cause price rises.

- IA.3-20. -----, "Agricultural Price Policy in the Context of Economic Development," American Journal of Agricultural Economics, Vol. 51 (Dec. 1969).

The article states that support prices calculated on costs cement the present (inefficient) production structures and retard structured growth. Prices should be announced prior to harvest, depending on crop estimates. The conflicting goods of price policy are pointed out.

- IA.3-21. -----, "The Basis for Agricultural Price Policy," War on Hunger, Vol. IV, No. 10 (Oct. 1970).

The author states that much past discussion of agricultural price policy has suffered from misplaced emphases reflecting a scarcity view of the agricultural sector in the face of rising population. He then states limitations on price policy (both economic and administrative), the sometimes conflicting objectives of price policy, and ancillary policies (research, productive inputs and transportation) which should be pursued in relation to price policy. He suggests a price support policy for the basic food grains in order to protect farmers, stabilize prices and protect low income consumers. Protection of private trade, market imperfections and political considerations are covered.

- IA.3-22. -----, "The Function of Agricultural Prices in Economic Development," Indian Journal of Agricultural Economics (Bombay), Vol. 23 (Jan.-Mar. 1968).

The basic conclusion of this analysis is that changes in agricultural prices have conflicting influences which push agricultural prices into a subsidiary role as a tool of public policy of stimulating agricultural development. Efforts to mitigate the harmful influence of one effect of a price change are likely to be at

the expense of another aspect. Principal areas for a positive price policy for agricultural development are attempting price stabilization on the face of fluctuating weather through an open market buffer stock operation and mitigating the harmful effects of failure in the agricultural sector through rationing and price regulation.

- IA.3-23. NERLOVE, Marc. "Estimates of the Elasticities of Supply of Selected Agricultural Commodities," Journal of Farm Economics, Vol. XXXVII (1956).

This paper deals with the role that farmers' expectations of future relative prices play in shaping their decisions as to how many acres to devote to each crop. It tries to answer two questions: First, why have such low elasticities of acreage to deflated price been obtained? Second, is it possible to obtain measures of the elasticities that are more in line with what we know from studies made on production functions and on farmers' reactions to the allotment and price support programs? A few tentative and preliminary estimates of the elasticity of acreage to deflated price for cotton, wheat and corn, for the period 1909-32 are given.

- IA.3-24. NERLOVE, Marc and Bachman, Kenneth. "The Analysis of Changes in Agricultural Supply: Problems and Approaches," Journal of Farm Economics, Vol. XLII, No. 3 (Aug. 1960).

The authors attempt to "array and evaluate recent contributions to agricultural supply analysis." Their theoretical conclusions include the need for adequate theories of aggregation for firm supply functions; of behavior under uncertainty; of investment for the firm; and of the diffusion of technological changes and their effects on production possibilities.

- IA.3-25. PARTHASARATRY, G. and Mudahar, Mohinder, S. "Foodgrain Prices and Economic Growth," Indian Journal of Agricultural Economics (Bombay), Vol. 31 (April/June 1976).

This article "seeks to analyze the ramifications of food grain prices on overall economic growth and its effect in turn on food grain production." (5)

- IA.3-26. RAJAGOPALAN et al. "Price Elasticities-Methodological Issues with Reference to Perennial Crops," Indian Journal of Agricultural Economics (Bombay), Vol. 26 (Oct.-Dec. 1971).

This paper has two objectives: first, to identify relevant problems in specifying price variables for estimating price elasticities and, second, to present empirical support for various hypotheses on output response to prices. The reference crop is tea and the reference period is from 1921 to 1968 with the exception of several years. The study shows that output decisions are influenced by prices and that output does not seem to respond differently to different directions of price changes. (1)

- IA.3-27. SHAH, V.C. "Agricultural Price Policy in a Developing Country," Indian Journal of Agricultural Economics, Vol. 22 (July-Sept. 1976).

The author states that agricultural price policy is a very useful instrument for increasing farm production and thereby accelerating the growth rate of a developing country. Empirical findings show that price policy is a necessary, but not sufficient, condition for stimulating agricultural development. Two factors for assessing the level and composition of agricultural output are, first, finding the nature and extent of the shift in production possibility curve and second, ascertaining changes in the proportion of various types of subsistence farmers.

- IA.3-28. STERN, Robert M. "Price Responsiveness of Primary Producers," The Review of Economics and Statistics, Vol. XLIV (May 1962).

The paper represents an attempt to add a further empirical example to what we know about how producers of primary products in less-developed countries respond to changes in the relative prices of the commodities which they produce. The example presented here shows, and attempts "to measure the response made by peasant producers in adjusting the acreage devoted to jute and competing crops to changes in the relative prices of their crops." (1)

- IA.3-29. TAYLOR, Donald C. "Price Policy with Special Reference of Major Irrigation Projects," Indian Journal of Agricultural Economics (Bombay), Vol. 26 (Oct.-Dec. 1971).

This paper examines price policy in relation to major irrigation projects in India, providing background information and discussing two special challenges posed by such projects - price policy concerning water rates and price policy concerning product prices. The author examines the possible economic incentives which might be provided to confront these challenges.

- IA.3-30. TIMMER, C. Peter. "Interaction of Energy and Food Prices in Less Developed Countries," American Journal of Agricultural Economics, Vol. 57 (May 1975).

Timmer argues that, with some exceptions, "modern, energy intensive agriculture is the only hope for many of the world's present population and for most of its yet-to-be-born." His purpose in this paper is to "identify some of the longer run economic relationships between the price of (nonsolar) energy and the price of food that are a consequence of the necessity to develop in the LDC's high yield, fossil-fuel based agriculture over the next few decades." Timmer uses a simple macromodel to consider energy related inputs and to examine input-output price relationships.

- IA.3-31. YOUNG, H.T. "Can Food Prices Be Controlled?" Canadian Journal of Economics (Toronto), Vol. 9 (Nov. 1976).

"The author develops a cost-push model for the estimation and analysis of food prices." (5)

B. Africa

1. The Sahel

a. General Works on Agricultural Development

- IB.1a-1. AGENCY FOR INTERNATIONAL DEVELOPMENT. Report to the United States Congress: Proposal for a Long-term Comprehensive Development Program for the Sahel. Washington, D.C., 1976.

This report is submitted in response to the statutory mandate (of Congress). It covers the following areas: (1) current international coordination for the planning of long-term development with the involvement of the African countries and organizations, and (2) AID's proposal for long-term development planning for the Sahel." (1)

- IB.1a-2. AGENCY FOR INTERNATIONAL DEVELOPMENT. Special Report to the Congress on the Drought Situation in Sub-Sahara Africa. Washington, D.C., June 1975.

This report gives concise background reading on the drought situation, lists technical assistance plans and gives country by country comments.

- IB.1a-3. BECKER, John A. An Analysis and Forecast of Cereals Availability in the Sahelian Entente States of West Africa. AID, Jan. 1974.

The purpose of this report is to provide a perspective of cereals availability in Niger and Upper Volta, describing the past, assessing the future and considering alternative assistance efforts in alleviating future food crises.

- IB.1a-4. BERG, Elliot J. The Economic Impact of Drought and Inflation in the Sahel, Discussion Paper No. 51, Center for Research on Economic Development, University of Michigan, May 1976.

Using currently available data from a wide variety of sources, this paper summarizes the main lines of economic evolution of the Sahel countries in recent years. The first section is a survey of the economic effects of abnormally dry weather, clarifying and describing briefly the economic impact of the drought. The second section focusses on changes in income distribution caused by drought, inflation and government policies, with attention given to income as a function of geography and source of livelihood. A number of key policy issues are discussed in a concluding section.

- IB.1a-5. -----, The Recent Economic Evolution of the Sahel. Center for Research on Economic Development, University of Michigan, 1975.

In an attempt to remedy a lack of knowledge about the effects of drought on the Sahelian economies, this paper first records and explains these effects in conventional economic terms - production, budgets, balance of payments, income distribution, etc. The report then brings together a large body of basic data on recent economic developments in the Sahel, creating an historical presentation, marking trends and changes over time of significant economic variables. Data is brought together from official reports, published literature and from the field (as of 1975). It is synthesized and made consistent so as to present, in one place and one form, a useful set of economic indicators.

- IB.1a-6. -----, "The Sahel: Time for a New Approach," OECD Observer, No. 79 (Jan-Feb 1976).

A review of the problems of the Sahel, including the reversible and irreversible effects of the drought. Recommendations for future opportunities include: (1) expanded intra-Sahel cooperation, (2) new external relations, (3) restoration of ecological balance (cutting back livestock), (4) stimulation of innovative behavior, (5) availability of new resources through technology.

- IB.1a-7. CAISSE CENTRALE DE COOPERATION ECONOMIQUE, Services d'études économiques et financières. "Remarques Générales sur la Commercialisation et la Politique de Prix des Céréales au Mali," étude de S. Michailof, mimeo, mars 1977.

This study is a "contribution of the Caisse Centrale de Coopération Economique to the work undertaken by the Marketing, Price Policy and Storage Committee of the Club du Sahel." It argues that overproduction of rice is likely and that the cereals marketing prices are too low. It concludes that Mali should reduce its commitment to rice projects involving partial irrigation; that future rice production be concentrated on full water control (e.g. Office du Niger); that rainfed agriculture (millet and sorghum) be given higher priority; and that the Government of Mali should combine a high-price policy for food-grains with the development of exports of millet and sorghum to neighboring countries.

- IB.1a-8. DUBOIS, Victor D. "Food Supply in Mali," American University Fieldstaff Reports, West Africa Series, Vol. XVI, No. 1 (April 1975).

A discussion of the devastating effects of the drought on Mali's agricultural and livestock sectors, seriously reducing the country's ability to feed its people and maintain a position of relative solvency. Mali went from food self-sufficiency in the 60s to widespread famine in the 70s, complicated by an extremely inadequate transport system and lack of local markets. In addition, government policies were discouraging to farmers. A series of monetary problems led to draconian austerity measures and eventually to the fall of the government in 1968. The author believes that only a sustained commitment from the international community for at least 10 years will help Mali revive its agricultural sector, build an adequate infrastructure and regain food self-sufficiency.

- IB.1a-9. -----, "A Note on the Sahel," American University Field-staff Reports, West Africa Series, Vol. XVI, No. 4 (Sept. 1975).

A review of immediate social, environmental, economic, and political consequences of the Sahel drought. Grave impacts on Sahelian ecosystem are seen in the loss of vegetation, water sources and topsoil. Morbidity and mortality rates are especially high among nomads with great spread of disease and malnutrition. Demographic dislocations, swelling urban areas unable to provide adequate facilities, have led to social and political problems. Economically, the drought has caused decreased agricultural production, food shortages, steep price rises, reduction of consumer purchasing power and foreign exchange earnings from exports, sharp increases in food imports and aggravation of the trade imbalance. The area of cultivable land is greatly reduced and the livestock population virtually eliminated. Only through international aid have the Sahel governments been able to keep down discontent and avoid total disaster.

- IB.1a-10. EICHER, Carl; Sargent, M.; et al. "An Analysis of the Eastern ORD Rural Development Project in Upper Volta: Report of the MSU Mission," Study for AID, African Rural Economy Working Paper No. 9, Dept. of Agricultural Economics, Michigan State University, 1976.

The study looks at the implementation and future development potential of Upper Volta's FADA Rural Development Organization. Recommendations include: (1) infrastructure development using available personnel resources to develop roads, (2) agricultural production, particularly the development of markets, (3) agricultural credit, especially for the medium term, (4) improving basic technical and socio-economic data to support the livestock sub-sector, (5) training for personnel in several sectors.

- IB.1a-11. JONES, William I. Planning and Economic Policy: Socialist Mali and Her Neighbors. Washington, D.C.: Three Continents Press, 1976.

The main focus of this book is on Mali's Five Year Economic and Social Development Plan from 1961 to 1966. The book is divided into two parts. Part I begins with a sweeping view of Malian economic history up to 1960. It continues with a general description of the economy in 1959, the outline of the first five year plan and the factors which are critical during its conception, and finally compares the experiences during this period with that of Mali's West African neighbors who were emerging from a similar colonial experience. In Part II, the actual operation of the Plan is analyzed through an examination of the structural measures instituted, such as socialization of certain sectors of the economy and attempts at administrative decentralization. The author evaluates the effects of governmental actions on Mali's rural population by devoting a chapter to the study of a single village. Finally, the Plan's performance is summarized in aggregate terms not only for the period for which it was conceived but also for a number of years following, with comparisons drawn from other countries in the area.

- IB.1a-12. JOYCE, Stephen J. and Beudot, Françoise. Elements for a Bibliography of the Sahel Drought. Paris: Organization for Economic Cooperation and Development, 1976.

A bibliography on the Sahel drought covering a three-year period, from 1972 to 1975. In their outline for such a bibliography, the authors include a wide variety of topics, such as climatological and ecological factors, other factors having contributed to the severity of the drought, proposed ways and means of combating the drought, aid rehabilitation and development of the Sahel, and the evolution of the overall situation since 1974.

- IB.1a-13. MADDUX, Michael M. Developing the Sahel: Analysis of the Recommendations of Three International Organizations. Arlington, Virginia: Virginia Research Institute, Oct. 1976.

This paper uses a uniform method of analysis to describe the models of the Sahel of three international organizations - FAO, SEDES/SCET and IBRD. It compares their development goals and policies, and proposes a mathematical and judgemental model. An alternative approach to determining development policies for the Sahel is discussed.

IB.1a-14. "SENEGAMBIA; the Smuggling Question - I and II," West Africa (London), Vol. II, Nos. 2706 and 2707 (April 12 and 19, 1969).

IB.1a-15. SCHUMACHER, Edward J. Politics, Bureaucracy and Rural Development in Senegal. University of California Press, 1975.

This book "examines Senegalese leadership's quest of institutional reform and its impact on rural development policy during the period between 1957... and 1970." By the end of the 1960's, the scope and ambitiousness of rural development strategy was substantially attenuated. The major determinants of the way in which rural policies have evolved have been:

(1) the continuity of strength of machine-style politics institutionalized by the dominant party, and
(2) persistent organizational and resource deficiencies which impair the institutional coherence of public bureaucracies. This book examines institutional change and policy evolution, specifically: machine politics, party structure, constitutional change, development of administration and bureaucracy, and change in economic institutions and agricultural policy. (1)

IB.1a-16. SHAPIRO, Kenneth. "(Non-livestock) Agricultural Sector of Niger," D.A.P. Team Reports, draft, November 1974.

IB.1a-17. WILCOCK, David C. "Entente Grain Stabilization and Marketing," memo to AID, January 30, 1976.

b. Marketing Studies

IB.1b-1. AGENCY FOR INTERNATIONAL DEVELOPMENT. Mali: Cereals Market Promotion, Project Identification Document, 1976.

The problem confronted in this study is how to induce farmers to increase the quantity of cereals they will store and/or sell for storage, so as to increase the proportion of production to be sold and facilitate holding of cereals for marketing in the "soudure" season. Principal goals of the projects were to increase storage capacity, improve transport, provide management and technical assistance, provide recurrent cost financing, and improve information gathering and analysis.

IB.1b-2. ARDITI, Claude. "Economie, Commerce Traditionnel et Cr dit en Afrique Sahelienne," Bulletin de Liaison STATECO, No. 5 (juin 1974).

The notion of "subsistence economy" has long characterized African economic systems in the specialized literature. Such a concept cannot represent the variety of production systems in Western Africa. In particular, the Sahel fringe was an area of intense commercial, cultural and religious links between North Africa and Sub-Saharan Africa. Nevertheless, it is possible to speak of a subsistence sector within the observed economic system. This sector used to allow the constitution of grain stocks which were quite important. Presently, this sector participates in the food marketing process due to urban population growth and especially due to pressures on the African peasant, which oblige him to commercialize an important part of his food grain crop, even if he has no surplus. At a later time, he must buy it back at uncontrolled and, therefore, higher prices. Two studies on Niger by Raynaud and Nicolas illustrate this process of destruction of the subsistence sector and show its impacts on the socio-economic structure.

- IB.1b-3. BAIER, Stephen Brock. African Merchants in the Colonial Period: A History of Commerce in Damagaram (Central Niger) 1880-1960. Ph.D. Dissertation, University of Wisconsin, 1974.

This is a history of the commerce of pre-colonial Damagaram, a state of the central Sudan. Two types of trade existed: internal exchange of staples, dependent upon seasonal participation of nomadic and sedentary peoples, and trans-Saharan trade. (3)

- IB.1b-4. BANQUE CENTRALE DES ETATS DE L'AFRIQUE DE L'OUEST. "La Commercialisation du Mil au Senegal," L'Economie Ouest Africaine (Paris), No. 129 (mai 1966).

One of the goals stated in the first 4-year development plan was to reduce the food deficit in Senegal by increasing productivity and acreage dedicated to foodgrains (mainly millet and rice). Another goal was the stimulation of millet marketing which would shift the economies of some areas from barter to monetary systems. Planning targets were nearly reached for both acreage and production; the foodgrains deficit (stabilized at a level of 22,000 tons) was not eliminated. However, planning goals were not reached for marketing, which represents only a small part of the harvest. This marketed output does not represent production excess but rather the indebtedness of the peasants. In fact, government measures (monetarization of the economy, development of credits) have encouraged the farmer to shift production toward groundnuts, which are twice as profitable and thus jeopardize means of subsistence during the harvest and build up debts. The objectives of the plan are conditioned by the relative positions of millet and groundnuts at the level of both prices and yield, which could certainly be doubled in the case of millet.

- IB.1b-5. BERTHE, Mahamadou and Meyer-Ruhle, G. Olaf. Report on the First Joint Evaluation of Mils-Mopti, AID project, Mopti/Bamako, April 1977.

A report on the status of the \$8 million project, aimed at stimulating millet production in Mali's 5th region. It contains useful information on the problems of such projects, as well as on agricultural policies in the region. The report includes an interesting section on marketing problems.

- IB.1b-6. BORSDORF, Roe. Evaluation of Proposed Marketing Interventions for Chad, Report No. 62, Food and Feed Grain Institute, Kansas State University, 1976.

The scope of the work was to (1) evaluate alternative actions that could be taken to reinforce the cereal grain marketing system and (2) to prepare technical input to a ...(project review paper). (1)

- IB.1b-7. COLLINS, John D. Government and Groundnut Marketing in Rural Hausa Niger: the 1930s to 1970s in Magaria, Ph.D. Dissertation, Johns Hopkins University, 1974.

This is a history of the local groundnuts markets in Magaria and the interest of the state in these markets since the 1930s. The markets provide a single context both for assessing the cumulative impact on the local socio-economic system of state intervention and for studying the effect on state behavior on changes in policy, resources and institutions. (3)

- IB.1b-8. GOSSELIN, G. "Le Mouvement Coopératif en Haute-Volta," Genève-Afrique, Vol. 8, No. 1 (1969).

This paper recalls the history of the cooperative movement in Upper Volta, presents its main organisms and agencies, reviews the legislation of the cooperatives, studies the credits granted to them, the doctrinal issues involved, the structures of the movement and, finally, its evolution and operation. Four tables are included: (1) Structure of the cooperative movement as of Dec. 31, 1965; (2) Dimensions of the cooperatives according to their characteristics; (3) Evolution of the cooperative movement between 1955 and 1965; (4) Operations of the cooperative movement as of Dec. 31, 1965.

- IB.1b-9. HILL, Polly. "Hidden Trade in Hausaland," Man, Vol. 4, No. 3 (1969).

This article is mainly concerned with the importance of the 'house-trade' conducted by fully-secluded women in a village in northern Katsina Emirate. It shows that although each woman sells her produce within the privacy of her husband's compound, one may yet argue that the sellers as a group, together with their customers, are the equivalent of a market-place,

especially so far as grains are concerned--a marketplace of incomparably greater importance than that which was established in the village recently. It briefly deals with some of the other economic activities of secluded women, mentioning the means by which they "coagulate" their small earnings into some investible size through membership of their "rotating credit associations". The study concludes by putting forward a little support for a hypothesis that rural market-places in parts of northern Katsina Emirate serve a relatively unimportant function in relation to the retailing of foodstuffs to the sedentary Hausa population. (1)

- IB.1b-10. HIRSCH, Anne-Rose. "The Development and Organization of Commerce in the Ivory Coast and Senegal," Pacific Viewpoint, Vol. 6, No. 2 (1965).

This article focuses on the Ivory Coast and Senegal as the most characteristic economies of West Africa because of the great effect of the production of export crops and trading structures on economic life. The author describes the natural environment of the area and the development of infrastructure, and the influence of these on the development of traditional trading and exports. Emphasis is placed on the dramatic and rapid change from colonial to modern commerce.

- IB.1b-11. IDET-CEGOS. Etudes des structures de prix et des mécanismes de la commercialisation des mils et sorghos, Tomes I-III, République de Mali, Institut d'Economie Rurale, mai 1976.

This report contains three main parts. The first presents the synthesis report. The second deals with the grain trade in Mali. This trade is characterized by a juxtaposition of the State organization, made up of the Office of Agricultural Products of Mali, the Cooperative and the High Administration, with a parallel and private trade. The authors study the organization of each of these offices and give an analysis of their present situation. They suggest some reforms and evaluate the effects of these reforms. Finally, the third section gives evaluation concerning the grain sector; overview and interpretation of statistical data, a producer survey on prices and commercial mechanisms of production, and a cereals production method.

- IB.1b-12. NICOLAS, Guy. "Processus d'approvisionnement vivrier d'une ville de savane: Maradi (Niger)," Travaux et documents de géographie tropicale, No. 7 (decembre 1972).

This study concerns staple food supply issues and problems in Maradi, the third largest city in Niger, which has a large Hausa population. As this city has traditionally always been a crossroads and thus important for commerce, this work allows an understanding of some characteristics of this society where the institutions of "city" and "market" are ancient.

