

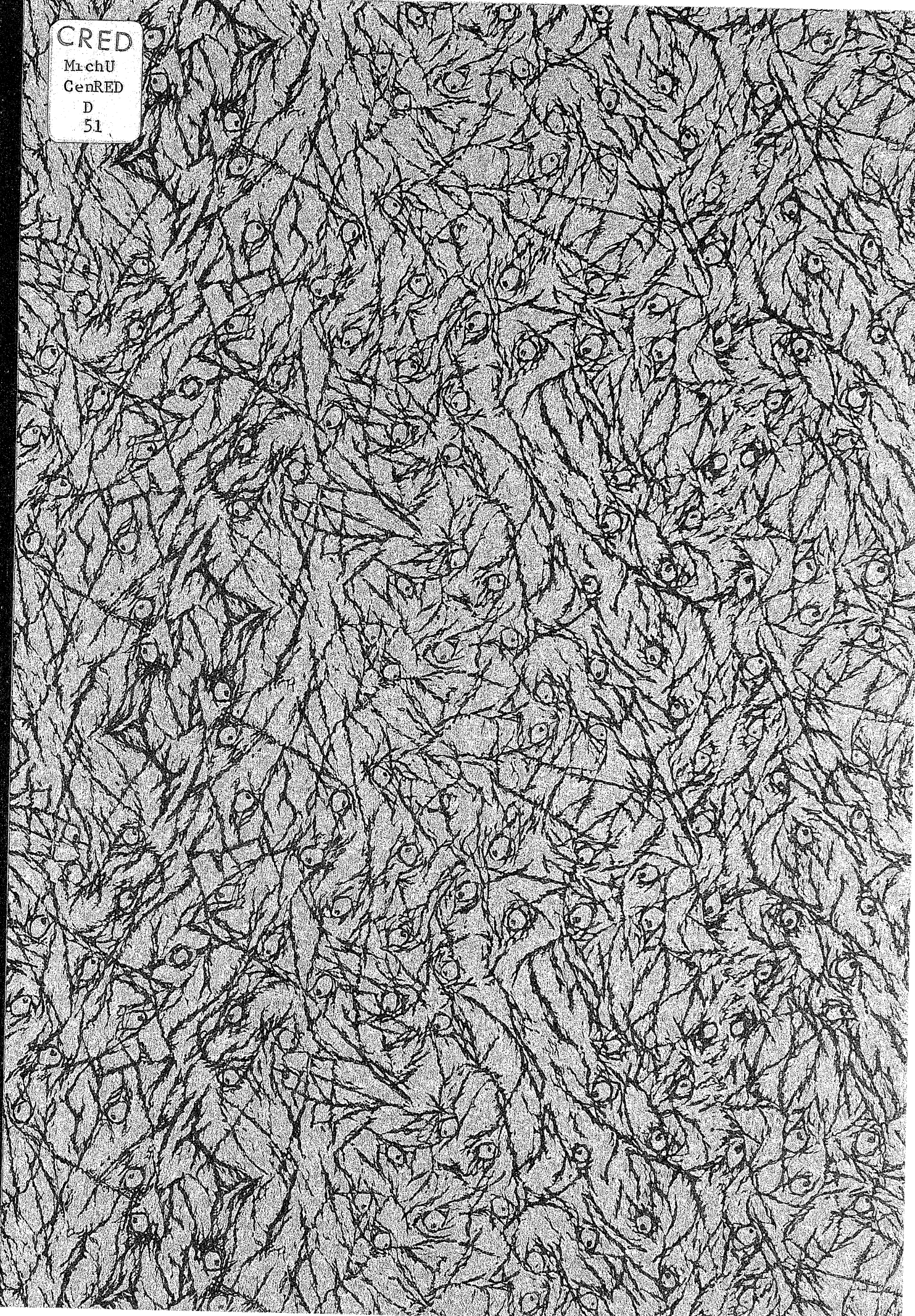
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The Economic Impact of Drought and Inflation  
in the Sahel

by

Elliot Berg



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This note is based on a report, The Recent Economic Evolution of the Sahel, prepared by the University of Michigan for AID in June 1975. The French version was presented before the opening session of the Club des Amis du Sahel in Dakar in March 1976.

## ABSTRACT

### The Economic Impact of Drought and Inflation in the Sahel

Elliot Berg

Summarizing currently available information, this paper describes the main lines of economic evolution of the Sahel countries in recent years. The first section surveys the economic impact of the drought, classifying and describing briefly the various economic effects of drought. The second focuses on changes in income distribution caused by drought, inflation, and government policies. In a concluding section, a number of key policy issues suggested by the Sahel's recent economic experience are discussed.

This paper is based on a report, The Recent Economic Evolution of the Sahel, (June 1975) prepared by the Center for Research on Economic Development of the University of Michigan under financing by A.I.D. The French version was presented before the opening session of the Club des Amis du Sahel in Dakar in March 1976.

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Résumant les informations couramment disponibles, cette étude décrit, dans ses principales lignes, l'évolution économique des pays du Sahel pendant ces dernières années. La première section considère l'impact économique de la sécheresse, classifiant et décrivant brièvement les effets économiques variés de la sécheresse. La seconde section traite des changements survenus dans la répartition des revenus et causés par la sécheresse, l'inflation, et les politiques gouvernementales. Dans une dernière section sont discutés un nombre de points clef de politique économique, suggérés par la récente expérience économique du Sahel.

Cette étude est basée sur un rapport, The Recent Economic Evolution of the Sahel, (juin 1975) préparé par le "Center for Research on Economic Development of the University of Michigan", sous le financement de l'A.I.D. La version française fut présentée devant la session d'ouverture du "Club des Amis du Sahel" à Dakar en mars 1976.

