The Marketing of Foodgrains in the West African Sudano-Sahelian States
An Interpretive Review of the Literature

Barbara Harriss

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REFERENCES
When I was asked by the Economics Program, ICRISAT, to take on a consultancy reviewing the literature on the economics of marketing the crops for which ICRISAT has a research mandate in the semi-arid tropics of West Africa, I was presented with the two volumes of the Center for Research on Economic Development (CRED), University of Michigan, CILSS/Club du Sahel study: "Marketing, Price Policy and Storage of Foodgrains in the Sahel, A Survey" (CILSS 1977). They suggested that, since most of the work had been done already, my task would be easy. My task has not been that easy. But what began as a formidable and crude challenge, namely to cover the same field as has CRED from cold (after 5 years of research on the economics of rice marketing in South Asia and with no West African experience) and in one-eighth of the man-months, has become one of the most interesting pieces of research I have ever done, and has resulted in a significant change in my approach to my subject. Given this change, I have had no problem in ordering this review of literature although, earlier on in the year, I was worried by the fact that it might have been written either by crop, by country or by topic.

ICRISAT has provided resources, for me unparalleled, to travel, to collect material, to discuss ideas with a wider range of people than I have ever met before in such a space of time (from scientific research workers, multilateral and bilateral aid agencies with their planners and implementers; local and foreign academics and consultants; national bureaucrats and their foreign advisers; traders and farmers). This report is testimony to the intellectual jolt given me by these resources. I owe to ICRISAT much gratitude.

Even so, it is not a comfortable jolt. I would most certainly refer the reader who seeks statistics and a comprehensive review of literature to the work mentioned above, by CRED. It is a major analytical and synthesizing achievement. Also, unlike their team, I have not had time to assimilate the details of the very considerable material, especially rich if one ignores crude disciplinary boundaries of the confining sort that gives conventional macroeconomics the reputation of being "a form of brain damage" (Henderson 1978). I have, however, assembled towards 1000 references, a third of which are summarized and all of which are included in a detailed classified bibliography which will be processed by ICRISAT separately. These references cover the whole of semi-arid West Africa, whereas my review here is restricted to five countries: Nigeria, Niger, Upper Volta, Mali and Senegal. I do not trust the statistics very much and have deliberately minimized their use in this review. With regard to my own doubts on data I am, nonetheless, reminded in salutary fashion of the adage: "a bad worker blames his tools". To avoid the accusation of having thrown them away I appended 82 tables of those statistics I consider basic and useful to ICRISAT's own research interests in agricultural marketing in the original report, but withdrew them from the revision. Those interested in these data should consult ICRISAT directly.

The literature which I have studied relates to the disciplines of social science: economics, sociology, anthropology, geography, history,
and politics. Sources range from published books to mimeographed type-scripts, from scholarly treatises to rushed consultancy reports. A great deal of it has resulted from interest provoked by the Sahelian drought in the early 1970s. At this stage, only time will reveal the extent to which these climatic and political events have affected the content of the literature and the interpretation given here.

This review concentrates on cereals, mostly on millet and sorghum, and to a much lesser extent on dry legumes, beans (cowpea or nièbè) and groundnut. Many references to the cash crops of the Sahel -- groundnut and cotton, and to a lesser extent, rice (a cash-cropped cereal) -- will be found in the companion bibliography and its index, and in the CILSS report (1977). I have considered the economics of groundnut marketing and its relation to grain production inter alia in an historical paper (Harriss 1981). I also refer readers to Kassam's paper Crops of the West African semi-arid tropics (1976) for full agronomic and ecological studies of the crops concerned. I shall not bother with these. I shall also minimize consideration of production economics (though not of production entirely) because David Norman and his team carried out a twin review of this for ICRISAT (Norman et al. 1981).

I have addressed my review squarely to ICRISAT's third objective: "To identify socioeconomic and other constraints to agricultural development in the semi-arid tropics and to evaluate alternative means of alleviating them through technological and institutional changes" (ICRISAT 1976, frontispiece); but the review demonstrates why I believe the conventional conception of "constraints" to be inaccurate and the conventional conception of "evaluation" misleading. Much of the review is given over to an analysis of marketing institutions and of policy. I have not presented an evaluation of, let alone a prescription of, solutions -- ICRISAT's "alternative means of alleviating constraints". This is not only because of my personal skepticism of the "social" value of reformism as evinced by its history in most third world countries (though I remain highly interested in reformism as a subject), but also because it would require a large review of its own. I have the material to write such a review, but not the time.

Various external events apart from the short duration of my consultancy (7 months), conspired to hinder the final writing of this review, to reduce its length, and, it is hoped, its discursiveness. I still have much material unincorporated. To my great regret I have had to minimize consideration of peasant storage and of interregional trading patterns. Worse, some of the research which needs to be done involves more rigorous thinking about issues on which information is already available. This is what my review might have attempted and I am only too aware of its shallowness in this respect.

My two consultancy tour reports to ICRISAT testify to the generous cooperation of over 160 people in Europe, America and overwhelmingly, in West Africa itself. Though it is invidious to single out colleagues for particular mention, nevertheless of special importance to my
understanding, and to the expression of that understanding, have been the following individuals whom I wish to thank: John Cameron (Norwich, UK); Anna Conti (The Hague, Netherlands); John Harriss (Norwich, UK); Pierre Hidalgo (Niamey, Niger); Matthias von Oppen (Hyderabad, India); Richard Palmer-Jones (Zaria, Nigeria); Jim Ryan (Hyderabad, India); Wolfgang Sachers (Bamako, Mali); Laurence Wilhelm (Ouagadougou, Upper Volta and Geneva, Switzerland), and Gavin Williams (Oxford, UK). For the time and attention they have spent in commenting on drafts they know how very grateful I am to the first and last of these colleagues. Of further importance has been the work of three French economic anthropologists, whom I have never had the chance to meet: Claude Raynaut, Claude Meillassoux, and Guy Nicolas. But I wish to acknowledge their refreshing influence.

The critiques of part of this review presented as the paper "Going against the grain" at ICRISAT's workshop on "Socioeconomic Constraints to the Development of SAT Agriculture", February 1979, (Harriss 1980a) by Professors Elliot Berg of Michigan, Bruce Johnston of Stanford, and Bill Morris of Purdue Universities, USA, are much appreciated and have been incorporated in the revision of this report. So, after a long time lag, have been the constructive comments of three readers: Stephen Biggs, Hans Binswanger, and Peter Matlon. Professor W.O. Jones has also offered helpful criticism of my work on methodology. To all of these I am grateful.

Important in the organization of my West African trips have been Claude Charreau, Phil Serafini, C.M. Pattanayak, Willem Stoop, Shad Okiror and B.B. Singh of ICRISAT's Cooperative Program (whose unstinting support was all the more appreciated because totally unanticipated), Fred Winch of IITA, Ibadan, Nigeria, Jean Meyrignac of the Mission Francaise de Coopération, Lomé, Togo, and Jerry Gana of the Department of Geography, Ahmadu Bello University, Zaria, Nigeria.

Important in the publishing of this review has been the work of the ICRISAT editors, whom I also wish to thank.

Finally, perhaps more than is usual, I must acknowledge that this review's errors are my responsibility. It is also not an official statement of ICRISAT's considered view. It is a personal review of literature, as any review is; and I welcome critiques.

Submitted to ICRISAT,
September 1978
Revised there, March 1980
ABBREVIATIONS FOR CURRENCIES

Nigerian Naira (N); Francs CFA (FCFA); USA Dollars (US$);
French Francs (FF); Indian Rupees (Rs.); Sterling (£)
The crisis consists precisely in the fact that the old is dying and the new cannot be born; in this interregnum a great variety of morbid symptoms appears.

Antonio Gramsci, *Prison Notebooks.*

Quoted in John Fowles, 1977, *Daniel Martin,* London
1. INTRODUCTION

1.1 THE IMPORTANCE OF AGRICULTURAL MARKETING

Agricultural marketing systems play a dual role in economic development in states whose resources are primarily agricultural. On the one hand, they are channels along which money commercializes a not necessarily static, but noncapitalist, peasant society. Increasing demands for money with which to purchase other goods may lead to an increasing sensitivity to relative prices on the part of producers, to their specialization on those crops where returns are greatest subject to particular cultural, ecological and economic constraints, and thus, to an increase in total production. Clearly, it is the marketing system which transmits the crucial price signals. Thus the first role of a marketing system is allocative. On the other hand, and in order to sustain nonagricultural development, resources have to be transferred from the agricultural sector -- physical resources to guarantee supplies of food, and of raw materials for agroindustry, and financial resources for investment in all aspects of the nonagricultural economy as well as for reinvestment in agriculture. The financial resources are transferred via the intersectoral terms of trade, via commodity taxation and via the use of profits of trade (be it private- or public-sector). Such resources may be reallocated directly or indirectly into private- or public-sector infrastructure, industry, commerce, or agriculture. Thus the second role of a marketing system is extractive, and it is continually bringing about the intersectoral reallocation of resources. Naturally the form and direction, size, and pace of this transfer of resources can be highly varied.

Most exchange systems in the semi-arid tropics today are simultaneously acting as resource allocators and resource transferrers.

The net effect of an agricultural marketing or exchange system upon society depends very much on the relationships of people to the system of production. It is this latter which determines who consumes how much, where and why. It therefore also determines distribution of consumption. The three spheres of the economy interact, as outlined simply in Figure 1.

The theoretical problem I am to flesh with facts, and am to analyze in this interpretation of literature, is thus the simultaneous occurrence of contradictory processes (the processes of resource allocation and resource transfer by the market, the simultaneous occurrence of petty subsistence trade allowing no accumulation of capital, and monopoly trade by various institutions permitting the large-scale accumulation of capital), the effects of these processes on the cultivation of ICRISAT's mandate crops, most notably millet and sorghum, and the implications of these effects for technological change.

The practical problem I am to investigate concerns the history of relative stagnation in relation to population growth, or relative and absolute decline, in the production of cereals in the region (CILSS 1977, Vol. I, p. 27). While not denying the importance of factors
Figure 1. Interactions between economic spheres.

Note: The broken-line linkage is excluded from analysis in this review.
internal to the sphere of production in explaining this history. We explain in the present review how marketing systems may contribute to this stagnation. The quantitative question -- to what extent do they explain this history? -- may be stated at the very outset to be a major topic for research. Fragmentary evidence has had to be assembled here. The case that marketing systems do not contribute to stagnation or decline in grain production assumes that the two spheres of the economy, production and exchange, are independent of each other. Evidence will be found in Norman et al's review of grain production in the Sahel (1981) to show the degree to which social and economic conditions of production explain this history. A school of analysis systematizing the evaluation of the behavior of marketing systems against the model of perfect competition, or some operationalized adaptation of it, has stressed the efficiency of agricultural marketing systems in West Africa (as elsewhere), if they are allocatively efficient then they cannot contribute to the explanation of relative stagnation. We must therefore pay attention to the way such conclusions are reached, as well as to the degree of independence that the spheres of production and exchange may have of each other. It is of no little importance that we seize the opportunity here to examine critically our sources of knowledge. The next chapter is thus unapologetically a review of analytical methodology and of data, and thus a technical foundation to the review of literature which follows.

The form of the rest of the review derives logically from the perception of the economy as comprising three closely-meshed spheres. It is necessary to study the characteristics of production, exchange (or marketing) and distribution (or consumption). In so doing it will be possible to study the interrelationships between production and exchange and between exchange and distribution. I shall introduce the spheres of production and distribution here before discussing exchange at length.

Because the state has intervened in complex ways in the mobilization and distribution of resources in the economies of the Sahel, it is clear that this intervention must have profound implications for the marketing of agricultural products. Accordingly, it is necessary for the purpose of an analysis oriented towards marketing to subdivide the sphere of exchange into that of the private sector and that of the state, and to examine the interrelationships between these two subspheres and between each and production and distribution. We are at the mercy of the literature, as befits a review, in the details accorded to each sphere and each interrelationship. By such a procedure, the nature of "constraints" engendered by the marketing system itself on the increase in production, and on the transfer of the known agricultural technology, may become clearer.  

---

1. A historical analysis of the commercialization of the agrarian economy of semi-arid tropical West Africa, and an outline for further social science research are to be found in Harriss (1980b; 1981).
1.2 THE SPHERE OF PRODUCTION

The semi-arid tropics of West Africa constitute the precipitation zone between 500 and 1500 mm/year, with an arid season of 5-10 months (Kampen et al. 1975, p.6). The region to be considered here comprises the States of Senegal, Mali, Upper Volta, Niger and northern Nigeria. In these Sahelian States agriculture absorbs between 76 and 90% of the population but, significantly, provides a less than proportional fraction of the GDP: 40-55%. Rural incomes are stagnant or declining (Copans 1975, p. 69; CILSS 1977, Vol. 1, p. 11; Wilhelm 1976a, p. 91; Ejiga 1977, p. 61). Production of grains -- millet and sorghum -- is highly rain-dependent. Production stood in 1977 at 1.2 million tonnes/yr in Upper Volta, 860,000 tonnes/yr in Mali, 1.3 million tonnes/yr in Niger, and 620,000 tonnes/yr in Senegal (Nacro 1977, Vol. 1, p. 23). There are few regions where cereals are monocultivated. Normally they are cultivated with groundnut and cotton. Cereals yields are low: millet at between 250 and 600 kg/ha in Upper Volta, sorghum at 300-900 kg/ha (Ministère du Développement 1976; Broekhuysen 1974); millet at 450-800 kg/ha in Mali, and sorghum at 300-1000 kg/ha (Opération Mil Mopti 1973; Ouattara 1977). All these ranges mask modal yields towards the low end.

Since 1960, while population has grown at 2.2%/yr, agricultural production increased at 1.0-1.7%/yr (Wilhelm 1976a, p. 91-92, reviewing much literature). Cash crops fared better than cereals. The production of cereals has either stagnated or declined, as in Upper Volta and Niger (CILSS 1977, Vol. 1, p. 27). The West African States of the Sahel (because of their historical lack of urbanization) now have the highest rates of urbanization in the world (Wilcock 1978, p. 258). So pressure for crop expansion comes from the demand side, and cities, especially, are in such chronic undersupply that some Sahelian States have to import rice and wheat. However, there does not seem to be any production deficit in the region as a whole in a "normal" year of precipitation (Nacro 1977, Vol. 1, p. 13). In an average year, Mali, Upper Volta and Niger can and do export millet and sorghum (CILSS 1977, Vol. 2).

The social relations of production vary throughout the Sahel but may be summarized as follows: The unit of production, the "household", can vary in size between 2 and as many as 60 people. It is based on a man and his wives and children or more than one man and their families, and the household's economic life is complex. The household head manages the farming and nearly always has other interlocked economic activities. Among these "trading is popular and prestigious, and the considerable economic mobility in villages often depends on the fortunes of trade" (King 1978, p. 7). Family members have well-defined rights and obligations towards the household economy and, outside of these limits, cash transactions between family members are common. Depending on religion, women may or may not work in the common field, the subsistence and cash-cropping production of which is the household head's responsibility. Small livestock may be kept by men and women alike. "Most farming is done by male adults, mostly using hand hoes. It is a farming system closely adapted to the risks inherent in a climate with a critically short rainy season. Fields are ridged, intercropping is usual and land
is distributed in small plots. Land tenure is usually characterized as usufructuary rights within village ownership, but in fact in some regions, notably Hausaland, there is a ready market in land with customary limits (King 1978, p. 8; see also, for instance Kleene 1975; Norman et al. 1981; Shenton and Freund 1978).

The marketed surplus of cereals varies between 5 and 20% of production. The States of the Sahel, through their intervention, market between 20 and 50% of that marketed surplus.

1.3 THE SPHERE OF DISTRIBUTION OF OUTPUT

In the Sahel calorie (cal) deficits are less acute than those found in South Asia. This does not mean to say that the diet throughout the society is optimal but there are few data on the social distribution of food-grains consumption. We do know that one dietary characteristic is seasonal variability. Simmons analyzed a consumption survey among 120 households in three villages of northern Zaria province between May 1970 and July 1971 (1976a). The average daily per capita diet was 2264 cal (the equivalent in a dry district of South India is 1700 cal: see Harriss 1977, pp. 306-311). The Zarian diet varied seasonally, from a low figure of 1949 cal in December-January to a maximum of 2458 cal in April-May (compared with an average requirement of 2009 cal, see Table 1). Sorghum and millet provided approximately 70% of the calories consumed. Nearly 70% of the generally adequate protein intake also came from sorghum and millet. Gilbert (1970, p. 23) quotes an earlier nutrition survey giving generally similar results for northern Nigeria (see Table 2).

A comprehensive nutrition survey carried out in Niger on 720 urban and 1200 rural households, and 400 nomadic pastoralists, showed that calorie intake was 128% of the FAO norm (of 2200 cal per adult per day (1957)) and protein intake 248% of the norm; but the diet lacked calcium and vitamins A and C (SEDES/FAO/INSEE 1963, pp. 65-71). Seasonal variations in food intake varied from 14% above average in December-March to 6% below average in the dry season, April-May and in Ramadan. Again, millet provided 83% of the calories and 61% of the protein. Sorghum provided about 10% of calories (SEDES/FAO/INSEE 1963, p. 40, 71).

Another characteristic of food distribution concerns its customary division within the family. Work in Niger by Mainet and Nicolas (1964, pp. 75-93) shows the male ration as being 700-1000 g of millet/day (2415-3450 cal according to calorific values in McDivitt and Mudambi (1969, Table 15)). Boys under the age of 10-14 years and adult women eat half this amount, and girls under 14 eat a quarter of this.

Relative and aggregate nutritional well-being does not characterize all the Sahel (see Tables 2 and 3). A third characteristic of the social distribution of food grains is regional variation. Whereas the average requirements for Niger were, at least in the early 1960s, estimated as 213 kg/capita/year for an urban dweller (2013 cal/capita/day), 313 for a rural sedentary person (2958 cal) and 160 for a nomad.
Table 1. Consumption needs (for energy) and intakes: 18 households, Hanwa, 1970-71.

<table>
<thead>
<tr>
<th>Season</th>
<th>Basic Calorie req's (cap/day)</th>
<th>Adjusted Calorie req's (cap/day)</th>
<th>Projected grain needs (lb/cap/mo)</th>
<th>Calorie intake (Cal/cap/day)</th>
<th>% of adjusted req's</th>
<th>Av. grain intakes (Cal/cap/day)</th>
<th>Av. grain intakes (lb/cap/month)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CATTLE OWNERS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apr/May</td>
<td>2025</td>
<td>2119</td>
<td>29</td>
<td>2655</td>
<td>125</td>
<td>2207</td>
<td>36.6</td>
</tr>
<tr>
<td>Jun/Jul</td>
<td>2170</td>
<td>2260</td>
<td>29</td>
<td>2750</td>
<td>122</td>
<td>2107</td>
<td>34.8</td>
</tr>
<tr>
<td>Aug/Sep</td>
<td>1949</td>
<td>1960</td>
<td>26</td>
<td>3555</td>
<td>181</td>
<td>2890</td>
<td>48.0</td>
</tr>
<tr>
<td>Oct/Nov</td>
<td>2028</td>
<td>2049</td>
<td>27</td>
<td>2081</td>
<td>102</td>
<td>1668</td>
<td>27.6</td>
</tr>
<tr>
<td>Dec/Jan</td>
<td>2209</td>
<td>2209</td>
<td>25</td>
<td>3496</td>
<td>158</td>
<td>2416</td>
<td>40.2</td>
</tr>
<tr>
<td>Feb/Mar</td>
<td>1987</td>
<td>1987</td>
<td>22</td>
<td>2771</td>
<td>139</td>
<td>1890</td>
<td>31.2</td>
</tr>
<tr>
<td>NOT CATTLE OWNERS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apr/May</td>
<td>2121</td>
<td>2189</td>
<td>26.5</td>
<td>2401</td>
<td>110</td>
<td>1752</td>
<td>29.1</td>
</tr>
<tr>
<td>Jun/Jul</td>
<td>1957</td>
<td>2018</td>
<td>23.9</td>
<td>2840</td>
<td>141</td>
<td>2027</td>
<td>33.6</td>
</tr>
<tr>
<td>Aug/Sep</td>
<td>2064</td>
<td>2135</td>
<td>27.6</td>
<td>2592</td>
<td>121</td>
<td>2019</td>
<td>33.6</td>
</tr>
<tr>
<td>Oct/Nov</td>
<td>2120</td>
<td>2135</td>
<td>25.3</td>
<td>1960</td>
<td>82</td>
<td>1402</td>
<td>23.4</td>
</tr>
<tr>
<td>Feb/Mar</td>
<td>2105</td>
<td>2105</td>
<td>26.4</td>
<td>2130</td>
<td>101</td>
<td>1608</td>
<td>26.7</td>
</tr>
</tbody>
</table>

Notes on compilation: The basic calorie requirement is based upon an unweighted average of the household daily per capita requirements for the households interviewed in a given season. The adjusted calorie requirement was made on a monthly basis upon the number of hours spent on farm work in a given month in excess of the mean amount for a month expended by the households concerned. The "excess" number of hours were evaluated as contributing 7.5 cal/min to the requirement level. Grain needs were projected using an average caloric content of 1809 cal/lb of a millet and sorghum mixture in threshed form and the average percentage of the caloric content of the diet composed of grains. Calorie intakes per day were computed as unweighted averages of the daily per capita intakes for the households sampled in a given season.

### Table 2. Urban and rural consumption patterns in Kano Province (in cal/cap/day).

<table>
<thead>
<tr>
<th>Rural area</th>
<th>Sorghum</th>
<th>Millet</th>
<th>Rice</th>
<th>Cowpea</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birnin Kudu</td>
<td>1300</td>
<td>1330</td>
<td>-</td>
<td>-</td>
<td>2630</td>
</tr>
<tr>
<td>Dawakin Tofa</td>
<td>1400</td>
<td>520</td>
<td>-</td>
<td>250</td>
<td>2170</td>
</tr>
<tr>
<td>Dutse</td>
<td>510</td>
<td>1220</td>
<td>-</td>
<td>50</td>
<td>1780</td>
</tr>
<tr>
<td>Ungogo</td>
<td>780</td>
<td>510</td>
<td>-</td>
<td>-</td>
<td>1290</td>
</tr>
<tr>
<td>Kano City</td>
<td>1160</td>
<td>310</td>
<td>280</td>
<td>-</td>
<td>1750a</td>
</tr>
</tbody>
</table>

*a. Supplemented by roots and vegetables.*

Source: Gilbert 1970, p. 23, from 1963-64 data.

### Table 3. Cereals consumption per year in West Africa.

<table>
<thead>
<tr>
<th>Country</th>
<th>Total pop'n ('000)</th>
<th>Cereals ('000 tonnes)</th>
<th>Cereals/ capita (kg)</th>
<th>Tubers/ capita (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Millet, sorghum, Rice, Other, Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mauritania</td>
<td>1200</td>
<td>3 4</td>
<td>107</td>
<td>89  Nil</td>
</tr>
<tr>
<td>Senegal</td>
<td>4100</td>
<td>85 31</td>
<td>571</td>
<td>139 99</td>
</tr>
<tr>
<td>Guinea</td>
<td>5100</td>
<td>450 50</td>
<td>600</td>
<td>118 98</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>6000</td>
<td>335 232</td>
<td>567</td>
<td>94 500</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>4100</td>
<td>32 31</td>
<td>8001</td>
<td>194 25</td>
</tr>
<tr>
<td>Niger</td>
<td>4350</td>
<td>31 1</td>
<td>1040</td>
<td>239  Nil</td>
</tr>
<tr>
<td>Mali</td>
<td>5500</td>
<td>110 14</td>
<td>640</td>
<td>115 36</td>
</tr>
</tbody>
</table>

(1512 cal), in Mali the official barèmes (cost schedules) assume 1°2 kg of cereals annually per adult (1714 cal/day) and 120 kg per child (1134 cal), whereas actual consumption is nearer 150 kg (14417 cal) (Richard and van dem Berg 1975, pp. 28-33; Ballan et al. 1976-77, Vol. 1, p. 2, and Vol. 3, p. 20). Senegal has a general pattern nearer that of Mali and Upper Volta than that of Niger in the early 1960s (Dione 1975, p. 28-38, and see Table 4). For planning purposes 130 kg/capita/year is assumed (SONED 1977, p. 282) (1304 cal/day), though it is known that the average level of rural consumption is about 30% less than that of urban consumption. In urban areas in Senegal very little millet is supposed to be eaten except in Casamance, the 'millet basket' (SONED 1977). Imports of wheat and (broken) rice form a crucial substitute for the locally-grown cereals for urban areas. The implications of this for price policy is discussed in detail below.

Having considered production and distribution, we can now turn to the sphere of exchange.

2. THE SPHERE OF EXCHANGE: METHOD, DATA, AND SUBSTANCE

This is a technical chapter, made inevitable by the need to explain the method used (how we come to know) and the data (on what our knowledge is based) before substance (what we actually know).

The mid- and late-1960s was an era of pioneering research in the economics of agricultural marketing in developing countries. The impetus for this came largely from Stanford University, USA. In Africa, teams from several US universities studied the systems of Sierra Leone (Illinois), Nigeria (Michigan State University, Stanford Food Research Institute, Stanford Research Institute), Kenya (West Virginia) and Ethiopia (Stanford Research Institute and Cornell). (see Gilbert 1970; Ilori 1969; Thodey 1968, 1969; Whitney 1968, see also Anthonio 1968).2

Essentially the same methodology was being used a decade later, as identified by Hays' studies of cereals marketing (1975, 1976; Hays and McCoy 1977) and by Ejiga's study of cowpea marketing in northern Nigeria (1977) and the studies for Niger and Upper Volta in the CILSS/Club du Sahel Etude Diagnostique from the University of Michigan (see Kohlers 1977; Berg 1977 a and b).

The orthodox methodology used is an adaptation of "structure-conduct-performance" analysis. This is an attempt to compromise between formal structures of perfectly competitive markets in economic theory and empirical observations of organizational experience in the imperfect markets of

2. The application of a practical methodology for analyzing market performance took place simultaneously in India (see the studies by Cummings 1967; Lele 1967, 1971, from Cornell; Holmes 1969; Jasdanwalla 1966; and Gupta 1973) and Bangladesh (see Farruk 1972, from Cornell).
the real world. It is a standard tool for market analysis in the USA and the UK (Bain 1959; Bateman 1976). Its purpose is to draw up a checklist or analytical framework for a number of variables such that their approximation to conditions of 'effective' or 'workable' or 'acceptable' competition may be evaluated. If a marketing system is judged to be effectively competitive, then it follows that the efficiency with which resources are allocated within the system is maximized. The implication is that social efficiency and equity goals are simultaneously maximized.

2.1 STRUCTURE-CONDUCT-PERFORMANCE METHODOLOGY

Market structure consists of "characteristics of the organisation of a market which seem to influence strategically the nature of competition and pricing within the market" (Bain 1959, p. 7). In particular, these are the numbers of traders, the degree of seller and buyer concentration, entry conditions, and the extent of agent and product differentiation. Clodius and Mueller add the distribution of market information and its adequacy in sharpening price and quality comparisons and in reducing risk (1967, pp. 345-350).

Market conduct is the "pattern of behaviour which enterprises follow in adapting or adjusting to the markets in which they sell (or buy)" (Bain 1959, p. 9) in particular methods employed to determine price, sales promotion and coordination policies and the extent of predatory or exclusionary tactics directed against established rivals or potential entrants.