- IB.1b-13. RAYNAUT, Claude. "La circulation marchande des céréales et les mécanismes d'inégalité économique-le cas d'une communauté villageoise Haussa," Cahiers des Centres d'Etudes et de Recherches Ethnologiques (Université de Bordeaux), No. 2 (1973).

As the conclusion of a survey taken in a small village, this study presents concretely "the transaction networks indigenous to the village and exogenous to the markets network." Above all, it gives the socio-economic framework of the village: the classic case of the development of a modern-type economy due to increasingly strong pressure by trade on the "traditional" sector. The consequence of it is that "food grain trade does not imply the existence a surplus" but on the contrary the peasants' economic vulnerability (fiscal and social pressure). Therefore, the origin of increasing social inequalities can be explained, as well as the development of an agricultural wage-earning class which is still temporary but can become permanent.

- IB.1b-14. SKINNER, Elliott P. "Trade and Markets among the Mossi People." Markets in Africa. Edited by P. Bohannon and G. Dalton. Northwestern University Press, 1962.

There is a constant flow of goods between the Mossi country and the Ivory Coast and Ghana, much of which is conducted on an informal basis. The market features discussed include the segregation of certain merchants into a particular place depending on the goods and the seller's place of origin, and attitudes toward profits. The market as the center of Mossi social life is stressed.

IB.1b-15. SOCIETE D'ETUDES POUR LE DEVELOPPEMENT ECONOMIQUE ET SOCIAL (SEDES). Les produits vivriers au Niger: Production et commercialisation, étude générale, les mils et sorghos. Paris, 1963.

This is the first study to consider production and marketing of millet/sorghum in Niger on a national basis. However, this empirical study did not take into consideration transactions outside of the market, so important in the rural world, therefore calling into question several of the conclusions.

c. Price Policy Studies

- IB.1c-1. ACKELS, Alden A.; Anderson, Donald E.; et al. A Study and Plan for Regional Grain Stabilization in West Africa, Report No. 21, Food and Feed Grain Institute, Kansas State University, 1970.

This is a study for regional grain supply and price stabilization in West Africa with the end goal of attaining regional self-sufficiency in food grain supplies. Studies were made in Mali, Upper Volta and Senegal. Conclusions call for technical aid for successful economic development and the establishment of a regional implementation of marketing activities.

- IB.1c-2. BLANDFORD, David. "The Analysis of Buffer Fund Price Stabilization by Export Monopoly Marketing Agencies in Developing Countries," Journal of Agricultural Economics (Ashford, Kent), Vol. 25 (Jan. 1974).

This paper attempts to develop a formal analytical framework to represent pricing policy and to apply it to the particular case of the marketing of groundnuts in the Gambia. An estimate of the operating level of stabilization is derived and, through a simulation experiment, the usefulness of the model for application of policy decisions is investigated. (1)

- IB.1c-3. SHAPIRO, Kenneth. "Grain Price Stabilization Program in Upper Volta," D.A.P. Team Report, November 1974.

2. Other West African Countries

a. General Works on Agricultural Development

- IB.2a-1. ABALU, George. "A Note on Crop Mixtures Under Indigenous Conditions in Northern Nigeria," Journal of Development Studies (London), Vol. 12 (April 1976).

This note contends that crop mixtures are employed by farmers primarily as risk precautions and that the immediate objective of farmers is not only one of profit maximization, but also of stability of income. The results of an income stability model employed to verify this hypothesis seem to agree relatively well with existing information.

- IB.2a-2. ADESIMI, Amos Adedoyin. The Prospects and Potentials of Groundnut Cultivation as a Means of Enhancing Economic Opportunities in the Rural Economy of Northern Nigeria. Ph.D. Dissertation, University of Wisconsin, 1973.

This study attempts to examine the problems of the groundnut economy of Northern Nigeria with a view to identifying the potentials and prospects of using the groundnut industry to enhance the income of rural people in the area. Most of the relevant institutional arrangements relating to groundnut cultivation and marketing, together with the various government policies and programs are analyzed. The range of economic opportunities open to the rural people is briefly analyzed along with an evaluation of the world markets prospects for the crop. (3)

- IB.2a-3. AGENCY FOR INTERNATIONAL DEVELOPMENT. Entente Food Production Project, Project Paper Outline, 1975 (?).

The aim of this project is to finance local and foreign exchange costs of a regional food production management team and of small farmer food production projects in the Entente states. The Entente member governments will be the recipients of funds for the purpose of increasing the quantity and efficiency of food purchased by small farmers. The need for these funds

to offset the trend of declining per capita food production is demonstrated in the paper, as is the capacity of the Entente fund and its member nations to implement the project. (1)

- IB.2a-4. AYLNER, Richard G., West Africa Farming. Bonbury, England: Aylmer, 1976.

- IB.2a-5. CRAUFURD, R.Q. and Carpenter, A.J. "Partial Mechanization of Rice in Sierra Leone," World Crops, March 1968.

The authors review the production of rice in the Boli areas of Sierra Leone. They describe the geographic, climatic, and soil characteristics of the boli. Following these descriptions is a discussion of the nature of the inputs used in rice production. The article ends with a survey of such issues as alternative varieties, weed problems, irrigation and intensification.

- IB.2a-6. CURRENS, Gerald E. The Loma Farmer: A Socio-economic Study of Rice Cultivation and the Use of Resources. Ph.D. Dissertation, University of Oregon, 1974.

This study develops applicable data for the consideration of several issues: (1) the openness of subsistence farmers to innovations and the factors which influence them, (2) the response of subsistence farmers to economic incentives, (3) the feasibility of an increase or transformation of subsistence production into production for the market and the relation of this to risk and uncertainty.

- IB.2a-7. DUBOIS, Victor D. "Former French Black Africa and France: Part I. The Continuing Ties; Part II. Toward Disengagement," American University Fieldstaff Reports, West Africa Series, Vol. XVI, Nos. 2 & 3 (May-June 1975).

Part I examines the extent to which French influence in the former territories has changed since independence. The author believes that France has maintained and likely increased these ties due to several causes:

close personal relations between peoples, economic and military aid and a vigorous campaign of cultural expansion which France has pursued in Africa. Part II examines the greater national sovereignty being expressed by African leaders. Among the problems the author discusses are racism, inequality, economic exploitation and the decline of a purely African culture.

- IB.2a-8. DUE, Jean M. and Karr, Gerald L. "Strategies for Increasing Rice Production in Sierra Leone," African Studies Review (Waltham, Mass.), Vol. 16 (April 1973).

Self-sufficiency in rice production has become the central focus of the national agricultural policy as established by the government of Sierra Leone. This paper summarizes recent research related to the economics of rice production in that country and outlines four possible strategies to increase rice output, in the context of both micro and macro costs. (1)

- IB.2a-9. EICHER, Carl K. Research on Agricultural Development in Five English-Speaking Countries in West Africa. New York: The Agricultural Development Council, Inc., 1970.

The first part discusses agricultural development in the five English-speaking countries in West Africa: Gambia, Ghana, Liberia, Nigeria, and Sierra Leone. The latter part includes an inventory, classification and evaluation of recent and current research on agricultural development, a discussion of major rural development problems in West Africa in the 1970's and a discussion of priority areas of research needing attention in the 1970's. The objectives of this monograph are three-fold. The first is to present the results of an intensive interdisciplinary study of Nigerian rural development strategies for the 1969-85 period and to draw from this study some implications of the nature of the agricultural development process in West Africa in general and in each of the five English-speaking countries in West Africa over the 1950-69 period. The third is to identify the research gaps and priority research problem areas in the 1970's in order that the interested researchers can avoid duplication and can focus on problems of high priority to West African Nations. (1)

- IB.2a-10. EIJNATTEN, C.L.M. Van. Toward the Improvement of Maize in Nigeria. Department of Horticulture, Agricultural University, Wageningen, Netherlands, 1965.

This article discusses the rapidly growing production of maize in Nigeria. Characteristics of various varieties of maize are discussed, as well as some of the insects and diseases which affect them. The information was used as a basis for the Nigerian maize breeding program. (1)

- IB.2a-11. IGWEBUIKE, Raphael Umera. Barriers to Agricultural Development: A Study of the Economics of Agriculture in Abakaliki Area, Nigeria. Ph.D. Dissertation, Stanford University, 1975.

This dissertation attempts to provide some insight into traditional agriculture by determining how the farmers allocate their resources and why they allocate them the way they do. This is achieved by a linear programming analysis of agriculture in four villages in Nigeria, and by parametric analysis of some of the barriers to rapid increases in production and productivity. The analysis indicates that backward technology and seasonal labor shortages are the most inhibitive barriers to the development of agriculture in this area. Results suggest that more resources be devoted to research and dissemination of research results to farmers and that the effect of development programs on the farmer's entire well-being be taken into consideration. (3)

- IB.2a-12. KASSAM, A.H.; Kowal, J.; Dagg, M.; Harrison, M.N. "Maize in West Africa: Its Potential in Savanna Areas," World Crops, March/April 1975.

The authors analyze the environmental suitability of maize in West Africa in terms of climate and growing season. They conclude that the highest potential for the intensive production of maize for grain lies in the savanna areas and predict that the Guinea savanna areas may one day become the corn belt of West Africa.

- IB.2a-13. KUMAR, Ashkok. "Smuggling in Ghana: Its Magnitude and Economic Effects," Nigerian Journal of Economic and Social Studies (Ibadan), Vol. 15 (July 1973).

The author distinguishes various types of smuggling and analyzes the smuggling of cocoa, timber and diamonds in Ghana by many methods, including under- and over-invoicing of exports and imports.

- IB.2a-14. LEVI, John. "African Agriculture Misunderstood: Policy in Sierra Leone," Food Research Institute Studies (Stanford), Vol. 13, No. 3 (1974).

The economic mechanisms of agriculture in one African economy and the way in which policy has affected it are analyzed here. An attempt is made to draw conclusions of relevance to the whole of tropical Africa as well as more particular conclusions. The author finds that the taxation of exports has inhibited supplies to such an extent that estimated producers' income losses are much greater than the revenue obtained. The distortion of prices through the urban, manufacturing bias of African economic policy has resulted in an economic performance far inferior to what might be achieved. Anglophone countries' tax policy has amounted to a unilateral supply restriction and keeps prices high.

- IB.2a-15. MADDUX, Michael M. A Model of Senegal Agricultural Supply and Demand, Working Paper No. 3, Virginia Research Institute, 1976.

The paper presents a description of the causal relationships, in a preliminary model, of agricultural supply and demand in Senegal. The model is constructed to allow policy-makers to test the effect of various policies on specific economic and social variables before the policies are actually implemented.

- IB.2a-16. MORRIS, W. H. M. "Entente Food Crop Production," first draft, Department of Agricultural Economics, Purdue University, revised November 5, 1975.

- IB.2a-17. OLATUNBOSUN, Dupe and Olayemi, J.K. "A Review of Problem Areas in Nigeria's Food Economy," Eastern Africa Journal of Rural Development (Kampala), Vol. 6, Nos. 1 & 2 (1973).

The authors critically examine the factors which have led to Nigeria's sufficiency problems with food. The problems of food production, supply and demand are broadly examined with data from secondary sources. The authors conclude that the basic approach to improving the performance of Nigerian food production involves taking measures to raise productivity, increase the resource base, improve marketing efficiency and minimize food waste. Ten measures are considered to further these aims.

- IB.2a-18. POSNER, J.L. Rice in the Development of Ivory Coast Agriculture, Staff Paper No. 73-6, Department of Agricultural Economics, Cornell University, 1973.

The paper examines rice in the Ivory Coast from the viewpoint of several disciplines, highlighting some of the advantages of the crop. Within the realm of development, the most outstanding advantages of rice are its responsiveness to capital and labor inputs while, at the same time, being able to flourish under completely traditional management practices.

- IB.2a-19. RIVIERE, Claude. "Les Coopératives Agricoles en Guinée," Revue Française d'Etudes Politiques Africaines, Vol. 59 (1970)

The obstacles to the development of the cooperative movement are many, and human ones are the most important and most difficult to overcome. The principal problems, according to this author, are: (a) lack of cooperative education of farmers and managers, (b) the improvised character of the establishment of cooperatives, (c) relative ignorance of principles ruling agricultural cooperation, (d) difficulties of peasants in adapting to cooperative farming and (e) environmental (or conceptual) and motivational differences existing between lineage collectivism and modern cooperative systems. In presenting more advantages than collective farming, the traditional collectivity relies on certain parasitic elements which are incompatible with agricultural cooperatives, themselves created in a general perspective of socialist transformation. Therefore, all initiatives to implant modern collective farming should take into account the traditional family and social structures and so stress that in peasant education.

- IB.2a-20. ROBINSON, K.L. "The Economics of Increasing Staple Food Production in West Africa," ITTA Weekly Seminar Paper, May 31, 1974.

The author concentrates on the economics of increasing staple food production on existing farms mainly in the forest zone. He examines the current availability of starchy staples, future food needs and associated input requirements, the competitive positions of different crops and the attitude of farmers towards expansion of production and investment in yield-increasing technology.

- IB.2a-21. STRYCKER, Dirck and Humphreys, Charles. The Political Economy of Rice in West Africa: Report on Mission to Senegal. West Africa Rice Development Association and Food Research Institute (Stanford), June 1976

The report is designed primarily for use by members of the research team who were to reside in Senegal for the duration of field research. An appendix offers a tentative beginning to the preliminary policy paper.

- IB.2a-22. UNITED NATIONS, Food and Agriculture Organization. "Rice Production Trends in Africa South of the Sahara," FAO Monthly Bulletin of Agricultural Economics and Statistics, Vol. 15 (Oct. 1966).

Because of recent programs and advances in technology, this article projects good long-term prospects for an expansion of rice output in sub-saharan Africa. Several impediments to increased production are discussed. From the author's point of view, it is difficult but imperative to strike a balance between the factors favoring an increase in the relative importance of rice in Africa and the obstacles to expansion.

- IB.2a-23. WEITZ-Hettelsater Engineers. A Grain Stabilization Study of the Entente States and Ghana, for Porter International Co. (Washington D.C.) and Entente Council Fund. Kansas City, Mo.: March 1969.

The major objective of this study was to evolve a practical plan for the storage and distribution, reduce losses, improve quality and stabilize prices. The major emphasis is placed upon improving and supplementing existing institutions. Suggestions are made to centralize the managerial function and create viable regional organizations. The report includes historical and current facts relating to the grain economy of the area and recommended programs for the future.

- IB.2a-24. WELSCH, Delane E. "Response to Economic Incentive by Abakaliki Rice Farmers in Eastern Nigeria," Journal of Farm Economics (Menasha, Wisc.), Vol. 47 (Nov. 1965).

The study reported in this article dealt with the introduction and subsequent expansion of a new crop, rice, into the Abakaliki area of Eastern Nigeria, and with the economic response of the small farmers in the area. The results of the study are consistent with the hypothesis that these farmers respond to economic incentives by allocating very efficiently the factors of production at their disposal, and with the hypothesis that their investment decisions tend to maximize returns to scarce resources. The economics of rotation explains the rapid adoption and expansion of rice production. It appears, however, that the initial development impact of rice is exhausted, and only the introduction of a bundle of new, profitable factors of production will give further impetus to development. (2)

b. Marketing Studies

- IB.2b-1. ANSCHEL, Kurt R. "Agricultural Marketing in Nigeria and Ghana," Development Digest, Vol. 8, No. 4 (October 1970).

Agricultural markets in these countries are highly functional social institutions. They have grown to meet the expanded demand, but some problems are apparent since urbanization is proceeding quickly. Major changes should be considered, especially in the credit and input markets, in the transportation system and in land tenure practices. (4)

- IB.2b-2. ARDITI, Claude. Les Circuits de Commercialisation des Produits du Secteur Primaire en Afrique de l'Ouest: Analyse Bibliographique, Ministère de la Coopération, Direction des Programmes, Sous-Direction des Etudes Economiques et de la Planification, Paris, mars 1975.

This bibliography analyzes staple food crop production and marketing in West Africa, that area's socio-economic history and the commercial situation in its socio-political context. The work includes analyses of thirty studies, primarily on West Africa. The author emphasizes a historical perspective so that one can "understand the past and the future of the trading communities of this region of the world."

- IB.2b-3. BAUER, P.T. West Africa Trade. London: Routledge and Kegan Paul, Ltd., 1963.

Beginning with a discussion of the general aspects of West African economies and the role of trade, this classic study analyzes the import trade, monopolistic and competitive influences in external trade, the export trade, marketing boards and internal trade. Country case studies include Sierra Leone, the Gambia, Nigeria and the Gold Coast.

IB.2b-4. BONNEFONDS, Atsé Leon. "La Transformation du Commerce de Traite en Côte d'Ivoire depuis la Dernière Guerre Mondiale et l'Indépendence," Cahiers d'Outre Mer, Vol. 21 (1968).

The Ivoirian economic system, like those of all of Africa, has been and is still dominated by commercial activities. Historically, these activities have been in foreign hands. During the entire colonial period, trade was essentially the export of raw materials, draining the output of the country (rubber, coffee, cocoa, bananas, etc.). After the Second World War, the leaders of traditional commerce, aided or approved by the political authorities began to change commercial policy. The change consisted of specialization by the European commercial companies in sectors connected with the evolution of domestic consumption and the giving up of other aspects to Lebanese-Syrian and Ivoirian merchants. With the help of local societies, the commercial companies set up a distribution network of capital and imported goods. The situation for the peasant consumer has not changed; he is still in the hands of the trader-creditor who purchases his crop.

IB.2b-5. CHECCHI AND COMPANY. Food Grain Production and Marketing in West Africa. AID, Final Report of a Special Study Team, Washington, D.C., 1970.

The report is a "short but comprehensive study" of the growing food grain deficit in West Africa. Senegal, Mali, Upper Volta and Niger are the countries of reference. Traditional food grains (millet, sorghum and corn) are emphasized. The authors consider the basic agricultural problems of the region, provide individual country reviews, and offer recommendations for dealing with the problem of food grain deficit.

IB.2b-6. FABIYI, Yakuo. "Structural Transformation of Agricultural Production Systems in Western Nigeria: the Role of Land Tenure Institutions," Quarterly Journal of Administration (Ile-Ife), Vol. 11 (April 1976).

This study proposes an alternative system of organizing agricultural production and spells out the implication of this system for the state's economy. (5)

- IB.2b-7. GILBERT, Elon Hamilton. Marketing of Staple Foods in Northern Nigeria: A Study of the Staple Food Marketing Systems Serving Kano City. Ph.D. Dissertation, Stanford University, 1969.

The major focus of this research was an examination of the structure and performance of the marketing systems for four major staple foods. The study was concerned with the extent to which these systems have facilitated the transition from a subsistence to an increasingly market-oriented economy. Because of a lack of published data, emphasis was placed on collection of information in the field. This provided a basis for a general description of marketing systems, discussion of various types of market personnel and an examination of price relationships. The research revealed a variety of marketing arrangements which evolved in response to environmental factors reflecting various stages in the transition from subsistence to market economy. (3)

- IB.2b-8. HELLEINER, Gerald K. "The Fiscal Role of the Marketing Boards in Nigerian Economic Development, 1947-1961," Economic Journal, Vol. 74, No. 295 (September 1964).

Helleiner reviews the accomplishments of marketing boards as revenue collectors. He recommends changes that could improve this function and attain a better marketing system. (4)

- IB.2b-9. -----, "Marketing Boards and Domestic Stabilization in Nigeria," Review of Economics and Statistics, Vol. 48, No. 1 (Feb. 1966).

"The record of the Nigerian marketing boards with respect to their pursuit of domestic stabilization is a mixed one -- much better with respect to price stabilization than with respect to income stabilization and, in the former instance, better with respect to intra-seasonal than inter-seasonal prices. These results lend weight to the view that Nigerian marketing boards are better defended in their role as (successful) earners of tax revenues than in their role as stabilizing authorities." (1)

- IB.2b-10. HILL, Polly. "Notes on Traditional Market Authority and Market Periodicity in West Africa," Journal of African History, Vol. VII, No. 2 (1966).

These notes on traditional market authority and market periodicity in West Africa are intended to draw attention to the neglect of a fascinating historico-anthropological field. They are concerned merely with markets as places, not as mechanisms. Markets, far from being outmoded institutions, are bound to increase in importance during the next few decades, especially in the expanding cities of the south. The author specifically discusses market authorities, market periodicity and geography, and market taxes. (1)

- IB.2b-11. HODDER, B.W. and Ukwu, N.I. Markets in West Africa: Studies of Markets and Trade among the Yoruba and Ibo. Ibadan: Ibadan University Press, 1969.

Both of the studies in this book were written by geographers and refer to market institutions in contiguous parts of West Africa. They illustrate widely differing approaches. While the Yoruba study is chiefly concerned with the analysis of markets as institutions, the Ibo study pays particular attention to markets as central places and analyzes the characteristics and processes of marketing and trade associated with these institutions. (1)

- IB.2b-12. INSTITUT D'ETUDE DU DEVELOPPEMENT ECONOMIQUE ET SOCIAL (I.E.D.E.S.). L'Approvisionnement des Villes dans les Etats Africains et Malagaches (horizon 1985) Tiers-Monde (Paris), Vol. XIII, No. 67 (juillet/septembre 1976).

The demographic growth and increasing rate of urbanization in Africa will raise important issues in the near future about the supplying of food to cities. The French Department of Foreign Affairs set up a project of prospective studies on the supplying of towns in the Madagascan and African countries, with projection to 1985. IEDES is responsible for the study of desirable and possible staple foods in five urban centers (Abidjan, Bouaké, Bamako, Lomé and Ouagadougou), according to the standard nutritional requirements, and for the analytic procedure of food elasticities. (1)

- IB.2b-13. LAWSON, Rowena M. "The Markets for Food in Ghana." Readings in the Applied Economics of Africa, Vol. I. Edited by E.H. Whethan and J.I. Currie. Cambridge: Cambridge University Press, 1967.