The economies of the Sahel have experienced extraordinary trauma in recent years -- the shock of drought between 1968 and 1974 and subjection to world inflationary forces. It now appears that the great drought is over; at least the rains have been close to normal during these past two rainy seasons. And the pace of world inflation seems to be easing. So it is a good time for a backward look, an assessment of what has happened to the economies of the Sahel in recent years.

It is too soon, of course, to make a full assessment of the economic impact of these events; data even for 1974 are only beginning to appear in many cases in provisional form; and it will be years before the economic consequences of the drought are known. Enough information is available, however, to permit description of the main lines of Sahelian economic evolution during these difficult years. The primary purpose of this note is indeed to summarize this information. In the first section the economic impact of the drought is surveyed; the diverse economic effects of drought are classified and very briefly described. The second section gives an overview of some changes in income distribution which have accompanied drought and inflation or been brought about by public policies. A final section raises a number of key policy issues suggested by the Sahel's recent economic experience.

## I. The Economic Effects of the Drought

It is useful, in considering the effects of drought, to group these effects in several major categories. Some effects are first of all "reversible," others "irreversible." The irreversible effects are of three main kinds: loss of human life; permanent physiological damage to the affected population, particularly children; irreparable ecological transformations such as destruction of topsoil and permanent yielding of vegetation to sand. The "reversible" effects are those conventional dimensions of drought's economic impact most stressed by economists: effects on agricultural output, on size and structure of livestock herds, on the general level of economic activity, on budgets and the balance of payments.

In addition to being "reversible" or "irreversible," the effects of drought may be "tangible" or "intangible". Some of the intangible effects of the Sahel drought were negative: the massive human suffering and unhappiness caused by frustrated productive effort, scarcity of food, persistent uncertainty, forced movement (for hundreds of thousands) into strange and often uncongenial surroundings -- camps, towns, distant countries; stresses on inter-state and inter-group relations. But there have also been positive intangible effects: expanded intra-Sahel cooperation; warning signals about the fragility of the Sahel environment; a broadening of Sahel contacts with outside states; social learning and the stimulation of innovation; a restoration of ecological balance.

### A. Irreversible Effects

(i) Human Mortality. There were undoubtedly many deaths caused by the drought. Direct drought-induced mortality was probably rare, however; there are very few reports of people dying from hunger or thirst. The drought worked on mortality through its generalized debilitating effects, and hence creation of greater vulnerability to sickness and disease. The most widely-quoted estimate of numbers involved is that 100,000 deaths were due to the Sahel drought. But this estimate appears to be based on a report of the Center for Disease Control (Atlanta, U.S.A.) in which an attempt is made to calculate an upper limit of

deaths due to famine. This was done by taking the highest death rate found in a group of nomad clusters in Niger (7%), and comparing it with the "normal" death rate for West Africa (2.4%). Thus was derived a "maximum" number of deaths due to famine in 1973 as amounting to 101,000<sup>1/</sup>.

The unsatisfactory nature of this estimate has been pointed out by a number of writers.<sup>2/</sup> In a recent survey,<sup>3/</sup> the demographer John Caldwell estimates a death rate of roughly 4% as "normal" for Sahelian nomads, in which case the "outer limit" of mortality would be 66,000. But Caldwell is unwilling to place much confidence in any such estimate because of the variability of mortality rates in time and space, and because of lack of knowledge. He concludes his analysis as follows.<sup>4/</sup>

What conclusions can one draw about the extra mortality arising from the drought of the early 1970's? Primarily that no one knows; the figures in the newspaper headlines were figments of the imagination and many apparently serious reports were little better. The statistical systems did not meet the challenge and demographers utilizing survey methods did not fill the breach. Obviously death rates must have gone up, especially among the nomads, many of the extra deaths being among babies and being ascribed to causes other than famine or to no cause at all. One can play numbers games -- a rise of one point in the death rate over the four years of drought in the six Sahelian countries would have meant a hundred thousand extra deaths. Such exercises are futile; they merely prove what large numbers are being considered and they fail to show how long the dead would have survived without the drought.

In the course of the drought, the writer became increasingly convinced that the drought publicity hid the vital truth. The real lesson was not how easily man succumbed to the drought but how tenacious he was in managing his survival.

(ii) Physiological Damage. In the acute phase of the 1973 drought, doctors from the Atlanta Disease Control Unit studied the nutritional status of thousands of Sahel children. They found significant numbers seriously under-nourished. Since it is known that children in certain age groups (e.g. post-weaning) are particularly vulnerable, and since it is likewise suspected that

<sup>1/</sup> U.S. Public Health Service, Center for Disease Control, Nutritional Surveillance in Drought Affected Areas of West Africa (Mali, Mauritania, Niger, Upper Volta August-September, 1973, mimeo. (Atlanta, Georgia), September 1973, p. 3

<sup>2/</sup> Cf. Helen Ware, The Sahelian Drought: Some Thoughts for the Future, U.N. Special Sahel Office, #33, March 1975, (mimeo). p. 1.

<sup>3/</sup> John C. Caldwell, The Sahelian Drought and its Demographic Implications, Overseas Liaison Committee, American Council on Education, Paper #8, December 1975, p. 24.

<sup>4/</sup> Ibid. p. 26.



important physiological effects can be associated with malnutrition (e.g., brain cell growth), significant irreversible costs may be involved. But specific knowledge is very limited on these matters.<sup>1/</sup> Nor is it clear that one severe episode of malnutrition has these physiological effects.