Market performance represents the economic results of structure and conduct (Bain 1959, p. 10-12), in particular the relationships between distributive margins and the costs of production of marketing services. Most commonly, time series price data are used to throw light on the degree of competition in marketing systems, as follows.

a. Through intermarket price correlation, to indicate the degree of market integration, widely interpreted as an indicator of competition.

b. Through static analyses of the relationship between components of the distributive margin: the shares of producers and those of the various intermediaries -- wholesalers and retailers, generally carried out for a limited geographical area.

c. Through dynamic analysis of the distributive margin comprising:

i. the relationship between transport costs and intermarket price differences (via geographical plots, via regression analysis and via the analysis of average margins), to indicate the competitiveness of interregional trade;

ii. the relationships between processing costs and differences in the prices for different product forms, in order to indicate the efficiency of product transformation;
iii. the relationships between seasonal price fluctuations and storage costs, to indicate market competitiveness through time.

d. Through calculations of annual and longer-term moving averages to investigate longer-period cyclical changes in the price level.

About this methodology that has achieved the status of orthodoxy, Jones, whose responsibility it was to organize and coordinate the pioneering African research and to synthesize the results, asserts: "Primary emphasis in evaluating efficiency was placed on the determinants of price". The investigations were formulated in terms of commodities. "The desirability of pursuing a commodity approach became increasingly clear as price analysis and the field studies progressed (Jones 1968, p. 96). And "in some ways the measurement of market performance as manifested by the behaviour of prices was more satisfactory than that based on identifying imperfections" (Jones 1974, p. 17). In 1974, in a review of the studies of the 1960s, Jones wrote: "I have never published a formal critique or evaluation of the way in which those studies were conceived or executed. The seriously interested student could extract and reconstruct all of this from the final report, although there I was not primarily interested in reviewing defects and deficiencies in our concepts or performance" (1974, p. 3).

The following critique (though not a "reconstruction") is by such a seriously interested student. First, I shall examine orthodox methodology for measuring market performance. I shall examine the use of the correlation coefficient as an index of competitiveness, and the use of static and dynamic analyses of the distributive margin, criticizing them methodologically and interpretively and suggesting possible refinements. Secondly, I shall examine the relationship between empirical data used in such research and the conclusions derived from them, suggesting possible reasons for the observed lack of logical relation. Thirdly, I shall look at other types of data.

2.1.1 The Correlation Coefficient as an index of Market Competitiveness and "Integration"

In Cochrane's normative model of economic markets for agricultural products, "the single market does not stand alone as a determiner of either price or quantity... The actions of buyers and sellers in a particular market are always influenced to some degree by the price signals and substitutional possibilities in other related markets" (1957, p. 32). To that extent, markets are "integrated". The degree to which price formation for agricultural commodities in one market town is related to the process of price formation in other towns can be indicated by the zero order correlation coefficients for wholesale prices in these markets. The concept implied by the word "integration" is easily and often confused with that of perfect or effective competition. Yet, in this context, integration is essentially a spatial concept (rather than connoting types of linkages as in "vertical and horizontal integration"). We shall see that a spatially integrated market does not have to be competitive.
Yet according to the reasoning of Cummings (for India) and others, if prices are at perfectly competitive equilibrium levels, then differences in prices between places would reflect only transport and processing costs and $r = +1.00$.

Both Cummings and Lele (for Indian material) account for real-world coefficients being less than 1.00 by the facts that temporal and spatial frictions occur as a result of transport costs, bottlenecks and uncertainties, lack of knowledge (though "traders were found to be highly knowledgeable about price movements in various market centres": Lele 1971, p. 25), lack of product homogeneity, and uncertainty as to the direction of movement of future prices (Cummings 1967, p. 85; Lele 1971, pp. 21-24).

2.1.2 Results

Results of "bivariate correlation analyses of synchronous data" for West Africa are problematical. Jones has confessed that "when we first undertook to calculate the intermarket price correlations it was not entirely clear what we would do with them when we got them" (1974, p. 20). He had earlier reported that, of 4836 coefficients calculated by a Stanford Food Research Institute project, only 19 exceeded 0.9 and 424 were zero or negative. He explained such anomalies with reference to poor market information and data defects (1968, p. 114).

Anthonio (1968, p. 222) mentions very low price correlations for all staple food crops between each of 18 central provincial markets and observes, also, that the smaller and more decentralized the rural market the lower the coefficient. Thodey (1968) finds high coefficients for cowpea (almost all above 0.8) but lower ones for rice and maize (almost all below 0.7). These he attributes to weak, localized and less integrated marketing systems. In Gilbert's analysis of agricultural marketing in northern Nigeria (1970, p. 249) the modal coefficient is 0.65 for cowpea, 0.55 for rice, 0.45 for sorghum, and 0.35 for millet. He explains these results with reference to the dispersed nature of supply and demand linked indirectly through overlapping supply areas characterized by poor information, and a slow supply response geographically articulated through Kano. However, there is no evidence presented to support this explanation which must be considered as an hypothesis. Ejiga's experiments with time lags (1977, p. 293) show very inconclusive results for his crop, cowpea. Only 5% of his correlation coefficients were statistically significant at the 0.01 level, though it is surely very likely that the Nigerian civil war and its associated disruptions share some of the explanation of this apparently low level of "integration". But Ejiga finds some cities which are apparently well connected by transport but which are insignificantly or negatively correlated. Such results he is inclined to attribute to sampling errors or bad years.

Hays' results for millet and sorghum in northern Nigeria show only 1% exceeding 0.8 and deteriorating sizes and distributions of coefficients between 1958 and 1965 and 1969 and 1971 (1975, p. 72). There is some evidence in his case study around Zaria that the closer-spaced the markets are the higher are the coefficients; but this is not generally supported by the work of the other authors mentioned above, work done at widely varying geographical scales.
Kohlers, in his case study of Niger for CILSS (1977, pp. 35-44), analyzed technically small samples of monthly data for the single years 1971, 1973, and 1975. In 1971 two-thirds of his coefficients were statistically insignificant at the 0.05 level. In 1973 (the year of the drought) most were significant and one-half exceeded 0.8 (whereupon he concluded that the marketing system was highly competitive). In 1975, however, only 20% were significant. He did not know what to conclude from this.

Berg, for Upper Volta analyzed similar data for the years 1962, 1963, and 1976. In the early periods he found that 20% of coefficients were significant at the 0.05 level. He also found that the highest level of price correlations was between two towns connected neither by trade nor indirectly by transport. Berg says that significant negative correlations are "nonsensical" (1977b, p. 97). By contrast, in 1976, 90% of his coefficients exceeded 0.9 and were significant at 0.05 (Berg 1977b, pp. 26-27). This signified market integration. His overall conclusion attests ambiguous results, and he feels that "more fieldwork would generate better data for firmer analysis" (Berg 1977b, p. 100).

2.1.3 Price Series Data

One very obvious source of explanation for these interesting results is the data used. Anthonio has used official monthly retail prices statistics for 7 staple foodstuffs in 18 main markets throughout the country for the period 1955-66. Thodey uses Nigerian Federal Office of Statistics average monthly retail prices for 8 commodities in 10 cities over 9 years; Gilbert: monthly price data for 3 commodities in over 50 markets between 1952 and 1965; Ejiga: monthly retail prices for cowpea in 17 markets over the period 1959-72; Hays: monthly retail prices for sorghum and millet for 15 markets from 1958 to 1971. Kohlers used monthly millet prices in 7-14 markets for the single years 1971, 1973 and 1975; and Berg, monthly millet prices in 5-11 markets for 1962, 1963 and 1976.

With respect to Nigerian data, Jones (1968, pp. 99-100) quotes Gilbert's memo on data quality to the effect that the monthly prices from the Ministry of Agriculture were "collected by low-ranking employees with minimal supervision from above"; that conversions from local volumetric to standardized units were at the discretion of the investigators; that there was no necessary standardization of the time of month when the "monthly" data were collected (they are therefore not only averages but spot data collected monthly); and that variety and quality for the crops were not specified. Monthly data from the Federal Office of Statistics in northern Nigeria were subject to the same problems and additionally suffered many gaps and obvious fabrications. Thodey notes that even daily prices are a range, and there is such a consensus on the individualization of price formation through haggling as to call into very serious question the analytical value of these monthly data.

Berg has subjected the data for the ex-French colonies to considerable scrutiny (see his most thorough paper, 1977a), and concludes in his case study of Upper Volta "the underlying data are so weak that it is
difficult to know whether the ambiguities and inconsistencies in the results" (of correlations) "derive from data unreliability or whether they reflect the realities of grain market functioning" (Berg 1977b, p. 26). Hays used monthly data from the Nigerian Crop and Weather Reports, but wisely collected his own price information. He also used a "bucket and balance" in local periodic markets and in Kano. His conclusion is that official prices underestimated the real price per lb in dry months and overestimated it in wet months: each by 3.5-5.0%. Jones, having quoted Gilbert's very severe reservations at length, immediately describes the Nigerian prices as an "apparently rich body of data" (1968, p. 101). In 1974, however, he wrote: "I would like to stress that these data were not of high quality and that people who knew about the price series insisted that they were worthless" (1974, p. 18). Hill says in her review of Hays' data (1976, p. 85) "I regard them as so unreliable as to be unworthy of the detailed analysis they here receive".

2.1.4 Other Problems with the Correlation Coefficient

However, there are other reasons why high correlation coefficients may not indicate integration and perfect competition.

a. Ceteris paribus, in a time of secularly rising prices due to population growth and increased effective demand, the coefficient will rise because absolute distances from the trend line will be relatively less deviant.

b. Ceteris paribus, the longer the time period for which, and/or the wider the range of crop varieties over which, price series variates are being averaged for correlation, the higher the coefficient, the lower the significance level, and the greater the likelihood that day-to-day price fluctuations which provide traders with their profits are smoothed away. None of the correlation coefficients computed for West Africa uses data collected more frequently than monthly and, as we have seen above, they cannot be considered (as is done by most of the researchers concerned) as "averages".

c. Then local markets which may trade absolutely or relatively little with each other or, indeed, anywhere else may have similar price responses to temporally synchronous local forces of supply and demand.

d. Then monopoly procurement at fixed prices (as practiced at times in Sri Lanka as well as officially in French West Africa) will yield intermarket correlations of 1.0, as will identical time series for two places.

e. High coefficients indicate stable margins and/or stable prices and, by themselves, could just as easily indicate monopoly conditions as perfect competition. Since, in India and in West Africa, they obviously do not indicate stable
prices, they must indicate stable margins. Yet at the same
time as finding "high positive correlations", Lele found
considerable variability in the storage margin (1971, p. 142),
transport margins (pp. 110-111), and milling margin (pp. 207
-211). Similar inconsistency characterizes the West African
material. The result is confusing.

f. With potential autocorrelation in time and in space, the
validity of the technique is further weakened. According to
Blyn (1973) it is the residuals on long price series, such
as those used by Cummings and Lele, that should be correlated,
after time trends (due to rising demand because of population
growth acting on a whole region) and seasonal trends (reflec-
ting a common supply pattern) have been controlled. To make
this correlation is, of course, impossibly difficult when the
price series data cover short periods, as do many of the West
African data. Making the correlation is also difficult if the
seasonal trends are not spatially or temporally synchronous.
Ideally, for short time series, one might correlate the resi-
duals of the polynomials which minimize residual elements; but
problems with missing data in the price series would often
prevent one attempting this exercise. Blyn, using Cummings'
long Indian price series data, and controlling them in the way
described above, found greatly reduced levels of "integration".
He concluded, "it does not seem likely that perfectly compe-
tive conditions exist to the extent indicated by 0.90 correla-
tions".

g. But Blyn (1973) also makes the point that markets may well be
integrated and yet have low correlations because market towns
are centers of supply, nonfinal demand, and final demand. It
is possible for an equilibrium price in a market to be any-
where between a low value, making it just worthwhile to export
grain, to a high value making it just worthwhile to import it.
Most market towns are neither primary exporters nor terminal
importers, but located along a continuum between the two.
Thus price series correlations can be lower than, simplistically,
they ought to be, and still reflect an "integrated" situation.

h. Finally, we shall see in the discussion of methodology for the
analysis of margins that it is perfectly possible, in the case
of two-way trade between market towns (itself neither neces-
arily reflective of competitive or monopoly marketing conditions),
that the correlation coefficient be zero or negative.

It is quite clear that, by itself, the correlation coefficient
is inadequate as a proof of either market integration or competition;
it can serve only as an indicator of likelihoods, given many assump-
tions about market structure and conduct. Until and unless the tech-
nique is greatly refined and ramified, its diagnostic use for market
competitiveness should be abandoned.
2.1.5 Analysis of Marketing Margins

The second method by which allocative efficiency in marketing is partially analyzed involves the use of price spreads between producers and consumers (and their relation to costs). In turn, these have taken two forms: static and dynamic analysis.

Static analysis consists of simple computations of the share of the consumer's price obtained by the producer and by traders at each stage in the marketing process. These are used for comparison with the same product at different points in time, or in different regions of a country, or with other commodities in the same or other regions, or with the same commodity in other countries (Mahalanobis 1972; Wollen and Turner 1970; Mamoria and Joshi 1968; Holmes 1969, Chap 6; Sriraman et al. 1963, p. 207) in order to give general insights into relative positions on a putative scale of allocative efficiency.

However, it is difficult to control for interproduct differences in perishability, for the number of services either necessary or actually rendered in marketing, for different levels of capital intensity, and of factor costs in different countries. Such standardization is necessary if meaningful inferences are to be made about efficiency. In addition, margins are often static in time and place, neither accounting for storage nor for intermarket trade. Static margins cannot be used to assess whether the distributive margin is independent of raw material prices. In a competitive market, changes in the margin should reflect changes in the supply and demand for marketing services, the former determined by factor prices and technological change and the latter by consumer income (Wollen and Turner 1970, p. 67; Shepherd and Futtrell 1969, p. 252). Long time-period analysis needs furthermore to be conducted in deflated constant prices to enable meaningful inferences to be made (Venkataramanan 1979).

One way in which the analysis of margins is considerably improved, and made dynamic in time or space, is by using the hypothesis that markets are efficient in pricing terms if offseason price rises are approximately equal to storage costs, if intermarket price differences are approximately equal to transport costs, and if changes in the form of the product (e.g., paddy to rice; millet to couscous) are approximately equal to processing costs. Frequency distributions of price differences between producer markets, other producer markets, or terminal markets, if compared with the relevant marketing costs determined by case studies or sample surveys of trading firms, have been used to reveal the extent to which the hypotheses are upheld.

Problems with this method include value judgments of acceptable levels of return if margins always exceed costs, explanations of loss if margins do not exceed costs, and explanations for the commonest case where margins oscillate between profit and loss.

2.1.6 Results

Several economists researching the market behavior of crops grown in the semi-arid tropics of West Africa have run into this interpretative
difficulty. Hays, for millet and sorghum in northern Nigeria, notes unlagged monthly spatial price spreads frequently in excess of transfer costs (1976) and Hays and McCoy, presenting plots of the differences between "supplying market place prices" and those of Kano market minus transport and handling costs, show both possibilities of high profits and high losses and systematic and sporadic reversals of relationships which they do not satisfactorily explain. They take refuge in the fact that annual average price differences between markets "are closely related to transfer costs" (1977, p. 191). Kohlers for Niger (1977, pp. 45-46), and Berg for Upper Volta (1977b, pp. 102-103) present the results of plots of unlagged monthly spatial price differences minus transport costs. These "detailed" plots also show possibilities of high profits and losses and highly uncertain reversals of relationships, attributed to poor estimation of transport costs. However, Kohler again presents annual average intermarket price differences (1977, p. 44) with huge standard deviations, but without transport costs data to help us interpret them. Berg, for Upper Volta (1977b, p. 27), concludes with unhappy caution: "Price differentials" (are) "substantially greater than transport costs which might be interpreted as indicative of market imperfection" (emphasis mine).

Two researchers have used regression analysis to determine either the static relationship between retail and wholesale prices (Anthonio 1968) or the relationship of prices in place a with those in place b (Ejiga 1977). The constant is, respectively, the markup or the transport costs. In Anthonio's regressions, if the constant approximates zero a percentage markup is assumed; whereas if it approximates 1.0 there is a fixed margin. For Ejiga: the explanatory power of the independent variable, and the statistical significance of the coefficient of variation, indicated whether or not spatial price differentials were related as hypothesized. The coefficient of the mileage variable (a transport cost proxy) in the spatial price differentials was then compared with the coefficient of the mileage variables in a known regression of transport costs and mileage. Anthonio's regressions showed that wholesale prices explained only 0.15 of retail prices in long-distance trade, and fared no better with lagging (1968, pp. 182-184). Ejiga's regressions showed that "absolute price differentials and mileage are not randomly related", a conclusion reminiscent of sledgehammers and nuts. However, his data show that they are generally minimally related in a weakly significant way, giving rise to the familiar and intractable problem in standard "structure, conduct, and performance" analysis of value judgments.

Bateman (1976) and Breimyer (1973) in their methodological critiques, conclude that there is no proxy for the analysis of profitability at the level of the firms comprising the market. The procedure generally used as a proxy for the firm is to personify towns and calculate profitability from the price data and survey or official data on costs of transport, storage, handling, etc. Anthonio gives us static markups for commodities (1968, p. 180, Table 5.9) as shown in Table 4.
Table 4. Range of retailers' markup, Nigeria, 1963-64.

<table>
<thead>
<tr>
<th>Good</th>
<th>Wholesale price (pence/lb)</th>
<th>Net price</th>
<th>% Markup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gari</td>
<td>1.05 - 5.98</td>
<td>2.02 - 7.16</td>
<td>13 - 107</td>
</tr>
<tr>
<td>Rice</td>
<td>4.55 - 7.56</td>
<td>5.02 - 11.32</td>
<td>8 - 50</td>
</tr>
<tr>
<td>Beans</td>
<td>1.82 - 6.99</td>
<td>2.08 - 10.00</td>
<td>9 - 99</td>
</tr>
<tr>
<td>Maize</td>
<td>2.19 - 5.55</td>
<td>2.64 - 9.20</td>
<td>14 - 74</td>
</tr>
<tr>
<td>Millet</td>
<td>1.50 - 2.18</td>
<td>2.23 - 4.20</td>
<td>22 - 160</td>
</tr>
<tr>
<td>Sorghum</td>
<td>1.05 - 7.56</td>
<td>2.02 - 11.32</td>
<td>8 - 160</td>
</tr>
</tbody>
</table>

It is to be observed that ICRISAT's mandate crops are prone to high levels of markup. Anthonio later remarks on the occurrence of losses between regional centers for millet (1968, p. 247). Iliori calculates gross profit margins for urban traders of 12.1-14.6% and 10.2-12.0% for rural traders (1968, p. 226), but no cost data are given. We have no idea of the returns for services performed and for the period to which these profit margins refer (presumably a month) and, since average prices are used and since Iliori had previously mentioned high concentration and polarization in the structure of an otherwise 'competitive' market (p. 193), it is clear that (a) profits can be high and (b) the research on profitability is too superficial to be meaningful or comparable with results elsewhere.

Finally, in the analysis of margins over time (whose substantive results) -- which yet again indicate the possibility of (a) high and (b) uncertain profits -- are discussed in Section 2.2 below, three points may be made about this methodology. First, if seasonal price fluctuations are discussed, it is more useful to calculate the percentage fluctuation of the preharvest maximum over the postharvest low, rather than the variation about an "average" which the highs and lows have helped to create. It is not always clear in the literature which measure of seasonal price variability is used. Secondly, the relationship between postharvest price rises and storage costs is extremely sensitive to the interest rate selected for capital locked up in stock, for which rate careful justification needs to be given; it is also highly sensitive to the quantity and costing of storage losses, about which insufficient is generally known. Thirdly, to use urban prices for such calculation when storage does not take place in urban areas (see for one example Ejiga 1977, pp. 282, 219-224) is problematical and needs at the least some justification.

None of these problems is adequately dealt with by stressing the risks (or uncertainties) of trade, the fact that prices are functions of supply by producers, and final and nonfinal rates of return are "reasonable".
2.1.7 Spatial and Temporal Refinements in Method

The simplifying assumptions made in these analyses of price behavior over space and time are very crude. Jones, amongst other economists, in synthesizing the seminal theoretical work of the German geographer Christaller (1966), with the empirical studies of Skinner (1964-65) has advanced our understanding of the likely complexity of the economic process over space (1974, pp. 117-119). He distinguishes the pricing performance of a redistribution system from that of a two-level system (see Fig 2 and 1968, pp. 117-119). Of the two-level system he says: "This model has great appeal because it seems to accord with the qualitative information we have about the behaviour of traders. It, too, should be susceptible to statistical test, but such a test must await more precise mathematical formulation of the model than we have been able to achieve" (Jones 1968, p. 119).

Though advanced over a decade ago, this model has only recently been mathematically formulated (Zemanian, 1979) and its statistical testing has yet to be carried out. However, one of the major unrealities in Jones' model may be his assumption that centers may be classified simply into "supplying" and "consuming" settlements carrying the implication that supplying centers (a) do not consume and (b) only ever export the commodities in question. None of the analyses of correlations or of margins in Africa incorporates consideration of the possibility of changes in the geographical direction of price formation. All these marketing models assume a unidirectional flow of commodities from rural origin to urban destination. Thus

\[ M = U_r - \left( \frac{1}{C} \right) R_p \]

where \( M \) is the marketing margin, \( U_r \) the urban price for rice and \( R_p \) the price of rural paddy, and \( C \) is the milling conversion ratio.

Timmer (1974) in criticizing this assumption in a paper on rice marketing margins in Indonesia, suggests, first, that, while retail prices in urban centers may be determined by paddy prices plus marketing costs in the postharvest period, in the preharvest period off-season rises in urban retail prices may draw paddy from rural areas. According to Timmer it is not correct to regard any one price as necessarily always functionally dependent upon another, as is done in all standard neoclassical tests on marketing economics (e.g., Shepherd and Futtrell 1969; Kohls and Downey 1972; Tomek and Robinson 1972).

He further suggests that, in a model landscape with a rural "producer market" and an urban "consumer market", prices will rise seasonally to reflect the normal costs of storage. At a certain point, however, the rise may level out. This happens in Indonesia because of the operation of a Government ceiling on retail rice prices (and presumably because of the exercise of sufficient authority to control a black market). Such leveling-out may happen, however, in any free or partially controlled market at a point at which it becomes profitable to import supplies from elsewhere. Meanwhile rural hinterland prices rise to cover storage costs. So long as rural demand is significant, rural prices will rise to a point
Figure 2. Spatial linkages in price formation.
where it is profitable to ship rice back from urban to rural areas. The margin between the rural and the urban price can be zero or negative, or it may simply be less than the postharvest margin for the simple undirectional model to be invalidated.

Timmer tested his hypothesis by applying a regression analysis of variance to quarterly subsets of monthly price data for every province of the Indonesian archipelago and found price relationships as explained in his model (1974).

The unidirectional model of price formation seems to have been taken for granted in Southern Asia and is an assumption underlying the calculation of official support prices. Detailed analyses of the patterns of behavior of weekly data for five types of paddy and rice wholesale prices in ten towns over 100 weeks in 1972-74, and of their relationships to marketing costs in South India, showed that Timmer's explanations are substantially supported (Harriss 1977, pp. 163-192). Price levels for rice and paddy in the larger consuming centers of Tamil Nadu can and do fall below those of rural market towns, both in a regular seasonal way over several weeks at a time, and in an uncertain way partially attributable to changes in the percentage of exports levied at artificially low prices by the State.

The mechanism by which the former trend is able to happen in a "free" or partially controlled market implies imperfectly competitive performance. Three factors are important here. First, if the urban center keeps its price levels low by importing from areas outside the local system that have lower costs of production and/or lower paddy purchase prices, or have different periods of harvest gluts and price slumps; secondly, if the urban price level is sufficiently low to enable rice to be exported to rural areas; thirdly, if these rural areas cannot import directly from the lower-cost exporters located outside the rural-urban system: then the urban center has a spatial monopoly control of trade.

Price plots such as those presented by Hays and McCoy (1977, p. 185), by Kohlers (1977, pp. 45-46) and by Berg (1977b, pp. 102-103) have been acknowledged as difficult to interpret (e.g., Berg 1977b, p. 105). This difficulty he attributes to data unreliability and suggests that, with better data and more leisurely exploration of those data, some interesting insights can be obtained. But these price plots may be used here, first, to call into question the interpretive value of any calculations of profitability based on annual averages; secondly to suggest the extreme likelihood of two-way or multidirectional trade mediated through urban centers with spatial monopoly control (attested using case study evidence of commodity flows for Ouagadougou, by Ouedraogo 1974 and Wilhelm 1976b); thirdly, to suggest that if the price data were considered useful (about which I tend to follow Polly Hill), then the testing of Timmer's hypothesis in the Sahel would yield results within the neoclassical paradigm more valuable in substance, and to the cause of research, than such testing as has hitherto been attempted.
2.2 THE RELATIONSHIP BETWEEN DATA AND CONCLUSIONS

At the end of Jones' synthesis on the marketing of staple food crops in tropical Africa (1968, p. 272), having devoted consideration to a number of market imperfections, he states: "Our studies have clearly demonstrated that African traders, operating through freely organized markets, have the capacity to carry out all normal marketing functions in a reasonably adequate fashion" (emphasis mine). Jones quotes Whitney approvingly to the effect that "The marketing system for food crops destined for consumption in Nigeria" (actually southeast Nigeria) "was a remarkably well-articulated, self-adjusting mechanism, which certainly had the capacity to react to changes in the external economy". The policy implication following this conclusion is therefore that the State should not intervene to replace or to regulate this system but only to provide improved physical infrastructure.

I examine below the basis of the conclusion of the "structure-conduct-performance" school: that in general, agricultural commodity markets in West Africa are satisfactorily competitive given their environment. In so doing it should be understood that care has been taken to try not to distort argument by quoting out of context, for this would obviously reduce the constructive role of this critique.

Thodey (1968, p. 11) states quite clearly in the summary of his thesis "The Western Nigerian staple food marketing system is operating rationally and is quite effective in performing its functions... The returns to such scarce factors as capital and entrepreneurship is high, while that to labour is low. Even though the marketing system is subject to large and frequently irregular price movements, and its pricing efficiency is only moderate at best, it is still very responsive and adaptive". "Price formation results from supply and demand under competitive conditions" (Thodey 1968, p. 179). These conclusions follow observations that "for the majority of producers, the very imperfect market information presently available to them, their need for cash, the small volume of their sales and the costs and effort in carrying unsold goods home from market tend to reduce their bargaining position at the time of sale" (1968, p. 57). "Cheating and deception are practised to some extent by traders" (Ilori 1968) also mentions adulteration by traders as common). In some cases violence was threatened (Thodey 1968, p. 191).

In local markets Thodey notes some evidence of collusion (1968, p. 178) and discriminatory individualization of price formation: "even the same trader has a wide range of (daily) prices according to haggling" (p. 179), a conclusion backed up for Ibadan by Ilori (1968). Thodey also notes evidence for oligopoly: "for all commodities a small number of large traders are influential. They have a profound effect on the price formation process... but act more as barometers than monopolists." Thodey mentions trade associations in his case study of Ibadan retail markets as a barrier to entry into trade and as facilitating price fixing in urban markets (1968, p. 28; p. 55) and elsewhere states that "trader competition at producer markets is weak or non-existent" (1968, p. 61; see also Adeyokunnu (1969) for evidence on the barrier effects of trading associations).
As regards long-distance interregional trade in Nigeria, Thodey notes "some evidence of monopoly at long distance" (1968, p. 177), that the cowpea exchange system is "long distance, oligopolistic, more stable" (1968, p. 180), that "the relatively few Yoruba traders involved in assembling and transporting cowpeas to Western Nigeria" (from the north) "mostly have large businesses and are not typical" (storing 6-8 times more in quantity and twice as long as the average Ibadan trader) (1968, pp. 1, 4) but that long-distance trade in rice and cowpea is less concentrated "because of fewer large traders than in that of other commodities which are highly polarised". Ilori also shows that in Ibadan the largest 8% of traders sell as much as the lowest 70%. Thodey's analysis of spatial price differences in Nigeria showed 50% exceeding double the costs of transfer (1968, p. 183) and showed high volatility through time (1968, p. 185).