Some of the major points in this article are:
(1) the long distribution chain in Ghana is a rational use of existing economic resources; (2) prevent consumer exploitation by either preventing shortages or taxing profits; (3) price control without rationing leads to abuse; (4) there should be as few opportunities as possible for non-productive people to be in positions of control over productive sectors; (5) prevent future shortages by increasing productivity of foodstuffs, improving transport and improving marketing facilities.

- IB.2b-14. MATLON, Peter Joseph. Size Distribution, Structure, and Determinants of Personal Income in the North of Nigeria. Ph.D. Dissertation, Cornell University, May 1977.

- IB.2b-15. MEILLASSOUX, Claude, ed. The Development of Indigenous Trade and Markets in West Africa. London: Oxford University Press, 1971.

The papers and discussions in this volume, which were presented at the Tenth International African Seminar in December, 1969, covering both French and English speaking areas, are organized with reference to the following main themes: precolonial trade and politics; trading areas and market centers; interrelations of trade and social organizations; long distance trade and the development of specialized trading groups; the adaptation of African economies and trade to 19th century changes in the European markets on the coast; the impact of modern capitalism on African trade; comparative review of different components of African trade. In studying problems connected with trade and markets, the Seminar was in line with a new development in social anthropology, the dual approach, historical and interrelational, with detailed examination of the effects of trade on all components of society.

- IB.2b-16. MIRACLE, Marvin P. "Market Structure in Commodity Trade and Capital Accumulation in West Africa." Markets and Marketing in Developing Countries. Edited by R. Moyer and S. Hollander. Homewood, Ill.: R.D. Irwin, Inc., 1968.

The author draws upon West African examples to show the ways in which control of marketing processes and control of capital may be related to each other and thus lead to profoundly anticompetitive results. He argues that even markets with large numbers of buyers and sellers may be subject to cartelization based upon the power inherent in the cartel leader's capital resources. The marketing process, in turn, is often the best available source for capital accumulation in developing countries. These considerations lead to a discussion of policies designed to promote freedom of market entry and increased access to capital accumulation opportunities. (2)

- IB.2b-17. -----, "Market Structures in the Tribal Economies of West Africa." Agricultural Cooperatives and Markets in Developing Countries. Edited by Kurt R. Anshel, et al. New York: Praeger, 1969

Research into market structures in West Africa is difficult due to suspicion, lack of writings and lack of resources to collect accurate statistics. The author finds that in factor markets, labor seems fairly efficient, communal tenure still dominates and capital markets are highly oligopolistic. For product markets, there is pure competition among farmers (no one can singly affect prices) and traders are also very interdependent. The prevalence of cartel activities is discussed in detail.

- IB.2b-18. ONAKOMAIYA, Samuel Onanuga. The Spatial Structure of Internal Trade in Delicacy Foodstuffs in Nigeria. Ph.D. Dissertation, University of Wisconsin, 1970.

The identification of the spatial structure of internal trade in five delicacy foodstuffs in Nigeria was the object of this study. Ecological differences between northern and southern parts of the country coupled with the pattern of urbanization, population migration and dietary preferences form the bases for the spatial pattern of long-distance trade in these commodities. Seven different functions and four classes of trading participants are distinguished. On the theoretical plane, the study sought to test three hypotheses of internal trade theory in less developed countries with particular attention to processes of bulking and bulk-breaking and the number, size and distribution of individual trading strands. The study highlights the significance of inter-urban trading flows and participates in identifying the hierarchical order of market centers (2)

- IB.2b-19 REUSSE, Eberhard and Lawson, Rowena M. "The Effect of Economic Development on Metropolitan Food Marketing: A Case Study of Food Retail Trade in Accra," East African Journal of Rural Development (Kampala), Vol. 2, No. 1 (1969).

This study concludes that public markets play a significant role in Accra; 74% of a family's food budget is spent there. There is growing trade by hawkers and street side sellers, sales of prepared foods are high and supermarket trade has developed rapidly. The reasons for which marketing services are better in the urban areas than in the rural centers are discussed.

- IB.2b-20. RIVIERE, Claude. "Les Mécanismes de Constitution d'une Bourgeoisie Commercante en République de Guinée," Cahiers d'Etudes Africaines, Vol. 4 (1971).

The economic rise of traders was made possible not despite but because of a premature socialist context including vestiges of colonialist/capitalist economies; and in particular, because of the africanisation of managers, the monetary inconvertibility, the traditional importance of Lebanese and Syrian traders, the coherent working of governmental trade and the weakness of the organizations of economic control. Even though the government knew how to avoid at the right time the formation of this trading class as a political power, nevertheless this latter still exerts an indirect political power in the way they can exert pressure on governmental action. However, if for a long time the development of a national trading bourgeoisie was impeded, it appears now that the highest economic classes have shown enough initiative in accelerating the amassing of wealth that they can be considered to have a strong bourgeois tendency.

- IB.2b-21. WELSCH, Delane E. "Rice Marketing in Eastern Nigeria," Food Research Institute Studies (Stanford), Vol. 6, No. 3 (1966).

This paper deals with the complete rice marketing system in Nigeria. The structure of marketing is described and its potential for contributing to increased production and economic development in general is examined. (1)

- IB.2b-22. WHITNEY, Anita. Marketing of Staple Foods in Eastern Nigeria, Report No. 114, Department of Agricultural Economics, Michigan State University, 1968.

The objectives of the study are: (1) to describe the organization of the present marketing system for yams, cassava, rice and maize; (2) to examine the forces affecting the operation of the system; (3) to evaluate the performance of the system in order to identify inefficiencies; and (4) to suggest alternative arrangements to improve performance at various stages in the marketing system. (1)

- IB.2b-23. WILCOCK, David C. "Political Economy of Agricultural Marketing in West Africa," Working Paper No. 16, Department of Agricultural Economics, Michigan State University, September 1976.

c. Price Policy Studies

- IB.2c-1. ADAMU, S.O. "On the Stabilization Policy of the Marketing Boards in Nigeria, 1948-68," Nigerian Journal of Economic & Social Studies (Ibadan), Vol. 12 (Nov. 1970).

In this paper, stabilization is defined as any scheme designed to even out temporary (even violent) fluctuations in either product price or money income of the producer.

- IB.2c-2. JONES, William O. "The Structure of Staple Food Marketing in Nigeria as Revealed by Price Analysis," Food Research Institute Studies (Stanford), Vol. 8, No. 2 (1968).

The author attempts to approach the study of market organizations through price analysis to reveal salient features of the organization of food marketing in Nigeria. Two quite different models are presented to explain the behavior of wholesalers of staple food-stuffs.

- IB.2c-3. KOLAWOLE, M.I. "The Reform of Commodity Marketing Board in Nigeria: An Analysis of New Producer Price Policy," The Developing Economies (Tokyo), Vol. XII, No. 2 (June 1974).

The paper examines the reform of the marketing board system in Nigeria as to nature and causes, and the implications of the new producer price policy. The author warns that the policy may worsen the food situation due to inadequate attention, increase the income gap between export crop and food crop producers, and increase the lopsidedness of the economy by increasing the dependence on export crop production.

IB.2c-4. OLAYIDE, S.O.; Ogunfowora, O.; Essang, S.M. "Effects of Marketing Board Pricing Policies on the Nigerian Economy; A Systems Simulation Experiment," Journal of Agricultural Economics (Ashford, Kent), Vol. 25 (September 1974).

After reviewing the literature on various aspects of Marketing Boards' operations, this paper analyses, with the aid of a simulation model, the effects of the Boards' pricing policies on the Nigerian economy. The results indicate that these policies, which depress producer prices by withholding from the farmers a substantial proportion of export revenues as 'surpluses', have reduced the growth potential of the Nigerian economy. A number of measures aimed at raising producer prices are suggested in the paper. These include, among others, the abandonment of a pricing strategy geared towards the accumulation of 'surpluses', the elimination of licensed buying agents and their substitution with marketing co-operatives the abolition of export and sales taxes on agricultural products and the centralising of producer price fixing authority in the federal government. (2)

3. Non-West African Countries and Africa in General

a. General Works on Agricultural Development

- IB.3a-1. AMANN, V.F., ed. Agricultural Policy Issues in East Africa. Kampala: Makerere University Press, 1973.

This book consists of seventeen papers which were presented at the East African Agricultural Economics Society Conference in June 1971. The papers are divided into four subject areas: general policy issues, crop policy issues and strategies, livestock policy in Uganda, production and marketing policy issues and other policy issues.

- IB.3a-2. BELSHAW, D.G.R. "Crop Production Data in Uganda: A Statistical Evaluation of International Agricultural Census Methodology," Development Studies Discussion Paper 7, University of East Anglia, November, 1975.

The paper presents a statistical evaluation of the three major sources of [crop area, yield and production] data in Uganda and concludes that the data examined are unsuitable for agricultural planning purposes. (1)

- IB.3a-3. DUMONT, Rene. "Le Mouvement Coopératif Africain: Plus d'Échecs que de Réussites," Revue Française d'Études Politiques Africaines, Vol. 59 (1970).

The author compares the origins of the cooperative movement in Denmark and in Africa. In Denmark, cooperatives developed spontaneously, relying on the widespread availability of adult education. Conditions favorable to the success of African cooperative movements do not exist, due to the poor standards of primary education. Thus, it was necessary for the government to take the initiative rather than the peasants. The character of the cooperative movement was changed; it was considered by the peasants as a creation of the government and did not command allegiance. To help the peasants,

the government granted loans, subsidies and sometimes exorbitant monopolies. Through several examples, drawn from experiments in Egypt, Tanzania, Zambia, Trinidad and Tobago, Mali and Senegal, the author shows that in most cases, the results were disappointing for many reasons: clumsiness of administration, interference by politicians, lack of education and training of the peasants which hinders their participation in a system which they feel is imposed by external authorities.

- IB.3a-4. FORD FOUNDATION. French Aid in African and Malagasy States, 1970.

This report was meant to serve as a basis for considering future assistance to Francophone West Africa. The report determines that existing moral, economic cultural and political considerations ensure the continuation of French aid to 13 countries, previously French colonies. The report covers: principal economic and social characteristics of the countries; cooperation mechanisms between France and the countries; French public and private aid; monetary and trade relationships in the Franc zone; assessment of the French aid program; and guidelines for additional assistance from non-French sources.

- IB.3a-5. HUNTER, Guy. "Agricultural Administration and Institutes," Food Research Institute Studies (Stanford). Vol. 12, No. 3 (1973).

The paper analyzes the nature of administrative difficulties in agricultural development and attempts to suggest a framework to make possible a more rational and coherent approach to the problem. The author's conclusions call for more local policy making and control and for more accurate statistical and evaluative systems.

- IB.3a-6. KANEDA, Hiromitsu and Johnston, Bruce F. "Urban Food Expenditure Patterns in Tropical Africa," Food Research and Institute Studies (Stanford), Vol. II (1961).

The present study concentrates on the analysis of food expenditure patterns, giving some attention also to the relative importance of major foods or food groups according to their contribution of

food calories. The sources of data used for the study are summarized and some of the limitations of the survey data are mentioned. In section II the relationship between food expenditure and total income--the so-called Engelian relationship--is examined. The position of cereals, starchy roots, and plantains in the expenditure patterns of urban households is considered in section III. Section IV focuses on regional variations in food expenditure patterns and also examines the evidence available concerning the structure or hierarchy of food prices and gives some indication of the way in which patterns of food consumption measured in calories differ from the pattern of food expenditure. The final section offers some tentative observations concerning prospective changes in food consumption that are likely to be associated with economic development. (1)

- IB.3a-7. LELE, Uma. The Design of Rural Development: Lessons from Africa. Johns Hopkins University Press for World Bank, 1975 .

The book summarizes the performance of rural development programs with a view toward drawing lessons for the design and implementation of future programs. In presenting a view of rural development derived from a catalog of insights, it is assumed that in the future one of the objectives of rural development will be to reach a mass of the low-income rural population.

- IB.3a-8. LIVINGSTONE, Ian. "Production Price and Marketing Policy for Staple Foodstuffs in Tanzania," Economic Research Bureau, University of Dar Es Salaam, 1971.

Government pricing policy in Tanzania has had weak foundations because of the lack of basic analysis of production goals of each commodity, storage options, contingencies and possibilities of export. Attempts to recoup financial losses from maize exports have had a destabilizing effect. Inventory policy should be geared to the "disaster" type of shortage rather than normal buffer stock operation. The export market for maize will provide profitable opportunities for export only

irregularly. Production should be planned with the domestic market only in mind. The author suggests that storing maize may be more economic than importing as needed. The maintenance of an excessively high consumer price has restricted consumption. An intelligence system for providing region-by-region reports on the progress of maize, paddy and other crops should be established.

- IB.3a-9. LOFCHIE, M.F. "Political and Economic Origins of African Hunger," Journal of Modern African Studies (London), Vol. 13 (Dec. 1975).

Africa's problems of food are not reducible to a matter of rainfall levels. They have to do fundamentally with the dualistic structure of Africa's agricultural economies. Decades of over-concentration on export cultivation have left the continent's food producing regions badly undersupplied with infrastructure, deprived of government services, desperately short of capital for development and technologically pre-feudal. As a result, any attempt to improve Africa's food-producing capability will need to concern itself with a fundamental structural transformation to the rural economy. (5)

- IB.3a-10. MEDANI, A.I. "Elasticity of the Marketable Surplus of a Subsistence Crop at Various Stages of Development," Economic Development and Cultural Change, Vol. 23 (April 1975).

This article contributes to the general knowledge of the price elasticity of the marketable surplus of a subsistence crop. Direct estimates of elasticity are derived for the Sudanese staple food crop using a simple dynamic linear model. (5)

- IB.3a-11. MIRACLE, Marvin P. Maize in Tropical Africa. Madison: University of Wisconsin Press, 1966.

This study describes geographical variation in the importance of maize as a food crop, examines the reasons for these variations and considers the future prospects for maize in African agriculture. (1)

- IB.3a-12. MONDOT-BERNARD, Jacqueline M. "Attempted Analysis of the Food Situation in Africa - Essai d'Analyse de la Situation Alimentaire en Afrique," Paris: OECD Development Center, May 1974.

OECD study to evaluate the food situation in African countries (specifically Burundi, Cameroon, Mali) on the basis of existing material in order to determine diets, their effect on birthrate and infant mortality and to throw light on the food production situation. An analysis of food policy in development schemes was a further objective. Conclusion: insignificant variation in the national average for the best placed countries - worsening situation in countries where agricultural production is at mercy of the weather. Immediate and long term action is called for.

- IB.3a-13. NEUMARK, S.D. "Some Economic Development Problems of African Agriculture," Journal of Farm Economics, Vol. 41 (February 1959).

One of the most urgent needs in African development is a link between the subsistence and the more economically advanced sectors of the economy. Marketing and transportation facilities comprise this link. Neumark cautions that capital spent on the technical improvement of production activities may be wasted unless marketing and transportation facilities are also improved. (4)

- IB.3a-14. RUTHENBERG, Hans. African Agricultural Production Policy in Kenya, 1952-65. Berlin: Springer-Verlag, 1966.

The author discusses the four stages which he hypothesizes in the evolution of Kenyan agricultural development policies. He then provides cost-benefit analyses for the different approaches taken in that evolutionary process. Among the analyses is included agricultural extension and administration, small-holder tea development, grazing schemes, etc. There is also a discussion of changes since independence and of future aspects of production development policy.

- IB.3a-15. WATERS, Alan Rufus. "Understanding African Agriculture and its Potential for Change," The Journal of Modern African Studies, Vol. 12, No. 1 (1974).

The article questions "the accuracy and relevance of existing data about the small-holder sector in African agriculture." It is asserted that "the small scale farmer in Africa knows his environment, his resources, and his own locality better than anyone else" can at present, and that he acts rationally to take advantage of this knowledge--furthermore, that short of altering his surroundings or providing him with more assets, we cannot hope to improve his productivity. Lastly, Waters suggests a tentative method by which to obtain more reliable information (1)

- IB.3a-16. XXX. "Le Problème du Riz a Madagascar," Revue Française d'Etudes Politiques Africaines (Paris), No. 97 (Jan. 1974).

Rice cultivation involves more than 70% of the employed population of Madagascar and it is the predominant staple food crop. A shortage has resulted, mainly for two reasons: increasingly inadequate production, because production has failed to keep up with population increases, and a defective domestic distribution system. Since the early 1960's, the government has intervened but efforts and investments have failed to give the desired results, partly because of a lack of unity and rational planning. This is why a development plan has been presented, based on actions both within agriculture (emphasizing collaboration with peasants, growth of cultivated acreage, diminution of losses, centralization of decisions) and outside (improvement of communication networks, rationalization of the harvest and distribution system, "Madagascarization" of key sectors of the economy). This plan relies heavily on changes in peasant attitudes to facilitate its actions.

IB.3a-17. YOUNG, M. Crawford. "Agricultural Policy in Uganda: Capability and Choice." The State of the Nations: Constraints on Development in Independent Africa. edited by M.F. Lofchie. Berkeley: University of California Press, 1971.

Coffee and cotton have been the mainstays of Ugandan development. Although steel and oil production are more attractive, they may be beyond the economic capabilities of the country. The article summarizes the central aspects of post-independence agricultural policy, considers the political environment within which it has occurred, analyzes the resources of the Ugandan government in policy implementation and suggests possible relationships between systems capabilities and policy choices.

b. Marketing Studies

- IB.3b-1. ALVIS, Vance Q. and Temu, Peter E. "Marketing selected staple foodstuffs in Kenya," Stanford Research Institute for AID, Menlo Park, California, 1968.

This research project was designed to determine the extent to which existing market systems in Kenya afford an efficient and low cost outlet for staple food products and to identify inefficiencies and their causes, in order to provide a firmer basis for formulating policies for reducing these inefficiencies. Conclusions involve market information, Marketing Board effectiveness and size of farms.

- IB.3b-2. BERG, Elliot J. "Socialist Ideology and Marketing Policy in Africa." Markets and Marketing in Developing Economies. Edited by R. Moyer and S. Hollander. Homewood, Ill.: Richard D. Irwin, 1968.

This article describes African socialist ideology and common underlying economic attitudes and preconceptions. While such ideology is an influential force in many developing-country governments in Africa, notably with regard to marketing policy, the author argues that the lack of trained personnel, the difficulty of centralized decision-making and other cultural and political factors make government-controlled marketing an inefficient and difficult undertaking. Along with the summary on the unsuitability of the socialist model, the author documents his case with examples from Guinea and Tanzania.

- IB.3b-3. BOHANNAN, Paul and Dalton, George, eds. Markets in Africa. Evanston, Ill.: Northwestern University Press, 1962.

This book is a collection of articles referring to all the regions of Africa, aiming to examine the economic aspects of the existing markets, as well as other aspects (sociological, anthropological, etc.).
(4)

- IB.3b-4: BROWN, C.P. "Marketing of Food Crops in Blantyre, Malawi," African Social Research (Lusaka), Vol. 12 (December 1971).

This paper relates results of a study of the marketing of food crops in and around Greater Blantyre, Malawi. During the dry season of 1969 and the growing seasons of 1969-70, over 1,400 sellers were approached concerning the marketing functions they performed. Two seasonal surveys were used for the analysis of changes in the pattern of marketing between seasons. Over half the respondents were farmers, the balance primarily being retailers. The proportion of middlemen found was negligible, and few retailers were found in rural markets. Results suggest that the daily income of farmers selling food crops in Blantyre and rural towns is similar. Also discussed are relationships between retailers and farmers, credit, transport and distribution of food production. (2)

- IB.3b-5: FARCY, Henri de. "Freinage à la croissance: Attitudes africaines en face des problèmes de commercialisation des produits agricoles," Tiers-Monde (Paris), Vol. 8 (jan-mars 1967).

This study of african attitudes towards problems of marketing agricultural products sees the lack of "cadres commerçants" as the main problem of marketing.

- IB.3b-6. HELLEINER, G.K. "Agricultural Marketing in Tanzania-Policies and Problems," E.R.B. Paper 68.14; Economic Research Bureau, University of Dar Es Salaam, 1968.

The author discusses the decentralization and lack of coherent objectives in marketing policy in Tanzania. He believes that improvements in the present system could be made by strengthening the skills of the cooperative movement, improving farmer understanding of the cooperative's role, and increasing protection from abuses against farmers by cooperative officials.

- IB.3b-7. HOLMBERG, Johan. "Grain Marketing and Land Reform in Ethiopia," Research Report No. 41, Scandinavian Institute of African Studies, Uppsala, 1977.

This article describes the changes in marketing and pricing of food grains which occurred in 1976 after the important Ethiopian land reform.

- IB.3b-8. JONES, William O. "Agricultural Marketing Policies for the Drylands of Africa," presented at the International Symposium on Rainfed Agriculture in Semi-Arid Regions, University of California (Riverside), April 1977.

The purpose of this paper is to suggest some guidelines for the development of agricultural marketing systems appropriate to the drylands of Africa. The characteristics of dry land agriculture are surveyed, the functions of a marketing system and measures of performance are described, and the effects of government policies are discussed.

- IB.3b-9. -----, "Major Questions or Allegations About the Nature of Food Marketing in Tropical Africa," memorandum, Oct. 2, 1967.

Basic questions discussed are: excessive seasonal variations and erratic prices, overabundance of intermediaries in the market, collusion among middlemen, disorganization of markets, inadequate market capacity, government intervention and marketing structures in general.

- IB.3b-10. -----, Marketing Staple Food Crops in Tropical Africa. Ithaca: Cornell University Press, 1972.

This study emphasizes economists' and decision-makers' ignorance about the African staple food crops trade, its nature and its size. For the author, the first step is to answer some questions and to question ideas on the following themes: the organization of the staple food crops trade, the nature of African society, the structures of demand, physical and institutional infrastructures and the activities of intermediaries. The procedures used by the author for this analysis on Kenya, Nigeria and Sierra Leone consist in describing marketing networks in terms of fluctuations, exchange levels and labor movements, in order to judge the working of the system and to propose some appropriate measures for improvements.