(iii) Ecological Change. A number of examples of irreversible ecological changes are often mentioned in discussions of the impact of the Sahel drought. One refers to the interaction between drought and soil characteristics. Drought raises soil temperature and reduces its humidity. As the topsoil heats up its life-giving organisms die and its physical composition changes. It turns to dust, presumably irretrievably. A related drought-induced change has to do with changes in plant cover, notably trees. Prolonged dry weather lowers water tables, reduces soil moisture and generally thins out plant cover. On sandy hillsides in particular, plants lose out in their struggle against suffocation. This phenomenon is also related to the more popular notion of "southward advance of the Sahara."<sup>2/</sup>

It is known that the drought has resulted in a thinning of plant cover in severely affected regions. Trees -- not only on hillsides but in affected areas in general -- have withered and died; the acacia, which yield gum arabic, have perished by the thousands in Senegal and Mauritania; according to some estimates, over 10% of Senegal's acacia trees have died.<sup>3/</sup> What is not so clear is the extent and degree of permanence of these changes. It is widely disputed that the "southward advance of the Sahara," is related directly to short-term variations in rainfall; it rather derives from basic imbalance between men, animals and environment in a particularly delicate ecological situation.

## B. Reversible Effects

(i) Livestock. Estimate of livestock "losses" has been understandably a major preoccupation of those concerned with assessing the drought's impact. Unfortunately there are serious problems of definition and measurement involved which make assessment of losses extremely difficult. Herd size statistics have always been

<sup>1/</sup> Such evidence as available is contradictory. Several 1973 surveys (in Northern Upper Volta and Northern Mali) found insignificant rates of undernutrition among children (Center for Disease Control, 1973, p. 28; J. Seaman, J. Molt, J. Rivers, and J. Murlis, "An Inquiry into the Drought Situation in Upper Volta," The Lancet, 1973, II, p. 777.) Clinical assumptions based on a range of symptoms show relatively low rates of severe malnutrition in the available surveys, whereas other methods of judging malnutrition show higher rates. Among one sedentary group aged 10-14, a 23% malnutrition rate was found by one method (ratio of weight to height) whereas the comparable figure was only 10% by other standards. The Atlanta survey team found 7% of sedentary children severely malnourished and 17% of nomad children in Mauritania, Niger, Mali and Upper Volta; a British team found rates of 9% and 10% for comparable groups in Upper Volta. Significant evidence of kwashiorkor was found only in northern Mali. See, for a brief survey of this evidence, Caldwell, op. cit. pp. 10ff.)

<sup>2/</sup> See, for more detailed discussion, Notes et Etudes Documentaires, La Secheresse en Zone Sahelienne: Causes, Consequences, Etudes des Mesures a Prendre. La Documentation Française, 23 sept 1975 (Paris.)

<sup>3/</sup> Le Senegal face a la Secheresse, paper prepared for the Workshop on Drought in Africa, Dakar, February 1975. It could be argued that income generating assets like acacia trees can be replaced at reasonable cost, so their loss should be more properly defined as a reduction in capital stock, not as a permanent ecological loss.

Table I: Size of Cattle Herds, 1966-1973  
(thousands of head)

	1966	1967	1968	1969	1970	1971	1972	1973	% "loss" 1973/1972
Chad <sup>1/2/</sup>	4,400	4,500	4,500	4,500	4,500	4,600	4,700	3,000	37
Mali <sup>2/</sup>	-	4,800	4,800	4,900	5,000	5,300	5,000	3,300	34 <sup>3/</sup>
Mauritania <sup>2/</sup>	-	2,400	2,400	2,600	2,600	2,500	2,300	1,600 <sup>4/</sup>	30
Niger <sup>5/</sup>	4,000	4,100	4,200	4,000	4,000	4,100	4,200	2,700 <sup>6/</sup>	36 <sup>6/</sup>
Senegal	2,400	2,500	2,500	2,500	2,600	2,700	2,500	2,200	25
Upper Volta	-	2,400	2,400	2,500	2,700	2,500	2,600	2,200	15 <sup>7/</sup>

1/ Until 1973, ECA Statistical Yearbook 1973; the 1973 estimate of the FED study (footnote 3) is the same as that made in the Chad Service de l'Élevage, Nov. 1974, "Situation après la Sécheresse".

2/ All 1973 estimates of herd size (and hence herd loss due to the drought) come from Fonds Européen de Développement, Situation Actuelle de l'Élevage dans le Sahel, 1974. Where different estimates exist they are noted in footnotes. The Mauritanian estimate is however from more recent Mauritanian Government publication, Bilan de la Sécheresse. The FED estimate for herd size in Mauritania in recent years seems particularly casual, and differs from all available estimates. The FED gives the cattle population of Mauritania as 2,300,000 in 1968, declining to 1,460,000 in 1972, and to 800,000 in 1973.

3/ This is the FED estimate. They proceed to say that the true "loss" will probably be in the neighborhood of 25% when all livestock return from their foreign pasturages.

4/ The 30% loss estimate comes from RIM, Bilan de la Sécheresse (1974). FED estimate is 800,000 head out of a 1972 herd of 1,460,000. An alternative semi-official estimate is that herd size fell to 1.4 million in 1970 and 900,000 in 1973.

5/ There are significantly conflicting estimates among different sources on the 1968 herd size. The common figure cited is 4,500,000. But this is not used here because the 4,100,000 is more reasonable-looking, and is the figure used by the Ministry of Rural Economy.

6/ This estimate from the FED 1974 Survey is lower than many others. For example, the 1973 Statistical Report of the Direction de l'Élevage gives a cattle loss of 2 million head between 1972 and 1973, or over 50% of the herd.