Thodey's conclusions do not follow logically from his data, and his interpretation of his data is confused.

Anthonio, studying seven basic foodstuffs throughout Nigeria, came to the different conclusion that "markets are highly competitive at the retail and producer level but uncompetitive in the middle" (1968, pp. 156-157). He disregards evidence for oligopolistic practices of trade in retail markets. He identifies "oligopolist-oligopsonist-wholesalers" (5% of all intermediaries (p. 84)) dealing with other entrepreneurs amongst whom the circulation of information was highly secret (1968, pp. 52-54, p. 84, pp. 192-194). In the northern savanna region he says that "most of the middlemen came from the feudalistic wealthy class" (p. 172) with migrants from the south beginning to compete, an historical process analyzed and corroborated by Gana (1979). His analysis of spatial price differences showed wholesale prices "explaining" 0.15% of retail prices in long-distance trade (pp. 82-84). He found returns to storage more excessive than returns to transport. This he interpreted as "signifying deplorable storage conditions" (pp. 192-194) rather than excess profit making on trade. We are not given any indication of effective competitiveness in interregional trade in this study.

Gilbert's research on sorghum and millet marketing system for Kano in northern Nigeria casts doubts on Anthonio's notion of highly competitive retail markets. Gilbert reports that "retail and wholesale markets of Kano city have subdued competition" and that "there is not any clear relationship between numbers of traders and the degree of competitiveness" (1970, pp. 285-286). Jones also admits the same problem in tallying structural indicators of perfect competition (numbers of traders, highly evolved bargaining procedures) with economic indicators (prices) within a neoclassical framework (1974, pp. 97-98). Gilbert further states: "although marketing margins did not appear excessive" (1970, p. 288) "nevertheless the large profits encountered, derived from a shortage of lorries as well as trade in marginal surplus and deficit areas which is risky" (p. 288). He does not mention losses, however. His policy conclusion appears to be totally unsubstantiated: namely that "the further development of a market-oriented agricultural sector
in Northern Nigeria does not depend on improvements in existing marketing systems for staples, but on the scope for increased production of cash crops and for increases in non-farm employment" (1970, p. 283). He goes on to suggest research and extension to increase the productivity of staples through high-yielding varieties and fertilizers, and implies that, somehow, through this mechanism greater regional specialization and an increase in cash crops will result. Gilbert, following West African practice, does not consider present staple crops as cash crops. His policy conclusions are not substantiated by the research of the thesis.

Hays, similarly to Gilbert, is also concerned with one northern town, Zaria, but he also analyzes the system at the regional level using data from 15 markets from five States. His conclusion is that intermediaries are generally productive and that marketing services are provided at reasonable costs, given their technical environment. The income of marketing intermediaries is low relative to the services performed (1976, p. 139): "organisation and conduct were typical of those necessary for competitiveness in the marketing system".

"Markets are competitive but not integrated" (1975). The same conclusion is reached by Hays and McCoy (1977). It is substantiated by observations that farmers had access to many buyers and that there were many intermediaries (up to seven though Hill, in her review of Hays (1976a, pp. 85-86), suggests that seven intermediary-long-chains were rarely used, meaning that the margin taken by each of the intermediaries was larger than Hays has implied). However, although there was a "high degree of competition" in the local subsystem, Hays' analysis suggests a lack of competition between subsystems. Even so, he defends it against charges of being monopsonistic. The "excessive price differences among urban markets did not result from planned manipulation under monopolistic or monopsonistic conditions. They were rather a result of imperfections inherent in the system which are due to certain characteristics of production and marketing making effective response to intermarket price differentials difficult (Hays 1976, p. 139). Such facts are the existence of small sporadic surpluses, and poor price information and risk (Hays and McCoy 1977). The explanation is "infrastructural". Hays shows that very high rates of return on money invested are possible, but is most unwilling to concede that they are actually made. He suggests that farmers make profits out of storage but he does not tell us whether such farmers are also traders or whether urban traders finance rural storage. The relationships between producers and traders are neglected; and Hill also reminds us that the same neglect applies to the mechanics of the marketing system in rural Hausaland where 90% of the Hausa population live (1976a, p. 86).

Finally, in relation to Nigeria, Ejiga's recent thesis on cowpea (niébé) marketing ends with the by now expected ritual conclusions that "the cowpea marketing system is performing relatively well given the constraints which are found in all developing countries. "... All the pricing efficiency analysis showed no evidence of monopolistic or large-scale exploitive practices" (1977, p. 366) (emphasis mine). However, his data belie his conclusions. He admits that the correlation
analysis of price series data "gives inconclusive results" (1977, pp. 153-155). Though he shows in a series of regression analyses that absolute intermarket price differentials and mileage (a transport cost proxy) are not randomly related (p. 309), they are also not at all strongly related in a statistical sense. The transport cost coefficient that emerges from his equation is \( N 0.03 \) per tonne-mile. But the actual rate is \( N 0.056 \), so it is clear that very large profits are being made over space. He tabulates data indicating large average profits on intermarket exchange and, where an average can conceal any distribution of profits, we are perhaps justified to be skeptical about the relationship between his data and his conclusions.

The three major French studies of the cereals marketing system in the Sahel (SONED 1977 in Senegal; Ballan et al. in 1976-77 in Mali; SEDES/FAO/INSEE 1963 in Niger) do not use the structure-conduct-performance methodology. Nor do they relate data to any model of perfect or effective competition. The methodology under discussion here is peculiarly anglophone. However, two studies in francophone West Africa made under the USAID-financed consultancy for the CILSS/Club du Sahel by the University of Michigan are in this tradition. Kohler concludes that, for Niger, "the evidence suggests that the general assumptions about the private sector" (monopoly assumptions) "are probably incorrect" (1977, p. 82). But his statement "the only restrictions on entry are government regulations and there is no evidence for excess profits" (1977, p. 24), does not square with his observation that "spatial price differences are not very conclusive. Quite frequently the price differences exceed the transport costs" (1977, p. 45) (emphasis mine). This situation he attributes to inappropriate calculations of transfer costs rather than to excess profit making by those who control the process of transfer. Furthermore, his observations about the profitability of storage and seasonal price fluctuations beg many questions. He claims that fluctuations are not excessive (p. 52). He presents calculations of profitability in Niamey based rigidly on November and July prices (not necessarily the lowest and the highest) that show large losses from storage for 60% of the time. Then he presents many partial data for the country as a whole, inadequate as a basis for generalization, which show that 40% of interseasonal price variations exceed 100-150% -- extremely high even by Asian standards.

Berg, in his summary of agricultural marketing policy and practice in the Sahel, states both that there is little evidence for monopsonistic grain markets (CILSS 1977, Vol. 1, p. 11) and, also, that there is an acute lack of knowledge about how grain markets function (1977, pp. 12, 14). In the Upper Volta case study (Berg 1977b) he finds price integration over time unexceptionable, stressing lack of high price fluctuations, while a quarter of his price fluctuations are more than 100%. He finds that rural markets fluctuate more than urban ones, a pattern perfectly consistent with two-way rural urban trade via a settlement around which traders hold a spatial monopoly. Berg, however, blames bad data collection procedures for this "problematical" result (1977b, pp. 54-55). On performance through space he has this to say: "A highly tentative analysis comparing millet price differences and transport costs between
market towns shows price differentials substantially greater than transport costs, which might be interpreted as indicative of market imperfection" (1977b, p. 27; emphasis mine). These results do not square obviously with the carefully phrased but very strong implication made earlier that markets are competitive, and farmers unencumbered by debt and free to participate in a market characterized by large numbers of traders and ease of entry (1977b, pp. 24-25).

2.3 CONCLUSIONS ON ORTHODOX METHOD

Five general points are worth making at this juncture:

1. The authors of the vast majority of economic analyses of agricultural marketing using structure-conduct-performance methodology (or some personalized variation of it) in West Africa examined here display a serious lack of logical relationship between the data presented and the conclusions derived. In no other branch of economics does it seem possible to elevate so many value judgments to the status of scientific conclusions. There is a serious lack even of simple comparison of the results. To date, and to my knowledge, there has been no comparative critique even of the crudity of that presented here.

2. The conclusions to be drawn from the research are confusing and attempts to synthesize them by consensus seem to be guilty of falsification. For one example the reader can refer back to the conclusions of Jones for tropical Africa, mentioned at the beginning of this section. For another, Berg's attempt to summarize studies of the Sahelian States results in the following: "there is little empirical evidence for monopsonistic grain markets" (CILSS 1977, Vol. 1, p. 11). He concludes that Hays and Gilbert's research indicate reasonably competitive rural grain markets, storage behaviour in line with what one would expect from a prudent farmer and no severe rural indebtedness" (a subject underresearched by both writers) (Berg 1977b, p. 25). More research along structure-conduct-performance lines will resolve this confusion only if it is consistent one way or the other. The past track record reviewed here suggests that the probability of this happening would be very low indeed. Structure-conduct-performance methodology cannot cope conceptually with deviations characteristic of the real world.

3. The polar assumption that commodity markets are either perfectly (or effectively) competitive or monopolistic (an assumption reflected in any content analysis of vocabulary), allied to the equilibrium assumption that markets can be judged to be in a state of relative competitiveness for all plannable time, is false. Jones writes skeptically: "the concept of the conditions for a perfectly competitive market is useful in determining how inefficient a market is" (1974, p. 16). Indeed, evidence is being interpreted on the assumption that the theory is right: evidence must be squared with theory or else explained away.

Transactions, even within the simple classifications of formalist economic theory, may take one of nine forms, as shown by Wiles (1961) and then by Gross (1966, p. 63):
Agricultural marketing economics has been obsessed over the issue of whether markets in both an economic sense, and in geographical aggregates of various sizes, belong to the top left or bottom right corners of this table. Our willingness to locate rigorously an analysis of market behavior anywhere than in the boxing ring corners has been nothing short of cowardly. Also, given any one of these nine configurations of buyers and sellers and any distribution of concentration of trades and businesses, any distribution of profitability following from it, the use of aggregate (annual) average returns on money invested tells us nothing about the form of the process of resource extraction from agriculture and of its accumulation in trade.

Further, the discipline has also conventionally assumed the geographical linearity of trade. If the unidirectional assumption about trade is relaxed, it follows that evidence on competition based on rates of return to trade, based on the relationships between annual average price differences between markets and average transport costs, is likely grossly to underestimate the profits made by two-way (or multidirectional) trade -- profits which result from differences that will be canceled out in the annual averages. The allocative efficiency of the marketing system will be overestimated and its role as a sector accumulating and reinvesting resources will be underestimated.

4. The commodity market cannot be considered as an independent entity (see Jones 1974, p. 96): "the desirability of pursuing a commodity approach became increasingly clear as price analysis and field studies progressed". The underlying assumption in such commodity studies is that competition in a commodity market maximizes welfare and productivity. It is clear that a competitive market may be necessary but it is certainly not sufficient for the maximization of productivity. The latter depends on the operation of assumptions about production discussed under the law of comparative advantage below, and "welfare" is a function of specific social distributions. To concentrate attention (as is done in the West African studies of the markets for semi-arid tropical crops) on the concept of competition diverts attention from the structural interrelations between production, exchange, and distribution. To concentrate attention on the behavior of the commodity market (because of the relative ease of access of data on price, however poor) diverts attention from the interrelationships between several commodity markets and between the circulation of commodity and that of money. These are essential to an understanding of the role that agricultural markets play in economic development, including in technological change in agricultural production.
The fetishism of competition, however, is not entirely devoid of purpose, but its raison d'être is ideological. It is related to a laissez-faire aversion to the type of State intervention that replaces rather than regulates private commodity markets. The tenor of the policy recommendations following the conclusions in this school of theses are strongly "anti-interventionist" and "pro-infrastructural". They stress, instead, the value of State intervention in sectors of the economy such as transport and communications, physical market sites, and such aspects of marketing as information, grading, standardization, processing and packaging (see Thodey 1969, p. ii; Thodey 1968, pp. 64-76; Gilbert 1970, pp. 276-277; Ejiga 1977, p. 26; Hays 1975; Jones 1968, p. 98; Olutunbosun 1975, pp. 111-120; and Helleiner 1974, p. 69). This is in order as Thodey puts it, "to diminish anti-social behaviour." More controversial reformist proposals include the creation of storage facilities and subsidized credit to larger traders or "entrepreneurs" for them to expand operations (Whitney 1968; Anthonio 1968).

These conclusions follow logically only from a verdict on the operation of the commodity markets as essentially competitive. Even so, they fail to face questions of policy implementation and of the form of ownership of the proposed infrastructure. Jones writes: "it probably could be demonstrated that we got into trouble when we overlooked some of the assumptions underlying the models we were using. But in many instances more precise examination of the extent to which basic assumptions were satisfied would not have helped because theory frequently does not predict the consequences of lifting assumptions" (1974, p. 23; emphasis mine). When the assumption about market competitiveness is lifted, it does not follow that the infrastructural improvements will diminish "the anti-social behaviour" that is elsewhere denied to exist. That the logical as well as historical base of this type of reformist policy pronouncement may be suspect is shown by the facts (a) that the Sahelian States have intervened in agricultural marketing in ways other than those generally advocated by the structure-conduct-performance school, and (b) that Nigeria has already invested heavily in physical infrastructure, especially communications, since the early 1940s (Tiffen 1976, pp. 40-60).

For the present, I must place a question mark not simply beside the methodology of conventional agricultural marketing economics in the structure-conduct-performance tradition, but also beside the history of interpretation of the results.

2.4 ALTERNATIVES

Given that structure-conduct-performance methodology is currently orthodox, alternatives are in their infancy. This review of literature is actually experimental in using the methodology set out in the introduction, considered to be necessary because of the inadequacies of orthodoxy. We have seen that the interrelationships between the three spheres of the economy are analytically necessary for an understanding of both the allocative and the extractive role of systems of agricultural marketing.
The study of interrelationships is almost totally neglected in studies based on structure-conduct-performance methodology. Hence we have to search outside this literature for relevant evidence. This means searching outside the conventional boundaries of economics. Amin has observed: "The division of work between different disciplines of social science isolates each group of researchers" (1973, p. vii). Such isolation may breed ignorance.

The CILSS team in their extensive economic review of the marketing of food grains in the Sahel are able to say, for one example, that "there is no data on farm level storage" and, for another, "nor are there studies of peasant behaviour and of traditional marketing systems" (1977, Vol. 1, p. 12, p. 14; Vol. 2, Upper Volta, p. 24). Such statements stem from a refusal to accept relevant economic evidence from beyond a defined disciplinary boundary. In the first case Harriss' bibliography (1978) lists 50 relevant references. Data are to be found in the work of food technologists (e.g., Tropical Products Institute 1973; Adams 1977a and b, and Yaciuk and Yaciuk 1977) and anthropologists (e.g., Hill 1976b; Guggenheim 1977, 1978). In the second case, this literature review (especially pages 43-62) and the bibliography show the lack of accuracy behind that statement. But it is English and French anthropology and an international corpus of work in rural geography in the tradition of the French "pays" school of village and microregional enquiry that is responsible for our knowledge.

Of particular importance to the present study is the evidence for interrelating linkages in such work. Of special value is the intellectual parity between production and exchange.

Further advantages of such work stem from what is frequently seen as its practical difficulty. (a) The insights into rural exchange (rather than trade in urban centers for which, for example, price statistics are usually collected). (b) Larger sampling fractions than for survey research since the population in the universe (the village) or small region is smaller. (c) The accuracy of primary data collected and exhaustively verified by a worker whose responsibility it is to analyze it.

Several methodological studies elsewhere confirm the improvement of accuracy of data with increasing exposure in the field, and with a reduction in the number of intermediaries used in data collection (J. Harriss and R. Chambers 1977, personal communications).

Anthropological or rural microgeographical research suffers from the relatively small number of such studies. This would not be a problem if it were not further disadvantaged by small geographical scale and consequent difficulties with generalization. Samples taken for research may be random and characterized by larger sampling fractions in relation to their populations than is the case with survey research. Also, a village is representative strictly of itself and of no larger unit.
It is as well to pause and remember that the same is true only to a very slightly lesser extent of much sample survey research relating to very large populations from which sampled units are drawn. Then when the variables analyzed by sample survey are large in number, differ greatly in their range of values, and are sometimes not amenable to quantification, sample size determination according to the principles of sampling theory is not possible.

The rest of this review draws in a deliberately catholic manner on the fruits of many "disciplines" in an effort to explain sometimes contradictory, sometimes inconsistent, almost always inadequate, information.

3. INTERACTIONS BETWEEN DOMESTIC EXCHANGE SYSTEMS AND PRODUCTION

I take as a point of departure the classical law of trade, specialization, and comparative advantage since it offers a description of aggregate relationships between production and marketing. Simply stated: a region will tend to specialize in those commodities in which its returns to factors of production are relatively the highest and will obtain by trade the commodities in which its returns are relatively the lowest (Bressler and King 1970, p. 345). It follows that, the freer the trade, the less the monopolistic participation either of private trade or of the State, and the lower the proportion of the difference in actual interregional prices which represents extraction by the State or the mercantile sector; then the greater the increase in aggregate production to be derived by regional specialization. The law should hold at any scale down to that of the individual producer or firm.

The application of this model creates a large number of problems, even in that conveniently streamlined approximation to reality termed the real world by skeptical economists. In the sphere of production the operation of the model requires perfect levels of information about costs of production, and insignificant regional variations in risk. It also assumes a wish to maximize aggregate money profits that is difficult enough to achieve in the case of the modern firm, let alone the region (see Wiles 1961, pp. 3-31). It usually assumes that regions are points and, if not points, that they are isotropic surfaces over which prices are simultaneously and freely formed, adjusted, and communicated, and over which transport is universally available. It requires free-factor mobility, flexible factor prices, equal and mutually advantageous exchange, and smooth transformation curves. It assumes that all values are money values and convertible -- dubious propositions for primarily subsistence economies.

Actually, the existing social distribution of income defines relative prices and thus constrains and molds the efficiency gains from regional specialization according to comparative advantage. To the extent that this behavioral logic is flouted, the operation of the law is weakened. I examine the interrelationships between production exchange and distribution in a part of the world, where a priori, this law may be at its most emasculated.
The following sections look in detail at the operation of the market in this paradoxical situation. If production factors are immobile and resources unconvertible, as assumed in the law, we cannot uncritically assume that interregional price differences are at "equilibrium" levels separated by transfer costs. And, if they are not, it is necessary to know the direction taken by the transfer of resources by trade because of its implication for the nature and rate of growth of these economies, and for income distribution within them. As pointed out in the Introduction, since it is historically necessary in an agricultural economy for physical and financial resources to be extracted from agricultural production to finance nonagricultural development, it is clear that these resources must be extracted either through direct taxation, or rent, or usury, or through trade. Even with ceteris paribus assumptions about production, the operation of the non-agricultural sector of a dominantly agrarian economy has to put constraints on any production increases powered by a response to comparative advantage. By extracting resources it thereby denies production its full resources to expand.

The nature and functioning of some of these constraints can now be examined. The marketing systems studied are neither "traditional" (because not sunk in a historical stasis) nor "natural" in the sense of uninterfered with, nor are they "indigenous" since this carries the implication of their having avoided the involvement either of the state or of outsider trading communities. I call them domestic for want of a better adjective. I try to consider systematically the interactions between this marketing system, that of the State, and grain production.

As was explained in Chapter 2 most evidence from the structure-conduct-performance literature cannot easily, if at all, be used to study interaction between spheres of the economy. We are left with research in economic anthropology, economic history, and economic geography for our source material. Such data have the advantage of personal collection and verification by their authors. They have the disadvantage of small aerial coverage. I therefore have to interpolate the contours of rural society from a few spot heights. In so doing I suggest some explanations for some of the contradictory conclusions encountered.

My first set of evidence relates to Hausaland, a regional straddling northern Nigeria and southern Niger with what Hill contends to be "a high degree of cultural, linguistic and religious uniformity" (1972, p. xiv) with the characteristic, unusual for semi-arid tropical West Africa, that "the population is so dense that farmers are obliged to farm all the cultivable land every year. This agronomic system which has been practiced for centuries does not necessarily lead to a progressive deterioration in yield. ... Not even in the densely populated area of the 'groundnut basin' of Senegal is there anything comparable" (1972, p. 21). As Hill herself stresses, and as I show below, this agronomic and cultural distinctiveness does not lead in a deterministic way to an economic uniformity and, in fact, population density is not uniformly high.
The research of Raynaut (1973, 1975) has demonstrated interlinkages between exchange and production in a now deficit-millet but surplus-groundnut producing village near Maradi in Niger. According to Raynaut "cereals commerce does not indicate the existence of a (physical) surplus, nor does it assure better distribution between members of the community. Everything points to its origin in the economic vulnerability of certain family heads, and it operates to accentuate their weakness and dependence, fuelled by their intense need for money" (1973, pp. 34-35, translation mine). This money is needed to pay taxes in cash, and this requirement alone amounts on average to 65% of the value of the groundnut crop. It also forces the poorest deciles into the sale of their subsistence crop. Fifty % of family heads sold 35% of their millet. Raynaut estimates that two-thirds of the goods traded are for small-scale rural redistribution.

In Nigerien Hausaland very few individuals do not derive a supplementary (and some a substantial) income from nonagricultural activities, notably trade. Much is house or honeycomb trade. This trade is carried out by women in the seclusion of their compounds with children as go-betweens for price information (see also Hill 1971, 1972, p. 138).

Large numbers of women are involved in centuries-old market-place trade in millet and sorghum and their cooked dishes (Nicolas 1962, 1965, 1968). There is an intense circulation of goods which pass from hand to hand without enriching anyone (Mainet and Nicolas 1964).

Raynaut described the peasant's widespread and compulsive involvement in speculation and marketing thus: "The same people (male and female) who fear adventure in the realm of production are quite familiar with economic risk in the one area in which it is serious -- short-term commercial speculation" (1975, p. 31).

For the accumulators: "The benefits accruing from this intense mercantile activity fuel further commercial speculation, be it through purchasing vehicles for transport, or be it by constructing houses for

3. Taxation in Niger Hausaland has at least until extremely recently been at significantly higher levels than in Niger, although even in Nigeria the need for cash for purposes of taxation has been identified as a cause of distress sale (Shenton and Freund 1978) and in Northern Ghana farmers have been forced to sell cattle (regarded as sacred) for this purpose (Heerman 1978).

4. Raynaut (1975) also describes the role of women as physical accumulators in the sexual division of labor in exchange. Women produce 37% of total cereals, sell 10% of all sales but buy 24% of all purchases, notably from men at harvest, reselling prepared food to them before the next harvest.
hiring out. It is only rarely that such profits are invested in agriculture" (Raynaut 1975, p. 33). "Even so, certain traders control fairly large estates. "... However, their motives are ambiguous, not giving the impression that a search for profit is of dominant importance. It is rather the desire to conform to the social image of a wealthy man: a powerful man whose stores have inexhaustible reserves, above all of millet (Raynaut 1975, p. 34).

For those forced to sell, money circulates with extreme rapidity through the community but because it originates in the sale of cash crops or "subsistence" crops for taxes, most of it is immediately restored to the "coffers of the State" (Raynaut 1977, p. 171). Because food has to be repurchased later the terms of trade for farmers selling distress surpluses are automatically worse than for those whose surpluses are not for distress purposes (Gore 1978; Post 1970, p. 10).

For such farmers these mechanisms leave no surplus money for investment in new technology and may lead to the physical over-exploitation of the land (Raynaut 1975, p. 37). Further mechanisms involving debt and an expansion of wage labor (though not of total landlessness) may be set in motion as in Figure 3. The longer the period of wage labor, the less the possibility of working their own land, the lower the yield on self-cultivated fields, the greater the deficit, the greater the need to sell at harvest and buy pre-harvest, the greater the need to work as wage labor, migrating seasonally if necessary.

Greater also is the need to borrow money. Loans with interest (very often 100%, and taken because the debtor needs seed) are more common than loans without (Mainet and Nicolas 1964, p. 113; RCFOM 1978, p. 37). The Civil Administration exists to suppress such activity but often participates in it (RCFOM 1978). The linkages between marketing, debt and wage labor have been described for Nigerian Hausaland in a preliminary case study of a millet- and a cotton-growing village by Clough (1977a, 1981). Here 30% of farmers whose production appears not to meet their food needs have to sell grain required for subsistence directly after harvest. They sell at low prices in order to meet the combined costs of taxes, debt repayment, household repair, and ceremonies involving the purchase of manufactured goods against which the agricultural terms of trade are secularly deteriorating. Much of this grain is exported to deficit regions or towns. In the hungry preharvest rainy season (the soudure) this group of farmers is forced to work

5. After 2 years of intensive anthropological fieldwork, Clough's conclusions remain substantially the same (P. Clough, personal communication, February 1980 and see Clough 1981).
The research of Raynaut (1973, 1975) has demonstrated in-terlinkages between exchange and production in a now deficit-millet but surplus-groundnut producing village near Maradi in Niger. According to Raynaut "cereals commerce does not indicate the existence of a (physical) surplus, nor does it assure better distribution between members of the community. Everything points to its origin in the economic vulnerability of certain family heads, and it operates to accentuate their weakness and dependence, fuelled by their intense need for money" (1973, pp. 34-35, translation mine). This money is needed to pay taxes in cash, and this requirement alone amounts on average to 65% of the value of the groundnut crop. It also forces the poorest deciles into the sale of their subsistence crop. Fifty % of family heads sold 35% of their millet. Raynaut estimates that two-thirds of the goods traded are for small-scale rural redistribution.

In Nigerien Hausaland very few individuals do not derive a supplementary (and some a substantial) income from nonagricultural activities, notably trade. Much is house or honeycomb trade. This trade is carried out by women in the seclusion of their compounds with children as go-betweens for price information (see also Hill 1971, 1972, p. 138).

Large numbers of women are involved in centuries-old market-place trade in millet and sorghum and their cooked dishes (Nicolas 1962, 1965, 1968). There is an intense circulation of goods which pass from hand to hand without enriching anyone (Mainet and Nicolas 1964). 4

Raynaut described the peasant's widespread and compulsive involvement in speculation and marketing thus: "The same people (male and female) who fear adventure in the realm of production are quite familiar with economic risk in the one area in which it is serious -- short-term commercial speculation" (1975, p. 31).

For the accumulators: "The benefits accruing from this intense mercantile activity fuel further commercial speculation, be it through purchasing vehicles for transport, or be it by constructing houses for

3. Taxation in Niger Hausaland has at least until extremely recently been at significantly higher levels than in Niger, although even in Nigeria the need for cash for purposes of taxation has been identified as a cause of distress sale (Shenton and Freund 1978) and in Northern Ghana farmers have been forced to sell cattle (regarded as sacred) for this purpose (Heerman 1978).

4. Raynaut (1975) also describes the role of women as physical accumulators in the sexual division of labor in exchange. Women produce 37% of total cereals, sell 10% of all sales but buy 24% of all purchases, notably from men at harvest, reselling prepared food to them before the next harvest.
hiring out. It is only rarely that such profits are invested in agriculture" (Raynaut 1975, p. 33). "Even so, certain traders control fairly large estates." However, their motives are ambiguous, not giving the impression that a search for profit is of dominant importance. It is rather the desire to conform to the social image of a wealthy man: a powerful man whose stores have inexhaustible reserves, above all of millet (Raynaut 1975, p. 34).

For those forced to sell, money circulates with extreme rapidity through the community but because it originates in the sale of cash crops or "subsistence" crops for taxes, most of it is immediately restored to the "coffers of the State" (Raynaut 1977, p. 171). Because food has to be repurchased later the terms of trade for farmers selling distress surpluses are automatically worse than for those whose surpluses are not for distress purposes (Gore 1978; Post 1970, p. 10).