- IB.3b-11. -----, "Measuring the Effectiveness of Agricultural Marketing in Contributing to Economic Development: Some African Examples," Food Research Institute Studies (Stanford), Vol. 9, No. 3 (1970).

The author states requirements for the performance of the marketing system if an economy is to achieve maximum productivity. He then applies these requirements to Nigeria, Sierra Leone and Kenya, concluding that the marketing systems generally have been able to adjust to the introduction of new crops, the development of urban demand and other changing conditions of supply and demand. The author then addresses some aspects of the Green Revolution and its effects upon marketing systems.

- IB.3b-12. -----, "Regional Analysis and Agricultural Marketing Research in Tropical Africa: Concepts and Experience," Food Research Institute Studies (Stanford), Vol. 13, No. 1 (1974).

The study indicates that there is a considerable difference in marketing patterns of specific commodities. There is an implication that knowing a general system of markets and their hierarchies will not necessarily enable us to describe the marketing of any one commodity. A distinction must be made between apparent change in the price per pound caused by random error in measurement and changes intentionally made by sellers, before confirming that a change in the quoted prices per price or per cup is likely to be preceded by a change in the quantity of the foodstuffs it contains.

- IB.3b-13. KINSEY, B.H. Overcoming Impediments to the Effective Marketing of Staples: A Case Study of Conflicting Objectives in Primary Marketing in Malawi. Development Studies discussion paper No. 9, University of East Anglia, Dec. 1975.

This paper is an attempt to present a brief picture of the structure of staples marketing in an agriculturally important part of Malawi, and to outline some of the conflicts among objectives established by the national marketing body and one of the major rural development projects.

- IB.3b-14.. KRIESEL, H.C.; Laurent, C.K.; Halpern, C.; Larzelere, H.E. Agricultural Marketing in Tanzania, Background Research and Policy Proposals, Michigan State University, East Lansing, Michigan, June 1970.

This study is a comprehensive analysis of the agricultural marketing system in Tanzania, characterized by strict control and intervention by the government through numerous institutions. Marketing processes are based mainly in cooperatives and statutory marketing boards for the principal agricultural commodities. Marketing margins have risen substantially, but some services have deteriorated during recent years. A critical appraisal of price policies and marketing policies is made, with specific reference to the problems faced in the single-channel marketing system. A detailed analysis of the functioning of marketing boards and cooperatives leads to a final section proposing recommendations for improving the performance of the system. (4)

- IB.3b-15. LEAKEY, C.L.A. "Factors Affecting Increased Production and Marketing of Food Crops in Uganda," Eastern Africa Journal of Rural Development (Kampala), Vol. 4, No. 2 (1971).

Agricultural extension has too often been based on assumptions that certain innovations constitute improvements when this in fact is in doubt both from technical and economic standpoints. Since, in aggregate terms, there is enough food already produced for the economic need of rural Uganda, any significant production, to be economic, must be used for the urban or export markets or for conversion through industry.

- IB.3b-16. MARKIE, John. "Some Recent Developments Affecting Agricultural Cooperatives, Marketing and Credit in Ethiopia," Land Reform, Land Settlement and Cooperatives (Italy), Vol. 1 (1975).

This paper discusses the use and control of cooperatives before and after the enactment of Ethiopia's land reform law which provided for state ownership of all privately-owned land and reallocation of this land to rural peoples. The new government intends to provide services to the rural sector through the existing cooperatives which were previously dominated by land owners and which constituted the primary level assembly system for marketing. Disadvantages of the program are discussed.

- IB.3b-17. MIRACLE, Marvin P. "The Literature on the Economics of Marketing in Tropical Africa," African Urban Notes, Vol. 5, No. 3 (Fall 1970).

This paper examines the literature on the economics of marketing in sub-Saharan Africa excluding the Republic of South Africa and its enclaves.

- IB.3b-18. PFOST, Harry B.; Dahl, Reynold; Thornburrow, William; Steinke, Kenneth. Study of the Tunisian Grain Marketing System, Report No. 47, Food and Feed Grain Institute, Kansas State University, August 1974.

The Kansas State University team studied the grain storage and marketing system from the time of harvest throughout the point of processing for food and feed. The team found that storage facilities for grains are inadequate at both the buying centers of the Office of Cereals and at the local level. Much grain is stored outside where it is subject to weather damage. Construction of 100,000 tons of additional bulk storage is recommended. The price support system assures farmers a price below the world level. The oversimplified grain pricing structure does not reflect storage and transportation costs, leading to inefficiencies in the overall marketing system.

- IB.3b-19. RUTMAN, G. "State Trading in Tanzania," South African Journal of Economics, Vol. XXXIV, No. 2 (1966).

- IB.3b-20. SCHUBERT, Bernd. "Some considerations on methods for evaluating factors for agricultural products," Eastern African Journal of Rural Development (Kampala), Vol. 6, Nos. 1 and 2 (1973).

Depending on the aims of a marketing policy, efficiency does not have to be the sole criterion by which it has to be judged. In the Ugandan example, the author evaluates certain criteria (among these, efficiency). The author makes use of econometric tools for marketing analysis.

- IB.3b-21. THODEY, Alan R. Marketing of Grains and Pulses in Ethiopia. Prepared for Technical Agency of Imperial Ethiopian Government. Report No. 16, Stanford Research Institute, April 1969.

This report is intended to develop a program by which the Ethiopian government can effect a structural economic shift towards money-income producing activities in the agricultural and related industrial sectors. The report summarizes the organization of the present marketing system, evaluated marketing performance, and includes recommendations for an improved marketing system.

- IB.3b-22. UNITED NATIONS, Food and Agriculture Organization (Organisation des nations unies pour l'alimentation et l'agriculture). Le Développement des Systèmes de Commercialisation des Produits Alimentaires dans les Grandes Zones Urbaines V.III. L'Afrique Francophone. Dakar, Senegal, Dec. 1975.

The conference held in Dakar in December 1975 was for the purpose of analyzing the changes necessary for the adaptation of food marketing systems to the current and future needs of growing urban areas and to formulate strategies for the efficient development of marketing systems, valid not only on economic and commercial bases but also on the socio-political level. Particular attention was given to the needs of low-income consumers and to the links between food supply areas and urban zones. The recommendations, based on ten case studies (Abidjan, Bamako, Bangui, Cotonou, Dakar, Kinshasa, Lomé, N'djamena, Tanazariwe and Yaoundé), concern the improvement of the production, collection and marketing systems.

- IB.3b-23. YOSHIDO, Masao. "Agricultural Marketing Reorganization in Postwar East Africa," Developing Economies (Tokyo), Vol. 11 (Sept. 1973).

Over the last thirty years, the institutional framework of agricultural marketing in the world has gone through many changes which have affected greatly the economies of the developing countries. The nature of these changes within the developing countries is very complex, reflecting on the one hand various external forces at work during this period, and on the other hand the nature of the domestic economic structures. Analysis of agricultural marketing reorganization should show characteristics of the original economic structures, the prime movers of these changes, pressures of different interest groups, and effects of these institutional changes on the course of economic development in the countries concerned. (1)

c. Price Policy Studies

- IB.3c-1. DEAN, Edwin. The Supply Responses of African Farmers: Theory and Measurements in Malawi. (Contributions to Economic Analysis, XLI). Amsterdam: North Holland Publishing Co., 1966.

This article discusses three problems relevant to supply response (for tobacco in Malawi). The first two relate to the elasticity of supply of cash crops and the characteristics of the labor supply function. The third problem concerns the possible influence of certain social factors on market price. (1)

- IB.3c-2. -----, "Economic Analysis and African Responses to Price," Journal of Farm Economics (Menasha, Wisconsin), Vol. 47 (May 1965).

This paper attempts to address the controversy over the nature of the supply responses of agriculturalists in underdeveloped countries. The author uses peasant-grown tobacco in Malawi for the basic model which is used to make predictions regarding the nature of supply responses. He tests these predictions using multiple regression analysis and compares his findings to three schools of thought on supply responsiveness.

- IB.3c-3. HAESSEL, Walter. "Demand for Agricultural Commodities in Ghana: An Application of Nonlinear Two-stage least squares with prior information," American Journal of Agricultural Economics, Vol. 58 (May 1976).

This article attempts to estimate price and income elasticities of demand of some major staple foods in Ghana. Conclusions are that Ghanaian consumers respond significantly and substantially to changes in prices of local foodstuffs. This demonstrates the importance of considering possible price changes in the planning process and emphasizes the importance of price policy in the agricultural sector.

- IB.3c-4. HYSLOP, John D. "The Tunisian Cereals Sector: An Examination of Production, Prices and Some Alternatives for the Future," International Agricultural Series. No. 12, University of Minnesota, 1971.

The report compiles what is known about the Tunisian cereals sector with the objectives of examining the production relationships among cereals, price relationships among Tunisian cereals internally and as compared to international prices, future alternative production policies and appropriate price policy.

- IB.3c-5. IBRAHIM, Abdul Rahman Zaki. "Price Incentive in the Development of Egyptian Agriculture," L'Egypte Contemporaine (Cairo), Vol. 65 (Jan. 1974).

This article examines the role of price incentives in the development of Egyptian agriculture. The author's conclusions include: (1) price theory does not fit the conditions of underdeveloped countries which follow a mixture of capitalist and marxist principles, (2) prices might be correct from the market standpoint, but not from the income distribution view, (3) cost must not be the determinant of farm gate prices, supply and demand must be considered, (4) price policy alone cannot be an effective instrument for farm income policies.

- IB.3c-6. JACKSON, Richard. "A Note on Geographical Variation in Rural Market Prices and Price Fluctuations in West Nile District, Uganda," East African Journal of Rural Development (Kampala), Vol. 4, No. 2 (1971).

It is the author's theory that the greatest price fluctuations can be expected in areas of marked seasonal changes in environmental conditions. He applies this theory to western Uganda, discovering that price variations for all crops are high, no matter what period of harvest. The author blames either the lack of limited availability of storage facilities, or the inadequacy of overall surplus as being responsible.

- IB.3c-7. USORO, Eno J. "Produce Prices and Rural Economic Activity; A Case Study of Two Itak Villages in the South-Eastern State of Nigeria," Nigerian Journal of Economic and Social Studies (Ibadan), Vol. 14 (July 1972).

This article is especially interesting from the viewpoint of labor allocation between food crops and cash crops, with the main emphasis on the latter.

C. Asia

1. General Works on Agricultural Development

- IC.1-1. AFIFF, Saleh, and Timmer, C. Peter. "Rice Policy in Indonesia," Food Research Institute Studies (Stanford), Vol. 10, No. 2 (1971).

Afiff and Timmer describe and analyze the historical development of an Indonesian rice policy. Their major emphasis is on the 1960-1972 period, although they give some recognition to the 1950s. Afiff and Timmer cite three causes of production problems in the early 1960s: declining area harvested, declining yields, and economic instability. To counteract the production problem, the Indonesian government implemented a number of programs.

- IC.1-2. ALAMGIR, Mohiuddin. "Some Aspects of Bangladesh Agriculture: Review of Performance and Evaluation of Policies," The Bangladesh Development Studies, Vol. III, No. 3 (July 1975).

Alamgir reviews the basic characteristics, such as physical condition, farm structure, and new agricultural technology, of an evolving Bangladesh agriculture and evaluates the role of agricultural development policies. He presents a structural analysis of the agriculture sector and follows this with an evaluation of policies and institutions. (1)

- IC.1-3. BARDHAN, Kalpana. "Marketed Agricultural Surplus and Development," The Economic Weekly, Dec. 5, 1964.

Burdhan analyzes the problem of marketed surplus "with a view to distinguishing between cases where raising the marketed proportion of production is as important as raising the level of production and cases where productivity is, or should be, the all-important factor." He also suggests three general policy guidelines for dealing with mobile surpluses: "(1) a more intensive and 'progressive' system of agricultural taxation; (2) 'doctoring' the terms of trade suitably between the agricultural and the non-agricultural sector; and (3) hastening, by various means, the process of seepage of wants for non-agricultural products into the agricultural sector." (1)

- IC.1-4. BARKER, Randolph and Herdt, Robert W. "Rice Production 1973-74 and the Impact of the Fertilizer Shortage for 1974-75," World Crops, November/December, 1974.

"This article considers three aspects of the current rice situation. First, (the authors) examine the impact of rising prices on consumers of different income levels. Then (they) discuss current estimates for the 1973 rice crop production. Finally, (they) examine the impending fertilizer crisis in Asia and its potential impact on rice production." The authors conclude that costs of inputs will continue to rise over the long run and that this will result in higher food costs and a slowdown in the rate of economic development. Fertilizer will continue to be a key input.

- IC.1-5. BHATTACHARYYA, Kalyanbrata. "On Agricultural Taxation," Economic Affairs, Vol. 20, No. 2 (July, 1975).

This is an essay on the role of agricultural taxation in the developing economy. The author argues that agricultural tax schemes are often, perhaps usually, shaped more by immediate interests than by adherence to a rational program of economic development. The author shapes his observations in light of a study of the economy of the state of West Bengal vis-a-vis land revenue.

- IC.1-6. EDIRISINGHE, Neville, and Poleman, T.T. Implication of Government Intervention in the Rice Economy of Sri Lanka. Cornell University, International Agriculture, Mimeograph 48 (1976).

The paper attempts to discern the main implications of intervention in rice marketing as they affect the economy in general and the rice economy in particular. An analysis is made of the rationality and efficiency of the policies, of the factors that act as constraints to realization of the objectives, and of the possible alternative courses of action.

- IC:1-7. FESSLER, Loren. "Population and Food Production in South Korea," American University Fieldstaff Reports, East Asia Series, Vol. XXII, No. 2 (March 1975).

The author reviews the development of population planning and food production programs in South Korea, especially since 1953, the end of the Korean civil war. He reports that government-supplied figures regarding population growth and increases in food production are often inaccurate. His conclusions are that food production is grossly inadequate and that population control is no better today than it was in 1964. The future outlook is better.

- IC:1-8. GOLDMAN, Richard. "Staple Food Self-Sufficiency and the Distributive Impact of Malaysian Rice Policy," Food Research Institute Studies (Stanford), Vol. XIV, No. 3 (1975).

Malaysia has become nearly self-sufficient in rice production within the last 20 years. Presently, the Government is emphasizing double-crops, new lands are being colonized in attempts to raise production, and improvements in paddy yields are also being researched. The author concludes that the price support program benefits non-poverty group farmers at the expense of poor consumers, and that increased mechanization will also harm labor.

- IC:1-9. GOTSCH, Carl H. and Falcon, Walter P. "The Green Revolution and the Economics of Punjab Agriculture," Food Research Institute Studies (Stanford), Vol. XIV, No. 1 (1975).

The Green Revolution was not so much due to improved varieties of seeds and fertilizer, but rather, to additional water for irrigation. Output was expanded through increases in the intensity of cropping. A model is presented which incorporates new production coefficients into a model of traditional agriculture, and the model's performance from the impact of new production technology is then explored. (1)

- IC.1-10. GRACE, Brewster. "Recent Developments in Thai Rice Production," American University Fieldstaff Reports, Southeast Asia Series, Vol. XXIII, No. 3 (June 1975).

The author traces the history of Thai rice production, the impact of the Green Revolution, water problems, fertilizer problems, the effects of rising food prices, land tenure and productivity, and government policy.

- IC.1-11. GRAINS POLICY TASK FORCE. "Analysis of Short Term Grain Policy Alternatives (for the remainder of the 1974 rice year) in the Republic of Korea," Michigan State University, Dept. of Agricultural Economics, 1974.

The paper analyzes short-term grain policy alternatives, level of grain imports, government buffer stock operation levels, methods of financing government grain operations, and administrative policy with respect to grain consumption.

- IC.1-12. HAYAMI, Yujiro and Ruttan, V.W. "Korean Rice, Taiwan Rice and Japanese Agricultural Stagnation: An Economic Consequence of Colonialism," Quarterly Journal of Economics (Cambridge, Mass.), Vol. 84 (Nov. 1970).

- IC.1-13. JHA, Dayanatha, and Maji, C.C. "Cobweb Phenomenon and Fluctuations in Sugarcane Acreage in North Bihar," Indian Journal of Agricultural Economics (Bombay), Vol. 26 (Oct/Dec 1971).

The authors focus on instability in sugarcane production and use two specifications of the cobweb theorem to provide an explanation for the observed "oscillatory movements of cyclical character in both acreage and relative price of sugarcane." Analysis is based on 31 years' time series data, from 1934-35 to 1964-65 (agricultural year). The first specification is "the traditional version in which both supply and demand functions are defined in a partially static sense. In the second, the dynamic supply relation is used." "... (Both) the models show that firstly, there is evidence for cobweb and secondly, it is of a convergent type." (1)

- IC.1-14. MAJUMDAR, M. "Marketable Surplus Function for a Subsistence Crop - Further Comments," The Economic Weekly, Vol. XVII (May 15, 1965).

The article disagrees with the theory that the amount of marketable surplus is a linear function of farm output. The author says that as output increases, so does marginal propensity to sell. If high and low-output farms both increase output identically, high-output farms will have a greater marketable surplus. Brahmanand Prasad criticizes the article, saying that samples are arbitrary and far from scientific, that there are underlying differences between areas from which data are selected, that the "subsistence level" is not defined, and changes in foodgrain prices are not taken into account.

- IC.1-15. MELLOR, John W. "The Agriculture of India," Scientific American, Vol. 235, No. 3 (Sept. 1976).

Mellor claims a 2.8% increase in foodgrain production per year in India from 1950 through the present. The author discusses, historically, this trend of increasing production. He cites four conditions necessary for the continuation, and improvement, of this increased production. These conditions are: a massive investment in infrastructure; an (almost impossible) increase in use of fertilizers; the increased effectiveness of research efforts; and a "widespread improvement of institutions for rural development." (1)

- IC.1-16. -----, "Opportunities and Problems Associated with Wheat Production, Marketing and Pricing in the Katmandu Valley," Cornell University, Department of Agricultural Economics, Occasional Paper No. 9 (1968).

This report gives a set of hypotheses for further study in regard to wheat production in the Katmandu Valley and the developmental implications of such production.

- IC.1-17. MOON, P.Y. "The Evolution of Rice Policy in Korea," Food Research Institute Studies (Stanford), Vol. XVII, No. 4 (1975).

The only way to achieve self-sufficiency in food production in Korea is to increase domestic production so that at least the minimum requirement is met from domestic sources. In view of the limited opportunities for expanding total paddy area, the country must rely heavily on higher yields per unit area to expand rice production.

- IC.1-18. NASEEM, Muhammad. "Credit Availability and the Growth of Small Farms in the Pakistan Punjab," Food Research Institute Studies (Stanford), Vol. 14, No. 1 (1975)

- IC.1-19. PANDEY, R.K. "The Analysis of Demand for Foodgrains," Indian Journal of Agricultural Economics (Bombay), Vol. 28 (April-June, 1973).

This article attempts to provide a more complete understanding of the demand relations of foodgrains in India, using knowledge of quantity, prices and income. The author attempts to provide an empirical estimate of demand functions for foodgrains and concludes that, if there is an increase in the prices of foodgrains, per capita demand will fall. An increase in per capita income will raise demand.

- IC.1-20. SIAMWALLA, Ammar. "A History of Rice Policies in Thailand," Food Research Institute Studies (Stanford), Vol. 14, No. 3 (1975).

This account is limited to government policies which affected the price of rice in Thailand until 1973. Thailand has never attempted to influence prices by influencing production; therefore, export policy has determined price policy for rice.

- IC.1-21. SINHA, R.K. "Report of the Committee on Taxation of Agricultural Wealth and Income -- An Appraisal." Economic Affairs (Calcutta), Vol. 18 (July 1973).

"The problem of orienting the tax structure to the objectives of planned economic development in our country has assumed a great importance these days. As a result, in recent times, there has been a revived interest in agricultural taxation. At all times and in almost every country the revenue from land has been an important source of income to the state. But in the era of planned economic development, it has generally lagged behind the development process and stands in greatest need for readjustment in terms of economic and fiscal requirements." (1)

- IC.1-22. TIMMER, Peter. "Political Economy of Rice in Asia," Food Research Institute Studies (Stanford), Vol. 14, No. 4 (1975).

Following the review of the agronomic and economic setting of the Indonesian rice culture, the author discusses the history of rice policy...dating back to the 17th century. With the discussion of modern rice policy comes an attempt to make explicit the interaction of objectives, policies and constraints. The essay closes with an evaluation of modern Indonesian rice policy and a prognosis. (5)

- IC.1-23. USHER, Dan. "The Thai Rice Trade." Thailand: Social and Economic Studies of Development, edited by T.H. Silcock. Durham, N.C.: Duke University Press, 1967.

"The function of the rice trade is to collect from the farmers the surplus of rice over and above their own needs, to mill it, and to distribute the rice where and when it is needed for export and by people in Thailand who do not grow rice themselves. The trade can conveniently be divided into purchase of rice from the farmers, milling, storage and interest cost, transport, retail selling, and export."

2. Marketing Studies

- IC.2-1. BALDWIN, William L. "The Thai Rice Trade as a Vertical Market Network: Structure, Performance and Policy Implications," Economic Development and Cultural Change, Vol. 22, No. 2 (Jan. 1974).

This is essentially a theoretical paper, pointing out that even when there are monopolistic elements in the marketing chain, export taxes and similar attempts to tax away monopoly profits will primarily fall on the producers and thus work as a production disincentive.

- IC.2-2. BELL, Peter F., and Tai, Janet. "Markets, Middlemen and Technology: Agricultural Supply Response in the Dualistic Economies of Southeast Asia," Malayan Economic Review (Singapore), Vol. 14 (April 1969).