7/ Probably the most knowledgeable observer of these matters in Upper Volta estimates the loss at 7-8%, in addition to normal losses. M. Garcia, Evaluation des Pertes sur le Bétail dues à la Sécheresse en Haute Volta. C.E.B.V., Rapport de Mission, Fév.-Mars 1974.

underestimated because taxes are at issue. Drought-induced livestock "loss" figures generally include (a) "normal" animal death rates, said to be about 11% for cattle, mainly due to calf deaths; (b) premature slaughters, and (c) animals sent south, especially across frontiers.

A number of post-1973 herd size estimates have now been made, by national authorities and by outside agencies, notably a European Development Fund -- sponsored survey late in 1973 and early in 1974. The results of these efforts are reflected in Table I which must be interpreted with even more caution than is usually needed when confronting Sahel statistics. They show losses of about one-third of the overall cattle population between 1972 and 1973. This is somewhat smaller than earlier estimates. Although the figure of one-third of the cattle herd is now widely believed to be reasonably close to reality, it is still too early to be sure.

In any case, the shrinkage of herd size represents an enormous economic loss to the cattle-raising population of the Sahel. There are three aspects to this loss: (1) smaller herd size means a smaller flow of current income, mainly because milk supplies are much lower and the sale of animals in exchange for millet may involve higher real cost to the stock-raiser who now has a smaller herd and changed structure (2) loss of cattle involves reduction in income-generating assets (capital stock). The wealth of herders has thus been gravely diminished, as has that of sedentary farmers who keep savings in the form of cattle. (3) the drought has a series of longer-term effects: it caused generalized feeding deficiencies, increased fractures, reduced fertility, induced higher abortion rates, and reduced survival rates of calves. All of this may have effects on the productivity of herds. It will surely mean difficulties in reconstituting them.

To better define the economic consequences of drought on livestock, and to quantify some of the costs, is one of the main tasks for future economic research in the Sahel.

(ii) Agricultural Production. The dry years between 1970 and 1974 had important deterrent effects on agriculture.

Table II shows the evolution of agricultural production since the mid-sixties. Although production data are notoriously weak, there cannot be any mistaking the story these numbers tell. Agricultural output went into marked stagnation or decline. Beginning in the late 1960's, in Chad, for example, production of millet and sorghum fell by some 15%, to reach a low of less than 600,000 tons in 1972, as against a mid-sixties output of about 700,000 tons. Senegal and Niger maintained about the same level of production through the years before 1972-73.

With respect to cash crops the picture is worse, and the data a little more reliable; marketed production showed an even less encouraging growth picture. The main Sahel cash crops, groundnuts and cotton, declined -- in most cases very dramatically. This was especially true in Senegal, where average output in 1970-72 was only about 75% of the mid-sixties average. Production of groundnuts also fell (by some 20%) in Upper Volta and more (30-40%) in Chad; cotton production held up a little better, but it is only in Senegal that there was any output growth. In Chad and Mali there was stagnation. With respect to rice, despite much discussion of increased output, the late 1960's and the

Table II: Agricultural Production, Principal Crops, 1966/67 - 1974/75  
(1,000 tons)

	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	Forecast 1974/75
<b>CEREALS:</b>									
<u>Millet + Sorghum</u>									
Chad	674	711	700	651	610	639	490	430	559
Mali	738	830	556	700	715	715	474 <sup>2/</sup>	530 <sup>2/</sup>	910
Mauritania	90	110	50	110	81	80	50	25 <sup>3/</sup>	-
Niger	1,120	1,350	948	1,384	1,100	1,230 <sup>4/</sup>	1,130	780	1,134
Senegal	423	655	450	635	401	583	323	467	650
Upper Volta	-	860	925	830	770	772	769	1,138	900
<u>Corn</u>									
Senegal	42	67	35	49	39	39	20	20	30
Upper Volta	-	64	66	69	72	66	2	-	-
<u>Rice</u>									
Chad	37	32	35	37	39	51	25 <sup>1/</sup>	30	35
Mali	-	103	80	96	98	117	60 <sup>2/</sup>	48 <sup>2/</sup>	120
Niger	20	33	39	38	37	27	32	23	28
Senegal	125	138	58	156	91	108	37	50	90
Upper Volta	-	28	29	31	36	37	29	-	-
<b>CASH CROPS:</b>									
<u>Cotton</u>									
Chad	123	102	149	117	95	109	104 <sup>2/</sup>	115 <sup>2/</sup>	121
Mali	-	39	50	51	59	74	72 <sup>2/</sup>	58 <sup>2/</sup>	67
Niger	7	6	7	11	10	8	5	1	8
Senegal	1	4	10	12	12	21	23	34	-
Upper Volta	-	-	32	36	24	28	33	27	29
<u>Groundnuts (unshelled)</u>									
Chad	125	88	99	115	96	75	75	76 <sup>6/</sup>	80
Mali	159	119	96	136	158	152	134	120 <sup>2/2/</sup>	145
Niger	202	209	177	207	144	171	140 <sup>5/</sup>	50	30 <sup>10/</sup>
Senegal	857	1,005	830	789	582 <sup>8/</sup>	988	570	643 <sup>9/</sup>	989
Upper Volta	-	73	75	75	78 <sup>8/</sup>	66	67	63 <sup>2/</sup>	-

1970's saw the virtual disappearance of such production as had been marketed earlier. Gum arabic, important in Senegal and Mauritania, fell from an average output of 5 - 7,000 tons in each country to under a thousand tons in Mauritania in 1973 and 1974, and about 3-4,000 tons in Senegal.<sup>1/</sup>

All of this, it should be stressed, is with respect to production estimates. The picture for marketed production is even more depressing, and this is before the blow that came in 1972-73. In Mali 1972-73 millet production fell by one-third and 1973-74 was not much better. Mauritania's food grain production, most of it from river flood agriculture, fell to one-quarter of "normal." Marketed rice fell away to virtually nothing in Upper Volta in 1972-73 (2,000 tons as against 66,000 in 1971-72) and to some 20,000 tons in Senegal, down by half from the previous two years. Marketed groundnuts fell to about one-third their usual level.