For such farmers these mechanisms leave no surplus money for investment in new technology and may lead to the physical over-exploitation of the land (Raynaut 1975, p. 37). Further mechanisms involving debt and an expansion of wage labor (though not of total landlessness) may be set in motion as in Figure 3. The longer the period of wage labor, the less the possibility of working their own land, the lower the yield on self-cultivated fields, the greater the deficit, the greater the need to sell at harvest and buy pre-harvest, the greater the need to work as wage labor, migrating seasonally if necessary.

Greater also is the need to borrow money. Loans with interest (very often 100%, and taken because the debtor needs seed) are more common than loans without (Mainet and Nicolas 1964, p. 113; RCFOM 1978, p. 37). The Civil Administration exists to suppress such activity but often participates in it (RCFOM 1978). The linkages between marketing, debt and wage labor have been described for Nigerian Hausaland in a preliminary case study of a millet- and a cotton-growing village by Clough (1977a, 1981). Here 30% of farmers whose production appears not to meet their food needs have to sell grain required for subsistence directly after harvest. They sell at low prices in order to meet the combined costs of taxes, debt repayment, household repair, and ceremonies involving the purchase of manufactured goods against which the agricultural terms of trade are secularly deteriorating. Much of this grain is exported to deficit regions or towns. In the hungry preharvest rainy season (the soudure) this group of farmers is forced to work

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a. Poor farmer

Taxes → Distress sale → Distress purchase → Laboring/migration → Production: lower productivity on own land → Debt

b. Rich farmer

Taxes → Sales → Hiring of labor → Production: increases in productivity → Money lending → Investments: land, houses, lorries, mechanized agricultural implements → Large-scale trading in grain/cattle

Figure 3. Exchange and production relations.
as seasonal wage labor on the farms of others in order to obtain food at double the postharvest price -- work which reduces their capacity to farm their own lands. Or they are forced to borrow money at seasonal interest rates of between 50% and 140% often to be repaid in kind valued at postharvest prices. It has been observed by others that body weights may decline and morbidity may increase during this period (Hunter 1966, Chambers 1978) further reducing these farmers' capacity for productive physical work.

The successful middle farmers of Clough's study (1977a) have bimodal selling patterns, also contributing to the postharvest glut because of heavy social pressures for ceremonial or marriage expenditure. However, they tend to sell relatively less and (because of being better risks) borrow more than poor farmers. During the cultivation season, grain will be sold to raise money to pay wage labor. Big farmers are able to withhold grain against mid-season price rises when they sell in order to pay wage labor and to invest in cattle, trade in which yields large profits from speculation. The same large farmers buy and sell grain. Prices offered vary with the quantity of the individual lot sold and, therefore, with the wealth of the seller. The market is highly volatile at the micro level. In Clough's case study, rates of return on money outlay over a single 2-day transaction by farmer-traders vary from 8% to 27%.

Farmer-traders may also store grain in villages against off-season price rises, and lend out money borrowed in turn from intervillage wholesalers. The latter specialize in diversified long-distance trade; they frequent periodic markets as well as marketless villages, have higher average rates of return than the farmer-trader to whom they lend money, and operate in turn on money borrowed from a few urban wholesalers with whom they share profits and whom they defraud.

Clough hypothesizes that the social relations of exchange here enable a small number of farmers to accumulate resources but they force many farmers to sell grain when prices are low or to go into debt to be repaid at harvest at high interest rates. Through this market structure a hierarchical trading system financed by urban merchants and hereditary notables, and tied by patron-client dependency relations, accumulates large financial and physical surpluses through its control of production (Clough 1977a and b; 1981). Yusuf (1975) adds corroborative evidence for Kano; Watts (1978) gives a very similar analysis for a village near Katsina. Even Ejiga (1977, p. 4) recognizes the "upward mobility" of traders who have accumulated capital and expanded the geographical scale of their operations. These create a system of debt which perpetuates and reinforces itself, enabling the extraction of a distress surplus on unfavorable terms from disadvantaged farmers. In forcing farmers to work as wage labor to obtain food whose earlier sale was equally forced on them, their labor input on their own farms is
reduced. Thus the market mechanism which progressively commercializes the rural economy simultaneously reduces returns to farmers and thus constrains its own progress. Since production is thus constrained, profits from grain marketing come from a retrogressive activity such as hoarding over time, which reinforces the constraining mechanism. It is quite consistent, therefore, to find evidence of large seasonal price swings.

Clough, Raynaut, and Hill report 100% seasonal fluctuations: Gore 200-400% in Ghana (1978). As Hill says: "Seasonal price swings are not more severe in Hausaland than to the south but the economic consequences are much more far-reaching" because of the inability of consumers to substitute, and their consequent, predictable vulnerability (1972, p. 137).

Watts (1978) for Hausaland, Gore (1978) for Ghana, Lallemand in Upper Volta (1975, p. 49) and Meillassoux (1974) generally in West Africa, assert that interseasonal price fluctuations have increased through time. This might be expected from a combination of increased amplitude in the seasonal oscillation of market demand (because of the changing social relations of trade) together with the constrained supply. Comparison of the percentage seasonal variations for 1960-61 in various Nigerien grain markets -- normally in the range of 25-40% -- with those occurring now (bimodally distributed around 60% and 140%) would support this contention (though more research is needed) (SEDES/FAO/INSEE 1963, pp. 17-24; CILSS 1977, Vol. 2, Niger, p. 50). There is some evidence that storage strategies for several years' consumption requirements ensuring the nutritional survival of the household through time -- strategies that are well adapted to a risky environment -- have decayed, and that smaller farmers stock less.

Watts remarks: "there is no inevitability about seasonal food shortages, just as there is no logical automatic or predetermined relationship between drought and famine" (1978). However, if these analyses of the effects of the marketing system on agricultural production are correct, then there is an inevitability about the seasonal behavior of the market. And, if evidence for adaptive land use strategies made during the drought leading to a further decline in land to subsistence crops and for the progressive failure of social-coping mechanisms for drought is assimilated (Faulkingham 1977; Guggenheim 1978) then there is now an automatic relationship between drought and famine. But how valid are such explanations? Let us consider other explanations. Hill in her two books on rural inequality, that consider trading in detail stresses in her explanation for rural poverty factors other than the linkages considered so far: (a) environmental factors (short farming seasons and uncertain rainfall); (b) lack of production factors (such as money and cattle manure); and (c) lack of alternative opportunities outside agriculture. Hill also argues that labor is not fully utilized. This is not supported by Norman's evidence from Zaria. It also might appear to contradict the assertions of Clough, Raynaut, and Watts that wage labor is diverted from self-employment rather than acting as a

6. A reduction in labor input is a crucial constraint; but it is not the only one.
supplement to it. However, it is seasonal underutilization that most concerns Hill, while it is the peaking of labor demands during the cultivation season, when untimeliness has high opportunity costs, that concern the other writers (see Hill 1972, p. 190, 1977, p. 100).

Hill nevertheless exposes the "balance of payments" problem of her village which "exports" £2500 of groundnut and would need to import food grains to the tune of £4000 to nourish everyone adequately. Invisible remittances do not redress the balance, and one section of the population -- the poor that sell after harvest, who are forced to sell their labor power and who are most dependent on the market economy even for grain seed -- are likely to be undernourished. Hill states that the yields of the poor are lower than those of the rich per unit area because their poverty prevents them from applying manure, let alone modern inputs; she even identifies a category as "too poor to farm" in a land-surplus economy, a statement which she regards as controversial (Hill 1977, p. 162-164).

She identifies large farmers, mostly men, but some women, who deliberately store for windfall sporadic profits over time. These are speculative because there is some risk of loss when the prices fall before harvest when farmers offload old stock onto the market, a practice attested by other writers. But she does not see the process as self-reinforcing, stressing instead the dissipation of accumulated wealth at death. However, that "death is a great leveler" may be an exaggeration. She says: "Rich men may have rich fathers, yet most sons of rich fathers will not be rich men" (1977, p. 100). Hill is not distinguishing between the degree of inequality and the practice of transmission of inequality. So I conclude that the differences between Hill's exposition and those quoted earlier are not fundamental but rather are in the nature of qualifications.

Matlon, in his thesis on Hausaland (1977), argues somewhat differently: that income disparities were small and due mainly to differences in the physical productivities of land and labor which "reflected at least approximately interpersonal differences in aptitude and work motivation" (1977, p. 419, p. 432). Palmer-Jones in a critique (1978) shows that the analysis of the data on which these conclusions were made is statistically naive, and that Matlon's conclusions do not follow from either his own or any possible reinterpretation of the data presented by him. Palmer-Jones argues that "non-market relations may mediate access to land, labour, manure, chemical fertilizers, etc., in such a way that poorer farmers cannot farm sufficiently ... a considerable portion of their surplus product and surplus labour time is appropriated by these noncapitalist relations, making it difficult for them to break out of their impoverished position" (1978, p. 4).

Hays in his study of marketing systems around Zaria denies the existence of the mechanism of usury. "There was no evidence that marketed tied to credit extension were significant for these two grains" (millet and sorghum) (1975, p. 90). So does Ejiga (1977): "None of the traders in all the samples said they advanced any money to farmers. Nor had any taken any loans themselves. No farmers had borrowed money or given cowpeas in exchange for debt" (p. 255). Ejiga however deliberately
identified himself with the Government in order to improve his rapport (1977, p. 41). Hill, in her critique of Hays, reminds us inter alia of the exceedingly secretive nature of storage and of allied subjects such as debt in Hausaland (1976a, p. 86). Both authors did fieldwork using paid assistance unlikely to be able to retrieve "statistically valid" data on debt. Finally, Palmer-Jones agrees, as I do, with Wood (1978, p. 42, on Bangladesh) that subjects such as moneylending "are institutionally disguised at the level of social relations in the village, both consciously through verbal agreement and informal arrangements backed by sanctions..."

Hays' work in northern Nigeria on the structure and performance of the grain trade in a rural-urban distribution system (1975) shows that larger farmers sell more grain and sell it later at higher prices than do small farmers. His categories (large and small) are crude ones related to land holding, unramified by household size (Hill 1976a, pp. 85-86). Hays concludes of the marketing system that resource allocation is "approximately optimal" -- the value judgement so characteristic of conventional structure-conduct-performance analyses of marketing systems -- given the particular income distribution. But he does not question the role performed by the marketing systems in changing the income distribution.

Clough's study analysis of the relation between overhead costs and net trading profits showed that the latter were 2-4 times the former, and he also queried the value judgements of Hays (1975) and Kohler (1977, pp. 22-25). Clough tells us that profits from the grain trade are invested in highly profitable cattle trading, enabling the wholesaler to employ wage labor on his farm and to lend out money at high interest rates to this labor. These observations must qualify any conclusions about resource allocation being optimized in trade.

I have contended that the marketed surplus of food entering trade is much larger in volume than is the net marketable surplus, because of postharvest distress sale and preharvest buy-back. The quantification of the relationship between gross marketed and net marketable surplus awaits further research, as does that of the relationships and mechanisms specified in Figure 3.

I have also contended that at the micro level the observed variations in interpretations of the role of the marketing system in Hausaland are more likely to be ideological rather than grounded in substantive differences in the relationship between agrarian and commercial systems. What variations occur in the rest of semi-arid West Africa?

Hill refers to Hausaland as "socioeconomically the great under-explored region of West Africa" (1972, p. xiv). My particular search in the rest of semi-arid francophone West Africa suggests precisely the reverse.
For Upper Volta Berg quotes the following ministerial note on grain price stabilization: "The peasant is currently in debt to the local trader who gives him a loan during the preharvest time. At harvest time he reimburses this trader by selling his crop at a very low price. Sometimes he sells his whole crop, although he is later obliged to buy part of it from the trader at extremely high prices. Then he gets into debt again and will never be free from this vicious cycle." Berg then says: "The least that one can say about these assertions is that they are not based on any systematic study of rural markets and peasant behaviour in Upper Volta. To our knowledge there are no such studies in existence" (Berg 1977b, p. 24). But this seems something of an exaggeration, or a confession of disciplinary blindness. Most research is on the Mossi, the most numerous of the many tribal groups of Upper Volta.

Wilhelm describes heavily populated Mossi country south of Ouagadouguou where maize, red sorghum, millet, and beans are grown for subsistence, and groundnut, tobacco, and cotton for cash (1976b). Here the harvests no longer assure self-sufficiency in staples. Lallemand observes precisely the same phenomenon in Yatenga (1975, pp. 44-50). The smaller the enterprise the larger the importance of purchased cereals, and the greater the likelihood that market purchases have to be put off until the soudure and the greater the likelihood of distress sale after harvest. Broekhuysse's survey of the Mossi plateau (1974) shows that about half of farm revenues is spent on taxes and ceremonies (a too easily aggregated category comprising nonfood purchases) and that approximately the same proportion was spent on repurchasing millet and sorghum. Similar conclusions are reached in a general study by Bollinger (1974). The "surplus" in Wilhelm's study area is bought by merchants from Ouagadouguou. The supplying of Ouagadouguou dominates the reallocation of surplus. From the stocks of these urban grain merchants the countryside is supplied during the soudure. This is perfectly consistent with Berg's finding that seasonal price swings are greater in rural areas than in Ouagadouguou, a finding he could not explain other than by blaming inaccurate data (1977b, pp. 16, 52-59). Ouedraogo corroborates Wilhelm's analysis in her study of the big cereals merchants of Ouagadouguou (1974): "Organised into a cereals/merchants association, they fear no intervention from Voltaic authorities in front of whom they dangle their political power".

To recover the surpluses yielded up after harvest, farmers may have to migrate for work. This migration reduces the strength of the work force engaged in agriculture. Much of it is seasonal. In Kombassiri 34% of the men aged between 15 and 59 are absent in the dry season (Wilhelm 1976b). Based largely on data from the early 1960s, Amin (1974) estimates an annual flow of seasonal migrants of 120,000 from Upper Volta into the cocoa-coffee zone (p. 73). While

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7. See Conti (1979) for a substantive exposition of data on migration and its consequences for production and for social reproduction.
this is prompted by cash needs it may prevent the adoption of production-enhancing "innovations" in the source areas. Gugler (1975, p. 197) cites a source which reports that efforts to introduce cotton production among the Mossi failed because it interfered with the existing pattern of seasonal labor circulation.

This response has become permanent, and Upper Volta (and also Mali and Niger) are performing the role of a source of supply of cheap labor for the farms, plantations, and industries of the Ivory Coast and Ghana (Amin 1973; ORSTOM 1977; Wilcock 1978; Lallemand 1975, p. 59; Conti 1979). As with seasonal circulation, these migrants (generally younger, single siblings) support with remittances the current consumption demands of an increasingly unsufficiency agriculture. Its field operations may be dominated by residual women family members apparently unable to adopt innovations (because of agricultural extension oriented to males only (Gissou 1977)).

On the migrants' return to marry the ex-migrant male workers resume their subordinate position in the family. They tend to start petty-trading because, as Berg notes, there are few entry restrictions for this activity (1977, pp. 25-27). Furthermore, they have no outlet in agricultural production for their accumulated capital. In the study of Mossi migrations, this is attested to be because (a) decision making on land use is based on seniority, (b) those with social power do not need money alone to enhance it, and (c) most importantly, because geographical expansion of territory now faces sharply diminishing returns to labor and capital (Ancey 1975, pp. 212-213; Ancey 1977; Capron and Kohler 1975, pp. 39-41).

The large number of intermediaries seasonally evident in rural petty commodity markets, and appearing to satisfy structural conditions for perfect competition, gives us little indication of the process underlying the pattern. They detract attention from monopoly at another level and from the accumulation of physical and financial surpluses by interregional traders. Even Berg finds price differences substantially in excess of transport costs (1977b, pp. 25-27). Explaining this with reference to lack of information, accounting skills, and transport, detracts attention from the fact of the profits and the social and economic process of which these profits are a part.

In Mali there really are no studies of the role of the evolving grain marketing system and of its effects on production. I agree with Panhuys: "Specific economic anthropological fieldwork is likely to result in considerable insights for the implementation of policies of commercialisation" (1973, p. 10). This being so one has to read between the lines in a rather speculative fashion.

Two studies of grain production point to inequalities in farm size. In the region of Mopti they vary from 3 to 20 ha, bunching around 7 ha (Operation Mils Mopti 1973). In Sikasso to the south,
a more "advanced" region, they vary from 1 to 40 ha, bunching around 5 ha (IER 1978a). Of course one cannot deduce a process of rural differentiation from this static evidence, and to some extent size of farm reflects size of family. Two further major surveys of agricultural practice in the south of Mali show a reduction of land grown to millet and sorghum. In 464 villages covered by the Compagnie Malienne de Développement des Textiles (Ouattara 1977) between 1973-76, land grown to cereals had declined from nearly 80% to 65% along with a "rural exodus", a reduction of labor on subsistence crops, and a transfer of land to cash crops, notably cotton. The price of cotton is more remunerative, and improved physical infrastructural facilities exists for its marketing. Individualization of land is on the increase, as is the hiring of migrant Bambara workers (Le Moigne and Memni 1973, p. 58-67; Operation Mills Mopti 1973, p. 12).

Ballan et al. (1976-77, Vol. 3, pp. 32-34), surveying 28 villages in Bamako, Segou, Sikasso, and Mopti regions, show that the increase in yield of millet and sorghum from fertilizer residuals, in an experimental millet-cotton rotation, is quite insufficient to maintain the marketed surplus of millet. Nor can the increase counteract the adverse effect on production of a reduction in land by an increase in the hectarage grown to cash crops. The correlation coefficient between the marketed surplus of millet and the percentage of land grown to cotton is -0.97. The relationship could hardly be more explicit. And the relative official price of millet against cash crops is deteriorating (Ballan et al. 1976-77, Vol. 1, p. 47).

Again, this deterioration does not prove that the mechanism at work in Nigeria, Niger, and Upper Volta works in Mali but, given rising demand from urban areas and deficit regions, it suggests that the aggregate cereals economy is much more vulnerable than formerly.

The links between taxation, debt, and marketing again seem important. Mention is made of obligatory sales postharvest to meet cash requirements for taxes as being an important source of supply (e.g., Ballan et al. 1976-77, Vol. 1, pp. 45-46; Vol. 3, p. 34). In Mali during the major drought of the 1970s the head tax was increased by 25% and became such an intolerable transfer of resources as to trigger off refusals of payment in the Diafounou region (Meunier 1975, p. 130). Panhuys also mentions the practice of preharvest loans in kind at effective interest rates of 100% (1973, p. 12).

Interregional trade, dominantly rural-urban, is fuelled from supplies at periodic markets picked up by the agents of urban non-specialist wholesalers who own transport. Whether or not they trade in millet and sorghum does not jeopardize their livelihoods.

8. Ballan et al. (1976-77) actually relegate all the redistributive activity within villages and via local periodic markets (where according to Bah, women have a dominant role) to the cadre of "subsistence", not to be considered as trade (Bah 1977, p. 67).

9. From the evidence on seasonal price variations presented by Bah (1977, p. 20-21) where rural prices fluctuate more than do urban ones, it is possible that here, as in Upper Volta, urban merchants may hold monopoly control over rural markets.
Their trade is characterized by diversity, precisely in order to minimize risk. Very considerable profits are made by these "traditional" urban wholesalers from international smuggling caravans, for Mali, in spite of its declining hectarage of cereals and low relative and absolute prices, is a food-exporting country in a normal year. It is estimated that 50,000-100,000 tonnes may cross borders in this way in years when Mali receives food aid. This indicates not only the likelihood of large profits through long-distance trade but of collaboration between these traders and a partisan bureaucracy (Bah 1977, p. 30; Panhuys 1973, p. 14; Diop 1971, p. 135).

The distinguishing economic features of these mercantile groups are their speculative behavior, collective organization, interregional and international trade crossing ecological zones, their versatility in dealing with cash, credit, barter, and their political patronage. The outstanding trading group is that of the Dioualas whose crucial importance to the Malian economy has had to be recognized by all Governments (Diop 1971, pp. 141-151; Amselle 1969).

I conclude tentatively that the distinguishing feature of the cereals marketing system in Mali is prices that reflect a low rate of return to production. In turn this is a product of the ability of trading groups to profit at the expense of cultivators (from whom these traders are socially differentiated, unlike elsewhere). This is evinced by high urban retail prices for grain. With greater profits to be made from the production of cash crops, the hectarage grown to millet and sorghum declines, rendering not only the rural population but also the urban population vulnerable to the power of trader-bureaucrats.

In Senegal, where both towns and countryside are increasingly provisioned by imported wheat and some rice paid for from the foreign exchange earnings of a stagnant export trade in groundnut, sorghum and millet are little marketed (Yaciuk and Yaciuk 1977, p. 56). The role of the groundnut marketing system in extracting financial and physical surplus from peasant producers at highly deteriorating double factorial terms of trade is well known and will therefore not be recapitulated here (see Amin 1973). Suffice it to recognize that to a certain extent the two commodity markets are interrelated. Production and sale of millet depend either directly on the relative prices of the two crops (CILSS 1977, Vol. 2, Senegal, pp. 43-50) or on the relative prices of groundnut and rice, the latter being preferred over millet in urban areas and in certain rural areas, too (Roch 1972, p. 52). Also the timing of cash demands (not only for taxes but also for the repayment of groundnut seed) determines the pattern of postharvest sales.

There are three kinds of millet and sorghum surplus. First, there are the sporadic residuals from the "disaster plantings" of larger farmers, released when the following season's crop can safely be predicted. Secondly, there are the continual small supplies of millet cultivated by women bartered for petty comestibles and consumer goods in villages or at local periodic markets (Minvieille
where the prices received by women for their surplus may be 75% that of men, resulting in and from differentiation within the household (SOMED 1977, Kleene 1974). Yaciku and Yaciku, studying eight villages, found that 85% of all sales were of this type (1977, p. 43), with occasional sales by men of grains exchanged for prepared food cooked by women. Most sales in rural markets are under 10 kg in consignment size, and 40% of transactions monitored in one field study were by women (Richard 1974). This type of very small-scale (barter) exchange may result from micro level regional specialization (Minvielle 1976).

Thirdly, there is the distress surplus of smaller cultivators triply penalized in price by their having to sell postharvest, having to sell in small quantities, and having to rehuy when prices are high (Richard 1974).

Once again, debt is linked with marketing. As Rocheteau says in his study of the Muslim Mouride sect in West Saloum, the survival of families during the offseason from the moment when the stores are empty until the harvest and the period when cash begins to flow, depends on the sales, loaning, and sales on credit of private traders and big local landowners (1970, p. 74). "The still very personalised nature of the relationship between peasant and trader is evidently not incompatible with ruthless commercial practices" (1970, p. 75). Rocheteau (1970) and Dione (1975) and SOMED (1977, pp. 70-75) in their macro level studies of the cereals economy warn that high interest rates play a large role in such transactions. Seasonal interest rates of 50-75% are increasing because of the canalization of agricultural surplus away from private traders and through the cooperatives dominated by marabouts (Rocheteau 1970). The kind of hierarchical credit arrangements hypothesized by Clough in northern Nigeria are hinted at in the SOMED study of grain marketing, and by Rocheteau, though there are remarkably few large-scale African traders (Diop 1972, p. 158).

A further unique feature of Senegal is the diminished importance of interregional and long-distance trade. This has been attributed to tighter State controls on the geographical direction of trade, though the State is certainly compromised by its dependence on the approval of traders in its commercial policies (Cruise O'Brien 1975). Wide regional price discrepancies and fluctuations inevitably occur (Dione 1975, p. 27; SOMED 1977, p. 78), giving rise also to short-distance sporadic cross-border smuggling to Gambia, Mauritania, and Guinea Bissau. Haswell documents the similar internal economic process within the Gambia (1975, p. 207-217).

3.1 Crises

"Climatic disasters are nothing but agents provocateurs revealing profound human causes which last longer than the disaster (le Roy Ladurie 1973, on 17th and 18th century France)."

10. This raises some interesting general points about the relationships between credit and marketing and farmers' terms of trade, worthy of further development.
A "crisis" is an extreme event which lays bare economic and social structures. Thus the Nigerian civil war was a "crisis". Here I briefly discuss the effects of drought in view of its influence on the recent literature.

There have been droughts in the Sahel throughout the 20th century: in 1920-21, 1927, 1931 (when 25% of the population of Niamey died); 1941-42, 1954-55 and, most notably, 1972-74 (Derriennic 1976, p. 122). "Crises resulting in severe shortages of food were a regular, if not normal, feature of life in the Sahelio-Sudanic zone" (Watts and Shenton 1978, p. 3). There is some evidence, however, to suggest that, through this century, the correlation between drought and famine has become higher, the geographical extent of famine wider, and that Sahelian society's elaborate structures of precautionary response to drought have broken down. Raynaut writes that, faced with precarious natural conditions, indigenous society was able to initiate a series of practices, individual and collective, that permitted it a margin of safety (which is not to deny that there were widespread deaths). "It is necessary to emphasise the efficacy of those traditional techniques of storage which permitted grain to be stored for relatively long periods -- up to several years -- which made possible the constitution of reserves" (Raynaut 1975). It is the thesis of Watts and Shenton, among others, that the commercialization of groundnut cultivation (that reduced hectarages to food crops especially in south-central Niger had historically performed the role of grain basket), the elimination of former rural buffers, and the inability of the colonial Government to build buffers, that has increased the vulnerability of the Sahel to drought.

The effects of the 1972-74 drought on the marketing system and on agricultural production were as follows.

1. Speculation and hoarding by traders in which the Governments of the Sahelian states did not intervene to suppress (Meunier 1975, p. 123; Derriennic 1976).

2. Tardy and inefficient food aid (CRED 1977, p. 1), not helped by the fact that the rural population at risk, always hither-to enumerated by village chiefs for States' taxes, was understandably rather greater than that officially estimated.

3. A reversion away from inedible cash crops to the cultivation of food crops (Faulkingham 1977), forcing a severe deterioration in the foreign exchange balances of the affected countries (CRED 1977, p. 1; Charlick 1974).


5. The exertion of an irreversible "ratchet effect" (Chambers 1978), in this case towards permanent indebtedness, the mortgaging or even the individual sale of land and herds.
(Lemoigne and Memni 1973; Raynaut 1975, p. 30; Meillassoux 1974; Wilhelm 1976a; Spitz 1977; Swift 1978), and the marginalization of significant numbers of people for whom there is no alternative employment as remunerative as their small-scale agriculture had been.

3.2 CONCLUSIONS

It is irresistible to conclude that, even considering the different interests of the literature and the sparse and patchy information available to us, the Sahelian grain marketing systems are generally quite closely linked with those for money and for taxation and control of both is concentrated: the one in private hands and the other in public hands. Financial and physical resources are being transferred from country to town via rural markets. The pace at which this process works has not been established. Together the commodity and money markets simultaneously work to expand commodity production and to constrain agricultural production, by inhibiting savings by the peasantry who might reinvest in agriculture. The strength of this domination varies regionally, depending on factors such as the (declining) productivity of the land and the population resource relationship, migration patterns, the tenure system, the political strength of trading groups, household storage capacity and practice, and the organization of markets for competing agricultural produce. The fiscal demands of the State reinforce the penetration of the market economy. But, of course, the State has other effects.

4. STATE INTERVENTION IN MARKETING

The interventions of the State are used to mobilize resources and to alter relationships between the three spheres of the economy (see Fig 1). Although it is most likely that the socially sensible form of state intervention would be to use public resources to regulate the use of, rather than replace, private resources in an otherwise free grain trade, the Sahelian States considered here have intervened on paper on a massive scale. The stated objectives have been to supply urban areas and rural regions most regularly in deficit, to stabilize producer prices, keep consumer prices low, organize infrastructure and emergency stock (Wilcock 1978, p. 253), and to organize the export of grain. They have also been justified in terms of the uses to which the resources transferred are put in comparison with the pattern of savings and investment of private trade.