"The objective of this paper is to provide an explanation of observed changes in traditional agriculture which adequately allows for some of the actual conditions of production and distribution in Southeast Asia region. It is argued that agricultural change in the traditional sector cannot be viewed in terms of a simple price-output nexus, that price theory ignores crucial factors which modify its validity, and that there remain serious gaps in our knowledge of the distribution network which control the pace of change. This paper attempts: (1) to show that existing statistical estimates of supply response are not good measures, being based on an inaccurate theoretical conception of agricultural relations in Southeast Asia, and hence have diverted our attention from other essential factors affecting change; and (2) to fill in some of the present gaps by outlining the elements of a framework of agricultural change which takes account of the technological and institutional environment of Southeast Asian agriculture, in particular the existence of economic dualism, the role of middlemen and market imperfections which...effectively condition supply response." (1)

- IC.2-3. BUCKLIN, Louis P. "Improving Food Retailing in Developing Asian Countries," Food Policy, Vol. 2, No. 2 (May 1977).

The adoption of horizontal and vertical integration in retail systems in the marketing of food in developing countries has long been the recommendation of researchers in this field. The author suggests that such proposals may not achieve the desired results for the poorer consumers in low-income Asian countries. An alternative approach, based upon the strengthening and improvement of traditional methods, is suggested as a more appropriate course of action in those countries.

- IC.2-4. CUMMINGS, Ralph Waldo, Jr. The Structure and Functioning of the Indian Wheat Market, with Special Reference to Khanna, Punjab, 1956-57 through 1963-64. Ph.D. Dissertation, The University of Michigan, 1965.

This is a study of the role of prices in distributing wheat through the private marketing system in India. The author discusses the criteria of efficient pricing to promote economic development and describes the marketing environment for wheat in India. A case study of one wheat market (Khanna, Punjab) is given, along with a statistical study of the pricing efficiency among 27 important Indian wheat markets. It is concluded that the private marketing system for wheat appears to be efficient in India. Several implications for future foodgrain price policy are suggested.

- IC.2-5. DANNHAEUSER, Norbert. "Distribution and the Structure of Retail Trade in a Philippine Commercial Town Setting," Economic Development and Cultural Change, Vol. 25, No. 3 (April 1977).

The paper examines the extent to which the town's trade structure is characterized by a large number of traders relative to its population. An attempt is made to determine what forces underlie the fractionalized market system. Two factors that are often stated to be of overriding importance in structuring peasant market channels, personalism and product credit, receive particular attention.

- IC.2-6. DESAI, D.K., and Ramachandran, V. "Working Capital and Credit Needs of Foodgrains Distribution in India," Economic and Political Weekly (Bombay), Vol. 9 (July 20, 1974).

This paper attempts to estimate the working capital required for the procurement and distribution of foodgrains. To arrive at the financial requirements for foodgrains distribution, estimates of the marketed surplus are needed. Instead of assuming a certain percentage of the total foodgrains production as the marketed surplus, a different technique was employed to estimate the marketed surplus. Based on the prices and stocks of foodgrains required at the beginning of the months and the marketed surplus of foodgrains, the working capital requirements were estimated for different years. The estimates of working capital for foodgrains show that the available bank credit met only 38% of the maximum working capital required in 1972-73. In fact, by not supplying the necessary working capital for foodgrains, the banking system has forced foodgrain distribution to depend on non-banking sources. It has thus increased the cost of financing the working capital and helped the price increase of foodgrains. (2)

- IC.2-7. FARRUK, Muhammed O. The Structure and Performance of the Rice Marketing System in East Pakistan, Occasional Paper No. 31, Department of Agricultural Economics, Cornell University, 1970.

The study examines, in detail, the structures of production, consumption, interregional exchange, and of the rice market at all levels. The marketing functions carried out privately and by the government are analyzed and evaluated. The processing of paddy is studied in depth, including alternative methods and its costs. The pricing efficiency of the marketing system, evaluated in terms of spatial and temporal differentials, is found to lack oligopolistic elements, and shows markets well integrated regionally. (4)

- IC.2-8. GHATAK, Subrata. "Marketed Surplus in Indian Agriculture: Theory and Practice," Oxford Bulletin of Economics and Statistics (Oxford), Vol. 37, No. 2 (May 1975).

The major aims of this paper are: (1) to develop a model to study the relationship between marketed surplus and the terms of trade between agriculture and industry; (2) to test some of the properties of the model in the light of the experience of an Indian state (Punjab-Haryana); (3) to highlight some of the major limitations of agricultural price policy in mobilizing the surplus from agriculture. (1)

- IC.2-9. GUZMAN, R.D., and Gonzales, F.H. "Production and Marketing of Sorghum in North and South Cotabato," Economic Research Journal (Manila), Vol. 20 (Dec. 73/Mar. 74).

The objectives of this study were to: (1) determine the cost of producing sorghum; (2) analyze sorghum marketing procedures and identify the problems involved; (3) determine whether or not viable sorghum markets exist in North and South Cotabato (Phillippines). (5)

- IC.2-10. HURD, John. "Railways and the Expansion of Markets in India 1861-1921," Explorations in Economic History, Vol. 12 (1975).

- IC.2-11. INGRAM, James C. "Thailand's Rice Trade and the Allocation of Resources." The Economic Development of South-East Asia: Studies in Economic History and Political Economy. Edited by C.D. Cowar. London: Allen & Unwin Ltd., 1964.

The author studies how, after 3 centuries of unsteady trade, Thailand emerged as a major exporter of rice in the second half of the 19th century. After a review of the evolution of volume, value and destination of rice exports up to the present, the author stresses how resources have been allocated. Several points are emphasized concerning the expansion of rice cultivation at the expense of other crops and

the ethnic division of labor as Chinese immigrants supplied much of the wage labor and the Thai increasingly became rice farmers. Despite a lack of data, it seems that rice-growers obtained increasingly favorable terms of trade from the 1860s to the end of the century but these terms fell sharply until 1920, then held steady. The broad view of Thailand's rice trade and of the social impact of the trade relies heavily on statistics which are presented in this paper.

- IC.2-12. LELE, Uma J. Efficiency of Jowar Marketing: A Study of Regulated Markets in Western India. Ph.D. Dissertation, Cornell University, 1965.

This thesis examines the stereotypes about the marketing system in India in particular and in underdeveloped countries in general about the regional and seasonal movements of agricultural prices. It attempts to emphasize the need for the study of existing marketing structure before replacing it with a new one. It questions the dominance of monopolistic elements generally associated with the traditional market structure in underdeveloped countries and emphasizes the phenomenon of interdependence of the wholesale markets in the process of price formation. It proposes that the apparent variation in seasonal price pattern from one year to another is a result of the changing knowledge of the prevalent market conditions available to the trader. The conclusions are based upon a study of wholesale markets in Western India. (3)

- IC.2-13. ----, Food Grain Marketing in India: Private Performance and Public Policy, Ithaca, N.Y.: Cornell University Press, 1971.

The study concerns government policy for agricultural development in underdeveloped nations. Among the topics considered are: the extent and nature of imperfections in the marketing system and the capacity of the existing system to meet expanded demands. Focusing on the marketing of paddy, rice, wheat and jowar, the author investigates how storage losses reduce production, the ability of private trade to adapt to rapidly changing supply conditions and the degree of competition in the marketing and processing of food grains. The book is based on statistical evidence from a large number of markets and on extensive field research. (1)

- IC.2-14. -----, Working of Grain Markets in Selected States, India, 1955-56 to 1964-65. Occasional Paper No. 12, Department of Agricultural Economics, Cornell University, 1968.

The study is an attempt to provide a higher degree of generalization to the findings of an earlier study of Lele's on imperfections in the marketing system in India. The study examines the stereotypes about the marketing system in India; that there exist regional and temporal disparities in agricultural prices which are largely a result of monopolistic trade. The information gathered through informal interviews provides a number of hypotheses quite contrary to the prevailing view on the subject.

- IC.2-15. MALEK, Quazi M.A. "Rice Cultivation in Comilla Kotwali Thana: The Role of Cooperatives," The Bangladesh Development Studies (Dacca), Vol. 4 (July 1976).

The paper is divided into sections dealing with data and methodology, analysis and results.

- IC.2-16. MELLOR, John. "Agricultural Product and Input Markets in South Asian Smallholder Agriculture." Agricultural Cooperatives and Markets in Developing Countries. Edited by K. Anschel, R. Brannon and E. Smith. New York: Praeger, 1969.

This paper describes some of the major structural characteristics of product and input markets in India. It also analyzes the theoretical conditions favoring the organization of cooperatives and discusses their prospects in this agricultural marketing system. (4)

- IC.2-17. PARTADIREJJA, Atje. "The Marketing Margin for Rice," Bulletin of Indonesian Studies (Canberra), Vol. 71 (July 1971).

Findings suggest that the marketing margin assumed in the determination of Bulog's retail floor price for milled rice is too high. This might suggest that a lower floor price for milled rice would be sufficient, or alternatively that the price of fertilizer need not be subsidized as much.

- IC.2-18. PHILLIPS, Richard. Recommendations for Improving Philippine Grain Marketing and Price Stabilization Programs. Report No. 46. Food and Feed Grain Institute, Kansas State University, 1974.

The report examines the setting for grain management in the contemporary Philippine society. It examines the functions, organization, plans and capabilities of the National Grains Authority, makes suggestions for improving these operations, suggests how information could be better used, and summarizes recommended priorities for ensuring an effective grain price stabilization program in the Philippines.

- IC.2-19. PHILLIPS, R., and Chung, Do Sup. Priorities for Improving Grain Marketing in Indonesia. Report No. 39. Food and Feed Grain Institute, Kansas State University, 1973.

This report summarizes a study on current conditions related to rice storage, handling and marketing in Indonesia. Its major content is an outline of suggested priority programs for implementation of recommendations regarding rice in Indonesia. Priorities discussed include: the study of potential for port grain handling and storage facilities; equipment and technological assistance for improved grain handling; development and administration of an effective national rice policy; research and demonstration programs; and participant training programs.

- IC.2-20. QURESHI, Sarfraz Khan. "The Performance of Village Markets for Agricultural Produce: A Case Study of Pakistan," The Pakistan Development Review (Islamabad) Vol. XIII, No. 3 (Autumn 1974).

Pakistan has developed a fairly competitive village marketing system for agricultural goods. A change in marketing has occurred since 1947, as a result of the shocks introduced into the system, and the improvement in inputs which accompanied the prices of development in the country.

- IC.2-21. RAO, C.H.H. "The Marketable Surplus Function for a Subsistence Crop, Comment One," The Economic Weekly, Vol. XVII (April 17, 1965).

Comments concern Krishna's study in The Economic Weekly, Feb. 1965. Krishna found the marketable surplus function to be linear in the case of the majority of samples analyzed. These findings led Krishna to question the theory that output increases on small farms are always likely to be swallowed up in consumption, whereas those on large farms are likely to flow into the market. Rao questions the applicability of Krishna's findings concerning general consumption behavior of farmers in regard to marketable surplus.

- IC.2-22. RUTTAN, Vernon. "Agricultural Products and Factor Markets in Southeast Asia," Economic Development and Cultural Change, Vol. 17, No. 4 (July 1969).

Ruttan points out the increasing importance of marketing channels in food products and factor markets as development occurs, as well as the greater amount of resources required by this activity which has been seriously underestimated by growth models. He concludes through an empirical test (for grains) that product markets are relatively efficient in transmitting price information and incentives between consumers and producers, and that middlemen's arbitrary powers to modify price are very limited. (4)

- IC.2-23. TIMMER, Peter C. "A Model of Rice Marketing Margins in Indonesia," Food Research Institute Studies (Stanford), Vol. 13, No. 2 (1974).

Timmer's paper addresses the policy issue of the size of overall marketing margins between the monthly price for four stalk paddy rices in eight major rice producing provinces of Indonesia and the retail price of medium-quality milled rice in those same areas. Two models are used in the analysis. The major conclusions are: (1) rural and urban prices are strongly interdependent for some parts of the year, but possibly not for others; (2) the marketing infrastructure on the outer islands is likely inadequate; and (3) government price policy is frequently very significant, but not very consistent.

IC.2-24. WORK, S.H. "Thailand: Case Study of a Developing Market System," Foreign Agriculture, Vol. II, No. 25 (June 22, 1964).

"Marketing difficulties hold down the farmer's income; they also hold down the value and volume of the agricultural exports on which most of the less developed nations largely depend for their international exchange earnings."

3. Price Policy Studies

- IC.3-1. ALAMGIR, Mohiuddin and Berlage, Lodewijk J.J.B. "Estimation of Income Elasticity of Demand for Foodgrain in Bangladesh from Cross-Section Data: A Skeptical View," Bangladesh Economic Review (Dacca), Vol. I, No.4 (Oct. 1973).

It is shown in this paper that the estimates of the demand functions obtained from these three samples are significantly different, so that the demand projections based on results from cross-section data may be misleading.... the only definite conclusion that can be drawn from this study is that the available sample data do not provide definite evidence about the coefficients of the demand function for foodgrain in Bangladesh, and, consequently, about the income elasticity. (1)

- IC.3-2. ----, "Foodgrain (Rice and Wheat) Demand, Import and Price Policy for Bangladesh," Bangladesh Economic Review (Dacca), Vol. I, No. 1 (January 1973).

The purpose of this paper is threefold: (1) to provide an analysis of foodgrain consumption in Bangladesh on the basis of the foodgrain demand function estimated from historical time-series data; (2) to use the estimated demand functions to project requirements for foodgrain imports under different possible production regimes; (3) projections of demand, production and import are used to derive implications for foodgrain price policies in particular, and overall price stability in general. (1)

- IC.3-3. BARDHAN, Pranab and Bardhan, Kalpana. "Price Response of Marketed Surplus of Foodgrains - An Analysis of Indian Time-series Data," Oxford Economic Papers (London), N.S. 23 (July 1971).

The authors "first construct a time series for marketed surplus of cereals for India as a whole on the basis of Census population figures, National Sample Survey (N.S.S.) per capita consumption data and official data about cereals output and Government distribution, and then (they) proceed to estimate the relevant price elasticities." A theoretical model is used and is supported by empirical analysis. The authors also note several possible criticisms of their estimates, such as caused by ignoring traders' stocks and end-of-the-year stocks and by using sets of data which may not always be comparable.

- IC.3-4. BOSE, Swadesh R. "The Price Situation in Bangladesh - A Preliminary Analysis," The Bangladesh Economic Review (Dacca), Vol. I, No. 3 (July 1973).

The author attempts to "ascertain the underlying basic causes of the post-liberation price spiral" in Bangladesh. This is done via a systematic analysis of post-liberation prices compared to a fiscal 1969-70 base year. The author has four purposes: (1) to show "the extent of the rise in the post-war liberation period"; (2) to identify "the major causes underlying the price rise"; (3) to analyze "the scope for price reduction"; and (4) to indicate "the measures necessary for stabilizing or reducing prices."

- IC.3-5. BROWN, C.P. "Rice Price Stabilization and Support in Malaysia," The Developing Economies (Tokyo), Vol. XI (June 1973).

Brown considers three rice price control devices administered by the National Padi and Rice Board: buffer stocks, import quotas (*vis-à-vis* self-sufficiency), and variable tariffs. He then looks more closely into the issue of self-sufficiency before presenting two models of the possible effects of price control, one based on the past and the other a projection for the future. Brown also believes that the control machinery in Malaysia needs simplification and suggests alternatives which may lead to greater equitability and efficiency in redistributing wealth.

- IC.3-6. CHAKRABARTI, Arup. "Fourth Plan and Price Policy," Economic Affairs (Calcutta), Vol. 12 (Nov. 1967).

The author explores the roles that price policy might take in India's Fourth Plan. There is a discussion of some of the uses of a consistent price policy in the development process, such as regulating an erratic economy and directing prices "in such a way that scarce resources are rationally allocated also." The author reviews various government reports which have some bearing on price policies and suggests areas to which strategy planners might pay particular attention.

- IC.3-7. CUMMINGS, Ralph W. "Effectiveness of Pricing in an Indian Wheat Market: A Case Study of Khanna, Punjab," American Journal of Agricultural Economics, Vol. 50, No. 3 (August 1968).

An important issue in food grain marketing in India concerns the effectiveness of competition, but there is little empirical research on which to evaluate the issue. This article analyzes pricing effectiveness in one private wholesale wheat market in north India by comparing average seasonal and spatial price differences with estimated storage and transport costs. The comparisons indicate that correspondence between average price movements and average cost differences was reasonably close. (2)

- IC.3-8. FALCON, Walter P. "Farmer Response to Price in a Subsistence Economy: The Case of West Pakistan," American Economic Review; Papers and Proceedings (Evanston, Ill.), Vol. 54 (May 1964).

The purpose of this paper is to examine more thoroughly and more quantitatively the direction and magnitude of farmer responses to price in a low-income economy. The major thesis set forth is that farmers in West Pakistan, when given the opportunity, do respond to price and income incentives. (1)

- IC.3-9. FORKER, O.D. Agricultural Price Policy in Turkey: A Collection of Works, Discussion Paper No. 2-3, Department of Agricultural Economics, Cornell University, 1971.

An analysis of wheat production in Turkey, which attempts to predict future trends in production, is made in this paper. Primarily the paper attempts to develop a quantitative base to judge whether the level of wheat production in any one year results from random uncontrolled factors or because of some basic change which significantly altered the circumstances of production.

- IC.3-10. GADGIL, D.R. "Price Policy for Foodgrains: Its Implications," The Economic Weekly (Bombay), Vol. 16 (Sept. 26, 1964).

If a state is to fix prices with the intention of seriously enforcing them, the prices to be fixed must have relation to (1) the objectives of fixation, (2) the manner in which it is conceived the market will operate in the context of fixed prices, and (3) the instruments and agencies that Government has on hand for the enforcement of fixed prices.

- IC.3-11. GOLDMAN, Richard N. "Seasonal Rice Prices in Indonesia, 1953-69; An Anticipatory Price Analysis," Food Research Institute Studies (Stanford), Vol. 13, No. 2 (1974).

This study examines in detail the production data and contains the first published estimate of seasonal rice production during the period 1953-69. One section introduces price series and deals with the problem of inflation. Another section isolates a normal seasonal price pattern in Javanese markets and gives a detailed look at seasonal price instability.

- IC.3-12. GOSWAMI, P.C. and Gogoi, J. "Effect of Price on Cultivation and Disposal of Paddy and Jute (A Case Study of Nowgong District in Assam)," Indian Journal of Agricultural Economics (Bombay), Vol. 26 (Oct./Dec. 1971).

Based on their analysis, Goswami and Gogoi conclude that in the short run price fluctuation does not affect the farmers' decision to increase or decrease the acreage under the main staple crops unless they are sure of a permanent increasing trend, as the last year's price may not continue in the current year when the new crop will be harvested. Secondly, farmers divert their attention to growing commercial or cash crop only after assuring supply of their food crops. Thirdly, there is little scope for the farmers in the lower-size groups to increase or decrease the area under the principal crops. (1)

- IC.3-13. HUSSAIN, Syed Mushtag. "A Note on Farmer Response to Price in East Pakistan," The Pakistan Development Review, Vol. IV (Spring 1964).

The purpose of this article is to supplement other price elasticity studies by presenting estimates of the price elasticity of supply for rice in East Pakistan. Jute is also included.

- IC.3-14. JOHL, S.S.; George, M.V. and Singh, A.J. "Agricultural Prices in Punjab; A Policy Analysis," Indian Journal of Agricultural Economics (Bombay), Vol. 25 (Jan./Mar. 1970).

The authors state that there is a "critical minimum rate of agricultural growth without which an economy cannot start growing at a desired (planned) rate," and that there is a need for a positive price policy to achieve this minimum rate of agricultural growth. The article covers three possible methods of fixing agricultural prices: (1) cost of production, (2) ruling price, or (3) parity price.

- IC.3-15. KAUL, S.N. "The New Wheat Policy," Margin, Quarterly Journal of the National Council of Applied Economic Research (New Delhi), Vol. 6 (July 1974).

Criticizes the present procurement system and advocates that the government offer a procurement price to the farmer at which, without brandishing coercive threats, it can secure the desired quantities for public distribution. It points out different problems arising from conflicting price policy goals. (5)

- IC.3-16. KAUL, J.L. and Sidhu, D.S. "Acreage Responses to Prices for Major Crops in Punjab--An Econometric Study," Indian Journal of Agricultural Economics (Bombay), Vol. 26 (Oct./Dec. 1971).

"This study is an attempt to obtain the best estimate of the response of Punjab farmers to prices while making a decision about acreage allocation to major crops, viz., wheat, paddy, maize, groundnuts and desi cotton..." The main postulate of this study is that, for decision-making in regard to the allocation of acreage, farmers look to harvest prices of the crops and not to the wholesale price or any other price... The second postulate is that the decision of allocating the acreage does not depend on past prices alone but that the extent of variation in these prices counts as much in building these price expectations to the farmer...." (1)

- IC.3-17. KHUSRO, Ali N. "Pricing of Food in India," Quarterly Journal of Economics (Cambridge, Mass); Vol. 81 (May 1967):

This study is concerned with the pricing of foodgrains output in India and with the sensitivity of consumer demand and producers' supply to pricing policies. Contrary to the presumption that people's response to the price mechanism is small in economies where the degree of monetization of produce is small and where neither much output is destined for nor much input purchased from the market, evidence in India points to an alternate theory. Demand patterns, supply functions, marketed surpluses, and even input substitution all seem to display a degree of price elasticity. (1)

- IC.3-18. KRISHNA, JAI. "Rapporteur's Report on Agricultural Prices: Problems and Policies," Indian Journal of Agricultural Economics (Bombay), Vol. 26 (Oct.-Dec. 1971).

The author critiques several papers (Taylor, Chetty, George and Singh, etc.) submitted to the Conference - Agricultural Prices: Problems and Policies. He notes that "with the adoption of new technology, the role of purchased inputs has become very significant in Indian agriculture. However, enough attention has not been paid to studying the implications of changes in input prices on farmers' decisions, much less to evolving meaningful guidelines for pricing of these inputs." While these papers are seen as representing significant additions to existing knowledge, Krishna points up several other areas where study is needed. Subject areas include: Responsiveness of Area and Production to Changes in Output Prices, Pricing of Agricultural Produce.