(iii) Agricultural Exports. In drought conditions a reduction of agricultural exports would be anticipated a priori on several counts: (i) in times of declining incomes and rising uncertainty, where issues of minimum survival needs arise, producers tend to shift out of cash crops and into food crops; (ii) output in general falls, hence export crop output falls; (iii) for crops produced partly for the market and partly for self-consumption (groundnuts is the main Sahel example, the share of output self-consumed by producers rises; (iv) where production is partly for home markets and partly for export, a greater share might go to local processing enterprises, for market reasons (transport cost advantage) and for non-market reasons (preferential buying arrangements enjoyed by local manufacturing). In addition, relative prices may tend to move in favor of food crops as compared to export crops. Most of the anticipated results seem to have occurred, as the dismal export picture portrayed in Table III indicates.

(iv) Cattle Exports. Meat and cattle are major exports for five of the Sahel's six countries, despite the fact that most live animal exports do not show up in recorded trade figures. Thus meat accounts for 10-25% of Chad's recent exports, 35-50% of Upper Volta's, 15-20% of Niger's, and 20-35% of Mali's.

Evaluation of the drought's impact on cattle exports requires the weighing of two opposing tendencies. On the one hand the drought reduced available export supply by death and increased (premature) local slaughter. On the other hand the drought led many more herders to take or send their cattle to the coastal countries where fodder was available. Relative prices also strongly favored trekking south, since heavy local slaughter rates drove down local beef prices in the face of demand made smaller by reduced income in the North.

<sup>1/</sup> République du Sénégal, Le Sénégal face à la Sécheresse, paper presented to Workshop on Drought in Africa, Dakar, February 1975.

In assessing the impact of these declines in agricultural output it is important to recall the special features of these economies, particularly with respect to labor force distribution. In Mauritania, for example, the dualism of the economy is particularly marked. Out of a population of 1.2 million, 42,000 work in the "modern sector"; 9,000 in Government, 5,000 in mining, 3,200 in manufacturing and construction and 20,000 "independents". In the "traditional" sector, 250,000 are pastoralists and 110,000 agriculturalists. According to one official estimate, (Rural Development Commission) the total value of agricultural production fell by two thirds between 1970/71 and 1972/73 from (600 million UM to 200 million UM), but this directly touched only 15% of the population.

Table III: Recorded Exports. Principal Commodities, 1964-1974  
(thousands of tons, billions of CFAF)

			1964 <sup>3/</sup>	1966	1968	1969	1970	1971	1972	1973	1974 <sup>4/</sup>
<u>Chad</u>	<u>Total</u>	Value	6.7	5.8	7.6	8.0	8.2	7.8	9.0	8.5	16.4
	<u>Cotton</u>	Quantity	3.8	32.7	42.2	47.5	39.0	34.6	40.7	36.2	
		Value	5.2	4.5	5.8	6.6	5.5	5.3	6.1	5.4	12.6
	<u>Beef</u>	Quantity	2.1	1.8	6.4	7.2	14.3	11.8	6.2	3.8	-
		Value	0.2	0.2	0.7	0.7	1.5	1.5	0.9	0.6	-
<u>Mali</u>	<u>Total</u>	Value	3.0	8.9	8.8	13.3	17.8	21.5	22.7	25.3	28.6
	<u>Cotton</u>	Quantity			11.3	14.9	18.2	20.0	22.8	21.0	15.0
	(fiber)	Value			3.1	4.1	6.0	7.0	7.9	10.3	
	<u>Groundnuts</u>	Quantity		21.0	15.9	10.4	23.0	30.0	38.0	26.0	19.0
		Value		1.4	1.3	0.8	2.5	4.0	4.0	4.7	4.3
	<u>Livestock<sup>5/</sup></u>	Quantity			7.4	11.3	15.2	14.2	13.3	12.6	13.4
	Value			2.0	3.9	5.4	5.2	4.7	4.7	5.5	
<u>Mauritania</u>	<u>Total<sup>6/</sup></u>	Value	2.2	3.4	3.4	3.9	4.9	5.0	6.0		
	<u>Iron</u>	Quantity	5.0	4.1	7.7	8.5	9.2	8.6	8.6	10.5	11.4
		Value	2.1	3.2	3.2	3.5	4.3	4.1	4.0	4.1	6.0
	<u>Copper</u>	Quantity	-	-	-	-	-	7.6	16.8	21.8	28.0
		Value	-	-	-	-	-	0.2	0.6	1.1	2.3
	<u>Livestock<sup>5/</sup></u>	Quantity	78.0	76.0	89.0	230.0	172.0	230.0	153.0	-	-
	Value	0.2	0.2	0.2	0.4	0.3	0.4	0.2	-	-	
<u>Niger</u>	<u>Total</u>	Value	4.7	8.6	7.1	6.3	8.8	10.7	13.7	13.8	13.5
	<u>Uranium</u>	Quantity	-	-	-	-	-	0.4	0.4	1.4	-
		Value	-	-	-	-	-	2.0	2.4	5.4	7.7
	<u>Groundnuts</u>	Quantity	98.0	189.0	172.0	135.0	150.0	113.0	137.0	87.0	-
	+ products	Value	3.2	6.2	4.9	4.0	5.7	4.7	6.2	3.7	2.5
	<u>Cotton</u>	Quantity	1.9	2.0	2.9	2.2	1.3	4.9	1.4	0.7	-
	(fiber) <sup>5/</sup>	Value	0.3	0.3	0.4	0.3	0.2	0.6	0.2	0.1	-
	<u>Livestock<sup>5/</sup></u>	Quantity	-	-	20.0	20.0	32.0	45.0	55.0	63.0	-
	Value	-	-	0.9	0.9	1.4	2.0	2.2	2.3	-	