To carry out these objectives, trading parastatals have been set up as part of a general expansion in such institutions in the Sahel. The parastatals are endowed with monopoly powers of purchase and sale. They organize finance from private, public, indigenous, and foreign sources. Price policy and fixed trading margins are determined in Government committees and implemented by special Caisses de Stabilisation des Prix (Price Stabilization Funds). Trading quotas may be arranged by the general Civil Administration or by the parastatals. Purchase and sales are intermittently in the hands of cooperatives, licensed private traders and (sometimes internationally financed) regional or crop-specific production parastatals.
The State Marketing Boards all organize transport. This may involve several means, all organized differently -- donkey, camel, boat, railway, truck -- and the cooption of the private sector as well as relevant parastatals. The Boards also organize storage. Storage and transport have been the targets of expansion everywhere. This expansion is usually externally financed by bilateral foreign loans or gifts and thus subject to external control (see CILSS 1977 for the whole region; Ballan et al. 1976-77 for Mali; CRED 1977 for Mali; Wilcock 1978 for Upper Volta; and SONED 1977 for Senegal). As commented in Mali: "This work is not always carried out with joy" (Operation Mils Mopti 1973, p. 5) and in Senegal: "We must underline this institutional confusion" (SONED 1977, p. 9).

In view of this "confusion" and, given that the dismantling of State intervention is extraordinarily unusual, there really is little point in debating, as is still done (see OECD/FAO 1977), whether private trade, cooperatives or parastatals are separately or in combination "optimal" or "most suitable". Nor, given the patent "gap between formulation and implementation", that "may be not entirely the result of an inability on the part of the State to act" (Collins 1974, p. 5), is there point in evaluating these institutional phenomena in terms either of stated objectives or of textbook objectives for marketing intervention "which exist only in Government speeches or in the hearts and minds of outside observers" (Collins 1974, p. 7), or of testing unproven assumptions on which current policy rests. This is especially true if there is no coherent policy and if the testing of assumptions gives ambiguous results (e.g., CILSS 1977, Vol. 2, sections on Upper Volta and Niger). Here, I explicitly reject the Keynesian and Fabian interpretation of State intervention as being above and outside civil society and as existing to abolish crises by economic planning. The State is an arena of action within which attempts are made to alter relationships. At worst the State may cause crises and at best it has multiple, inconsistent, and changing objectives.

In order to understand the nature of State intervention in agricultural marketing it is necessary to review the historical evolution of, reasons for, and distributional effects of, this complex situation. Most of the best literature confines its assessment of intervention in terms of a unidirectional causality. However, it must be recognized that "Government" (regarded as a monolithic unity) and the "traditional" distribution systems may have coexisted for a fair while in a dialectical relationship, tied together in unity and in contradiction. In the following section I therefore expand my interpretation of the relationships of interventionism in the semi-arid tropics of West Africa, and begin with an exposition of their internal evolution. 11

4.1 AMBIGUOUS ORIGINS AND FUNCTIONS

In Niger the parastatals or sociétés d'économie mixte (SEM) were introduced into a primary economy at Independence when secondary

11. See also Harriss 1981.
industry was foetal and when commerce was controlled by foreign companies. Their organizational form reflects those of parastatals of metropolitan France. Resulting as they do from a battle for power between the interests of the French Government and those of private French capital before Independence, they were a form of institution which enabled the perpetuation of French interests in the ex-colonies after the political break. The Nigerien Government was thus forced to allow interbreeding between local public and private capital (e.g., the Banque de Développement Rural Nigérien created in 1961) and more commonly between local public and foreign private capital (e.g., Société National de Transport 1961, Société Nationale pour l'Arachide (SONARA) 1962, Société pour la Transformation du Mil (SOTRAMIL) 1967, and Office des Produits Vivriers du Niger (OPVN) 1970). Under such compromises it was generally understood, though not legally established, that profits were to be re-invested in the SEM sector and that such foreign administrators as were employed would train local counterparts (BIT 1978a).

The OPVN was set up to trade in millet and sorghum because of specific conditions such as inadequate storage, high price fluctuations, inadequate supply to urban areas after the 1968 drought, problems with the disbursement of food aid, and a need to organize production, marketing cooperatives, and information (CILSS 1977, Vol. 2, Niger, pp. 8-9; Copans 1975, pp. 132-135). However, the cereals marketing parastatal was set within an economic context of expanding interventionism. OPVN, and their current but intermittent purchasing agency the Union Nigerienne de Credit et de Co-operation (UNCC), differed from other SEM's only in originally having a clear social goal: to supply hospitals, prisons, and the urban bureaucracy (SEDES/FAO/INSEE 1963, p. 16), and to stabilize prices. This evolved over time into the enforcing of low relative producer and consumer prices. It also involved the association of OPVN buying points with those for Ministry of Finance taxation, so that money circulated rapidly out from and back to the coffers of the State (Raynaut 1977). Domestically-procured millet and sorghum are of far less volumetric significance than are imported rice, sorghum, and maize in OPVN's operation (M. Herssens, OPVN, personal communication, August 1978). Sixty-five % of sales are to Niamey alone.

Cowpea, which was traded profitably by OPVN to large-scale Nigerian merchants operating legally and in competition with large-scale Nigerien merchants operating illegally, was transferred from the auspices of OPVN to those of the financially moribund SONARA in 1976 (BCEOM 1978; Richard 1977, pp. 50-60).

In Upper Volta attempts by the StEt to intervene in grain marketing during the 1960s were limited both in scale and in success. However, in 1971, in a similar context of expanding interventionism (Bollinger 1974) the Office National des Céréales (OFNACER) was

12. In Niger the parastatals administer one-third of the formal sector economy with a payroll of only 2000 in a country of 5 million people (BIT 1977). Many of these parastatals form parallel 'roles to, and duplicate, the civil administration.
created with the ostensible objectives of protecting consumers against traders and excessive price fluctuation, and of building a buffer. Before 1974-75 they operated with licensed private traders, these being the largest mercantile intermediaries, and were mainly instrumental in distributing imported grain. However, from 1975 onwards OFNACER has coped with a large expansion in domestic procurement working, first, through regional development organizations -- ORDs -- and, in later 1976, through the village cooperatives, and supplying urban and heavily-deficit regions (Berg 1977b, pp. 13-15).

The Office des Produits Agricoles du Mali (OPAM) came into being in 1965. It has functioned since then "under permanent improvisation" with a growing number of institutions: cooperatives, the Office de Stabilisation et Regulation des Prix, and the Civil Administration. OPAM supplies hospitals, schools, and factories. Thirteen sales points for civil servants in Bamako are supplied with 6 times the per capita ration of the retailing centers in the chronically deficit 6th region around Gao (Richard and van dem Berg 1975, pp. 33, pp. 63).

By contrast the assumption of parastatal responsibility for domestically produced cereals trading dates in Senegal from 1975. But it is nevertheless embedded in the expanding role of the State, which had experimented in various ways in the control and organization of the peasant economy. First, there were the Sociétés Mutuelles de Développement Rural for rice cultivation and marketing, then the Centres Regionaux d'Assistance au Développement, the Co-operatives, and the Centres d'Expansion Rurale, all set up for various aspects of agricultural extension. The Office de Commercialisation Agricole held a fictive monopoly for commodity marketing and the Banque Sénégalais de Développement was in charge of finance. In 1966 ONCAD, created for groundnut marketing, (Harriss 1981) took over the collection of small quantities of grain free-marketed by the rural cooperatives, and in 1971 added the distribution of imported rice. Simultaneously the Caisse des Grands Produits Agricoles (CGPA) was created to "coordinate" the activities of ONCAD and those of private trade. Since 1975, when ONCAD achieved a "total monopoly" on millet and sorghum trading, it has also added to its portfolio responsibility for the distribution of inputs, including credit, and for the marketing of maize. As with the other parastatals ONCAD supplies urban areas and deficit regions, and attempts to build a buffer. However, whereas in 1972-73 these cereals represented 4% of ONCAD's total business, by 1974-75 they were down to 1%. This gives some indication at least of likely planning and administrative priority (SONED 1977, pp. 1-11; Dione 1975) and the domination within the institution of policies for crops other than sorghum and millet.

Finally, Nigeria's State commitment to food grain marketing dates from 1977 when the National Grains Board was instituted in something of a policy vacuum but following the re-reorganization of regional parastatals on a commodity basis once again. At present, millet and sorghum is being purchased via "licensed buying agents" for resale in cities such as Kano, Zaria, and Kaduna as nonsalary urban relief to the civil service. Although State involvement is recent, familiar problems of low and sporadic supplies, poor quality, and pilferage are being encountered (New Nigerian, various issues, March-July 1978).

13. Ninety-seven parastatals have been established since 1973 (IBRD 1977).
4.2 FICTIVE MONOPOLIES

Whereas for the present the Nigerian State has no monopoly in grain trading, in the four francophone countries studied, the State now markets grains under legal monopolies dating mainly from the drought of 1972-74. Two attributes of this monopoly are important to our understanding of the internal contradictions of intervention.

First (though the data on which these statements rest cannot be conclusive), the monopoly constitutes an insignificantly small proportion of grain production and an insufficiently large proportion of grain trading to influence market behavior. In Niger, OPVN markets on average 20% of marketed surplus estimated in turn at 10-16% of production (CILSS 1977, Vol. 2, Niger; BCEOM 1978). SONARA is estimated to market 30% of the traded surplus in cowpea (BCEOM 1978). In Upper Volta, OFNACER markets 20% of the 15% of production that is sold and the legal monopoly is freely acknowledged to be "in principle only" (Wilcock 1978, p. 201). In Mali, OPAM markets at most 40% of the surplus of 15% of production (Panhuys 1973, p. 11). In Senegal, ONCAD has never marketed more than 30% of the 15% traded (SONED 1977). Part of the reason for the paper-tiger nature of the monopoly is the second attribute.

Monopolies are seasonal. The purchasing campaigns lag behind the harvests, and, where the marketing systems are periodic, the monopoly is effective only on certain days of the week (Richard and van den Berg 1975, p. 24). In Niger the campaign date for groundnut is determined by SONARA's Paris office with reference to Nigeria's harvest timing (Capo-Chichi 1976, p. 27; BCEOM 1978, p. 3). In Mali, official purchase prices are declared in July, far too late to influence cropping-pattern decisions. The opening date of the millet purchasing monopoly and the fixed distributive margins were announced in February 1975 for the 2 months previously. Furthermore, the monopoly ends whenever funds are used up, with large gaps while the funds from the Banque du Développement Malien are "unplugged" (Ballan et al. 1976-77, Vol. 2, pp. 22-27). In Senegal the State monopoly on millet begins rigidly 1 month after harvest and lasts until the groundnut harvest (SONED 1977).

4.3 CENTRALIZATION AND EMPLOYMENT

Two reasons for the serendipitous nature of the monopoly are (a) lack of people, and (b) lack of appropriately located people in the employ of the parastatals -- despite criticism of overstaffing. In Niger, OPVN expanded its labor force by a factor of 10 after the 1972-74 drought. However, it is apparent that in Niger, even with external assistance, the acquisition of technical skills remains highly deficient and is dependent on training abroad on scholarships from the Nigerien government (BIT 1978a). The International Labour Office

14. In Nigeria in the mid-1950s Rules for a Close Season for Groundnut Purchasing were enacted. These prohibited purchase between 1 August and the opening of the official monopoly buying season. But, since there is often a 2-month gap, it is ineffective as a measure to prevent crop pledging, and no actions have ever been taken against infringers (Hill 1972, p. 228).
found: "almost invariably, organisation was informal, job responsibilities undefined and individuals were confused about their roles" (BIT 1977, p. 12; see also BIT 1978b and c). Middle management in OPVN suffered from a high turnover, and top management, overpaid and in "desperately short supply" was adept at making contradictory decisions (BIT 1977). Also, because of bureaucratic rigidity, it was not possible to make flexible seasonal responses to requirements for labor.

In Upper Volta it is not simply the overrapid expansion of OFNACER but also of satellite parastatals that has led to management by the untrained (Berg 1977, p. 18; Wilcock 1978, p. 205). The overcentralization of employment is of course related to the overcentralization of flows and of stocks clear from official (OFNACER) data on the location of disbursements of food imports. In Mali, OPAM's salary payroll is increasing at 15% per annum. In Mali, too, there are insufficient top cadres and a generally incompetent (because untrained) middle-level management and inspectorate (Richard and van dem Berg 1975, p. 62). Further, the fixing of remuneration in the regions is controlled by the Civil Administration and is unstandardized (Richard and van dem Berg 1975, p. 45).

Secondly, the parastatal administration is often very highly centralized, more so than its spatial trading patterns would suggest to be optimal. In Mali 38% of OPAM's salary payroll of 882 people in 1976 were employed in Bamako, as were most of the 100-300 day laborers (Richard and van dem Berg 1975, p. 45).

This administrative structure impedes the flow of information just as it impedes interdepartmental coordination: but below it will be seen that there are other reasons for both these characteristics. It is plain that the internal capacity of parastatals to regulate their own expansion is insufficient.

4.4 UNSTABLE PARASTATAL INTERMEDIARIES

The parastatals in francophone West Africa are not actually in direct contact with producers, and rarely with consumers. Because of their manpower and financial weakness they operate through intermediary institutions. It is a vicious circle. Their relationships with (illegal) private traders is examined below. Suffice it, here, to emphasize the power of private traders, as exemplified by the failure of parastatals to affect price stabilization, almost always one of the stated objectives of intervention.

Table 5 shows the absence of consistent policy towards trading intermediaries in Niger. Until 1975, for instance, there was a free market. Thereafter OPVN operated with UNCC only. In 1977-78 licensed (large-scale) private traders operated with UNCC. Sometimes village headmen are also enlisted for retailing activities, and the police are used for food aid distribution (BCEOM 1978, p. 11). By 1978 OPVN hoped to operate through its own special agents in an effort to break the diversionary power of private traders and the inefficiency of the cooperatives.
Table 5. Niger: Institutions involved in agricultural marketing.

<table>
<thead>
<tr>
<th>Product</th>
<th>Producers</th>
<th>Coops</th>
<th>UNCC</th>
<th>Private trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millet</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>OPVN</td>
</tr>
<tr>
<td>Millet</td>
<td>x</td>
<td></td>
<td></td>
<td>OPVN</td>
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<tr>
<td>Millet</td>
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<td></td>
<td>OPVN</td>
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<tr>
<td>Millet</td>
<td></td>
<td></td>
<td></td>
<td>SOTRAMIL</td>
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<tr>
<td>Sorghum</td>
<td></td>
<td></td>
<td>x</td>
<td>OPVN</td>
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<td>Sorghum</td>
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<td>Sorghum</td>
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<td>OPVN</td>
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<tr>
<td>Paddy</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>RIZ DU NIGER</td>
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<tr>
<td>Paddy</td>
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<td>RIZ DU NIGER</td>
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<tr>
<td>Rice</td>
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<td>OPVN</td>
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<tr>
<td>Rice</td>
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<td></td>
<td></td>
<td>RIZ DU NIGER</td>
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<tr>
<td>Cowpea</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>SONARA</td>
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<tr>
<td>Cowpea</td>
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<td>SONARA</td>
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<tr>
<td>Cowpea</td>
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<td>SONARA</td>
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<tr>
<td>Groundnut</td>
<td>x</td>
<td>x</td>
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<td>SONARA</td>
</tr>
<tr>
<td>Groundnut</td>
<td></td>
<td></td>
<td></td>
<td>SONARA</td>
</tr>
<tr>
<td>Gum arabic</td>
<td></td>
<td></td>
<td></td>
<td>COPRO NIGER</td>
</tr>
<tr>
<td>Hides &amp; skins</td>
<td></td>
<td></td>
<td>x</td>
<td>SNCP</td>
</tr>
</tbody>
</table>

Source: BIT 1976
In Mali such is the organizational confusion that the partly French-financed cotton production parastatal Compagnie Maliene du Développement des Fibres Textiles buys millet and sorghum in two development zones, while Operation Mils, the USAID-financed millet production project, buys millet in zone 5 (Ballan et al. 1976-77, Vol. 2, p. 40).

In Upper Volta, the Organisations Regionaux de Développement (ORD), created in 1966, were administered under a different Ministry from that of OFNACER until a recent expedient reform unified them. Even so, the ORDs have refused to sell to OFNACER (the ORDs working capital on cash crops having been blocked by banks because of failure to repay credit for staple food grains marketing). Instead they prefer the quick payment and higher prices of at least two other separate organizations involved in buffer stock building, one project run by OSRO/FAO and another project of the Comité National pour la Constitution et la Gestion des Stocks de Céréales de Réserve (Wilcock 1978, p. 203).

The parastatals used as purchasing intermediaries are to a certain degree autonomous (Ballan et al. 1976-77, Vol. 2, p. 32), and thus run administrations parallel to the civil service. Even though they are autonomous they are sometimes externally financed and subject to conflicting interests. In Mali, for instance, Operation Mils benefits from American and some German aid in some regions and French aid in others (Panhuys 1973, p. 3). The parastatals are either crop- or region-specific and therefore give millet and sorghum low planning priority in production, let alone in marketing. In Upper Volta the ORDs have very wide powers, including extension, education, veterinary advice, production, credit, and marketing. Given the skills and equipment necessary, these wide responsibilities may explain their erratic performance (Wilcock 1978, p. 196). In Senegal procurement is organized differently in each region: that of the Fleuve is covered by the Société de l'Amenagement et Exploitation des Terres du Delta (SAED), a regional development organization; that of the groundnut basin is a crop-specific organization, Société du Développement et Vulgarisation Agricole (SODEVA); that for West Senegal is for cotton: Société du Développement des Fibres Textiles (SODEFITEX); and that for Casamance is regional: Société pour la Mise en Valeur du Casamance (SOMIVAC); actual procurement is organized by the cooperatives (see below), while retailing is covered in urban areas by the Société Nationale de Distribution (SONADIS) with no other organization to compete with private trade in rural areas (SONED 1977, p. 290; Ministere du Développement Rural 1977, p. 2).

The organization of Government agencies enables bureaucrats to profit privately from State intervention (peasants' transport costs margins rarely being disbursed to producers but absorbed instead by the intermediaries (Richard and van dem Berg 1975, p. 38)). Also, disorganization allows private traders, lorry owners, and politicians who have captured the administration of the proliferating parastatals to profit disproportionately in comparison with profit making in any other sector of society. Single individuals may even operate simultaneously as administrators and as private traders (Diop 1971).
Cooperatives are the semiautonomous institutions used as buying agents in all five countries considered in this review. Their ambiguous (and in Niger not legally defined) structures, consisting of a mixture of dirigiste bureaucratic authority and participatory democratic organization by peasants, their mixture of socially beneficial objectives with competitive business requirements, their vacillating relationships with regional development or crop-specific parastatals and with the marketing parastatals, makes them easy prey to capture by merchants. "Co-operatives are indistinguishable from the point of view of their members from private trade" (Forrest 1978; King 1978, p. 21). They are not set apart from the private commercial accumulation of capital but are an integral part of it.

In Nigeria cooperatives have long been used to modify marketing and agricultural credit. In the 1960s, 2500 Cooperative Credit and Marketing Societies were created, some under the State Ministry of Community Development, others under Ministry of Natural Resources and yet others with the Ministry of Trade and Industry. They were administered with considerable dirigiste uniformity by State employees (King 1978, pp. 1-3). The conclusion of King's careful study of the effects of "co-operative uniformity" on six different villages is worth quoting. "The complicated co-operative institutional form makes demands which are not suited to the skills and norms of behaviour of villages and which require the State to call upon the help of powerful local leadership to run the co-operatives, and whose authority, wealth and institutions are consequently reinforced. The services provided by the co-operatives are best suited to the needs of the more commercialised farmers, notably village leaderships" (King 1978, p. 31). King is at pains to stress that each village responded in a distinctly different way to uniform State intervention. "The variation ranged from villages where co-operative credit had little or no effect on agriculture to those where it was dramatically stimulating; it ranged from those where poorer farmers were almost totally excluded to those where every section of the community participated equally" (King 1978, p. 23). But he concludes that the uniform cooperative is "certain to be inappropriate, most of the time".

King's study actually focuses on credit provision. As Anthonio has explained (1968, pp. 82, 178-180), the marketing of crops by cooperatives is only important for export crops (specifically cocoa) where the parastatal with which they in turn liaise has a sure outlet at guaranteed prices, and a bank overdraft. Village cooperatives engaging in grain marketing, despite their privileged access to subsidized credit, do not offer effective competition to wholesalers. This is because of their "high administrative overheads and lack of motivation". Forrest (1978) makes the further relevant observation that "where the economic advantages are clear, as in the case of rice milling in Abakaliki or bulking for long-distance trade in Umuahia, farmers and traders combine without State assistance or registration (emphasis mine).

Rather the same is true of indigenous "mutualist" institutions in Nigerien Hausaland where "traders with money to lend are the real winners in a society characterized by rapidly intensifying individualism, competition and hierarchy hardly conducive to the formation of co-operatives" (Nicolas 1968, pp. 11-12, 16).
Here producers combine spontaneously in small groups for such limited goals as the organizing of collective infrastructural developments (e.g., the digging of wells or the making of nurseries for market gardening crops). However, this peasant experience is totally ignored by the professional cooperative administrators who are oriented towards the management of multifunctional institutions. According to Nicolas, cooperative management is dominated by the disbursement of agricultural credit and the propagation of ox-drawn production equipment which is inappropriate to the factor endowment and apparently very partially adopted only by the elite (Nicolas 1968, pp. 23-63). They are also oriented to the planning and production goals of thinly nationalized foreign cotton merchant companies (Nicolas 1968, pp. 69-70), or to SONARA, the groundnut parastatal (see Harriss 1980).

The Union Nigerienne de Credit et de Co-operation (UNCC) was set up in 1963 to replace the Société Mutuelle de Développement Rurales -- moribund through debt -- and to bypass, by institutional fission, problems of credit and inputs disbursement. Groundnut marketing was the most obvious and profitable activity. Paradoxically, in an era of increasing Africanization, UNCC's buying in Magaria, the most important departement, was in the hands of the American Peace Corps Volunteers (Collins 1974, p. 246-263). Cooperatives also failed with credit inter alia because of the over-large geographical and social composition of each cooperative. Separate expatriate movements to build village cooperatives foundered on the misconceptions of Hausa society as uniform and homogeneous, a misconception that Nicolas had exploded in the early 1960s (1962, pp. 64, 67, etc.). Credit is a continual festering sore.

In groundnut marketing, UNCC is paid an identical margin to private traders acting as agents for SONARA. Without inclusion of overhead costs the cooperatives' cost structure is lower than that of private trade, but including overheads the reverse applies. Although Nigerien intermediaries eschew the 'gifting' practices of private trade, the cooperative organization has done little to bring about more egalitarian relations within their subgroups; and many more problems that cooperatives are often instituted to solve had already been "solved" by State intervention up to 1963 (Collins 1974, pp. 309-320; Charlick 1974, pp. 10-24). As a consequence of the historical emphasis of cooperatives on groundnut, their organization is weak in the cereal surplus areas. The cowpea trade, at 1542 million FCFA/year, is currently double that of millet and sorghum, but problems with the former include inadequate physical storage facilities and heavy losses. Problems with the latter include inadequate supplies to justify infrastructure, thus highlighting the geographical and institutional inflexibility of cooperatives (UNCC 1977, p. 7, pp. 12-29).

Cooperatives in other Sahelian countries will be considered summarily. They are used intermittently by marketing parastatals (see for instance Berg 1977b and SONED 1977, p. 296, for Senegal). They suffer periodic reorganization and retitling, generally to escape the dilemmas of poor records on credit repayment. They are subject to the separate authority not only of the production and marketing parastatals, but also of the Civil Administration and of various different Ministries (see for instance Ballan et al. 1976-77, Vol. 2, p. 15 on Mali), and may be cannibalized by private traders in disguise as...
peasant producers. The former then appropriate payments planned for the latter (see, for instance, SONED 1977, p. 290 for Senegal). Cooperatives are by far the most unstable and vulnerable of parastatal intermediaries for cereal marketing.

4.5 PARASTATAL FINANCE

In spite of the complexity of the subject, several generalizations may be made.

Parastatal operations in millet and sorghum are not viable at market prices, whatever their social justification. These characteristic deficits are caused by the relatively small scale of operation and by parastatal operation in high-cost (deficit) regions (not countered by operations in low-cost regions). All the parastatals have high overhead costs. These would be exacerbated in social cost-benefit accounting because the marketing overheads of the general Civil Administration are invariably neglected in such accounts as exist. Financial planning is defective and cumbersome. In Mali, for instance, estimated financial requirements for marketing are usually aggregated via the village chiefs and through the Civil Administration in December. OPAM is informed in July and negotiates with the Banque du Développement du Mali once a year. The latter unblocks the first quantum of funds in November and will not release more until all receipts are remitted (Ballan et al. 1976-77, Vol. 2, p. 26).

The process is similar in Niger (CILSS 1977, Vol. 2, Niger). In Operations Milis, where forward planning is more streamlined at the administrative level of the cercie and the zone d'expansion rurale (ZER), money can be in over- or under-supply any one season by 100% (Richard and van dem Berg 1975, p. 19). The financial status of Niger's SEM's have been studied exhaustively (BIT 1978b). All have a permanent undersupply of working capital for purchase and storage which "ought" to be at 35% of turnover but which on average is 20%. The use of overdraft facilities at commercial banks is "bleeding SEM's dry". In the case of the OPVN, the ILO has diagnosed a highly inadequate supply of working capital and an inadequate fixed distributive margin, especially given the division in 1976 between OPVN's domestic transactions and the distribution of foreign food aid. OPVN has negative reserves covered only by 1500 million FCFA/year of external aid and 800 million FCFA/year from the State (Hidalgo 1977). SONARA has totally eroded its working capital and has an urgent need for substantial reinforcement of its resources, given continued uncertain supplies of groundnut and cowpea (BIT 1978b). SOTRAMIL suffers from a permanent undersupply of millet and relatively high overheads from low degrees of capacity utilization, typical of badly costed inappropriate factory technology. SOTRAMIL's operating subsidy is 50 million FCFA/year, and its subsidy on capital equipment is a further 50 million FCFA/year. Even so, its products are out of the price range of peasants (Derrienic 1976, p. 214). In line with the commercial bias in the Nigerien economy, the merchanting SEMs are the most important in terms of turnover yet in market prices they have been static at 12-13 million FCFA/year over the last 6 years (BIT 1978b).

15. See for instance, Harriss 1976, for a full discussion of the international transfer of inappropriate rice milling technology in Asia, and Stewart 1976, for similar industrial examples elsewhere in Africa.
In Upper Volta, OFNACER is chronically short of working capital and has built up an operating deficit of 38 million FCFA in 1975 (Berg 1977b, p. 14).

Mali's OPAM has negative reserves. Its working capital covers 8% of its stock where it "ought" to be 50%. The salary component of marketing costs at 1% is extremely low. To counteract this, transport at 10%, credit at 27%, and interest on borrowed capital at 5% of total costs are all "excessively" high (Richard and van dem Berg 1975, pp. 55, 63).

Senegal's ONCAD's losses on domestic millet and sorghum marketing are subsidized by the profits from groundnut export and from rice imports.

The consequence of this chaotic financial planning and lack of economic viability is the involvement of a multiplicity of internal and external funding agencies, each minimizing the riskiness of its own involvement. Thus investments by France, West Germany, and the UK underwrite Mali's OPAM's budget. Niger's OPVN is financed by Canada (ACDI), France (FAC) and USAID (via PL 480 gifts sold in local currency, via storage, and technical assistance projects). In 1977 such external aid amounted to 1365 million FCFA (CILSS 1977, Vol. 2, Niger). Niger's UNCC generates 1% of its funds itself; 35% comes from grant subsidies from four different sources, 11% from France (FAC), 46% from the EEC (FED), 7% from the US (USAID) and 0.1% from the UK (the charity, OXFAM) (UNCC 1977). In Senegal not only are FAC and USAID involved in investments in foodstuffs marketing, but also six banks, all of which contribute to ONCAD in different fixed proportions, and all of which have to agree to any such loan.