- IC.3-19. MATHUR, M.B. "A Study of Movement in Prices of Selected Items of Foodgrains and Industrial Materials in India, 1939 to 1967/68," Occasional Paper No. 13, Department of Agricultural Economics, Cornell University, 1968,

Mathur pulls together a large amount of data regarding Indian agriculture prices and provides an analysis of this data. The analysis covers three major areas: (1) the role of prices in intersectoral income and capital transfers, (2) the effect of price relationships on agricultural production and marketing, and (3) the factors affecting urban prices of agricultural commodities.

- IC.3-20. MEARS, Leon A. and Anden, Teresa L. "Who Benefits from the Post-Harvest Rice Price Rise?" Philippine Review of Business and Economics (Diliman), Vol. 7 (December 1970).

In this study, the authors analyze the validity of the argument that, because a farmer lacks credit, he is forced to sell his crop before or immediately after the harvest when prices are low, rather than benefiting from higher post-harvest prices. In questioning this argument, the authors present their Philippine-based studies of the costs of holding stocks including storage costs, opportunity costs and risks of loss. They conclude that, while substantial price fluctuations do provide the astute trader an opportunity for profits, the risks involved are too great for the farmer to bear. The article concludes with a brief summary of some policy implications.

- IC.3-21. MEARS, Leon and Barker, Randolph. "Effects of Rice Price Policy on Growth of the Philippine Economy: An Analytical Framework," The Philippine Economic Journal (Manila), Vol. VII, No. 1 (First Semester, 1968).

The general aim of this paper is to examine in detail the implications of the Philippine government's rice price policy for economic development, emphasizing supply and demand relationships and elasticities. The costs of government domestic and import procurement, and gains and losses to consumers and producers under existing price policies are also discussed. The authors call for increases in imports in order to maintain retail price ceiling goals. A higher price ceiling goal is recommended. (1)

- IC.3-22. MELLOR, John W. "Notes on Food Grain Prices, India, 1967-68 and 1968-69," Occasional Paper No. 2, Department of Agricultural Economics, Cornell University, 1967.

The note makes comments and calculations based on Mellor's previous paper "Determinants of Foodgrains Prices, India: 1949-50 to 1963-64. The note suggests several different interpretations of the discrepancy between reported prices and those estimated in the original article.

- IC.3-23. -----, "Note on Agricultural Price Policy: 1968 India Wheat Price Support," Occasional Paper No. 5, Cornell University, 1968.

- IC.3-24. MELLOR, J.N. and Dar, A.K. "Determinants and Development Implications of Foodgrains Prices in India, 1949-1964," American Journal of Agricultural Economics, Vol. 50, No. 4 (1968).

This article examines the movement of foodgrain prices in India. The variation is explained largely in terms of alterations in the gap between supply and demand and the money supply.

- IC.3-25. MISHRA, G.P. "Agricultural Price Inflation and Industrial Recession in India," Economic Affairs (Calcutta), Vol. 15 (April 1970).

The main reason for the growth of a high rate of agricultural price inflation may be attributed to the failure of the planned rate of growth in agricultural production in keeping pace with the rate of increase in the demand requirement. The article suggests remedying the problem by a process of economic expansion in the Indian economy in a manner such that agriculture and industry may simultaneously expand and grow.

- IC.3-26. MUBYARTO. "Rice Price, Marketing and Food Policy in Indonesia," Malayan Economic Review (Singapore), Vol. 13 (October 1968).

The goal of the rice policy suggested here is to find a balance between the interests of rice consumers and producers. In the long run, any rice policy must combine incentives for production with inducements to consumers to diversify food consumption.

- IC.3-27. QURESHI, Sarfraz Khan. "Price Responsiveness of Marketed Surplus of Wheat in Pakistan," The Pakistan Development Review (Islamabad), Vol. 13 (Summer, 1974).

The result of the study in Pakistan shows that the higher relative price of wheat induces the farmer to reduce family consumption and increase farm sales. The hypothesis of fixed cash requirement and the inverse relationship between price and market sales is not confirmed in Pakistan.

- IC.3-28. RAO, C. Hanumantha and Subbarao, K. "Marketing of Rice in India: An Analysis of the Impact of Producer's Prices on Small Farmers," Indian Journal of Agricultural Economics (Bombay), Vol. 31 (April/June 1976).

This paper deals with spatial differences in prices, seasonal differences in prices, and differences in prices according to farm size.

- IC.3-29. RAO, V.K.R.V. "Price Policy and Economic Development; with Special Reference to India," Economic Weekly (Bombay), Vol. 16 (Oct. 10, 1964).

A price policy for economic development must have three components: (a) measures directed towards regulating the general volume of private expenditure so that it will not cause an undue pressure on the limited supply of goods; (b) measures specifically directed towards controlling the prices of foodgrains at levels which would be fair to both consumers as well as producers; (c) measures dealing with relative prices with a view to assisting the direction of resources towards the achievement of desired targets in terms of the major goods and services constituting the domestic product. An attempt is made to spell out the measures called for under the above three headings. (2)

- IC.3-30. REDDAWAY, W.B. "Pricing Policy for State Enterprises in Bangladesh," Bangladesh Development Studies (Dacca), Vol. 3 (Jan. 1975)

- IC.3-31. THINGALAYA, N.K. and Shetty, N.S. "Foodgrains Prices and Costs of Cultivation: Some Observations," Economic Weekly (Bombay), Vol. 17 (Sept. 25, 1965).

This paper is a preliminary attempt to analyze the relationship between the prices of foodgrains and the costs of production using the available data, meager as they are. The purpose is merely to indicate very roughly the relationship between the prices of a few foodgrains and their fair costs of cultivation and not to suggest any policy conclusions. (2)

- IC.3-32. TURVEY, Ralph and Cook, Eric. "Government Procurement and Price Support of Agricultural Commodities; A Case Study of Pakistan," Oxford Economic Papers (London), N.S. 28 (March 1976).

The authors describe and evaluate the mixed private/public marketing system for cereals in Pakistan, particularly the floor price policy pursued by the government. They emphasize the need for an accompanying ceiling price. Because the actions of private traders are determined by their expectations of, among other things, government policies, it is very important that the government implement an open information policy consistent with its marketing actions in order to coordinate the private and public sectors.

D. Latin and Central America

1. General Works on Agricultural Development

- ID.1-1. FIGUEROA, Adolfo. "Agrarian Reforms in Latin America: A Framework and an Instrument of Rural Development," World Development, Vol. 5, Nos. 1 and 2 (Jan./Feb. 1977).

Agricultural relative prices can influence the impact of land reform. An appropriate set of prices may increase substantially the initial limited impact of land reform. However, this set of prices may be inconsistent with national priorities and patterns of development. One can conclude that complementary policies have not accompanied land redistribution in Peru. Complementary policies were also not provided in the case of Mexican land reform, and in Bolivia the pattern has been similar.

- ID.1-2. KUNDU, A. "Rice in the British Caribbean Islands and British Guiana, 1950-1975," Social and Economic Studies (Jamaica), Vol. 13 (June 1964).

The study deals with the demand and supply positions of rice in the past decade and their future trends. The study shows that the British Caribbean islands are not losing in their rice deals with British Guiana. The expansion of the rice industry, even in the face of high costs, is vital for the economy of British Guiana, since the industry, because of its labour intensive nature, can provide considerable employment.

- ID.1-3. LEURQUIN, Philippe P. "Rice in Colombia: A Case Study in Agricultural Development," Food Research Institute Studies (Stanford), Vol. VII, No. 2 (1967).

A third stage in Colombian production of rice is described. The period involves a massive application of improved inputs and methods, leading to considerable progress. This period has followed a period of recovery in the boom and decline pattern of Colombian agriculture.

ID.1-4. TENDLER, Judith. Inter-Country Evaluation of Small Farmer Organizations (Final Report): Ecuador, Honduras.
AID, Bureau for Latin America, Office of Development Programs, November 1976.

The report gives findings and recommendations based on studies of nine AID programs involving small farmer organizations in Ecuador and Honduras.

2. Marketing Studies

- ID.2-1. BORSODORF, Roe and Heid, Walter G., Jr. An Assessment of Agricultural Marketing Needs of the Soybean and Grains Sector in Ecuador, Report No. 58, Food and Feed Grain Institute, Kansas State University, 1976.

The objectives of the study ~~was~~ to assess the marketing structure in Ecuador for soybeans and other grains and make recommendations directed toward production, processing and marketing. (1)

- ID.2-2. FLETSCHNER, Carlos. Structural Patterns in the Marketing of Selected Agricultural Products in Chile: The Position of Small and Large Growers, Research Paper No. 42, Land Tenure Center, University of Wisconsin, 1971.

This study analyzes the behavior of small and large producers when confronting the markets, as well as the different market environments in which these growers operate when they sell their products. In order to provide specific details, this study examines the structure of selected agricultural product markets, noting geographic and economic differences, and at the same time presents an explanation of the most important marketing problems of small and large producers in each area. The study also analyzes the administrative and institutional barriers that condition access to and exit from the markets for each group. (1)

- ID.2-3. HARRISON, Kelly; Henley, Donald; Riley, Harold; Shaffer, James. Improving Food Marketing Systems in Developing Countries: Experiences from Latin America, Research Report No. 6 (Marketing in Developing Communities Series), Latin American Studies Center, Michigan State University, 1974.

This publication is primarily directed toward aiding specialists faced with the problems of improving agricultural production and distribution systems in developing countries by providing an approach to marketing system diagnosis and planning. The report draws largely on the experiences of the authors in Latin America over ten years. Major diagnostic observations, based on examination of the social and economic environment as related to food, are described. Comparative analyses of market coordination problems in major agricultural commodity subsystems and comparative analyses of urban food distribution are presented.

- ID.2-4. RILEY, Harold; Harrison, Kelly; et al. Market Coordination in the Development of the Cauca Valley Region-- Colombia, Research Report No. 5 (Marketing in Developing Communities Series), Latin American Studies Center, Michigan State University, 1974.

This summary report highlights (16 technical) studies and integrates them into an overall diagnosis of the existing marketing system. In each (of the eight) sections of the report there are specific recommendations related to the diagnosis. The final chapter deals with implementation problems and strategies. (1)

- ID.2-5. SLATER, Charles, et al. Market Processes in La Paz, Bolivia, Research Report No. 3 (Marketing in Developing Communities Series), Latin American Studies Center, Michigan State University, 1969.

This study provides an analysis of the internal processes of the La Paz urban food market and of selected rural consumer markets in the food shed serving this city. Surveys were conducted to study consumers and their characteristics, food retailing, wholesaling, and the transportation system serving La Paz. Also included were farmers, country assemblers and rural fairs. The study ends with a set of proposed changes needed in the different stages of the urban-rural marketing system of La Paz. (4)

- ID.2-6. SLATER, Charles, et al. Market Processes in the Recife Area of Northeast Brazil, Research Report No. 2 (Marketing in Developing Communities Series), Latin American Studies Center, Michigan State University, 1969.

This study is based on extensive field research, describing the marketing system linking the urban area of Recife and the rural areas of Northeast Brazil. It includes a detailed analysis of: the urban consumers, the retailing and wholesaling of food in Recife, the farmers and the farm production processes, the distribution of inputs, and the marketing system for five major agricultural commodities. (4)

- ID.2-7. SMITH, Carol A. "Market Articulation and Economic Stratification in Western Guatemala," Food Research Institute Studies (Stanford), Vol. 11, No. 21 (1972).

Data are used to show that economic stratification in Guatemala is structured in space and influenced by the pattern of market access. This analysis suggests that the structure of marketing in this region helps to create and maintain income disparities between different population segments and groups that make up the social system.

- ID.2-8. SMITH, Gordon. "Marketing and Economic Development: A Brazilian Case Study," Paper No. 26, Program of Development Studies, Rice University (Houston, Texas), 1972.

Marketing changes in Brazil have been straightforward adjustments to the almost inevitable improvements in the inputs which accompanied growth. Growth should reduce marketing costs and, in the case of Brazilian rice, these cost reductions have been substantial.

- ID.2-9. SMITH, Vernon. "Marketing Agricultural Commodities in Pichincha Province, Ecuador," Geographical Review, Vol. 65 (July 1975).

"This paper describes the processes and channels through which commodities are exchanged between agricultural producers and the urban consumer in Quito, Ecuador." The author concludes that middlemen take much value from production, and leave little incentive for increased productivity. Larger farmers can avoid the middlemen. By restructuring the system, greater returns for the producer could be achieved while holding or decreasing prices for the consumer.

- ID.2-10. SORENSON, L. Orlo. Observations and Recommendations Concerning the Corn Marketing System in Guatemala, Report No. 13, Food and Feed Grain Institute, Kansas State University, 1969.

This report includes an overview of the Guatemalan grain marketing system and a set of recommendations for the improvement of that system.

- ID.2-11. SORENSON, L. Orlo and Chung, Do Sup. Grain Marketing and Market System Development in Haiti, Report No. 43, Food and Feed Grain Institute, Kansas State University, 1973.

The report includes an overview of market organization and marketing facilities in Haiti and a set of recommendations for program to improve grain marketing in that country.

- ID.2-12. WEBER, Michael T. An Analysis of Rural Food Distribution in Costa Rica, Ph.D. Dissertation, Department of Agricultural Economics, Michigan State University, 1976.

A review of a country development institute (IFAM) and of individual county seat government project development and loan procedures concluded that IFAM ought to strengthen the analytical capabilities of project analysis and be more attentive to establishing the economic, financial, and administrative viability of specified projects. (3)

3. Price Policy Studies

- ID.3-1. ECHEVERRIA, R.P. "A Note on Distribution Effects of Chilean Agriculture Price Policies," Occasional Paper No. 15, Department of Agricultural Economics, Cornell University, 1969.

This article examines income transfers affected by changes in the price system. The author concludes that: (1) different economic groups within one and the same activity are affected in a substantially different way when changes in the price system occur; (2) it is essential when making the analysis of income transfers to maintain the adequate proportion between the magnitude of the transfer and the total gross income generated by each group, and (3) in analyzing income transfers motivated by changes in the price system it is fundamental to consider all of the economy's prices.

- ID.3-2. HUSSAIN, Sayed Mushtag. "Price Incentives for the Production of High-Yielding Mexican Varieties of Wheat," The Pakistan Development Review (Karachi), Vol. 10 (Winter 1970).

The paper describes the design and coverage of the survey of Mexican wheat-growers conducted in 1969, considers the problem of price incentives required for the adoption of Mexican varieties of wheat, raises some questions about the desirability of producing the high-yielding seeds for export, and gives a summary of conclusions. (1)

- ID.3-3. -----, "Price Incentives for the Production of High-Yielding Mexican Varieties of Wheat: A Rejoinder," The Pakistan Development Review (Karachi), Vol. 12, No. 2 (Summer 1973).

In response to Mr. Sarfraz Khan Qureshi, the author writes that: (1) the price of wheat is relevant to the choice between local and Mexican varieties; (2) theoretical and empirical measures give similar results.

- ID.3-4. MERRILL, William C. "Setting the Price of Peruvian Rice," Journal of Farm Economics (Menasha, Wisconsin), Vol. 49 (May 1967).

The Peruvian government presently buys and sells most of the domestic and imported rice in Peru. The main goals of its wholesale operation are to keep the farm price of rice high, to maintain a low consumer price, to break even on its wholesale operation, and to reduce rice imports. The conflicts of these goals are illustrated graphically by using a system of iso-profit and iso-import curves. (2)

- ID.3-5. THIRSK, Wayne R. "Price Policy and Agricultural Development in Ecuador," Paper No. 76, Program of Development Studies, Rice University (Houston, Texas), 1976.

Three factors which help to explain the poor performance of agriculture in Ecuador are domestically set product prices for many agricultural commodities which are below international levels, generous incentives for import substitution in the industrial sector and a failure to adjust the tariff structure to take account of surplus labor. This paper examines the nature and magnitude of these pricing distortions. It is concluded that the present price structure serves the interests of neither efficiency nor equity.

II. STORAGE

- II.1. ACKELS, A.A., and Pedersen, John. Review of Grain Storage, Handling and Distribution - Morocco 1969. Report No. 10. Food and Feed Grain Institute, Kansas State University, 1969.

"This report presents the findings of the Kansas State team and is intended either to provide recommendations for solutions to problems or to suggest further work that needs to be accomplished to arrive at economic plans for action." (2)

- II.2. BAILEY, J.E. "Whole Grain Storage." Storage of Cereal Grains and their Products. Edited by Clyde M. Christensen. St. Paul, MN: American Association of Cereal Chemists, 1974.

This is a technical discussion of the storage of whole grains. The author covers such topics as: kinds of storage facilities, structural requirements of storage bins, grain handling equipment, and maintaining quality in storage.

- II.3. BARRE, H.J., and Wimberly, James E. "Storage of Food Grains in South Asia," Technos (Fort Collins, Colo.), Oct./Dec., 1975.

The authors present a state of the art of storing food grains in LDCs. Economical alternatives are suggested. (5)

- II.4. BHATNAGAR, A. P., "Considerations for Grain Storage," Bulletin of Grain Technology, Vol. IX, No. 2, (June 1971).

A national grain storage system has to emerge by building integrated storages at all levels. Characteristics of different level storages have been explained. Area storage capacity determination shall be based on food, seed and reserve stock needs. The location of storages must be worked out by distribution method of linear programming. Economic considerations have been worked out for all levels of storages. (2)

- II.5. CASWELL, G.H., "Grain Storage Problems in Nigeria," Samaru Agricultural Newsletter, vol. 17, no. 1 (Feb. 1975).

The author argues that traditional methods of grain storage are inadequate for meeting contemporary food needs. He suggests a framework for meeting these needs to the greater benefit of the Nigerians.

- II.6. CHUNG, Do Sup. Observations and Review of Regional Grain Storage and Purchasing Facilities in Guatemala. Report No. 27. Food and Feed Grain Institute, Kansas State University, Sept. 1971.

The author observed some of the existing storage facilities and purchasing stations owned by INDECA (National Institute of Agricultural Commercialization), received various government plans and reports, and offered suggestions for improving operations. (1)

- II.7. CHUNG, Do Sup. Review of On-Farm Grain Storage in Tanzania. Report No. 49. Food and Feed Grain Institute, Kansas State University, 1975.

This report deals with a review of grain production, farm structures, imports and exports of cereal grains, on-farm grain storage situation, causes and extents of on-farm grain losses, the past and present studies and programs in on-farm storage, governmental and institutional capability, and finally, recommendations for improving on-farm storage situations in Tanzania. (1)

- II.8. DARLING, H.S. Storage of Food Grains in the Sudan. Khartoum: Philosophical Society of the Sudan, 1954.

In the northern Sudan, large urban populations and restricted agricultural production mean that the area consumes more food than it produces. Storage periods therefore tend to be short and this, combined with the dry climate (which minimizes losses from insects and other micro-organisms) makes the problem of food storage one of minor importance. Mastaba storage is discussed. In the Central Sudan, large surpluses of food crops are produced. Transport difficulties make it impossible to distribute these surpluses rapidly and they are usually stored in the area. The pit storage of dura millet is discussed in some detail. It is hoped that grain mixed with benzene hexachloride and stored in bulk in large mechanically dug

pits will keep for up to four years with losses not exceeding 2% by weight. In the Southern Sudan, high temperatures and humidities make it difficult to store food crops for more than a few months. Difficulties in food storage are contributing to delay the development of the area. The problems are discussed. An outline is given of current experimental work designed to find a way to store grain safely in the area for at least two years. (1)

- II.9. GILES, P.H., "The Storage of Cereals by Farmers in Northern Nigeria," Samaru Research Bulletin, No. 42, Ahmadu Bello University (Zaria, Nigeria), Institute for Agricultural Research, 1965.

This study finds that there is considerable variation in farmers' methods of harvesting, prestorage treatment and storage of the main cereal crops in Northern Nigeria. The major governing factors are climate, tradition and adaptation to environment. Most crops are stored unthreshed and removed for food. It is estimated that 4% of the total sorghum and millet crop is lost to insects every year. It was found that granary temperatures are not high enough to prevent insect infestation. The possibility of long-term storage without insect damage decreases with increased rainfall.

- II.10. GORMELY, Patrick; Keck, Martin; and Ackels, A.A. Review of Grain Storage, Handling and Processing and Distribution Problems and Proposals in the Republic of Korea. Report No. 6. Food and Feed Grain Institute, Kansas State University, 1968.

The report is the culmination of a study of "the problems of the grain food supply of Korea from farm and port to market." It includes the raw data, an analysis of that data, and recommendations.

- II.11. GUGGENHEIM, Hans. Traditional and Modern Techniques in Grain Storage and Transportation: Problems and Solutions for Operation Mills. Report to A.I.D., Bamako, Mali, January 15, 1977.

An important study of traditional methods of storage in Mali, including rare estimates of losses.

- II.12. HAYS, H.M., "The Marketing and Storage of Foodgrains in Northern Nigeria." Samaru Miscellaneous Paper, No. 50, Ahmadu Bello University, (Zaria, Nigeria), Institute for Agricultural Research, 1975.

It was the purpose of this study to conduct a detailed investigation into the extent and nature of imperfections in the traditional marketing system for millet and sorghum at each stage of the distributive process as produce moves from the farmer to the final consumers. Emphasis is on defining the traditional marketing system, evaluating its performance and examining ways of implementing changes to improve the system. The general objectives of this study are to describe the traditional market organization for millet and sorghum and to examine the pattern of market structure, the types and forms of market conduct of sellers and buyers and some measures of actual performance with a view toward formulating suggestions and recommendations for improving operational and pricing efficiency. The study examines in detail the marketing link in one area of northern Nigeria. The pricing efficiency of the marketing system is examined by studying prices in 15 selected locations in the four northern states of Nigeria. (1)

- II.13. HAYS, H.M. "Storage of Cereal Grains in 3 Villages of Zaria Province, Northern Nigeria." Savanna, V. 4, No. 2 (December 1975).