Table III: Recorded Exports: Principal Commodities (continued)

			1964 <sup>3/</sup>	1966	1968	1969	1970	1971	1972	1973	1974
<u>Senegal</u>	<u>Total</u>	Value	30.2	37.1	37.9	31.9	42.2	34.7	54.4	43.2	89.9
	Groundnuts	Quantity	0.5	0.6	0.7	0.4	0.4	0.2	0.6	0.3	-
		Value	23.7	28.7	27.4	17.7	20.9	12.7	29.3	15.6	28.5
	Phosphates	Quantity	0.7	0.8	0.8	0.8	1.0	1.2	1.4	1.4	1.6
		Value	2.4	2.6	2.6	2.7	3.3	3.8	4.6	4.9	25.9
	<u>Upper Volta</u>	<u>Total</u>	Value				5.3	5.1	4.4	5.1	-
Cotton		Quantity	1.8	2.4	12.0	12.7	28.0	16.5	19.0	18.0	-
		Value	0.2	0.3	0.9	1.6	1.5	0.9	1.1	-	-
Livestock <sup>5/</sup>		Quantity	24.5	27.0	32.5	25.9	23.0	23.9	32.6	5.7 <sup>1/</sup>	15.0 <sup>2/</sup>
		Value	1.8	2.2	2.5	2.2	1.8	1.9	2.3	0.5 <sup>1/</sup>	1.6 <sup>2/</sup>

1/ 6 months only.

2/ 6 months only.

3/ 1965 for Chad.

4/ Forecast;

5/ 1,000 heads.

6/ Billions ouguiyas.

Given the scarcity of usable data on actual cattle movements across frontiers, sales, repatriations and so on, it is not possible at this time to say whether the herd-reducing effect or the export-raising effects were dominant. The number of Zebu cattle slaughtered in Abidjan rose from 49,500 head in 1971 to 55,000 in 1972 and 52,000 in 1973, declining to 43,100 in 1974. This rise of 10% during the worst of the drought and subsequent decline by 15%, suggests that the export-raising effects were most important. One other suggestive bit of evidence pointing in the same direction relates to changes in remittances. Malian authorities indicate that remittance inflow increased from 9 billion Malian francs in 1973 to 18 billion in 1974, and they believe this is due mainly to increased cattle sales by Malian herders who moved south to escape drought conditions.

(v) Changes in National Income. The overall movement of output and income in the recent past can be seen most clearly in the national income estimates, with due regard to their limitations. Here too, the movements are so unambiguous that the accounts cannot be seriously misleading, though of course the magnitudes are arguable. Niger's accounts, for example, show the following:

Table IV: Niger, Economic Growth 1967-71

	1967	1968	1969	1970	1971	1967-71
	Growth Rate %					
Agriculture	0.3	-5.2	-1.7	-2.3	11.9	-0.6
GDP (PIB)	1.6	-2.1	2.4	4.0	7.3	2.6

This is a current price series. And it is before the 1972-73 drought, before agricultural output and GDP reflected the effects of the 1972 and 1973 rains. It is also a gross output estimate, not taking population growth into account. If these figures are even remotely credible, and if population has been growing at anything close to "official" rates (2.3% p.a.) then rural real per capita incomes in Niger have fallen drastically since 1967, and as indicated in Table VII especially since 1972.

A similar series for Upper Volta shows similar results:

Table v: Upper Volta, Economic Growth, 1970-1973

	1970	1971	1972	1973
GDP (billions current CFAF)	96	101	103	110
Agriculture	40	39	39	36
Industry	15	17	18	19
Other	41	45	46	55



An official estimate for 1974 indicates no change in the level of output as compared to 1973 -- in current prices. In terms of real output this suggests a decline of about 10% between 1970 and 1974 in total GDP, with an even sharper decline in the agricultural sector.

Table VI summarizes GDP changes in Senegal, Mali and Mauritania.

Table VI, GDP: Mali, Mauritania and Senegal, 1970-1974  
(Unofficial Estimates)

	1970	1971	1972	1973	1974
Mali: GDP in constant prices (billions Malian francs)	-	170	177	166	166
primary sector	-	73	76	60	55
secondary sector	-	23	24	25	26
tertiary sector	-	71	77	81	86
Mauritania: GDP in constant market prices (bns. ouguiyas)	-	9.7	10.1	10.1	-
primary	-	3.5	3.1	2.5	-
(agriculture)	-	(0.5)	(0.4)	(0.3)	-
(livestock)	-	(2.5)	(2.1)	(1.5)	-
secondary	-	4.3	4.8	5.4	-
tertiary	-	1.9	2.1	2.2	-
Senegal: GDP in current market prices (billions CFAF)	234	217	261	231	-
primary	63	48	66	48	-
secondary	42	42	48	46	-
tertiary	129	128	146	137	-

The table, which is based on very rough preliminary estimates, shows overall stagnation or slight decline in output since 1970. The magnitude of national income and agricultural sector loss due to the 1972 drought, as estimates in the national accounts, is underscored in the following table:

Table VII: Real Output in 1973 as % of 1972

	Chad	Mali	Mauritania	Niger	Senegal <sup>1/</sup>	Upper Volta <sup>1/</sup>
Gross Domestic Product	-6	-6	+1	-10	(-19)	(-9)
Agricultural Sector Output	n.a.	-21	-13	-12	(-20)	(-16)

<sup>1/</sup> Estimates for Senegal and Upper Volta made by deflating the available (current price) data by the consumer price index. Consumer prices rose by 8% in 1973 in both countries. The output declines, as measured in current prices, were: Senegal: -11 for GDP, and -12 for agricultural sector output; Upper Volta: -1 for GDP, and -8 for agriculture.