Whether the source of such finance is internal or external, its diversity militates against either unified or medium-term policy making.

4.6 FOOD AID AND IMPORTS

The effect of food aid on a recipient economy is discussed very fully in Stevens (1978) and ISMOM (1977a and b). In this review I summarize its effects on the institutions through which it is disbursed. Imports and free flows of externally produced grain result from and contribute to the parastatal's vulnerability. The geographical balkanization of the Sudano-Sahel zone and the economic balkanization occurring within each State are conducive to the creation of sudden artificial scarcities. Food aid has uncertain time lags. Stocks may arrive in the wet season, late, and in poor condition (Richard and van dem Berg 1975, pp. 77-89). Coalitions of foreign multiple interests are involved. Food aid is often sold, yielding surpluses which may be invested productively (Niger had 1300 million FF from such activities in 1976 for rural productivity projects (BCEOM 1978, p. 12)). It may equally be unaccounted for: 1800 million FF in Upper Volta, for instance (CILSS 1977, Vol. 1, p. 42).

Aid has come to dominate the marketing activity of Sahelian parastatals. Before the institutional fission in 1976, 70% of OPVN's throughput had been food aid (CILSS 1977, Vol. 2, Niger). It is "essential" to the operation of OPAM in normal years, e.g., 1976 when
apparently Mali had a surplus, as well as drought years, e.g., 1972-73 when 98,000 tonnes were received (Ballan et al. 1976-77, Vol. 1, p. 2).

Imports may require subsidies as in Niger (BCEOM 1978, p. 12). In Mali the subsidy can be up to 66% of retail price (Bah 1977, pp. 18-19). In any case imports use scarce foreign exchange. In Senegal 31% of cereals consumed are imported, and the proportion of foreign exchange earnings required to pay for them has risen steadily from 20% in 1961-65 to 33% in 1971-75 (Dione 1975, pp. 1-3).

Imports also have uncertain prices and time lags, and may involve multiple foreign interests. The impact of imports on price levels and production in West African countries depends on relative price discrepancies and the relative quantities involved. In Mali the effect may be adverse (Panhuys 1973, p. 3), in Upper Volta less so (Stevens 1978; Berg 1977b). For the parastatals the types of uncertainties described above contribute to policy instability as well as being an avenue for patronage and corruption (Berg 1977b, p. 13).

4.7 CEREALS PRICE POLICY: SCRAP FROM THE CASH-CROPPING TABLE

The question of the manipulation of agricultural prices so that they differ from "equilibrium" is a highly complex one, and this not only because it begs the further question of what equilibrium actually is. I discuss some general issues first, prior to an all-too-brief consideration of cereals price policy in each individual country.

First, it is clear that it is by means of prices that exchange systems are linked to consumption and its production. To consider price policy per se, unrelated to its interrelationships, is thus an artificial and difficult exercise.

Secondly, it is often contended that in the Sahel cereals price policies are absent, or extremely defective, that they should be present, and should take such-and-such a form. In fact, though in Nigeria there is no price policy as yet, in the francophone Sahel they are of course neither "absent" nor "defective" but they operate in particular and peculiar ways that we ought better to understand than the literature indicates. The fact that, for instance, official prices for millet and sorghum are identical, whereas they have different labor requirements and output per hectare and per man-hour (sorghum being higher), and whereas official internal procurement prices for "cash crops" such as rice may be sensitively differentiated into as many as six categories, is wrongly interpreted as "neglect". The treatment of millet and sorghum is as deliberate as that for rice and maize.

Thirdly, there is a preoccupation in the literature with the "lowness" of official cereals prices (criticism which can verge on exaggeration: Comité d'information 1975, p. 16). The data are presented in Tables 6 and 7, and I take as points of departure the following eight observations for the region as a whole.
Table 6. Evolution of official producer prices in FCFA/kg.

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Table 7. Evolution of official consumer retail prices, in FCFA/kg.

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<td>Paddy</td>
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<td>70</td>
<td>80</td>
<td>85</td>
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Source: Unpublished documents from OPAM, Mali; Responses questionnaires CEAO (Ministère du Commerce, du Développement Industriel et des Mines) Haute Volta.
N.D. = no data.
1. The relationship between official and parallel market prices for cereals is complex (BCEOM 1978, pp. 77-78), varying with country, region, season, and the social relationships of trade. It is complicated by the region's balkanization.

2. Official prices, that are being proved to be nil or negative returns to the costs of production (C.O.P.), are due not to inappropriate pricing or theoretical formulations about the economic importance of purchased inputs, but to the fact that market prices for wage labor (whatever their relation to the official guaranteed minima used in the "C.O.P." calculations) are very much higher in the Sahel than the cost of peasant labor. In Mali, the relationship between official prices and "C.O.Ps" for cash crops show even lower relative -- if not absolute -- returns than for subsistence crops (IER 1978b), underlining the problem with imputing values of labor in peasant production systems.16

3. Low official food prices mean high relative profitability for external aid projects concentrating on cash crops.

4. Low official producer prices, if they hold down preharvest repurchase prices, would be favored by small farmers not only because they are net consumers but also because low official prices may well be higher than the black market low prices at which traders buy the distress surpluses of small farmers.

5. Uniform official prices act like trade restrictions. They reduce production incentives in areas with comparative advantage while increasing them in those areas with comparative disadvantages.

6. Low official and parallel market price levels reinforce the rationality of growing export crops on whose trade taxation and processing both urban bourgeoisie and urban proletariat depend in mercantile economies.

16. It is worth adding at this point my own confusion about the final purpose of the concerted and brave technocratic effort to relate price policy to a serious analysis of the relationships between official prices, "market" prices, and costs of production, where labor is the most important element and is valued in this politically determined way. Is the purpose of such research to establish crop prices that represent equal returns to inputs (overwhelmingly labor)? If so, on what basis are peasants to make cropping pattern decisions? Is the purpose to establish minimum price levels above which certain crop prices may be manipulated by the State for various planning objectives? If so, where is the equally necessary evidence on price elasticities of supply, given non-market-equilibrium conditions? Since these returns-to-production cost studies are being carried out in every Sahelian country and are to be expanded (IER 1978b; Nacro 1977), I feel their logic and ultimate purpose require some formal general exposition that I have not encountered yet in the literature.
7. Low official and parallel market price levels reduce effective demand both for agricultural and nonagricultural products in rural areas.

8. Fixed official prices destabilize producer income in ecological regions where production is vulnerable to rainfall variability. This has been clearly proved in the case of Nigerian Marketing Boards (see Harriss 1981) and is usually relevant to marketed surpluses of subsistence crops as well.

I now turn to individual countries: in Niger OPVN started up by purchasing grain intermittently from the uncontrolled market. The objective of price stabilization followed recently, and has evolved into a primary concern to keep official consumer price levels low. Even in the early 1960s, before the creation of OPVN, official purchase prices varied between 44% and 71% of a price that would remunerate producers at the politically decreed Salaire Minimum Interprofessionelle Garanti (SMIG or Guaranteed Minimum Wage) (SEDES/FAO/INSEE 1963; CILSS 1977, Vol.2, Niger). Prices are now fixed by the Comité des Prix (which has deliberately raised that for cowpea above its historical parity with cash crops (CILSS 1977, Vol.2, Niger, p. 6; Richard 1977, p. 24). On the one hand these fixed prices are notional — often flaunted when private traders are involved as purchasing agents. On the other hand OPVN is often forced to operate "concessionally" on the free market when unforeseen supplies are required, often at the elevated prices of the "soudure". And now bush market prices for millet and sorghum are said to be 30% above those of OPVN at harvest and 80% above OPVN's during the soudure or hungry preharvest season. Millet prices on the parallel market exceed that of sorghum (CILSS 1977, Vol. 2, Niger, p. 70). Retail prices are 30-60% above OPVN's, and producer prices for cowpea are between 70 and 90% higher than SONARA's (BCEOM 1978, pp. 7, 45-47). Although cowpea, groundnut, and cotton bring higher returns per man-hour than do millet and sorghum at official prices, there is evidence that official cash crop prices are too low to ensure supplies sufficient to guarantee the financial viability of their parastatals. The cash crop prices are mainly based on assumptions of annual trading turnover of 100,000 tonnes each while the reality is 4000 tonnes for groundnut and 49,000 tonnes for cowpea (BCEOM 1978, pp. 51-53).

I conclude that price policy is structurally unstable. I do not conclude with CILSS (Kohler 1977, pp. 67-70) "that the fixing of prices different from equilibrium is generally unimplementable or has negative results", for the same report shows that "farm prices and probably farm incomes have increased over the past decade probably faster than the incomes of civil servants and possibly even faster than the urban minimum wage. Taking into account the initial levels, the disparity between urban incomes and agricultural incomes is probably still considerable" (Kohler 1977, pp. 75-76). This statement demonstrates that minimum urban wages legislation and civil service salaries can be fixed differently from equilibrium to influence real agricultural incomes. I agree with CILSS that OPVN by itself is unable to control uncertain seasonal price variations.

The case of Upper Volta where active "Price support programmes are not of long standing" (CILSS 1977, Vol. 1, p. 229) has been used to demonstrate that cereal prices are not "too low" (see CILSS 1977, Vol. 1, pp. 13-14; Berg 1977b, pp. 39-51), with practical evidence that OFNACER has purchased cereals from private traders at below official
prices (Berg 1977b, p. 18). Berg also contends that relative official price levels have moved towards staples and away from cash crops (Berg 1977b, p. 39). However, relative official prices show a sharply declining real return to millet (Berg 1977b, p. 44). Berg's countering of the assertions that prices are "too low" has many inconsistencies. He states that food aid or the subsidized sale of substitutable imported foodstuffs such as rice, does not affect the "price level" (see also Stevens 1978; Berg 1977b, p. 37). But later he shows that imported grain sold below cost and marketed below the prices of domestic grain "acted as a considerable subsidy" (Berg 1977b, p. 60) and that "in particular instances it could indicate that prices should be substantially higher" (p. 37-38). He shows the terms of trade of parallel market prices are moving towards millet, while those using official prices are moving away (p. 44). The trend for urban wage indices and production returns indicate no disadvantage to the latter, but the urban wage index is the legal minimum wage, about the realism and implementability of which little is known, and Berg does not mention the fact that average urban income might be in the order of magnitude of 10 times that of the active rural worker (Iaccoacci and Szczepanik 1975).

With regard to international comparisons, while official grain prices were twice those of Niger's in 1963, they were equal in 1970 and fell below in 1973. They are far below the official prices for Senegal (Berg 1977b, p. 51). Official high quality seed sold at "official premium" prices are actually bought and used for food in Upper Volta because of their cheapness relative to prices of the parallel market. Returns to production calculated on the problematical and unimplementable Salaire Minimum Agricole Garantie (SMAG) suggests that official prices for millet and sorghum remunerate workers at 49% of the "correct rate" with donkey cultivation, 63% with oxen but 38% with the traditional technology that is most widespread. By contrast the relationship is 66% for maize and 64% for rice (Nacro 1977, pp. 43-49). At the very least Berg's policy conclusion is found controversial by reformist technocrats.

The process of price determination is chaotic, producer prices are often announced after harvest, and simultaneously with consumer prices which thus bear no relation to possible conditions in the soudure (Wilcock 1978, p. 205).

Mali's price policy is currently geared to the encouragement of culture attele -- ox drawn traction -- in agricultural production. This policy has come under severe criticism for its inappropriateness to the factor endowment (see Nicolas 1978 for Niger; Forrest 1978 for Nigeria, and Conti 1979 for Upper Volta). Price policy is also geared to the promotion of cash cropping, facilitated by the fact that Mali does not suffer "structural deficits" in cereals production (CRED 1977, p. 16).

Mali's general producer price levels are far lower than those of her neighbors (Ballan et al. 1976-77, Vol. 2, pp. 66-67). And subsidies on consumer prices in Mali represent an invisible tax on producers of 66% in relation to world market prices minus transport costs from the West African coast to Bamako (Bah 1977, p. 19). The producer gets a third of the world market price.
Low prices enable Mali not only to export on the world market despite its landlocked location, but also to extract substantial fiscal margins (19.4 F. Malien/kg for cotton, 29 F. Malien/kg for groundnut as well as taxes of 10 F. Malien/kg for cotton, 5 F. Malien/kg for groundnut from CMDT and OACV, the respective marketing parastatals). Relative price levels between cash crops and cereals are "thought to be fairly stable" (Ballan et al. 1976-77, Vol. 2, p. 62). Actually, in the early 1970s the official cereals prices represented a daily remuneration at 66% of the rate for groundnut or cotton (Panhuys 1973, p. 9). By 1975-76 the official prices remunerated millet and sorghum at 95% of the arbitrary SMIG, groundnut at 85%, cotton 82%, and rice 72% (Ballan et al. 1976-77, Vol. 2, pp. 23, 45-48, 62). In 1978 millet and sorghum prices remunerated producers at 83% of the SMIG, and the relative superiority of this relation for subsistence crops vis-à-vis those for cash crop was maintained (IER 1978b, Annexe 7-3). But, while from 1967 to 1977 the index of millet and sorghum prices rose from 80 to 160, groundnut from 80 to 133, cotton from 80 to 166, and rice 72 to 160, that for purchased inputs rose from an average of 55 to 220, the SMIG for laborers rose from 100 to 217, and that for Government cadres went up from 100 to over 115.5 (CRED 1977, pp. 22-23). So there is evidence that relative prices may be turning against the agricultural sector as a whole.

To my knowledge there is one quantitative attempt to assess the national effects of a relative rise in producer and consumer cereals prices, and this is for Mali. If producer prices were raised from 30 to 40 F. Malien and consumer prices from 51 to 60 F. Malien, ceteris paribus the general price level would increase by 12%. The increase in purchasing power of surplus cereals producers would increase by 25% and that of a household on the SMIG would decrease by 8.5%. The high subsidy on imported millet would be somewhat reduced (Ballan et al. 1976-77, Vol. 2, pp. 66-67).

Such exercises may be placed in perspective with the knowledge that the official prices do not measurably influence the parallel market prices even of Bamako where the state supplies 40% of cereals, and in deficit regions the official prices are well under half those of the parallel market (Richard and van dem Berg 1975, pp. 10-15). Given the aggregation of millet and sorghum and maize, when sorghum has a higher yield but an inferior price on the parallel market, sorghum is encouraged into the public distribution system. Similarly, given the lack of official price sensitivity to quality, poorest quality cereals are encouraged (Ballan et al. 1976-77, Vol. 2, p. 62). Finally, we should note that the producer prices are fixed by the decree of the Office du Stabilisation et Regulation des Prix after "informal meetings", and retail prices are fixed after meetings between OPAM, the cooperatives and the parastatals in charge of road, rail, and river transport. The initial quantitative studies on the returns to production have not affected the decision making process (Ballan et al. 1976-77, Vol. 2, p. 45).

In Senegal, a technocratic effort is planned to increase production and urban consumption of millet and maize considerably above that of present trends, and to reduce the consumption of imports of wheat and rice (Ministère du Développement Rurale 1977, p. 19-20). It faces two sets of sensitive price policy problems: (a) those of the relative prices of millet and sorghum and maize and of their substitutes in (urban)
diets; (b) those of the relative prices of subsistence and food crops as a whole, and of cash crops, especially groundnut and cotton (SONED 1977, pp. 28, 2-4).

With regard to the first problem, official prices of millet and sorghum are considered "too low", that for maize "too high" and (because of substitutability for consumption), rice is artificially "too low" (Ross 1977, p. 21). Because of the relation of domestic prices (high) to world market rice prices (lower), ONCAD's manipulation of imported rice prices can determine the amount of subsidy it gives to other foodstuffs. But it has to continue to import rice to do this, and to pay for it in foreign exchange earned from groundnut export.

With regard to the second problem, the EEC operates "Stabex", that encourages the traditional export crops, e.g. groundnut, by assuring the States concerned of international subsidies if foreign exchange revenues over a 4-year period represent prices below those of the world market. There is thus a series of good structural reasons to doubt the feasibility of major changes in relative price relationships in Senegal.

Meanwhile the official prices for millet and sorghum represent returns to producers remunerating their labor at between 55-70% of the 'guaranteed minimum daily wage' (Sivilia 1978). Evidence for the corrupt absorption of the commissions allocated (for instance, to peasants for transport), for the corrupt lowering of official prices, and for the mismanagement of weighments (Ross 1977, p. 21) call into question the sensitive manipulation of relative prices.

It is apparent that the accusation that the low producer price policy is dominated by the interests of the (urban) bureaucracy and the political and mercantile elite, is correct but simplistic. There are also conflicts of interests in the countryside between surplus producers (and regions) for high general agricultural prices, and net deficit producers for low food prices; but given the possibility of profitable cash cropping, millet and sorghum are not necessarily high priorities for price increases in the agricultural lobby. Some of the local economic planning technocracy feel the desirability of raising relative prices in favor of cereals (see especially Nacro 1977), but the instabilities described above militate against this.

4.8 BAREMES: THE STATE'S DISTRIBUTIVE MARGIN

Not only are official producer and consumer prices decreed after interdepartmental negotiation and political bargaining but so also are the divisions of the distributive margins between the parastatals and private agents involved in marketing. Three issues are relevant here. One is the size of the distributive margin that relates in turn to price policy, already considered. The second is its space neutrality, and the third is the margin's internal instability.

The distributive margin for millet and sorghum is usually lower than that for other crops, yet, given the locations of supply and demand, distributional costs are considerable. In Niger, in the early 1960s, the distributive margin covered 90% of costs for the SMDR's (SEDES/FAO/INSEE 1963, p. 27). UNCC's net margin for millet is
2.2% of the turnover. Because of short supplies the net trading margin for cowpea in the cooperatives is 1.6% (UNCC 1977, pp. 12-14). OPVN's gross distributive margin for millet is 0.6% of turnover (that for sorghum is 12% and rice 10%) and, since millet comprises 60% of OPVN's trade, it materially affects the parastatals profitability. Furthermore, average transport costs at 5500 FCFA/tonne are over twice those decreed in the bareme: 2200 FCFA/tonne. Niger's landlocked location thus renders the trading costs (especially those relating to transport and taxes in entrepots) problematical, reducing her competitiveness in the international groundnut market and denying her cowpeas access to the European cattle feed market (Capo-Chichi 1976, p. 2; Pujubet and Richard 1978).

In Upper Volta, the official distributive margin was reduced from 15 to 8 FCFA during the course of one season (Berg 1977b, p. 18). Margins for transport are standardized but there is no financial cooperation between the ORDs, each with varying overhead cost structures, and each having differing relationships to the centers of supply and demand (Wilcock 1978, p. 204).

In Mali, the retailing bareme at 1.5 FCFA/kg is so low that the concept of a fixed retail price irrespective of geographical location has been practically abandoned (Ballan et al. 1976-77, Vol. 2, p. 20). The underestimated transportation commission allocable in theory to peasant producer-transporters is in practice absorbed by the purchasing "cooperatives". And, whereas the total distributive margin remained constant at 19.0 FCFA/kg between 1974 and 1976, the cooperative's margin rose from 5.05 to 5.79 FCFA/kg while OPAM's transport margin dropped from 5 to 4 FCFA/kg. Furthermore, sacks are not accounted for in the bareme (Richard and van dem Berg 1975, p. 24-26).

By contrast in Senegal, whereas the private distributive margin is in the region of half that of the parastatal, "ONCAD is an upper level of inefficiency and distributive costs above which private trade cannot rise" (SONED 1977, pp. 65, 102).

The fixed operating margins of the parastatals are heavy constraints when trading flows are variable and fixed costs are high (Richard and van dem Berg 1975, p. 58): "It is understandable under such circumstances that OPVN "(or OFMACER)" is an institution which will necessitate large subsidies each year" (BCEOM 1978, p. 49). The CILSS report asserts that the baremes -- cost schedules for intervention -- "do not reflect reality" (CILSS 1977, Vol. 1, p. 12; Berg 1977b, p. 60). But the reality that they certainly do reflect is one where interdepartmental fights for power and resources within the bureaucracy are more important than are decisions based on costs of production and marketing information.

### 4.9 INTERREGIONAL TRADING RESTRICTIONS

As with price policy it is hard to discuss this topic without reference to the effects it has on private parallel trade, which is considered at the appropriate point below. Four major points are relevant here.
1. The reticulation of transport by road or rail has evolved to suit the requirements of export crops, not "residual" subsistence crops or goods traded interregionally. This is as true internally as it is internationally within the macro region. Ilori (1973) has given us an especially illuminating account of the latter, the main principles of which are probably germane to the former.

Trade among West African countries was 2.7% of all recorded trade in 1965-66. Products are those traded over long periods of recent history -- cattle, dried fish, kola, cowpea, rice, millet, and sorghum. Ilori estimates that a large proportion of the international cattle trade across international frontiers escapes records; but, even if this is true for all commodities, the international trade within the region is quite remarkably small.

The transport network is one reason for this. Colonial road and rail systems neglected interterritorial communications. Railways have been built with four different gauges and do not interconnect. Interregional sea trade is not relevant to the landlocked Sahel and trade by air is costly. Road transport is afflicted with high costs caused by delays, accidents, bad loading and unloading, and rough handling. Over and above this the cost of road transport can vary by a factor of 4 according to the quality of the road.

Entrepot storage facilities are said to be deficient in quantity and quality (though this is actually a somewhat contentious issue on which to make assertions). The lack of quality grading and uniform volume standards restricts interregional trade, as does the acute lack of market information to which lack of standardization contributes -- this especially among parastatals. The fact that there are three major currency zones (that of the CFA franc, the pound sterling, and the dollar -- in Liberia) with only the franc easily convertible, also hinders interregional trade. Cumbersome customs duties (5-15% on all West African imports in the West African Customs Union -- Benin, Ivory Coast, Mauritania, Mali, Niger, Senegal, and Upper Volta; and 5-25% on all imports in Nigeria, Ghana, Sierra Leone, Liberia, Togo, and Guinea) are also obstructive. So also are nontariff commercial policies, delays in obtaining export permits, and short-term limits set for currency payments. The combined effects of fiscal and commercial policies can amount to a difference of 40% on, for example, imported wheat.

2. Interregional cereals trade within the Sahelian countries is restricted not only by the marketing parastatal itself but also by the separate Civil Administration. In Senegal, prefets control trade in lots under 100 kg and Gouverneurs consignments under 10 tonnes) and the rest is controlled by the economic police controle economique. Elsewhere it is in the hands of the prefets (CILSS 1977, Vol. 2, Niger, p. 13) and the controle economique. In Mali, for instance, "Movement orders ... come officially from OPAM headquarters. However, inspectors and controllers also get instructions from provincial civil administrators. The latter sometimes refuse to authorize transfers that they think will put their regions at a disadvantage" (Ballan et al. 1976-77, Vol. 2, p. 9). So there are acute and chronic problems of discoordination and discretionary decision making.
3. In other ways the implementation of trade restrictions (as part of the State monopoly and mandate to supply cities and deficit regions) repercussions on "intended" beneficiaries and is weakly implemented. Coercion may be necessary to assemble supplies and to organize lorries (either privately owned or belonging to other parastatals) especially over short distances and on bad roads (Ballan et al. 1976-77, Vol. 2, p. 12). The assumption that trade should supply cities and that "peasant producers are not a market" (Dione 1975, p. 19) often starves surplus regions of off-season supplies (SONED 1977, p. 77) and ignores or neglects deficit rural regions.

4. Finally, partly as a result of this, transport costs may be excessive because of routings (in Mali on average costs are double those of the parallel markets) (Richard and van dem Berg 1975, p. 38). Furthermore, liaison with various other transport parastatals is difficult because of the low rates offered by marketing parastatals. There is little forward planning and frequent practice of empty return-loading (that effectively doubles transport costs) (SONED 1977, p. 298). In Mali, because of this problem and because of tariff differences, it is cheaper to supply Kayes from Dakar than Bamako, and Mopti from Dakar than Abidjan (Richard and van dem Berg 1975, p. 44).

4.10 MARKET REGULATION

In the broadest interpretation of this phrase, the preceding discussion will have made clear that attempts to regulate the commercial economy are hardly less long-standing in Africa than they are in South Asia. In the technical meaning given the term in South Asia -- namely the concerted combination of the provision of physical infrastructures (market places) with institutional structures such as the "democratic" administration of the market place by committees comprising farmers, traders, and bureaucrats, the licensing of traders, the standardization of weights, measures, and bargaining procedures, the provision of accurate price information and the extraction of standard state taxes, to curb at minimal cost a free trade -- market regulation is unknown in West Africa. This does not mean that some of the attributes of regulated marketing have not been introduced, especially in the ex-British colonies where State intervention has taken slightly different forms from those in the Francophone Sahel. I examine below the current experience of Nigeria and the historical experience of Niger.

In northern Nigeria, under the Native (now Local) Authority Law Section 41, authorities can, and do, make rules on the timing of market opening, cleanliness, official rents (the important taxation function of regulation), and the organization of lorry parks and hawking (see Anthonio 1968, p. 175). They could, but do not normally try to, use their powers to prescribe "weights, scales and measures to be used in the sale of produce, or to fix maximum retail prices which are unenforceable" (Hill 1971, pp. 228-229). The 1961 Control of Grain Rules in Katsina N.A. prohibit traders from purchasing for resale sorghum and millet elsewhere than in a market without written permission of the N.A. (Gilbert 1970, p. 201-210). In Katsina Emirate,
studied by Hill, no proceedings had ever been taken against infringers of regulations.

Knowledge of the existence of these "unrealistic" rules "does not percolate through to rural communities, untroubled as they are by court action" (Hill 1971, p. 228). Rules designed to license or curb money lending or prescribe ceilings to interest rates which exist in South Asia do not exist because of being unenforceable in West Africa. Hill concludes, with Anderson (1954, p. 177), that "most Nigerian ordinances seem to have little impact on the day to day life of the Muslims of the North outside urban areas -- drafted as such legislation often is, by those whose experience of the powerful native authority, native court and native authority police systems of the Northern Emirates, is strictly limited" (Anderson 1954, p. 29-30).

In Niger, it is impossible to disassociate the regulation of groundnut markets from the attempts by the waning French colonial State in the 1950s to curb the power of French mercantile companies, and from the attempts of the waxing Nigerien State in the 1960s to Nigerienize, nationalize and cooperativize commerce. The regulation of "free" markets by attempting to standardize weights and measures scales (1949-50, 1954-55) and bargaining procedures (1951-52) culminating in regulations on quality inspection, the physical creation of market places, and the standardization of market place rents and taxes in 1956, were all transitional to the cooperativization of groundnut marketing. Even now, however, cooperatives handle between one-third and one-half of the groundnut marketed (UNCC 1977, p. 11; Collins 1974, pp. 136-166, 309), the rest being in the hands of large private traders. These are agents of SOMARA over whom State regulations have little practical effect. The period 1965-69 was the final fling for evolutionary reformism in market regulation. The UNCC lowered the salaries of groundnut weighers and enabled these key personnel to be democratically elected, made weighing scales generally available, and created a cadre of local supervising personnel engaged inter alia in market education (Collins 1974, pp. 295-309). However, these reforms were limited to cooperative markets, were patchy in implementation, and did little even there to change the inegalitarian structures of these marketing institutions (Collins 1974, pp. 309-370).

Market regulation differs strikingly from that implemented in India, even in countries such as Ghana where Heerman (1978) affirms the inability of local marketing laws to change market structure or conduct. Regulation has been partial and uncoordinated in conception, historically transitional in ex-French West Africa, and generally ineffective in ex-British West Africa.