This study on the storage of Nigeria's two most important food grains examines the storage practices of 54 farmers in 3 villages of Zaria Province in North Central State. The types of storage structures in use are described with a view to providing some insights as to their adequacy and efficiency. Given the present storage practices for millet and sorghum, the scope for improvement through the use of better structures appears to be limited because of the effectiveness and the present low cost storage using the Rumbu. There is some scope for reducing storage losses through wider adoption and proper use of insecticides. (2)

- II.14. HERNANDEZ, Xolocotzi, "Maize Granaries in Mexico," Harvard University Botanical Museum Leaflets, V. 13, No. 7 (1969).

The author describes the historical development of maize granaries in Mexico from pre-Conquest times to the present.

- II.15. HOLMES, Elwyn S., Farm Storage and Handling of Rice, Corn and Soybeans in the Guayas River Basin of Ecuador. Report No. 52. Food and Feed Grain Institute, Kansas State University, 1975.

The objectives of this study were to review farm storage and handling of rice, corn and soybeans in the Guayas River Basin of Ecuador and to 1) make recommendations to improve operational efficiency of existing facilities; 2) determine training requirements for personnel; 3) explore types of adaptive research that might be applied to farm and cooperative grain storage; and 4) recommend methods of quality preservation for grains in storage. (1)

- II.16. HUYSMANS, A.A.C., "Storage of Foodgrains - Problems and Prospects," Bulletin of Grain Technology, Vol. VIII, No. 3 (Sept. 1970).

India is the country of reference. The author considers the role of storage problems, rodent problems and prevention, insect problems, and prospects for improved food grain storage.

- II.17. KRISHNAMURTHY, K., "Improvement of Storage of Foodgrains and Commercial Crops in Nigeria," Bulletin of Grain Technology (India Grain Storage Institute, Hapur), Vol. IX, No. 1 (March, 1971).

The author describes the functions and efforts of the various government sponsored agencies and administrative units responsible for storage of food grains and commercial crops in Nigeria.

- II.18. KRISHNAMURTHY, K., "Marketing and Storage of Grains in Cyprus," Bulletin of Grain Technology (India Grain Storage Institute, Hapur), Vol. VIII, Nos. 1 and 2 (March-June, 1970).

Cyprus is trying hard to increase the output of food grains to cater to the needs of growing population, increasing tourist traffic and developing cattle industry. Ctesiphon bins gained worldwide publicity. The observations with these structures in Cyprus will be a guideline to others interested in similar storage structures. The progressive policies of the Government, sound marketing and storage practices of the Grain Commission, coupled with research activities of the Agricultural Research Institute and the Department of Agriculture, will be able to make the country self-sufficient in foodgrains and place the entire post-harvest handling and storage of foodgrains on a modern scientific basis. (1)

- II.19. KRISHNAMURTHY, K., "Marketing and Storage of Foodgrains in Kenya," Bulletin of Grain Technology (India Grain Storage Institute, Hapur), Vol. VIII, No. 3 (Sept. 1970).

The National Agricultural Laboratories in Nairobi work in collaboration with various governmental boards in the areas of research, demonstration and extension of various aspects of storage. The article describes the kinds of storage units that are being both researched and used at the present. These include cribs, small scale storage bins, modern storage bins, air warehouses and Waller bins. Insect control is also discussed. It is the author's opinion that "by establishing commodity boards and modernizing handling and storage of grain to suit the needs, Kenya has put the grain trade on sound lines."

- II.20. LOPEZ, César O., Rapport sur la possibilité de construire des silos souterrains hermétiques en la République de Mauritanie....No publisher given, Sept. 1971 .

The author evaluates a system of storage for sorghum: underground hermetic silos. He studies these in Argentina and then recommends their construction in Mauritania. He explains their goals, gives an estimate for three years of use and gives technical specifications.

- II.21. McCOY, John H., and Tolle, Dwight S., Implementation of Grain Storage Operations, Marketing Services and Price Stabilization Program for the Government of Honduras. Report No. 8, Food and Feed Grain Institute, Kansas State University, 1968.

This study was prepared to provide assistance: (A) in developing recommendations for the training of personnel for the operation of grain storage facilities and the marketing of grain, (B) to the government of Honduras in developing a plan for the use of technical assistance in grain storage, in grain marketing and grain price stabilization, and (C) in developing general recommendations for more efficient administration and operation of the proposed grain storage and marketing system. (1)

- II.22. MPHURU, A.N., Losses Which Occur During the Harvesting and Storage of Grains: A Bibliography. Special Report No. 4, Food and Feed Grain Institute, Kansas State University, (July, 1976).

This bibliography is intended to draw together in one volume what has been published or reported on grain storage losses/damage/estimation and detection. It is divided into four sections. The first part includes literature pertaining to internal infestation and detection procedures. The second part includes losses due to insects, rodents and birds. The third section covers harvesting, handling, conditioning and processing losses and the last section covers literature on nutrient, fungal and germination losses. (1)

- II.23. PEDERSEN, John R., Status of Grain Storage in Developing Countries. Special Report No. 3, Food and Feed Grain Institute, Kansas State University, Oct. 1974 (revised July 1975).

The purpose of this paper was to focus on the current overall grain storage situation in developing countries. Two goals were in mind. First, as much data as possible was to be assembled on capacity, location and types of grain storage currently available in developing countries throughout the world. Second, storage conditions, problems and deterrents were to be considered. A complete catalogue of all existing storage facilities is not presented in this paper. Data reported in this paper has been obtained primarily from reports, studies and papers dealing with various aspects of grain storage in the developing countries. (1)

- II.24. PFOST, Harry; Hugo, Cornelius; and Jack, Donald S. Assessment of Grain Storage and Marketing Facilities in the Dominican Republic. Report No. 57, Kansas State University, Food and Feed Grain Institute, 1976.

The Kansas State University team studied certain problems related to grain marketing in the Dominican Republic. They reviewed grain storage and handling facilities and recommended that a feasibility study be conducted in order to determine the usefulness of a proposed new agricultural marketing center.

- II.25. PFOST, Harry B., and Niernberger, Floyd F. Study of Grain Storage and Marketing in Bolivia. Report No. 42. Food and Feed Grain Institute, Kansas State University, 1973.

The report is the result of a study delving into some of the wheat storage and marketing problems in Bolivia. Recommendations for a coordinated grain marketing system in that country are presented.

- II.26. PHILLIPS, Richard, Needs and Opportunities for Improved Grain Marketing in Panama: Executive Digest. Report No. 36. Food and Feed Grain Institute, Kansas State University, 1973.

The general objective of the study is to identify major long-term needs and opportunities for improved grain marketing in Panama within the setting of balanced economic development for the total agricultural sector of the country. Specific objectives include the following: (1) identify patterns of projected demand for grain and grain products; (2) develop projections of grain production on potentials by province; (3) develop projections of market volumes and distribution patterns; (4) identify needed improvements in existing marketing and processing facilities; (5) evaluate grain price policies and price support programs as they affect producers, handlers and consumers; (6) identify major needs for supporting marketing services. (1)

- II.27. PHILLIPS, Richard, and Pfof, Harry B. Observations and Recommendations for Improving Grain Storage and Marketing in Colombia. Report No. 20. Food and Feed Grain Institute, Kansas State University, 1970.

This study was prepared to examine the design and operation of the modern grain silos, to make suggestions for improvement and to conduct a seminar for those involved in the operation and management of the silos. (1)

- II.28. PHILLIPS, R.; Pfof, H.B.; Chung, D.; and Pedersen, J.R. Review of Economic and Engineering Study Rice Storage, Handling and Marketing. The Republic of Indonesia. Report No. 35. Food and Feed Grain Institute, Kansas State University, 1973.

The authors present a favorable general reaction to the report prepared by Weitz-Hettelsater Engineers. They review the methodology and comment on the major recommendations of that report.

- II.29. PINGALE, S.V. Storage Facilities. Foodgrain Technologists' Research Association of India, New Delhi, 1970.

This is a report on various structures which can be used as grain storage facilities, in this case as applied to India. The report covers virtually every facet of storage.

- II.30. RADETZKI, Marian, "The Swedish Grain Storage Venture in Tanzania: A Micro Evaluation." Seminar Papers, Institute for International Economic Studies, University of Stockholm, May, 1971.

This paper deals with Swedish aid transfers to Kenya and Tanzania. After an analysis of the most important development constraints on the two countries and a survey of their receipts of international aid, a critical assessment is undertaken of the overall Swedish aid endeavor. The paper concludes with a few micro-studies of individual Swedish projects.

- II.31. RAMASAVIAN, T.; Krishnamurthy, K.; and Pingale, S.V. "Studies on Preservation of Food Grains in Local Storage: Part II-Storage of Grain in Villages Near Hapur." Bulletin of Grain Technology (India Grain Storage Institute, Hapur), Vol. VI, No. 2 (June 1968).

Studies carried out in a few villages in Western U.P. to understand in detail the storage practices and problems prevalent in the area reveal that a variety of indoor storage structures are used for preservation of grains but none of them satisfies the requirements of ideal storage. There is a need to develop good storage structures and a suitable fumigant for use in the existing structures to safeguard the grain in the rural areas. (2)

- II.32. RUNCIMAN, A.M., "What We Need in International Farm Policy." Grain Storage: Part of a System. Edited by R.N. Sinha and W.E. Muir. Westport, Ct.; Avi Publishing Co., 1973

Grain surpluses will probably continue to be a problem in the 1970's, resulting in depressed prices. The chief reasons are: (a) lack of coordinated plans by developed countries to restrict production according to comparative advantage; and (b) marketing and transportation difficulties have forced surplus grain in developing countries to be dumped on world markets. Small farmers in developed and developing countries are being hurt. Multilateral agreements among developed countries establishing guidelines to increase scale of production among producers, according to comparative advantage, will allow countries to scale down support prices which are stimulating production. Assistance is needed in developing countries, particularly those undergoing a Green Revolution, to create better storage and transportation facilities. Both these are needed before international commodity arrangements will work. (2)

- II.33. SARID, J.N., and Krishnamurthy, K., "Protection of Marketable Grain," Bulletin of Grain Technology (India Grain Storage Institute, Hapur), Vol. VI, No. I (March 1968).

The authors describe some of the problems of grain storage in India and suggest a general framework for improving grain storage facilities.

- II.34. SORENSON, L., and Do Sup Chung. Bangladesh Food Grain Storage and Stock Management Study. Report No. 59. Food and Feed Grain Institute, Kansas State University, 1976.

"The objective of the study is to assemble information and to develop detailed scopes of work for a study of food grain storage which will contribute to a comprehensive food grain policy and management program in Bangladesh." (1)

- II.35. SPENCER, William P.; Pfost, Donald L.; and Pedersen, John R. Recommendations for Grain Storage and Preservation in Senegal. Report No. 54. Food and Feed Grain Institute, Kansas State University, 1975.

"The grain storage and marketing system in Senegal was reviewed with specific emphasis on the need for grain storage facilities to maintain a reserve stock of grains and a program to train Senegalese in grain storage and preservation." (1)

- II.36. TEUTEM, Onno van, "National Foodgrain Stock Policies in Developing Countries in the Context of World Food Security," FAO Monthly Bulletin of Agricultural Economics and Statistics, Vol. 24, No. 10 (Oct. 1975).

In the light of various foodgrain stock policy issues raised at the 1974 World Food Conference, the author reviews those actions which have been, and could be, taken to ensure an adequate foodgrain supply. Among the areas covered are: 1) national and international grain stocks; 2) FAO assistance; 3) initial findings of FAO reviews; and 4) actions to strengthen national food-stock policies. The author concludes there is still much to be accomplished in terms of policy formulation and implementation.

- II.37. TOLLE, Dwight I. Cereal and Dry Edible Bean Marketing and Warehousing in the States of Piaua and Paraiba, Brazil. Report No. 17. Food and Feed Grain Institute, Kansas State University, 1970.

The author investigated storage problems related to P.L. 480 food shipments and made recommendations related to these problems and to processing and marketing functions for cereals and dry edible beans in these Brazilian states.

- II.38. UNITED NATIONS, Food and Agricultural Organization. National Food Reserve Policies in Underdeveloped Countries. FAO Commodity Policy Studies No. 11 (Rome, 1958).

This report has two main purposes. First, to provide information of practical help to governments, particularly of underdeveloped countries, which are faced with decisions as to the establishment and maintenance of national reserves, and second, to suggest possible ways of promoting the use of surplus foodstuffs, in line with accepted principles, to build adequate reserves in vulnerable countries. Thus, Part One of the report contains a general analysis of the functions of national reserves and sets out the basic reasons why they are needed in many underdeveloped countries. Field inquiries were made in India and Pakistan. The results are presented in Part Two, together with a comparative note summarizing programs and stock policies in five Central American countries. The general conclusions as to possible international action which emerge from the analysis are summarized in Chapter III. (1)

- II.39. UNITED NATIONS, Food and Agricultural Organization. "Notes on and summary of discussions of GASGA members on reductions of post-harvest food loss in the Sahel." Rome, July, 1976.

The subject of these discussions includes the present status of infrastructure development and research capability in post-harvest crop protection, the status and needs of personnel training, and the requirements and opportunities for development assistance for crop protection programs. Individual Sahelian countries, as well as the region as a whole, are discussed. The report contains terms of reference and a list of documents.

- II.40. WENDLING, Leo T. Assessment of Food Grain Storage Facilities - West Pakistan. Report No. 7. Food and Feed Grain Institute, Kansas State University, 1968.

The purpose of this report was an assessment of food grains storage facilities in West Pakistan and schemes for materially increasing available storage capacity in the immediate future at minimum cost... This report includes only "short-run recommendations for wheat and rice storage facilities." (1)

- II.41. WINTER, J.D., and Gilman, G.A. Report of the Grain Storage/Marketing Evaluation Mission to the Gambia. London: Tropical Products Institute, June 1975.

The aims of this report were: (1) to study the level of domestic supply of grain and the marketing, storage and distribution of this and imported grains (including food aid) in the Gambia; (2) review the need for further storage facilities required to ensure orderly and efficient marketing of all grains and to provide for the strategic buffer stock, should this be deemed necessary; (3) in the light of (1) and (2), to make recommendations on a national grain storage and marketing policy. (1)

III. FOOD AID

- III.1. AKTAN, Resat. Analysis and Assessment of the Economic Effects of Public Law 480 Title I Program, Turkey. Ankara, University of Ankara, 1964.

The study examines the economic effects of P.L.480 Title I food shipments to Turkey through 1962. The authors describe basic characteristics of Turkish agriculture and present an analysis of the impact of P.L. 480 shipments on this system. The study finds that such shipments did not raise food prices outside of normal, expected increases, that P.L. 480 provided urgently needed food supplies, and that these shipments freed funds for economic development.

- III.2. DUDLEY, Leonard, and Sandilands, Roger J. "The Side Effects of Foreign Aid: The Case of Public Law 480 Wheat in Colombia," Economic Development and Cultural Change, V. 23, No. 2, (January, 1975).

A theoretical model for the marketing of surplus wheat imports shows the possibility of a discrepancy between the socially optimal price and the price which maximizes government revenues. In the presence of domestic factor-market distortion and an overvalued exchange rate, the bias is likely to be on the downward side. Evidence supporting this hypothesis was found in the case of the P.L. 480 program in Colombia. From 1958 to 1971, the price received by Colombian producers averaged 20 per cent lower than the estimated socially optimal level. As a result, Colombia imported 1,400,000 tons of wheat which could have been produced domestically at a lower opportunity cost.

- III.3. FISCHER, F.M., "A Theoretical Analysis of the Impact of Food Surplus Disposal on Agricultural Production in Recipient Countries," Journal of Farm Economics, 45 (November 1963).

- III.4. GOERING, Theodore J., and Witt, Lawrence, "United States Agricultural Surpluses in Colombia - A Review of P.L.480," Technical Bulletin (East Lansing: Michigan State University), v. 289 (1963).

The authors explore the impact of P.L.480 food shipments on the Colombian agricultural economy. They examine the impact in four specific areas: (1) price policy and related issues; (2) economic development and the use of local resources;

(3) consumption levels for food and other farm products; and (4) Colombian foreign exchange balances. The authors then present their conclusions, one of which is that P.L. 480 aid deflated national production rather than stimulated production.

- III.5. HUBERT, Klemens, "A Theory on the Economic Effects of Food Aid in Recipient Countries," Zeitschrift für die Gesamte Staatswissenschaft (Tübingen), 131, (April 1975).

The paper presents a theoretical framework for the analysis of the economic effects of food aid. Although a number of studies have dealt with various aspects of this kind of development assistance, the effects have hardly been examined comprehensively from a macro-economic point of view.... The criterion applied to judge the results of food aid in a recipient country is its contribution to the achievement of the specific development objectives on a self-sustained basis... Economic development, especially its acceleration, depends decisively on whether or not the labor force, particularly the growing number of those employed in the non-agricultural sector, can be sufficiently provided with food... Three model situations (food gaps) have been differentiated... (1)

- III.6. ISENMAN, Paul J., and Singer, H.W. "Food Aid: Disincentive Effects and their Policy Implications," AID Discussion Paper No. 31, 1975.

This article reviews some of the analytic issues and literature relevant to the concern about the disincentive effects and risks of food aid. These concerns have been found to be strongly felt by agricultural economists and aid "practitioners." India is presented as a case study.

- III.7. JONES, David B., and Tulloch, Peter. "Introduction: Is Food Aid Good Aid?" ODI Review (Overseas Development Review), No. 2 (1974).

The authors suggest that in those situations where financial aid is not feasible, food aid may be a desirable alternative for the short run. They see such aid providing certain benefits, such as an easing of balance of payments problems, by payment in kind rather than in cash, a rebuilding of depleted stocks, aid in disaster situations where food is of more immediate need than money. A final caution about the short-term nature of food aid is given.

III.8. MANN, J.S., "The Impact of Public Law 480 Imports on Prices and Domestic Supply of Cereals in India," American Journal of Farm Economics, 4 (February 1968).

III.9. MENZIE, Elmer L.; Witt, Lawrence W.; Eicher, Carl K.; and Hillman, Jimmie S. Policy for United States Agricultural Export Surplus Disposal. Technical Bulletin (Arizona Agricultural Experimental Station), 150 (1962).

The study concludes that, for recipient countries, development must be equated with investments. Food aid must be included in any development plan, if it is significant. Several countries are analyzed in this study, including India, Israel, Colombia and Tunisia . The study also concludes that food aid cannot be equated with dollar aid.

III.10. RATH, N., and Patvardhan, V.S. Impact of Assistance under P.L. 480 on Indian Economy. Poona: Gokhale Institute of Politics and Economics, 1967.

III.11. ROGERS, K.D. Utilization of Food Aid in Economic Development. Center for Agricultural and Rural Development. Report No.6. (Ames, Iowa: Iowa State University, 1971).

III.12. ROGERS, K.D.; Srivastava, U.K.; and Heady, E.O., "Modified Price Production and Income Impacts of Food Aid Under Market Differentiated Distribution," American Journal of Farm Economics, 54 (March 1972).

III.13. SCHULTZ, Theodore, "Value of U.S. Farm Surpluses to Underdeveloped Countries," Journal of Farm Economics, 42 (December 1960).

The author discusses basic questions concerning the benefits and costs of food aid to the U.S. and recipient countries. One cost of food aid may be to hinder development by reducing production and lowering prices.

- III.14. SEEVERS, G.L., "An Evaluation of the Disincentive Effect Caused by P.L. 480 Shipments," American Journal of Agricultural Economics, 50 (August 1968).

- III.15. SRIVASTAVA, Uma K.; Heady, Earl O., et al. Food Aid and International Economic Growth, Ames, Iowa: Iowa State University Press, 1975.

The study was made to better quantify the effects of previous food aid programs on development, producer and consumer welfare, agricultural progress, and fiscal structures in recipient countries. Analysis is made of conditions under which consumer welfare can be enhanced and farmers can be insulated from negative price impacts. The reference country is India. (1)

- III.16. UMSTOTT, Haven D. "Public Law 480 and Other Economic Assistance to United Arab Republic (Egypt)," U.S.D.A., ERS Foreign Report, 83 (June 1964).

Umstott found that P.L. 480 aid lowered the cost of living in Egypt but at the eventual cost of greater dependence on such shipments rather than by expanding domestic production. He concludes that long-run projections would forecast even greater dependence on foreign supplies of food.

- III.17. UNITED NATIONS, Food and Agriculture Organization. Use of Agricultural Surpluses to Finance Economic Development in Underdeveloped Countries. Commodity Policy Series #6, Rome, 1966.

The purpose of this study was to determine how agricultural surpluses could be used to finance economic development via new and additional investments without stressing import-substitution or competition with sales of domestic products. The reference case was India. The study forecasts total surplus food need in proportion to total new investment type of surplus food distribution prospect. A second part of the study discusses those projects which would be most beneficial in the Indian case.

IV. Government and International Agency Documents

CHAD - DOCUMENTS - TCHAD

Documents Officiels - Government Documents

- Caisse Centrale, "Production du Coton," note interne, 1976.
- Ministère de l'Agriculture, de l'Elevage, Eaux-Forêts, Pêches et Chasses. Rapport Annuel Campagne 1975-1976, Vols. I-III, 1976.
- Ministère du Développement Agricole et Pastoral, Chargé de la Lutte contre les Calamités Naturelles, Direction de l'Agriculture, Division de la Statistique Agricole, Office National du Développement Rural (ONDR). L'Agriculture et l'Equipement des Cantons dans le Secteur de la Tandjile, Campagne 1975-1976, 3ème Trimestre, 1976.
- Ministère d'Etat Chargé de l'Agriculture, Direction de l'Agriculture, Division de la Statistique. L'Agriculture et l'Elevage Tchadiens à Travers les Chiffres 1962-1971, Update, 1976.
- Ministère d'Etat Chargé de l'Agriculture, Direction des Services de l'Agriculture, Division de la Statistique Agricole, "Premiers Résultats du recensement de l'Agriculture 1972-1973, Toutes Préfectures," 1973.
- Office National du Développement Rural (ONDR), "Rapport de Synthèse pour la Zone Sud," Janvier-Septembre 1976.
- Office National du Développement Rural (ONDR), Service Vulgarisation, "Mercuriales Zone Cotonnière, 1973-1974-1975," Mai 1976.