The indicated magnitude of 1973 reductions in agricultural output and income seems to be between 12 and 21% -- an extraordinarily severe loss to people already very poor. The available figures for the 1973-74 crop year (production 1973, sales and consumption 1974) do not show much improvement except in Senegal where groundnut production rose by over 10%, cotton by around

50% and cereals by some 40%. In Mali the millet estimate for 1974 was up over 10%, but all other crops were down fairly sharply (10-20%). In Upper Volta most commodities are reported as down from 1973 except for an inexplicably large millet estimate. Niger had a very bad year in 1973/74; agricultural output fell 30% from 1973. Chad's millet crop in 1973/74 was off 12% from the previous year, and rice down almost 30%, though cotton production was up over 10%.

For most of the countries of the Sahel then, the year 1974 was as bad or worse than 1973 in terms of production of cash crops as well as production of food. So the severe income and welfare loss of 1973 persisted through 1974 -- or would have in the absence of intervention.

(vi) Budget Effects. The drought could be expected to have adverse effects on public sector finances in two main ways: (i) it generated a set of new and urgent social needs involving care for drought victims and attention to their recovery and rehabilitation; (ii) it reduced the tax base and tax capacity in the wake of declining income, output and trade.

The actual effects have been rather more nuanced. This may be so because we cannot really tell what happened, because it is so hard to see clearly in the budget documents the reality of recent fiscal history. Some expenditure relevant to assessing the economic impact of the drought also seems to take place in two particularly opaque budget lines -- the subsidy and transfer item, and "unclassified" expenditures.

This said, a certain number of generalizations emerge from the available budget data, which are summarized in Tables VIII and IX. This discussion must obviously be incomplete, given the variety of issues and the number of countries involved.

1. Revenue performance in the 1970's has not been appreciably different than in previous years, at least in money terms and for most of the governments in the Sahel. As can be seen in Table VII, revenue growth in four of the six countries was more than 7% p.a. during the years 1970-73, which is high by Sahel historical standards. Mauritania was the star performer, as it has been during most of the decade. Chad has lagged behind the others, as it always has; no other Sahel state had revenue decline so consistently, and of such large size; 1974's revenues were 17% lower than those of 1971. Niger revenues grew at a relatively low rate of 3% annually.

2. The factors explaining revenue performance vary from country to country. One observation seems central, however; non-agricultural sectors provided the stability and/or growth necessary to offset declines in income and economic activity due to the drought. Mauritania is a good example. Iron ore exports account for about 40% of the total receipts from taxes on international trade, and 20% of the total budget receipts. Taxes on income and profits are another 20%. Both rose by about 50% between 1970 and 1973. Mauritania's revenues could thus rise at 15% annually despite the disastrous effect of the drought on its livestock and its agriculture.

It is the same with Niger, though this is perhaps less apparent. Niger had a particularly disastrous groundnuts crop in 1973 -- marketed nuts fell from 165,000 tons in 1969-70 to under 20,000 tons in 1973-74. Groundnut incomes

Table VIII: Annual Percentage Changes in Government Revenue, 1962-1974

	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973 <sup>1/</sup>	1974
Chad	-	-	-	-	-	-10%	21%	12%	2%	-2%	-13%	-3%	
Mali	-	-	-	7%	10%	-	-	5%	8%	5%	9%	7%	
Mauritania	-15%	-4%	9%	3%	9%	10%	9%	17%	21%	18%	10%	32%	
Niger	-	6%	22%	3.5%	5%	-2%	20%	6%	5%	4%	0%	20%	
Senegal	-2%	8%	-3%	-1%	1%	1%	13%	-1%	13%	2%	9%	27%	
Upper Volta	54%	-11%	5%	-19%	-	6%	16%	3%	10%	0%	11%	4%	

<sup>1/</sup> Based on estimated receipts for 1974 fiscal year, except in Senegal, where it is a provisional estimate of actuals.

Table IX: Government Expenditures by Object, 1969-1974

	Chad					Mali					Mauritania				
	1969	1970	1971	1972	1973	1969	1970	1971	1972	1973	1970	1971	1972	1973	
	billions CFAF					billions Malian francs					millions ouguiyas				
Salaries	6.4	7.2	7.2	8.5	8.7	9.2	14.0	14.5	16.0	18.7	710	749	827	938	
Material and Supplies	3.2	4.0	4.1	3.4	2.8	4.0	4.5	4.5	5.9	6.4	349	326	375	436	
Subsidies and Transfers	1.6	1.7	1.8	7.1	2.5	1.7	0.3	0.3	0.7	0.5	172	249	237	239	
Public Debt Service	0.4	0.6	0.9	0.5	0.5	3.2	1.2	1.2	0.6	0.5	35	47	37	34	
Other	1.1	0.8	0.3	0.7	0.2	3.3	0.4	0.2	1.6	2.0	69	156	315	341	
"Coefficient of Effectiveness" (materials & supplies: salaries)	.50	.56	.57	.40	.32	.43	.32	.31	.37	.34	.49	.44	.45	.46	
	Niger					Senegal					Upper Volta				
	1969	1970	1971	1972	1973	1970	1971	1972	1973	1974	1969	1970	1971	1972	1973
	billions CFAF					billions CFAF					billions CFAF				
Salaries	4.5	4.8	4.9	5.2	5.5	19.4	20.8	21.6	23.3	25.5	4.8	5.5	5.8	6.3	7.1
Material and Supplies	2.1	2.5	2.4	2.5	2.6	6.9	7.3	7.6	7.7	8.1	1.7	1.7	1.9	2.0	1.9
Subsidies and Transfers	-	-	-	-	-	5.2	5.7	6.0	7.5	7.5	1.2	1.2	1.1	1.2	1.4
Public Debt Service	0.3	0.6	0.7	0.7	0.4	1.2	1.4	1.1	n.a.	n.a.	0.4	0.3	0.3	0.3	0.4
Other	0.4	0.9	1.0	1.2	1.2	2.6	3.3	3.5	4.3	5.2	-	-	-	-	-
"Coefficient of Effectiveness" (materials & supplies: salaries)	.47	.52	.49	.48	.50	.36	.35	.35	.33	.32	.35	.31	.33	.32	.27