4.11 STATE INTERVENTION IN STORAGE

This aspect of intervention is extremely important because of its relationship to (and effects on) not only the internal economies of Sahelian States but also the international donors of financial assistance. A most striking feature is the "rapid build-up in warehousing as a result of international transfers of food aid during the drought
years and of international financial assistance for the construction of storage facilities". Yet as we have seen earlier and, as CILSS emphasizes, "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" (CILSS 1977, Vol. 1, pp. 229, 231). This is as relevant to storage by the State as it is to that by farmer-producers. The storage of crops involves considerations of technology, finance, location, and price, and procurement policy. For a review of these issues the major reference work is by Wilcock (1978).

In northern Nigeria the interrelation of State storage to price and procurement policy is exemplified by attempts to enforce State storage schemes during the second world war in order to supply army and mine workers in Plateau province. These failed, not through lack of infrastructure but "because coercion on producers was necessary if supplies are to be obtained at a reasonable price". Open market purchases made middlemen suspicious. They then hoarded supplies, thus exacerbating a situation that the measures were supposed to help. There was also high wastage (€17,000 in one instance) through weevil infestation (Gilbert 1970, pp. 201-211).

The precolonial state was, however, adept at creating buffers. M.G. Smith observed that the grain tithe or zakkat was used to create central grain stores which were called upon during periods of food shortage (1965; 1967, pp. 112-115). In 1957 the Strategic Grain Reserves were established as buffer stocks and to aid price stabilization, with stores in Gusau, Funtua, Kano, Zaria, and Jos to provide a 20,000-tonne reserve sufficient for 3 months.

Between 1959 and 1961 €100,000 was invested in stores and €525,000 in the acquisition of stock. This was then sold to Native Authorities or to traders between 1961 and 1966 leaving no buffer for the drought years of 1966-67. Gilbert's conclusion (1970) was that the intervention had been ineffective. The same conclusion was reached by Ejiade (1976) over State Grain Storage Schemes involving 6000 tonnes in the savanna regions of Oyo, Ogun, and Ondo States implemented as part of a Federal Reserve of 250,000 tonnes projected as costing €40 million. Ejiade found that, with regard to the price stabilization objective, "most silos and cribs were empty and those that were not were less than half full" (1976, p. 35). Storage of 6000 tonnes could not in any case influence market prices when production was over 100 times this amount. The demonstration effect was insignificant (1976, p. 36) and there were no records on storage costs, maintenance, fumigation, or handling. Silos were in a bad state of repair as were the commodities stored -- fit only for poultry feed (1976, pp. 36-40).

This means that large-scale storage projects (whose costs are often based on exaggerated estimates of peasant losses) are likely to be unimplementable (Gilbert 1970, p. 288). In this context it is interesting that storage and warehousing is not planned in the National Accelerated Food Production Project (NAFPP 1977, p. 70).
This is in sharp contradistinction to the francophone Sahelian States where the situation in 1977 was as in Tables 8 and 9.

In Niger, State intervention long preceded the major drought of 1973-74 and related to the new Nigerien Government's wish to reverse the policy of intermittent State coercion for the building up of 2-3 year buffers by peasant producers, this being the formal intervention favored by the French Colonial Government from the 1930s to the 1950s (Collins 1974, pp. 49-65). Hence it was to be the role of the State, not that of the peasant, to guarantee the integration of food supplies, through time. However the size of State storage facilities has always exceeded the capacity of the State to use, let alone fill, them (see SEDES/FAO/INSEE 1963, p. 13, for evidence of 33% utilization in the early 1960s). Although the total State storage capacity currently planned is 70,500 tonnes (Table 8), IBRD estimates the buffer needed as 20,000 tonnes, Germany estimates 40,000 tonnes (CILSS 1977, Vol. 2, Niger, p. 30), and BCEOM (1978) notes that a buffer of even 19,000 tonnes assumes that OPVN can market and retain 40% of traded surplus (which is far beyond its historical performance).

The location of projected storage is problematical, involving tradeoffs between economies of scale (and management) in centralized complexes and economies (and actual feasibility) of transport in decentralized reticulations. State storage schemes also suffer "constant problems with insects" and technology is proposed which has never been tested in sub-Saharan conditions. This may involve hermetic sealing, which would be unsuitable if the store is to be used for anything other than long-term buffer purposes (CILSS 1977, Vol. 2, Niger, p. 30).

Even so, the Nigerien Government is being advised to experiment with offering target goods, forcing debt repayment in kind, and connecting sales to tax repayments in order to act as "an inducement for other farmers to sell at least part of their millet" and "to produce a mentality of commercial millet farming on the part of the farm enterprises" (Charlick 1974).

In Upper Volta, State storage facilities are said to be 54,000 tonnes. Despite OFNACER's mediocre procurement record (a buffer of 8700 tonnes in 1976), 20,000 tonnes are envisaged as a reserve and the remainder is envisaged as interseasonal storage (CILSS 1977, Vol. 1, pp. 231-235).

One interesting problem is connected with the conflicts in procurement strategies, including price policies, of the owners and builders of the buffer inventory. In Upper Volta they include OFNACER, OSRO/FAO, and a special Government Committee (Berg 1977b, p. 18). Simultaneously 3000 village buffers are to be created in connection with the ORDs. It has already been discovered that food shortages are more acute in the south and east than in the north where "decentralized" stores have been built. Furthermore bulk subterranean silos have been recommended (as with "Entente" proposals for Niger (Daves and Elterich 1978)) with no consideration of economic viability and deterioration. In 1976 a quarter of the State's grain stock of 8700 tonnes had deteriorated to the point where it required immediate disposal (Wilcock 1978, pp. 209-215).
Table 8. Storage infrastructure, estimates of present capacity (tonnes) of cereal storage and additional capacity under construction in CILSS states.

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Present capacity</th>
<th>Addl. capacity already financed</th>
<th>Total capacity: present and in course of construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chad</td>
<td>1976</td>
<td>17,600</td>
<td>N.D.</td>
<td>17,600</td>
</tr>
<tr>
<td>Gambia</td>
<td>1975</td>
<td>4,500</td>
<td>N.A.</td>
<td>4,500</td>
</tr>
<tr>
<td>Mali</td>
<td>1976</td>
<td>90,000</td>
<td>20,000</td>
<td>110,000</td>
</tr>
<tr>
<td>Mauritania</td>
<td>1975</td>
<td>16,000</td>
<td>N.A.</td>
<td>16,000</td>
</tr>
<tr>
<td>Niger</td>
<td>1977</td>
<td>35,500</td>
<td>35,500</td>
<td>70,500</td>
</tr>
<tr>
<td>Senegal</td>
<td>1977</td>
<td>25,000</td>
<td>60,000</td>
<td>85,000</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>1977</td>
<td>54,000</td>
<td>N.D.</td>
<td>54,000</td>
</tr>
</tbody>
</table>


Table 9. Planned emergency reserve targets (in tonnes).

<table>
<thead>
<tr>
<th>Country</th>
<th>Reserve target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chad</td>
<td>10,000</td>
</tr>
<tr>
<td>Mali</td>
<td>70,000 (including 20,000 tonnes of rice)</td>
</tr>
<tr>
<td>Mauritania</td>
<td>40,000</td>
</tr>
<tr>
<td>Niger</td>
<td>20-25,000</td>
</tr>
<tr>
<td>Senegal</td>
<td>50,000 (including 30,000 tonnes of rice)</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>20,000</td>
</tr>
</tbody>
</table>

In Mali, which has very large State storage capacity, and an ambitious buffer stock, there is actually no consensus on the latter's appropriate size. The Malien Government plans 60,000 tonnes, while CRED argues that, because long-term buffers are easier to manipulate than are price stabilizing interseasonal stocks, and because the peasants can look after themselves: "rural areas can absorb a deficit of 100,000 tonnes from their own stocks" (1977, Vol. 2, pp. 4-5). The buffer, to be financed by FED, should aim at supplying cities and be far less substantial in size (Panhuys suggesting 30,000 tonnes (1973, pp. 25-26)).

Similar problems, as elsewhere, arise with location and financing. According to Ballan et al. (1976-77, Vol. 2, pp. 90-131) stocks are overcentralized and heavy capital losses are sustained through excessive transport that "reduces the competitiveness of the State" with the private trade which officially does not exist.

There are management problems: interseasonal stores may be full at the time of the new harvests; highly variable supply generates acute and occasional gluts, and there is evidence of much contamination and wastage (Richard and van dem Berg 1975, pp. 19-35) which a British project is trying to reduce.

In Senegal, given the country's dependence on imports for 30% of her food supply, present storage at 58,500 tonnes is totally inadequate (enough to feed the country for 9 days) and the size of the security buffer is subject to controversy, ranging from 50,000 tonnes (IBRD) through 130,000 tonnes (Ministère du Plan 1978; Dione 1975) to 620,000 tonnes which SONED point out would feed the towns and the army for 3 months (1977, pp. 156-173, 249). Regional buffers might be desirable but are unimplementable: "ONCAD has an infrastructure and an organization adapted to the bulk marketing of groundnut but does not have the flexibility necessary to intervene in a marginal market" (SONED 1977, p. 296). There is unsurprising evidence already of low capacity utilization for storage facilities (CiLSS 1977, Vol. 2, Senegal, p. 19) and of wastage of stock (Dione 1975, p. 28).

I conclude that plans to reduce peasant households' own stocks and to "integrate" or make them dependent upon the facilities of the State are unlikely to succeed. Low capacity utilization increases the ratio of fixed to variable costs and raises total costs. What these uneconomic storage facilities do succeed in doing is to increase the dependence of the Sahelian States on external finance, often simultaneously on a multiplicity of international financial agencies. Finally, I turn briefly to consider the role of the latter on the marketing interventions of the State.

4.12 STATE INTERVENTION AND EXTERNAL AGENCIES

Justice will scarcely be done to this important subject which deserves a review of its own. Five points require recording.

1. External economic aid, whether in the form of projects, programs, or policies, acquires extreme political power in countries that have negative reserves and where current domestic (State) budgets are not balanced by the State revenue generated.
2. Despite this power, most external aid does not concern itself with cereals marketing. The rural development priorities for the Sahel are dams, wells, and irrigation projects, pastoralist projects and veterinary services, transport and (tele)communications, market gardening crops for an internal market, and groundnut, cotton, rice, and maize production. The involvement of externally financed production parastatals in millet marketing (for instance the ORDs in Upper Volta, the Operation Mills in Mali) has resulted in some coercion that has reduced these agencies' credibility as extension agents. There is remarkably little international expertise in the special practical problems of rainfed food-grains marketing, and associated policy formulation and evaluation. Moreover it is quite clear from the records of cereals production projects in the Sahel that their chronic economic problems do not prevent their replication. This suggests that criteria other than economic ones should guide their implementation, and the social and political benefits of failed economic projects deserve rigorous analysis.

3. Expatriate foreign-funded technical assistance staff within the parastatals are generally cognisant of the fact that increasing producer prices for agricultural commodities will expand effective demand for nonagricultural products in rural areas. Nevertheless they recognize that the private interests of the indigenous urban bureaucracy with whom they work more in the opposite direction, and that their own private interests lie with the agency financing them. Under such circumstances, policy initiatives in the interests of peasants and peasant production are extremely problematic to suggest or implement.

4. There is no international policy consensus towards marketing parastatals (or parastatals generally). While official IBRD policy in Senegal favors parastatals, as short-cut mechanisms to a large-scale demand for credit, technology, and training that can be administered by such an institution, in Niger the International Finance Agency, a subdivision of the IBRD, gives a majority of its loans to private enterprise via the Chamber of Commerce. USAID aids parastatals through its PL 480 grain gifts, the local sale of which generates (convertible) capital for these institutions. Via the "entente" (the grouping of States comprising Togo, Upper Volta, Niger, Senegal, Ivory Coast, France, Canada, and the USA) storage infrastructure and training is provided. The USA, with its commitment to free enterprise, also finances development projects run by parastatals such as the ORD de l'Est in Upper Volta, Operation Mills in Mali, and SOMIVAC and ONCAD in Senegal. The European Agencies -- FED for the Common Market, FAC for France, and the relevant Ministries of Germany and the UK -- are similarly unsystematically involved. FAO presides over food aid to vulnerable target groups through the World Food Programme via the parastatals. ILO trains cadres for parastatals, and attempts in Niger to rationalize accounting procedures that everywhere are tardy and deficient. International intervention betrays lack of coordination rather than any consistent pattern and purpose in its actions.
5. Finally, the large number of external aid agencies, from the communist bloc as well as the west, minimize the number of issues on which external influences can combine and maximizes areas on which conflict of interests is possible. Two problematic and common symptoms of this situation are the excessive variety of sources and an over-supply of aid. It is invidious to exemplify in a deliberately general statement but OPVN, for instance, owns a fleet of 30-40 trucks and lorries of 14 different types, all with different spare-parts requirements. Few are suitable for the Sahel, and, as a result, they are poorly maintained. On another level another symptom is the multiplicity of regional groupings -- CEAO (France, Ivory Coast, Senegal, Upper Volta, and Niger), CEDEAO (the same plus Nigeria, UK, and USA), the Conseil de l'Entente, the Club du Sahel, and CILSS, all for overlapping and conflicting purposes. The conclusion of this section is that the multiplicity of agencies and interests involve and aggravate the structural instability clearly monitored in our analysis of intervention.

4.13 CONCLUSION: PARASTATAL TERATOGENY

A surprising level of generalization has been achieved without much loss of detail in this necessarily long section dealing with West African forms and relationships of intervention which differ rather markedly from those of South Asia. The marketing parastatals of the Sahel are often used as scapegoats: "The Headquarters pilots a ship without compass or charts" (Richard and van dem Berg 1975, p. 56). This section has shown clearly that the "discoordination", the "policy vacuums", and the "instability" stem quite clearly from forces of production and exchange in which cereals marketing is only one part.

The most salient characteristic of the cereals marketing parastatals are (a) responsibility without power: they have very much less of the economic autonomy of South Asian parastatals. And (b) a tendency to expand regardless of financial viability. The fundamental internal contradiction is that financial technological and manpower resource requirements for State intervention are high whereas surpluses of millet and sorghum are small in quantity and sporadic in time and space. Parastatals are required to pay producers more than the free market, to sell to consumers at less than the free market prices, and to trade where private trade either cannot or will not go, all this with the social aim of reducing the cost of marketing (Kohler 1977). The cooperatives are the only parastatal institutions prone to bankruptcy, the others being maintained on subsidies. Also, (c) cereals marketing parastatals have chronic instability in structure and in functioning affected by vacuums in or vacillations of policy making (CILSS 1977, Vol. 2, Upper Volta, p. 7, 11). In Mali for example: OPAM appears to be an implementing institution which controls neither the price nor the quantities of cereals purchased. It controls slightly better the quantities sold, but this is within limits imposed by administrative authorities. It does not regulate the resources given it by the opportunity to trade. It confines itself to transporting goods supplied to it. It's only activity is the storage and transport of grain" (Ballan et al. 1976-77, Vol. 2, p. 14).

At best these institutions offer an incomplete competition with private trade. At worst they are premature institutional monsters (in terms of their needs for capital and labor). Historically they have benefitted bureaucrats and traders, and the following sections show in detail why this is.
5. THE EFFECTS OF STATE INTERVENTION ON DOMESTIC MARKETING SYSTEMS

It is difficult to tease out the disaggregated effects of the various types of intervention from an inadequate, because differently oriented, literature. I assess in the following order the effects of the "monopoly" and infrastructural interventions, trading restrictions, and the effects of consumer price subsidies.

5.1 THE EFFECTS OF THE MONOPOLY

The first salient feature is that the domestic grain marketing system has been legislated out of existence. The efficacy of the State monopoly varies from country to country but, as has been seen from the preceding sections and as is generally acknowledged, it is weak.

Policy vacillations actually create loopholes for private trade. In Upper Volta, for instance, we have seen that the private sector had responsibility for supplying deficit regions and urban centers until 1970, operated under license to the parastatal (OFNACER) until 1974 and was "replaced" by the Regional Development Organizations from then onwards (Berg 1977b, pp. 11-16).

In Niger: "Parallel trading systems still exist" (Richard 1977, p. 50) at least sufficient to cope with 40% of the international trade in cowpea (Richard 1977, p. 60). At least 10% of the groundnut trade in the cooperative markets of the center and east, and 25% in the periodic markets of the west, is in illegal private hands (Capo-Chichi 1976, pp. 31-33), as is 80% of the grain trade.

In Mali private trade still supplies urban centers in production zones and undercut the parastatal (OPAM) (Ballan et al. 1976-77, Vol. 1). In Mali "traditional systems, instead of being absorbed by the planned sector still maintain their distinctive characteristics and escape almost all political control" (Derrienic 1976, p. 305).

In Senegal, private purchasing on license to the parastatal (ONCAD) was abolished in 1976 but licensed traders are still allowed to sell ONCAD's millet and sorghum (SONED 1977, p. 77). In view of the recentness of the suppression of private trade it is early to judge effects.

The sporadic involvement of private traders as intermediaries for the State increases the opportunity for excess profit making by merchants. In Niger, for instance, the control of public trade by Government is minimized: price control is left to local authorities and producers (Derrienic 1976, p. 211) and Government policy in 1971 was that "we must keep in mind the complex relations established between producers and traders. It is not timely to remove traders from the system. They are Nigeriens. They have a right to earn their living" (Le Niger, Hebdo, No. 4, 25 January 1971). This "attitude" has been substantially maintained by bureaucratic managers. At no stage during 1972-74 did the Nigerien government requisition the
stocks of private traders (Derriennic 1976, p. 214). Licenses are allowed for only 142 bush traders in a country of some 5 million population. They are clearly literally in monopoly positions at periodic markets where they are thus able to buy at low black-market prices. They can also buy by volume and remit to OPVN by weight, appropriating the difference (CILSS 1977, Vol. 2, Niger, p. 53). They are also in strong positions vis-à-vis the cooperatives, dealing in 50% of parastatal trade in 1974, 20% in 1975 (because of delayed food aid) and 45% in 1976 (BCEOM 1978) -- and parastatal trade is only 20% of total food grains trade.

Very similar behavior is observed in Upper Volta where parastatal processing agencies for the parastatal marketing agency often have recourse to private traders as final purchasers (Wilcock 1978, pp. 201-204; Berg 1977b, p. 18-19). In Mali the parallel market's purchase price may be higher and the consumer price lower than those of OPAM, even in Mopti, center of a deficit region (Richard and van dem Berg 1975, p. 25). In Senegal the Ministry of Finance and of Interior Commerce was granting millet trading licenses to merchants well after 7 August 1975 from which date ONCAD's legal monopoly began. Private traders purchase from farmers the ONCAD trading receipts (disbursed when money is unavailable) at half value, for later recovery at face value from the parastatal (in whose administration they may be officially involved). Retailing, still done by private trade, is another loophole for black-market activity (SONED 1977, pp. 21, 74).

The fact that the purchase monopoly is merely a postharvest campaign, limited in duration and ceasing everywhere when State funds dry up for whatever reason, or when sacks are not available, also inappropriately lagged behind. This means that farmers with pressing needs for cash postharvest are forced by lack of alternatives onto the parallel market, and this has led traders with capital to profit disproportionately from purchases at low postharvest prices and to stock for the soudure -- the hungry season. Of course this is no behavioral innovation, but it is thought to have exacerbated, not stabilized, the process resulting from the interlinkage of commodity and money markets and increased the amplitude of rural price fluctuations (Berg 1977b, p. 16 for Upper Volta; Ballan et al. 1976-77, Vol. 1, pp. 4-45 for Mali; SONED 1977, pp. 82-86 for Senegal).

The prices at which small-scale redistribution in the soudure is affected may be inflated because coercion by the parastatals during the campaign has extracted subsistence crops, not true surplus (therefore increasing off-season demand), and because these commodities have been removed from the locality (therefore reducing supplies) (see Ballan et al. 1976-77, Vol. 2, p. 20; Dione 1975, p. 27). Traders may prospect for standing crops to mortgage (Ouedraogo 1974, p. 25), which activity may be the first stage in the private acquisition of land. The only evidence for the monopoly's having any beneficial effect for producers is in Niger where it has been found that a monopoly price of 40 FCFA raises the low postharvest price on the parallel market from a usual 2-10 FCFA to 25-27 FCFA (Kohler 1977).
The fact that the State agents of the parastatals will buy and sell only in round sackloads swells the contribution of the most vulnerable petty sellers to the parallel market in producer areas and forces the vast majority of consumers unable to afford whole sacks to buy grain privately (e.g., for Mali: Ballan et al. 1976-77, Vol. 2, p. 40; for Senegal: SONED 1977, p. 290). It is known that bureaucrats with access to the parastatals sometimes legally buy lots of whole sacks, break bulk and either distribute small lots on a break-even basis to subordinates, or at a profit (which is illegal) (Ouedraogo 1974, p. 25; Wilhelm 1976b, for Upper Volta; Ballan et al. 1976-77, Vol. 1, p. 40, for Mali). Direct sales from individual producers to mobile urban consumers in a markedly imperfect market may also occur -- flows estimated at 2200 tonnes in Senegal in 1976 (SONED 1977, p. 72).

The suppression of private trade during the monopoly may result in the temporary drying up of petty grain sales in periodic markets and, as a result, may put special pressure on the incomes of the women for whom trading is an independent means of improving economic status. The whole process of State intervention may replace employment for women in private trade by that for men in parastatals (though I concede that the involvement of women in traditional long-distance trade is unusual but not unknown). Finally, it is probably incorrect to conceptualize State and private trade as separate activities. Rocheteau (1970) makes the important point that the marketing cooperatives in Senegal are dominated by Mouride marabouts and used as a battle-ground for economic power between them and private bush traders. Similar processes are at work in consumer cooperatives (SONED 1977, p. 74).

5.2 THE EFFECTS OF TRADING RESTRICTIONS

We have best indications of the effects of the parastatals' restrictions on interregional trade in Mali where it has been historically of greatest importance. The major effect is to induce spatial compartmentalization.

Here the State concentrates its purchasing resources in the southern regions with 26% of the population and 41% of millet and sorghum production; and over one-third of its employees are actually located in Bamako (CRED 1977, p. 140; Richard and van dem Berg 1975, p. 56). Even in such surplus-producing areas the private marketing system grows in importance with increasing distance from towns (Ballan et al. 1976-77, Vol. 3, pp. 32-38) and "the price decline to cultivators really accentuates the economic disadvantages of isolated populations" (USAID 1976, p. 24).

Meanwhile the severe-deficit district of Gao (the sixth region on the desert border proper) may be starved of supplies because, as we have seen in the section on trading restrictions, provincial Governors may refuse OPAM's legitimate trade -- refusing to part with their local buffers. Or red sorghum (surplus cattle feed from the USA, imported under food-for-local-currency agreements) is distributed, for which consumers have very low preferences. In any case, given the fluctuations in production, OPAM cannot predict in advance its regional requirements -- free interregional trade varied between 19,000 and 738,000 tonnes of millet and sorghum between 1967-73 (Richard and van dem Berg 1975, p. 36).
Hardly surprisingly long-distance and interregional trade thrives clandestinely and profits from speculation over space and time increase in security. Given that official prices for grain in Mali are 32 F Malien/kg whereas 50 Fr Maliens equivalent may be obtained in Upper Volta, 80 in Senegal and up to 100 in Mauritania, there is much smuggling across Mali's vast and unpoliced frontiers.

"External leakages often result from barter between agriculturists and pastoralists, barters of cereals for salt, etc., which are mutually advantageous" (Richard and van dem Berg 1975, p. 25). Producer-traders in deficit regions may buy OPAM's grain at 37-50 F Malien in 1974-75 and smuggle it into Senegal to be sold at 100 F Malien equivalent. CRED and Ballan et al. give very conservative estimates of 15,000-30,000 tonnes smuggled (CRED 1977, p. 143, footnote; Ballan et al. 1976-77, p. 66), some of which may be bartered for cattle and salt in short supply domestically (Richard and van dem Berg 1975, p. 24).

in Niger the internal terms of trade may go against cattle because of artificial scarcities of millet whose barter ratio against cattle can be 40% higher than official price ratios (SEDES/FAO/INSEE 1963). Wilcock also claims that Upper Volta's surpluses regularly and illegally and Niger (1978, p. 229). In Senegal, which is on the receiving end from Mali and where trading lineages have never attained the power of those in Mali, interregional grain trade appears to be suppressed (SONED 1977, p. 78).

in both Upper Volta and Mali, private transporters and truckers (who may also be general traders) have had to be enlisted (sometimes coerced to operate at below cost, losses which will be made up by hoists on prices in private trade) (Berg 1977b, p. 19; Ballan et al. 1976-77, Vol. i, pp. 25-28; Richard and van dem Berg 1975, pp. 38-45)). The accumulated profits from tolerated illegal grain trading tend to be invested in transport facilities, urban property, and in the import-export "parastatals" created from the old European merchant capitalist firms and sometimes still financed in major part by international capital. It is sometimes contended that it is international disequilibrium in official prices which provoke smuggling (BCEOM 1978, pp. 39-40). This is most unlikely, given the weak powers of official prices to affect parallel market prices, and given the extreme present improbability of cereals smuggled from one country being sold on the official "market" of another (though see Harriss 1981 for evidence of this behavior in groundnuts between Nigeria and Niger).

Elsewhere it is important not to overemphasize the regulatory effect of the inefficient operation of the parastatals. Throughout much of the Sahel they may be of small importance in controlling the domestic market. Even in Senegal, "the traditional trading system is not going to disappear even if it becomes clandestine" (SONED 1977, p. 86). However there is not much evidence that State intervention does anything but accentuate the power of private traders over producers, increase the inhibitive role of the market, widen distributive margins further, and provide means for bureaucrats to accumulate capital. The evidence to the contrary are exceptions to prove this rule.
6. THE EFFECTS OF STATE INTERVENTION ON GRAIN PRODUCTION

A negative has to be established at the outset. I do not consider the effects of interventionist projects deliberately designed to increase production and confine myself to marketing intervention. I concentrate attention on the effects of price on production, for it is widely contended that the (low) producer-price policy is the most important single reason for stagnation in the production of millet and sorghum (see Nacro 1977, Vol. 2). Secondly, I examine the effects of the provision of physical infrastructure on production.

6.1 PRICE AND PRODUCTION

It is difficult to determine the relation between official prices and production. It was noted above that official prices are "low" and on pages 68-69 the point was made that the contention to the contrary, which appears in the general summary of the CILSS report (1977, Vol. 1, p. 13), though qualified as "high tentative" is highly controversial.

There is little evidence of the depressing effects of low relative prices on grain production throughout the region (FAO 1976, p. 41), though production statistics are notoriously unreliable (production sometimes being calculated simply as a function of rainfall for which there are better data!). In Upper Volta it is feared that there will be a further shift from grain to cash crops through the treatment of price data in this FAO study is crude (Berg 1977b, p. 58). In Mali, the marketings of traditionally surplus regions are declining; the lack of differentiation in price by the parastatal between millet and sorghum (a feature of pricing policy throughout the Sahel in contrast to the detailed schedules for paddy and rice) has led to an increase in sorghum hectarage that has lower labor requirements and thus higher returns (USAID 1976, p. 8). Recent shifts to cash crops are reported (CILSS 1977, Vol. 2, Mali, p. 34; Panhuys 1973). Further intervention to commercialize crops other than millet and sorghum in southern Mali has reduced the area planted to millet, and it has therefore reduced the production of millet by more than the residual fertilizer from cash crops raises yields (Bailan et al. 1976-77, Vol. 3, pp. 30-36). It is likely that the producer's social status will determine the effect of official price policy on his production. For the unindebted in some countries in some years returns to production will be raised by selling at official prices. For the indebted, for those whose cash needs force precampaign sales, official prices will have no relevance to his production returns. For creditors the date of the monopoly and the campaign prices will encourage rather than suppress his ability to accumulate credit in cash and kind.