Autres - Other

- Banque des Etats de l'Afrique Centrale, Agence de Ndjamena, "Balance des Paiements de la République du Tchad (Année 1973)," Juin 1974.
- Barnathan, J.C. "Monographie Coton Tchad," Banque des Etats de l'Afrique Centrale, Agence de Ndjamena, Avril 1974.

Voir page suivante
See following page

CHAD - DOCUMENTS - TCHAD

(suite, continued)

Faurie, G. "La Culture Cotonnière au Tchad: Etude de Prix de Revient," Banque des Etats de l'Afrique Centrale, Agence de Ndjamena, Août. 1975.

Groupe de Conseillers en Développement d'Afrique Centrale, Production et Commercialisation des Céréales, Vol. I-III - Tchad, Juillet 1974.

Groupe de Conseillers en Développement d'Afrique Centrale, Economie des Oléagineux au Tchad, Vol. 1: La Situation Actuelle, Avril 1976.

Agence pour le Développement International - Agency for International Development

Projet Commun Gouvernement du Tchad et Care-Tchad, "Projet pour le Stockage de Grains de la Famille Rurale," 1976.

LA GAMBIE - DOCUMENTS - THE GAMBIA

Government Documents

-- Central Statistics Office, National Sample Survey of Agriculture, 1973/74. Statistical Working Paper No. 13, May 1974.

-- Economist Intelligence Unit, Quarterly Economic Review, Nos. 1-4 (1974).

Other

Trupke, H. "Increasing Food Availability through Waste Reduction and Improvement of the Marketing System," no publisher given, 1976.

Tropical Products Institute, Report of the Grain Storage/Marketing Evaluation Mission to the Gambia, June 1975.

LA HAUTE-VOLTA - DOCUMENTS - THE UPPER VOLTA

Documents officiels - Government Documents

- Garey, Ambroise; Storm, Leo. "Rapport de la Commission Mixte O.F.N.A.C.E.R./D.D.R.: Enquête sur la Production et la Commercialisation des Céréales," Office National des Céréales, Août, 1972.
- Lamizana, Robert; Simpore, Saidou; Der Somda, Michel. "Groupe de Travail Agriculture-Commerce Chargé d'Etudier des Problèmes Posés par la Commercialisation des Produits du Cru," Ministère des Finances et de Commerce, et Ministère de l'Agriculture, de l'Elevage, des Eaux et Forêts et du Tourisme, 1973.
- Ministère du Commerce, du Développement Industriel et des Mines, Direction du Commerce, Budget de la Caisse de Stabilisation des Prix des Produits Agricoles, 1973-1974, 1974-1975, 1975-1976.
- Ministère du Développement Rural, "Avant-Projet de Constitution de Stock Céréaliier Villageois: Un Programme de Commercialisation des Céréales au Niveau des Villages de Développement Communautaire," Mai, 1976.
- Ministère du Développement Rural, "Note Relative à la Constitution du Stock de Céréales de Réserve," 25 Mai 1976.
- Ministère du Développement Rural, "Une Politique de Stabilisation et de Soutien des Prix de la Production Céréalière en Haute-Volta," 1976.
- Ministère du Développement Rural, Comité National pour la Constitution des Stocks de Céréales de Réserve, Secrétariat Permanent du Comité de Coordination du Développement Rural, "Rapport Intérimaire d'Exécution du Projet Stock de Réserve de Céréales -- Phase II 1975/76," Projet Stock de Réserve FAO/FSAS, 31 Juillet 1976.
- Ministère du Développement Rural, Secrétariat Permanent du Comité de Coordination du Développement Rural, "Additif au Rapport Final d'Exécution: Stock de Réserve de Céréales Devant Servir à Secourir les Populations des Zones Sahéliennes de la Haute-Volta," Projet FAO/OSRO, 12 Mars 1976.

Voir page suivante
See following page

LA HAUTE-VOLTA - DOCUMENTS - THE UPPER VOLTA

(suite, continued)

- Ministère du Développement Rural, Secrétariat Permanent du Comité de Coordination du Développement Rural, "Note d'Informations sur l'Origine et l'Entretien du Stock," 27 Octobre 1975.
- Ministère des Finances et du Commerce, Direction du Commerce, Service du Commerce Intérieur, "Problèmes de la Commercialisation des Produits du Cru," Rapport au Conseil des Ministres, n.d.
- Ministère des Finances et du Commerce, Direction du Commerce, Service du Commerce Intérieur, "Procès-Verbal de la Réunion de la Commission Nationale Créée par Arrêté No. 389/MFC/DC/CI du 14/6/1971 et Chargée de l'Etude des Problèmes de la Commercialisation des Produits du Cru," n.d.
- Ministère des Finances et du Commerce et Ministère de l'Agriculture, de l'Elevage, des Eaux et Forêts, et du Tourisme, "Rapport de Mission du Groupe de Travail Agriculture-Commerce Chargé d'Etudier les Problèmes de la Commercialisation et de l'Exportation des Produits du Cru," 1972.
- Ministère du Plan, du Développement Rural et de l'Environnement, et du Tourisme, Comité de Coordination du Développement Rural, "Rapport Provisoire sur la Collecte des Produits Agricoles par les Organisations du Développement Rural," Août 1975.
- Ministère du Plan, du Développement Rural, de l'Environnement et du Tourisme, Comité de Coordination du Développement Rural, Secrétariat Permanent, Rapport d'Activité, Annexes, Août 1974-Novembre 1975.
- Ministère du Plan, du Développement Rural, de l'Environnement et du Tourisme, Secrétariat Permanent du Comité de Coordination du Développement Rural, "Rapport Final d'Exécution: Stocks de Réserve de Céréales Devant Servir à Secourir les Populations des Zones Sahéliennes de la Haute-Volta," Projet FAO/OSRO, 10 Septembre 1975.
- Ministère du Plan, Sous-Commission de la Production Végétale, "Définition d'Une Politique Céréalière," 1976.

Voir page suivante
See following page

LA HAUTE-VOLTA - DOCUMENTS - THE UPPER VOLTA

(suite, continued)

-- Office National des Céréales (O.F.N.A.C.E.R.), "Estimations des Ressources et des Besoins en Céréales (Récolte 1976)," 8 Octobre 1976.

-- Rochette, R. "Les Eleveurs Peuls Pendant l'Hivernage 1976 dans les Blocs A.V.V. de Wayn, Rapadama Sud, Mogtedo, et Mogtedo-Bombore (Rive Gauche de la Volta Blanche), "Autorité des Aménagements des Vallées de Volta, 14 Août 1976.

Autres

Bell, Allen. "Current Upper Volta Food Situation," Memorandum, 24 September 1976.

Dommer, Arthur J. "Technical Report on Data Requirements to the Director, CDO, Ouagadougou," AID, November 1975.

Entente Grain Stsbilization Project, "Draft Evaluation Project 161," n.d.

Programme des Nations-Unies pour le Développement, "Constitution d'un Stock de Réserve de Céréales Devant Servir à Secourir les Populations de Haute-Volta en Cas de Mauvaise Récolte dans le Contexte de l'Engagement International sur la Sécurité Alimentaire Mondiale," Programme du Gouvernement de la Haute-Volta, 23 Mars 1976.

Warren, Fred B. "1973 Crop Production in Upper Volta," U.S. Department of Agriculture and AID, May 1974.

Wilcock, David C. "Entente Grain Stabilization and Marketing," Department of Agricultural Economics, Michigan State University, June 30, 1976.

MALI - DOCUMENTS - MALI

Documents Officiels - Government Documents

- Direction Nationale du Plan et de la Statistique, Service de la Statistique Générale, de la Comptabilité Nationale et de la Mécanographie, Annuaire Statistique 1971, Août. 1973.
- Institut de Productivité et de Gestion Prévisionnelle, Rapport Final de la Commission Interministérielle sur la Restructuration de l'O.P.A.M., Août. 1976.
- Ministère du Développement Rural, Institut d'Economie Rurale, "Coûts Moyens de Production des Principaux Produits Agricoles pour la Fixation des Prix aux Producteurs de la Campagne 1976/1977," Juin 1976.
- Ministère du Développement Rural, Institut d'Economie Rurale, Unité d'Evaluation, "Evaluation de l'Opération Arachide et Cultures Vivrières: Résultats d'une Enquête Descriptive de la Zone d'Intervention de l'O.A.C.V. en 1976," Juillet 1976.
- Ministère d'Etat Chargé du Plan et de la Coordination des Affaires Economiques et Financières, Direction de la Statistique, Annuaire Statistique 1966.
- Ministère du Plan, de l'Equipement et de l'Industrie, Service de la Statistique Générale, de la Comptabilité Nationale et de la Mécanographie. Annuaire Statistique 1968, Mai 1969.
- Présidence du Gouvernement, Direction Générale du Plan - Statistique, Direction de la Statistique Générale, de la Comptabilité Nationale et de la Mécanographie. Rapport de l'Enquête Agricole 1970-1971, Août 1973.

Gouvernement Français - French Government

- BDPA, Mission de Restructuration de l'Office des Produits Agricoles du Mali (O.P.A.M.), Mai 1975.

Voir page suiyante
See following page

MALI - DOCUMENTS - MALI

(suite, continued)

- Le Mali, Notes et Etudes Documentaires, La Documentation Française, Nos. 4081-4083, 22 Avril 1974.
- Secrétariat d'Etat aux Affaires Etrangères, Chargé de la Coopération, Dossier d'Information Economique, Mali 1972-1973, Mars 1974.

Agence pour le Développement International - Agency for International Development (U.S.A.I.D.)

- Garvey, William E. and Robbins, George L., Millet and Sorghum Price Policy and Related Marketing Problems in Mali, Field Report 13, AID and the U.S. Department of Agriculture, Economic Research Service, April 1972.
- Laubis, Robert E., "Project Design: Malian Component of the O.M.V.S. Regional Grain Stabilization Project," Memorandum, AID, April 21, 1972.
- "Mali Crop Production - Action Riz-Sorgho," August 1976.

Autres - Other

Ballan, P.; Lelievre, D.; Mangenot, P.; et Haik. G., Etude des Structures de Prix et des Mécanismes de la Commercialisation des Mils et Sorghos, Tomes I-III, IDET-CEGOS, Mai 1976.

FAO, Rapport au Gouvernement du Mali sur le Problème de la Commercialisation des Céréales, 1973.

MAURITANIE - DOCUMENTS - MAURITANIA

Government Documents

- Ministère de la Planification et du Développement Industriel,
Direction de la Statistique et des Etudes Economiques, Annuaire
Statistique, 1970, 1973, 1974.
- Ministère de la Planification et du Développement Industriel,
Direction de la Statistique et des Etudes Economiques, Statistiques
du Commerce Extérieur de la Mauritanie en 1972, Commerce Special
Importations Exportations, Résultats Provisoires.
- Ministère de la Planification et de la Recherche, Direction de la
Statistique et des Etudes Economiques, Bulletin Mensuel Statis-
tique. janvier, août, septembre, décembre, 1972.

Other

Mauritania Rural Development Project, USAID project paper, July 1976.

NIGER - DOCUMENTS

Government Documents

- Analyse de la Situation Demographique au Niger, 1972.
- Ministère du Développement Rural, Direction du Service de l'Agriculture, Situation Agricole et Alimentaire au Niger après la Campagne Agricole 1976.
- Ministère de l'Economie Rurale, Direction de l'Agriculture, Section Statistique Agricole, Enquête Agricole par Sondage 1972-73.
- Office des Produits Vivriers du Niger (OPVN), Rapport d'Activité, 1974-75.
- OPVN, Rapport sur la Campagne de Stabilisation des Cours des Céréales et Légumineuses, 1972.
- Rapport sur la Sécheresse au Niger, mars 1976.

Other

- Bureau pour le Développement de la Production Agricole (BDPA), Report on Modernization in the Komadugu Valley, Paris, no date.
- Castelet, Paul. Interdisciplinary Mission to the Niger River Commission Oct.-Nov. 1969. United Nations Development Program, Abidjan,
- Conseil de l'Entente, Fonds d'Entraide et de Garantie des Emprunts. Cereal Project Upper Volta/Niger: Study on the Constitution of a Reserve Stock of Cereals for Niger, 1974.
- Funel, Jean-Marie. Methodologie de la Planification - Le Développement Régional et sa Problématique, Etudes à travers l'Expérience de Tahoua. République Française, Ministère de la Coopération, 1976.
- Mahamare, M. Brah. Un Examen de la Structure et du Rôle des Coopératives au Niger et Quelques Problèmes Eprouvés dans leur Fonctionnement. OECD/FAO, 1976.
- United States Agency for International Development, miscellaneous memoranda: "Masson Report-Getting OPVN in Operating Order"; Harris trip to Niamey, 1971"; "Report on Paris Grain Stabilization Conference, 1971"; "Guidelines for Assisting Sahel Cereal Production"; "West Africa Grain Stabilization"; "Additional Thoughts on the Niger Cereals Price Situation"; Sydney Harris, "Report of Trip to Niamey, Oct. 1971"; Robert Lester, "Summary Report-Grain Stabilization Project in Upper Volta and Niger, May-July 1972"; William Garvey, "A Rational Grain Marketing Program for Niger" Oct. 1974.

SENEGAL - DOCUMENTS

Government Documents

- Ministère du Développement Rural et de l'Hydraulique, Développement de la Riziculture en Casamance, Rapport d'Enquêtes de Terroirs, Tome I: Rapport de Synthèse, 1973.
- Ministère du Développement Rural et de l'Hydraulique, Conseil National de l'U.P.S., Le Socialisme dans le Développement Rural après Quinze Années d'Indépendance, Bilan et Perspectives, mai 1976.
- Ministère du Développement Rural et de l'Hydraulique, DGPA/DEMP, Vème Plan du Développement Economique et Social, 1977-1981, Commission 1A (Agriculture), Propositions d'Actions, juillet 1976.
- Ministère des Finances et des Affaires Economiques, Direction de la Statistique, Situation Economique du Sénégal, 1975, octobre 1976.
- Ministère des Finances et des Affaires Economiques, Direction de la Statistique, et Ministère du Plan et de la Coopération, Division des Ressources Humaines, Enquête Demographique Nationale, 1970-1971, mai 1973.
- Ministère des Finances et des Affaires Economiques et Ministère du Plan et de la Coopération, Enquête Demographique Nationale, 1970-1971 - Analyse des Résultats du 2eme Passage Portant sur la Population Active, mai 1974.
- Ministère du Plan et de la Coopération, Direction de la Planification, Division des Ressources Humaines, "L'Emplois et les Salaires dans les Secteurs Privé et Semi-Privé au Mois de Décembre 1975," octobre 1976.
- Ministère du Plan et de la Coopération, DP/DRH, Projection de la Population Active 1971-2001, octobre 1975.
- Ministère du Plan et de la Coopération, DP/DRH, Projections Demographiques sur la Base de l'Enquête 1970-1971, août 1975.
- Ministère du Plan et de la Coopération, DRH, Considérations Relatives à la Définition d'une Stratégie de Développement à la long terme du Sénégal, mai 1974.
- Office National de Coopération et d'Assistance pour le Développement (ONCAD), Direction Technique, "Note Technique de Stockage et de Conservation, Commercialisation du Mil, Campagne 1971-72."
- ONCAD, Direction Technique, "Infrastructures de Stockage de Mil - Note sur Avant Projet," no date.

See following page
Voir page suivante

SENEGAL - DOCUMENTS

(continued, suite)

Other

Lateef, Victor. "Agricultural Crop Production for Senegal," memorandum, ADO/Dakar, Jan. 16, 1976.

United States Agency for International Development (USAID). "Matam Irrigated Perimeters," project paper, September 1976.

USAID, "O.E.R.S. Grain Stabilization Project," project proposal, April 1971.

U.N. Documents - Documents des Nations-Unies

- Food and Agriculture Organization (FAO), Constitution et Gestion d'un Stock de Réserve de Céréales au Tchad, provisional, 1976.
- Mission de Sécurité Alimentaire, Draft Report, 24/10, June 11, 76.

General Documents - Documents Généraux

- Agency for International Development, Food Grain Production and Marketing in West Africa, March 1970.
- CILSS, Club du Sahel, "Réponse au Questionnaire Envoyé par l'Equipe Commercialisation, Politique de Prix et Stockage," Juillet 1976.
- Conseil de l'Entente, "Fonds d'entraide et de Garantie des Emprunts," (Haute-Volta- Niger), Jan. 1975,
- Herpin, Jean et Martinval, Charles. "Introduction et Synthèse du Rapport de Mission Relatif à l'Organisation du Marché Togolais des Céréales et aux Modalités d'Intervention de l'Office National des Produits Vivriers 'Togograin'," République Française, Ministère de la Coopération, Union Nationale des Coopératives Agricoles de Céréales, Société d'Etudes et d'Equipements Agricoles et Agro-Alimentaires, Septembre 1976.
- International Fertilizer Development Center, "West Africa Fertilizer Study," AID, July 15, 1976.
- Lester, Robert. "Summary Report of Temporary Duty Assignment to Grain Stabilization Project in Upper-Volta and Niger, May 25-July 18, 1972," AID, July 1972.
- Morris, W.H.M., "Entente Food Production, An Introduction," first draft, Nov. 1975.
- Pattinson, I., "Une Brève Analyse des Quelques Problèmes Relatifs aux Programmes de Stabilisation des Céréales en Haute-Volta et au Niger," 1974.
- Pattinson, Ian. "Marketing of Cereals and Cowpeas and Price Stabilization in Upper Volta and Niger, Six Monthly Report," Dec. 1974.
- Pattinson, Ian. "Quelques Observations sur l'Expérience des Offices en Commercialisation des Céréales Locales," Conseil de l'Entente, Projet Céréaliier Haute Volta/Niger, Nov. 1973.
- Proposals of the Tanzanian Government on the Recommendation of the Special Presidential Committee of Enquiry into the Cooperative Movement and Marketing Boards, Government Paper No. 3, 1966.

Voir page suivante
See following page

- S.C.E.T. International et S.E.D.E.S.; Essai de Réflexion sur les Stratégies Anti-Sécheresse Possibles dans les Pays Sahéliens de l'Afrique de l'ouest, Rapport de Synthèse, Jan. 1976.

- United Nations Food and Agriculture Organization, Etude Prospective pour le Développement Agricole des Pays de la Zone Sahélienne 1975-1990, Vol. I; Rapport Principal, Vol. II; Annexes Statistiques. Rome (1976).

- United Nations Food and Agriculture Organization. The World Rice Economy in Figures, 1909-1963. Rome, 1965.

DOCUMENTS OF THE INTERNATIONAL BANK
FOR RECONSTRUCTION AND DEVELOPMENT AND
THE INTERNATIONAL MONETARY FUND

DOCUMENTS DE LA BANQUE INTERNATIONALE POUR
LA RECONSTRUCTION ET LE DEVELOPPEMENT ET
DU FONDS MONETAIRE INTERNATIONALE.

IBRD Country Studies
Etudes Par Pays Faite Par Le BIRD

- "Agricultural Sector Survey: Senegal, Vol. I,II" 3 Nov. 1975.
- "Appraisal of A Second Sedhiou Project: Senegal" 4 June 1976.
- Chad: 1976 IBRD Report.
- "Chad: Development Potential and Constraints" July 1974.
- "Chad's Economic Development" 2 July 1973.
- "Current Economic Situation and Prospects of Mauritania, Vol.I" 5 August 1971.
- "Current Economic Position and Prospects of Upper Volta" 21 Jan. 1969: 7 July 1975.
- "Current Economic Position and Prospects of Senegal" 2 May 1968.
- "Economic Memorandum on Mali" 20 May 1976.
- "Economic Memorandum: Niger. 13 May 1976.
- "Economic Position and Prospects of Niger" 1973 (?), also May, 1972.
- "Evolution Economique Recente du Mali" 30 Sept. 1973 (also in English).
- "Recent Economic Development in Mali" 9 May 1973
- "Senegal: Tradition, Diversification and Economic Development" Nov.1974.
- "The Economy of the Gambia" 12 December 1975.
- "The Economy of Senegal, Vols. I,II,IV" 15 August 1973.
- "The Economy of Niger" 8 July 1968.
- "The Economic Development in Upper Volta, Vol. II," Agriculture 27 November.1970.
- "Mauritanie: Propositions pour un Programme d'Investissements Publics 1976 - 1980" June 1976.
- Recent Economic Development in Mali, 9 May 1973.

IBRD, IMF (Continued)

Other IBRD Documents
Autres Documents du BIRD

- "Special Sector Survey: Emergency Grain Reserves for the Sahelian Countries" 26 June 1975.
- "Special Sector Survey: Irrigation Potential of Semi-Arid Zones of West Africa: Part I, Senegal River Basin Irrigation Development" 20 August 1975.
- "Western Africa Foodgrain Study" 7 September 1976.

IMF Country Studies
Etudes Par Pays Faite Par le FMI

- Chad - 1976 FMI Report June 1975.
- "Chad - Recent Economic Development" 3 May 1973; 16 September 1976.
- "Niger - Recent Economic Development" 1973; 10 June 1975.
- "Mali - Recent Economic Development" 24 May 1972 and 30 July 1973; 13 January 1976.
- "Mali Report" 18 February 1975.
- "Senegal - Recent Economic Development" 31 January 1975.
- "The Gambia - Recent Economic Development" 5 March 1976.
- "Upper Volta - Recent Economic Development" 25 June 1976, 11 Dec. 1973

INDEX OF AUTHORS

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- Abalu, G. IB.2a-1
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