However, that it is official price policy which is causing this stagnation assumes a marketed surplus significantly responsive to price -- an article of faith of the economic technocracy that I feel must surely be questioned. I am not alone in this debate.
In Senegal, for instance, there is sharp divergence between the Ministère du Plan's technocrats who believe in "peasants'" rational response to price, and analysts such as Dione (1975) who think that cereal surpluses are the residuals from "disaster-over-planning" (SONED 1977, p. 283). We do not actually know whether the marketed surplus of Sahelian food grains is sensitive to price at all. It is even unclear what "price" means.

First, there is the fact of wide seasonal fluctuations. Ejiga notes that 85% of cowpea production is sold, 25% within the first 3 months of harvest when prices are low but a further 50% between months 3 and 6 (1977, Ch. 9). What are we to conclude from this? Secondly, price is also clearly a function of specific social relationships: "In the unofficial marketing system there exist several price levels according to the relationship binding the peasant to the trader who buys his crop" (BCEOM 1978, p. 37). Anthonio (among others) recognizes that, at primary periodic markets, price formation is dominated by personal haggling and that, within the day and within the week, prices fluctuate more violently than in any other type of market (1968, p. 149). In such markets social mechanisms, such as farmers joining together to bargain with the long-distance traders, may be used to achieve countervailing power (Scott 1978), and may eventually offer significant competition with traders. Thirdly, I consider that -- even if it is proved to be limited -- for obvious reasons connected with the impact of intervention in prices on the parallel market the whole idea of "market" in the neoclassical sense must be viewed skeptically.

General literature on the elasticity of supply with respect to price has been reviewed by Newman (1977). There is remarkably little for Africa as a whole in contrast to that on South Asia. It seems that the price elasticity of supply of cash crops is positive and significant. Abalu, for instance, experimenting with an adjustment model, being a deviation from a normal trend model and a mixed strategy model, found highest elasticities with the inclusion of a price expectation variable, indicating that farmers responded more to anticipated than to past prices (Abalu 1975, p. 39). Olayemi and Oni (1972) have shown the existence of asymmetricality in cash cropping price responses, that to increases being significantly higher than that to decreases (p. 353). Against this, an earlier study on groundnut asserts that in north-eastern Nigeria, where this is the only cash crop, the actual or expected price was scarcely any influence on the surface cultivated -- there is no alternative (COGERAF 1961, p. 56). Perhaps price response has increased through time.

Medani's evidence (1972, p. 65) suggests that farmers using 'modern age technology' have a higher response to price than the overwhelming majority using traditional technology. Medani's work (1972, 1975) is specially relevant in that it relates to sorghum. His sample covered 600 Sudanese farmers from 1966 to 1969, which he stratified by degrees of "involvement" with the market mechanism for inputs and outputs. Using a three-equation version of the Nerlovian supply response model, he calculated short-run price elasticities which range according to strata from 0.1 to 0.5 and lon-run elasticities
ranging from 0.23 to 0.9: "the distribution of these elasticities are skewed towards the lower values", the median short-run elasticity being 0.19 and the median longer-run elasticity being 0.3 (1972, p. 64). These elasticities have been used (as in the CILSS study) to suggest that the evidence of the price response is overwhelming. This does not mean that farmers are overwhelmingly price-responsive, or that price can be used for a "fine tuning" manipulation of the agricultural economy (see Lipton 1977, Ch. 13).

Even the assertion of price responsiveness in staples would appear controversial. Gilbert (1970, p. 279) implies that supply of sorghum and millet in northern Nigeria is price-inelastic. The American consortium for the Study of Nigerian Rural Development conclude that "food prices do not appear important in explaining the supply of food crops" (Okurume 1969, p. 110) and the policy implications of this are that there is "little economic justification for Nigeria to launch major food production campaigns in the early 1970's" (Laurent et al. 1969, pp. 65-66) except "to increase food production in the Northern zone to supply the tree crop agricultural zones".

At the very least this theoretical and policy issue is highly confused. Given (a) the priority accorded by peasants to domestic storage (which will mean that this year's surplus is a function of this year's production and last year's stocks); (b) the (possibly declining) practice of overplanting to ensure a guaranteed minimum production in a risky cropping environment; (c) distress sales before the campaign and repurchases after it; (d) possibly different responses to price between the stock from fields cultivated by individuals and from those cultivated communally within the family unit; and given (e) the crop rotations necessary in the environment -- it would be very surprising to find a net surplus highly responsive to price.

There is no research to show whether "present stagnation" is a result of a high response to low official prices (often announced too late in the year to influence plantings) or a low response to high parallel market prices, or a high response to parallel market prices that are lower than official prices. Alternatively, the stagnation might be an amalgam of responses to a parallel market which differentiates in price between varieties and qualities, between types of seller (women, small farmer (male) and large farmer (male)), a market which changes seasonally in its relations to the static official price.

Little is known about the relation between official and parallel market prices, except what has been already reported on the higher volatility of the latter as a result of the former, more marked in rural areas than in urban ones (Berg 1977b, p. 58) (though this will depend on the amount of marketable surplus entering official channels). In Upper Volta this is low and market prices are little affected (Wilhelm 1976b). In Mali one source finds OPAM's prices consistently exceeding those of private trade in surplus regions (Ballan et al. 1976-77, Vol. 1, pp. 20, 34) and therefore succeeding in lifting producer prices during the postharvest campaign. Panhuys (1973, pp. 14-15) states the reverse: that parallel market prices
exceed those of OPAM by 10-100%, and Richard and van dem Berg that private purchase prices can be higher and yet consumer prices can be lower than the respective prices of the parastatal because private trade monopolizes the least cost flows, leaving OPAM with problems of distributing to the costly residual areas (1975, p. 24). In addition to high overhead costs in barter exchange of millet between the Dogon and the Tamasheg Tuaregs, and between the Bambaras and the Maures nomads, the imputed market prices for millet are 3 times the official prices and the nomads go on into the desert to sell at even higher prices (Panhuys 1973, p. 13). In Senegal, too, opinion differs as to whether free market producer prices exceed the official ones (Ross in CILSS 1977, Vol. 2, Senegal, pp. 43-50) or the reverse (SONED 1977, p. 86, 102).

To some extent these relations must depend on the size of the harvest but to sort all this out is an important research priority with considerable policy implications.

6.2 PHYSICAL INFRASTRUCTURE AND PRODUCTION

It is equally reasonable to suggest that nonprice factors are important conditioners of agricultural stagnation for food crops. We have already discussed the role of taxes of need for cash on marketed supply and of debt. Other nonprice factors influencing supply include rainfall (Gilbert 1970, p. 268; Anthonio 1968, pp. 60-63, Ejiga 1977, p. 82), microecology, risk averting, land use patterns, and distance to market (Ballan et al. 1976-77, Vol. 3, p. 37), and the current restocking in the aftermath of the drought (Ballan et al. 1976-77, Vol. 1, p. 2).

Here I suggest that it is the poverty of physical and financial infrastructure for grain marketing, especially the institutional separation of trading from the limited State production credit, which is of importance. Since the marketed surplus in any one year is difficult to predict it is hard to organize finance for trade and repayments for farmers. Trading funds may be untimely. Purchase of cultivators' subsistence requirements may be coerced. Peasants' transport costs to centralized depots may not be reimbursed. The physical removal of subsistence stocks from zones of production exacerbates the vulnerability of farmers to the soudure (see Wilcock 1978; Wilhelm 1976a for Upper Volta; Berg 1977b, pp. 43-44 for Upper Volta; Ballan et al. 1976-77, Vol. 1, Vol. 2, p. 48; USAID 1976; CRED 1977, p. 138 for Mali; and SONED 1977 for Senegal).

Thus it is possible that producers are deprived of capital not only by the action of private trade but also by the State. The existence of efficient marketing infrastructure for cash crops may influence cropping pattern decisions away from millet and sorghum irrespective of the relative price relationships. Also the cultivators will have a reduced and untimely quantum of capital unlikely to be channeled into innovations. There are few of such reserves available for millet and sorghum anyway. In Upper Volta, "encadrement" of cultivators has been hindered by their distrust of the Regional Development Boards who were not adequately equipped to handle the monopoly purchasing system with which they were entrusted (Wilcock 1978; Berg 1977b, p. 19), and these production
parastatals are rejecting the mercantile role. In Senegal it is alleged to be lack of capital that prevented peasants from responding to a 30% rise in the official price of grain after the drought (FAO 1976, p. 15). Both price and nonprice factors work to slow the formation of a rural market.

7. THE EFFECTS OF GRAIN PRODUCTION AND MARKETING SYSTEMS ON STATE INTERVENTION

I cannot find any research at all which has considered this subject or its implications in an explicit way. Two points may be made: on the inadequacy of domestic resource transfers to finance intervention, and on the impossibility of the State's replicating domestic trade.

7.1 INADEQUATE RESOURCE TRANSFERS FOR INEFFICIENT PARASTATALS

The main effect of production on the nature of State intervention seems to be that the agricultural system does not generate sufficient resources -- either financial or physical -- for intervention to be organized so as to be implemented to fulfill its stated objectives. On the one hand, the impoverished nature of producers who are net consumers will reinforce the very same cheap food policy that is causing their poverty in the first place since it is not in their interests to pay higher prices for food. It is this policy that is riven with inconsistencies and contradictions. On the other hand, the first response of the Sahelian peasant to his harvest is, if he can, to store so as to enable his dependents to survive long but unpredictable production scarcity. This is a highly adapted strategy for a risky and uncertain production environment, but is unsuited to the consumption needs of a rapidly urbanizing market economy. Attempts to transform storage practices by the State (mistaking furthermore the distress sales and rural redistribution for a "true" surplus) extract excessive resources from the rural sector and increase its vulnerability. It is unsurprising that such projects sometimes meet with stubborn resistance from peasants, resistance which takes the form of refusal to cooperate. Nonetheless, policies aiming at the reduction of household level stocks apparently continue to be pursued (USAID 1976). Meanwhile urban demand increases, supplies are diverted from the parastatals, and the parastatals are thus caught in an economic trap.

7.2 REPLICATIONS OF DOMESTIC TRADE: FINANCIAL CONSEQUENCES

Local trade is proving impossible to replicate by the State. This local trade consists of small quanta of "surplus" sporadic in space and time, sold whenever cash is required by both poor and rich, or when prices are high, by the rich; they are diverted from parastatals whose minimum capital investments are high, whose technology is imported and capital-intensive, and whose manpower costs are large. In turn, to ensure its minimum current obligation, let alone create a buffer, the parastatal is sometimes forced to order its agents to coerce peasants into parting with grain, as in Mali and Upper Volta.
Alternatively it indulges, as in Senegal, in sanctioning increasing imports of rice and wheat which are changing the structure of demand in rural as well as urban areas towards "economically superior" through nutritionally inferior food (Yaciuk and Yaciuk 1977, p. 56). "The consequences of the evolution of the home market are disastrous for the nation" (Ministère du Développement Rural 1977) a truly ironic source for such a statement.

The resources required to reverse this trend -- a stable and higher-yielding production technology for millet and sorghum, a product-transformation technology but, most importantly, control over what rich urban classes choose to eat -- show no signs of being available. One instance is: the highly subsidized promotion of rice in Mali when the costs of production of millet are much lower and likely to decline further (CILSS 1977, Vol. 1, p. 18) can only be explained by the consumption preferences of the bureaucratic elite and those who fund the development projects. A second example is: the idée fixe of introducing the Senegalese urban bourgeoisie to millet bread (made of 30% millet) itself of questionable practicality (SONED 1977; Ministère du Plan 1978, pp. 10-11). This pales into insignificance besides problems of price and procurement policy and of the level of import-substitution necessary to achieve "planned" structural transformation (Ministère du Plan 1977, pp. 74-112).

The parallel marketing system competes effectively with that of the State in surplus districts leaving the latter to cope with reduced supplies and higher cost distribution to deficit regions. This is especially acute in Mali where the deficit regions are territorially vast and sparsely populated.

The domestic market cannot be controlled by partial ("monopoly") intervention. According to FAO "15-20 per cent of the marketed surplus is sufficient to control the market" (1976, p. 109). But this depends on the structure and performance of the market, and we have seen that the domestic marketing system, certainly in Mali and Upper Volta, is too powerful to be controlled in this way by a competing parastatal. Only in Senegal, where marketed surplus is small and ONCAD until recently marketed a supposedly higher percentage of this surplus, was there any indication of successful control over prices.

Furthermore, the lack of resources with which to monitor borders, or the will to monitor them effectively, is an open invitation to smuggle. It is impossible to implement the monopoly, and the lack of financial resources feeds back continually into an inability to accumulate adequate physical resources.

In Mali and Upper Volta members of trading "ethnies" have been closely involved in the operation of State trading (Diop 1971). They have an interest in sustaining its inefficiency because far greater private resources accrue from clandestine international trade inevitably provoked by present policies. Bureaucrats may invest in trade and transport (Bollinger 1974, p. 44). The lack of legality of the traditional private sector (combined with a total inability to prevent its functioning) benefits those who have to be bribed.
The production and marketing systems thus create conditions encouraging the expansion of the type of intervention that tends to exacerbate pressures exploiting the agricultural sector. Injected periodically with external funds the administrators have no interest in phasing out what they control. Thus this analysis shows that constraints on institutional reform are very much more narrow than has been concluded, for example, from the large study carried out for CILSS (1977).

8. THE EFFECTS OF THE COMPOSITE GRAIN MARKETING SYSTEM ON CONSUMPTION

Inspection of the tables in this chapter will make clear the lack of research on this subject, as well as the virtual impossibility of making useful generalizations. It is hard, if not meaningless, to distinguish producers from consumers. Hill points out emphatically that the vast majority of rural producers consume and purchase (1976a, p. 85). Davies (1968, 1970) and Gilbert (1970, p. 29) note that urban dwellers (especially the richest) themselves may be farmers and producers. Our external categories may not be very useful in this context. Again we may note two points: one about the social distribution of consumption and the other about social differences in consumption of the product of State trading.

8.1 INCOME AND CONSUMPTION

Income elasticities for staples are very low and the economic importance of millet and sorghum in the diet decreases with increasing income (Tables 10 and 11). Urban income elasticities of demand, or expenditure elasticities, vary very greatly, but those for staples are lower than those for food as a whole. However in Kaduna, Adamu found that income elasticities for staples are lowest amongst poorest households (1966). Those for millet and sorghum are lower than for other staples (Table 12). Ejiga's careful study of cowpea consumption reaches the verdict that there is no consistent and statistically significant relation between income and consumption of cowpea (1977, p. 348) (Table 13). Simmons' highly detailed study of consumption in three villages of Zaria province (1976b) showed a high proportion (45%) of expenditure devoted to food of which 55% in turn came from the "market". Increasing incomes were reflected in greater expenditures on food in general but specifically in meat, fish, poultry, milk, fresh vegetables, and nonfood goods. Expenditure elasticities for sorghum and for cereal products were very low (Table 14). One study in Senegal shows negative elasticities for millet (SONED 1977, p. 36), emphasizing the extremely important income substitutions of wheat (bread) and rice (Tables 12 and 15). Millet and sorghum appear to qualify as economically inferior foods.

8.2 STATE TRADING AND CONSUMPTION

The intervention of the State is, as we have seen, usually justified in terms of the objective of supplying the major cities. Yet the urban poor are not discriminated toward by parastatal sales for four reasons:
Table 10. Sources of selected commodities consumed in Kano city as a percentage of total consumption.

<table>
<thead>
<tr>
<th>Income bracket:</th>
<th>Sorghum</th>
<th></th>
<th></th>
<th></th>
<th>Millet</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Middle</td>
<td>Low</td>
<td>Total</td>
<td>High</td>
<td>Middle</td>
<td>Low</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Retail grain purchase</td>
<td>30</td>
<td>55</td>
<td>55</td>
<td>46</td>
<td>13</td>
<td>21</td>
<td>18</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Wholesale grain purchase</td>
<td>41</td>
<td>25</td>
<td>18</td>
<td>29</td>
<td>14</td>
<td>7</td>
<td>Nil</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Own production</td>
<td>22</td>
<td>7</td>
<td>8</td>
<td>12</td>
<td>15</td>
<td>9</td>
<td>3</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Prepared food purchase</td>
<td>7</td>
<td>13</td>
<td>19</td>
<td>13</td>
<td>58</td>
<td>63</td>
<td>79</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Number in sample</td>
<td>32</td>
<td>42</td>
<td>44</td>
<td>118</td>
<td>32</td>
<td>42</td>
<td>44</td>
<td>118</td>
<td></td>
</tr>
</tbody>
</table>

Source: Gilbert 1970, p. 29.

Table 11. Expenditure for starchy staples as a percentage of total food expenditure in Kaduna and Zaria, Nigeria, 1961.

<table>
<thead>
<tr>
<th>Expenditure class (shillings)</th>
<th>Total</th>
<th>Rice</th>
<th>Wheat and wheat products</th>
<th>Millet &amp; sorghum</th>
</tr>
</thead>
<tbody>
<tr>
<td>67.6</td>
<td>47.4</td>
<td>7.9</td>
<td>2.0</td>
<td>8.8</td>
</tr>
<tr>
<td>78.4</td>
<td>45.7</td>
<td>8.4</td>
<td>2.1</td>
<td>7.9</td>
</tr>
<tr>
<td>85.6</td>
<td>43.5</td>
<td>8.6</td>
<td>3.6</td>
<td>5.5</td>
</tr>
<tr>
<td>86.4</td>
<td>44.2</td>
<td>8.0</td>
<td>3.5</td>
<td>3.0</td>
</tr>
<tr>
<td>88.2</td>
<td>40.7</td>
<td>6.9</td>
<td>4.4</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Source: Gilbert 1970, p. 27.
### Table 12. Income elasticities of demand.

<table>
<thead>
<tr>
<th></th>
<th>Enugu, Nigeria&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Kaduna, Nigeria&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Senegal&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Niger&lt;sup&gt;d&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Middle</td>
<td>High</td>
<td>Rice</td>
</tr>
<tr>
<td>All food</td>
<td>0.60</td>
<td>0.31</td>
<td>0.44</td>
<td>0.52</td>
</tr>
<tr>
<td>Staples</td>
<td>0.43</td>
<td>0.31</td>
<td>0.44</td>
<td>0.52</td>
</tr>
<tr>
<td>Meat</td>
<td>0.70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oils &amp; fats</td>
<td>0.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetables</td>
<td>0.43</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruit</td>
<td>0.67</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Anthonio 1968, p. 39 (year 1963-64).
<sup>b</sup> Adamu 1966.
<sup>c</sup> SONED 1977, p. 36.
<sup>d</sup> SEDES/FAO/INSEE 1963, p. 33.

### Table 13. Propensities to consume cowpea, and elasticity coefficients in Nigeria.

<table>
<thead>
<tr>
<th></th>
<th>Sokoto</th>
<th>Jos</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Av. propensity</td>
<td>Marginal propensity</td>
</tr>
<tr>
<td>Cowpea</td>
<td>0.015</td>
<td>-0.004</td>
</tr>
<tr>
<td>Rice</td>
<td>0.210</td>
<td>0.032</td>
</tr>
<tr>
<td>Wheat</td>
<td>0.110</td>
<td>0.030</td>
</tr>
<tr>
<td>All food</td>
<td>0.366</td>
<td>0.094</td>
</tr>
</tbody>
</table>

Table 14. Expenditure elasticities, Hanwa, northern Nigeria.a

<table>
<thead>
<tr>
<th></th>
<th>All food</th>
<th>Sorghum</th>
<th>Millet</th>
<th>Rice</th>
<th>Maize</th>
<th>Cereal products</th>
<th>Meat, fish, poultry</th>
<th>Cow-pea</th>
<th>Ground-nut</th>
<th>Vegetables</th>
<th>Fats, oils</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.35</td>
<td>0.12</td>
<td>1.90</td>
<td>2.92</td>
<td>1.73</td>
<td>0.13</td>
<td>1.55</td>
<td>0.51</td>
<td>0.11</td>
<td>0.45</td>
<td>0.39</td>
</tr>
</tbody>
</table>

a. Elasticity = b in the consumption function \( \log y = \log a + b \log x \).
Source: Simmons 1976b, p. 113.


<table>
<thead>
<tr>
<th>Year</th>
<th>Wheat</th>
<th>Maize</th>
<th>Rice</th>
<th>Millet, sorghum</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961</td>
<td>16.8</td>
<td>11.7</td>
<td>50.1</td>
<td>126.8</td>
<td>205.4</td>
</tr>
<tr>
<td>1967</td>
<td>14.6</td>
<td>18.3</td>
<td>66.8</td>
<td>135.2</td>
<td>234.9</td>
</tr>
<tr>
<td>1973</td>
<td>25.8</td>
<td>19.1</td>
<td>54.2</td>
<td>100.7</td>
<td>199.8</td>
</tr>
</tbody>
</table>

Source: Dione 1975.
a. the urban poor cannot buy in 100 kg sack loads at lower prices than those of the parallel market;

b. insufficient is procured by the State to feed all the urban populations;

c. insufficient is procured by the State to influence parallel market prices;

d. the parallel market, characterized by haggling in price formation, works in the same way as the State does to differentiate the consuming population.

In theory the State subsidies on official consumer prices should increase urban demand and work to transfer the financial surplus potentially accumulable by the parastatal to private consumers instead. As Stevens explains in his study of food aid to Upper Volta: "If the quantity of food aid is too small to influence general price levels, this may be the only effect" (1978, p. 14). The same argument applies generally to consumer subsidies. If food aid is sufficient to influence price levels, and if the lowering of the general price level is transferred along the parallel market to producers, then farmers' incomes will also be deleteriously affected. Steven's modest conclusion for Upper Volta is that "while subsidies are Government policy, price levels are not unaffected by market forces" (Stevens 1978, p. 56).17 We have seen that it is petty and/or rural consumers who are affected by these price levels. State trading does not improve their consumption levels.

9. CONCLUSIONS

I have attempted in this review to explain how it is that the marketing system may contribute to the observed stagnation of cereals production in the Sahel. I have done this by examining the three spheres of the economy: production, exchange, and distribution and the interlinkages connected with exchange (grain marketing) and other spheres (production and distribution). My conclusions appear in Sections 3.2 and 4.13. The existing state of research does not allow me to quantify the interacting and complex role of the marketing system on production. Nor would I pretend to deny the importance of relations of production in explaining the stagnation of the "subsistence" sector.

It is due to external metropolitan economic power that the allocative role of the agricultural marketing system has favored export crops and not food crops. Change in agricultural production technology is still subject to this power and, in the medium-term future, an appropriate, 17. It is not irrelevant to note that the rich urban bourgeoisie were remarkably protected over the period of scarcity of the drought. In Upper Volta, while the rural/African consumer price index, in which grain is weighted heavily, increased from 135 (base 100 = 1964) in 1970 to 221 in 1974, that for urban/Europeans went up from 116 to 126 (Bollinger 1974, p. 89).
ecologically sound, widely replicable, modern grain production technology capable of employing and feeding the growing population will almost certainly be absent. It is an unstable coalition of external metropolitan and national economic power that uses the marketing systems for export crops to extract resources, and for whom the general failure of State marketing systems for food grains to generate similar kinds of resources is problematical. External economic power is thus both the key, and the barrier, to productive and progressive change in the agrarian economy.

Commerce is not just a constraint on agricultural development on a par with the absence of water or roads or presence of river blindness (as in FAO 1976a, and other consultancy documents that use a "commodity" approach to rural development). Commercial activities are part of a system of particular relations from which they cannot be divorced. The agricultural systems of the Sahel are characterized by marked relative poverty as the general orders of magnitude of the remarkable statistics assembled by Szczepanik and Iaccoacci show: see Table 16.

<table>
<thead>
<tr>
<th></th>
<th>1960-62</th>
<th>1969-71</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Volta</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Mali</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Niger</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Senegal</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>All underdeveloped countries</td>
<td>28</td>
<td>27</td>
</tr>
<tr>
<td>France</td>
<td>37</td>
<td>39</td>
</tr>
<tr>
<td>UK</td>
<td>103</td>
<td>108</td>
</tr>
<tr>
<td>USA</td>
<td>61</td>
<td>73</td>
</tr>
<tr>
<td>All advanced countries</td>
<td>54</td>
<td>55</td>
</tr>
</tbody>
</table>

Source: Szczepanik and Iaccoacci 1975.

State intervention has apparently failed to affect anything but information on private trade, though the evidence reviewed here is in major part supportive of the notion that the net effect of these composite marketing systems is to help inhibit production.

It is quite impossible to identify single constraints on production or single interest groups or classes who benefit from the operation of the composite marketing systems, even though it is obvious that the poorer peasantry and poor urban consumers are net losers.
State intervention appears to be altering the structure of (technically illegal) private trade in favor of monopolies, thereby exacerbating what it intervenes to restrain. The CILSS/Club du Sahel Working Group, in specifying the stated objectives of State intervention as the criterion by which it is to be evaluated, come to the conclusion that it fails. "Policy making suffers from lack of systematic fact finding analysis" or "Policy objectives are not being met" (CILSS 1977, Vol. 1, p. 11). Or "Grain agencies manifest inefficiency" (CILSS 1977, Vol. 1, p. 22) and operate at deficits and suffer high storage losses (Berg 1977b, p. 11). We have seen in this review that the real purposes of such interventions evinced by the history of their implementation is to secure the position of the bureaucracy and the closely linked mercantile "community". It is by these criteria that they are successful.

The latitude for reformist change within the present socio-economic structure appears to be very limited. It is not at all clear how further reformist measures can improve market efficiency. It is clear that any local political mandate to liberalize trade is presently insufficiently powerful to influence policy. Likewise, the liberalization of international trade is politically inconceivable as well as being subject to the same caveats.

It is possible that the literature interpreted and reviewed is excessively critical. It is also possible that this literature lacks perspective, written too early on in the current multiplicative phase of the lives of the parastatal or too soon after the drought of 1972-74. But technical delegates of African countries themselves have expressed concern to increase "true surpluses", necessitating action to alter the priorities of what they perceived as relative neglect (see Nacro 1977, Vol. 2), but what I have explained as inevitable instability.

However, the resources of their economies are very limited. Fragile domestic budgets (even of the most robust economy) do not balance, so any reallocation of resources from internal funds has to be diverted from an alternative use. External funds are rarely allocated for purposes actually articulated by nations (Meillassoux 1974).

Furthermore, we are not dealing with a tabula rasa. There are few reformist precedents for dismantling of any institutional structures (apart from village-level cooperatives) built up not so much for the staples considered here as for the cash crops grown for export. Intervention expands because it creates monopolistic trading sources of income both for bureaucrats and for private traders. In so doing it obviously creates privileged bureaucratic employment as well.

Finally, the literature treating price policy for millet and sorghum is curiously silent on the most important point: that low producer prices for grain must be designed not so much to keep urban prices low (for they do not always do that for many of the urban poor) but (in the absence of a uniquely and widely appropriate production technology) they are designed to ensure stability in, or an increase
in, the production of cash crops. Ceteris paribus, increases in grain production would reduce hectarages grown to cash crops which earn the foreign exchange which in turn sustains an evolved structure of powerful nonagricultural demand, for nonagricultural goods, mostly imports.

The import of wheat and rice, preferred over millet and sorghum by urban populations, in reducing effective demand for local crops also works to lower the general price level for millet and sorghum, and the food crop/export crop price ratio.

We have to face the question of whether any "development" involving substantial reversals of present trends (as would be necessary to effect the changes in demand in Senegal for instance (Ministère du Développement Rural 1977; Ministère du Plan 1978)) is possible given what we know about the Pandora's box of interventionist measures, even though it may well be socially necessary. Until peasant producers decide of their own volition to take initiative in the arena of political power and economic decision making (an event which seems unlikely in the time span of conventional economic planning) then this puzzle appears under the status quo of the Sahelian political economy to be completely unresolvable. The formidable challenge for technological change is not "scientific". It is social.


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