went way down and exports fell to almost nothing, all of which should have sent revenues spiralling down. But the activity of the modern sector remained at a high level, and even accelerated, with some new construction getting under way, due to the greater inflow of external aid. The volume of business turnover rose 16% in 1972 and 14% in 1973.<sup>1/</sup> Also, this was the time of the rise of the uranium industry; uranium exports rose from 2.4 billion CFAF to 5.5 billion between 1972 and 1973. This helped sustain and increase the volume of taxable recorded imports and exports as well as income and profits taxes,<sup>2/</sup> and allowed government revenues to increase even in the face of agricultural disaster.

In Senegal, similarly, the yield from income taxes rose by 20%, and excise taxes also rose smartly.

3. The main direct revenue effect of the drought was the elimination of the cattle tax in a number of countries -- for example, Niger, Chad, Upper Volta and Mali. This tax generally accounted for between 5 and 10% of total revenues in the late 1960's but it was a tough tax to collect, stimulated smuggling and in the period of drought ran into increasing resistance among herders. Its yield was therefore declining. The tax was abolished in 1973. The budget incidence of this change was softened by the European Development Fund, which granted each of the countries suspending the tax an aid grant to help cover the lost revenue.<sup>3/</sup>

4. Local government revenues seem to have been more seriously affected than those of central governments. In Upper Volta, for example, communal revenues fell by almost 20% in 1973 -- from 3.5 billion CFA francs to 2.9 billion -- and "cercle" taxes fell by about 10% -- from 7.3 to 6.6 billion CFA francs.

5. Current expenditures have in all cases increased faster than current revenues between 1969 and 1973. Rising import prices and some salary increase affected the outcome in 1973, though this was before the full impact of the world inflation. Salaries are the main item of expenditure; they were between 40% (Mauritania) and 64% (Mali) of total current expenditure in 1970-72. The government wages bill rose in the early 1970's at a rate of between 4% p.a. in Senegal and 20% p.a. in Mali, in the other four countries, the rate was 6 - 10%. Increases in salary payments were thus the major cause of increased current expenditure.

6. Materials and supplies appropriations grew less quickly than salaries, which is a virtually universal phenomenon for governments under fiscal pressure. The so-called "coefficient of effectiveness" (the ratio of expenditure on supplies to expenditure on salaries) declined significantly between 1970 and 1973, except in Mauritania and Niger. (See Table IX) Inflationary pressures in 1974 greatly exacerbated this problem.

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<sup>1/</sup> Secretariat d'Etat aux Affaires Etrangeres, Direction de l'Aide au Developpement, Bureau des Programmes, Secteur Information Economique et Conjoncture, Indicateurs Economiques, Niger, mai 1974.

<sup>2/</sup> In 1972/3 (October-September) return from income and profits tax rose by 6%, from taxes on imports by 12%, and from export taxes by 3% over 1971/72. BCEAO, Indicateurs Economiques, No. 223, December 1974.

<sup>3/</sup> In at least several countries new taxes were introduced as partial substitutes for cattle tax. In Mali, for example, a tax on cola nut consumption appeared and in Niger a new tax on building rents. The Mali Government planned to reintroduce the cattle tax in the 1975 budget (which contains an item for it) but as finally passed, the budget left out the tax. A taxe conjoncturelle -- an export tax on cotton and groundnuts -- was introduced in that year, in addition to the cola tax.

**TABLE X: United Nations Emergency Office Balance of Payments Projections  
Compared to Estimates Results, 1974  
(millions of \$US)**

	Current Account Deficit		Net Inflow of Capital		Overall Deficit		Overall Deficit as % of Total Imports	
	Projected	"Actual"	Projected	"Actual"	Projected	"Actual"	Projected	"Actual"
Mali	53	35.5	11	9.6	42	31.6	30.9	22
Mauritania	26	12.6	9	-3.6	17	16	9.6	8.6
Senegal	133	45	64	26	69	19	13	3.5
Upper Volta	82	143	72	136	10	6.8	7.4	4

Sources: UN General Assembly, Completion of Task Assigned to the Ad Hoc Committee..., UN Emergency Office, Addendum to the Report of the Secretary-General, 9 September 1974.

"Actuals" are from IMF, IBRD and BCEAO sources.

Conversion from SDRs to \$US at the rate of \$1.20 = 1 SDR; conversion from CFA francs to \$US at the early 1975 rate of 220 CFA franc to \$1.

7. Four of the six Sahel states managed to run current budget surpluses throughout the 1970's, and to make local resource contributions to development spending. Chad, on the other hand, had a steadily growing current deficit from 1970 on; by 1974 current expenditures of 15 billion CFA Francs were covered only to the tune of about 11 billion by current revenues -- a deficit of over 25% expenditures. Mali's current budget deficit in 1974 was almost 15% of total current expenditures, and over a quarter of total revenues. Chad's fiscal problems derived mainly from the civil war which prevailed in the north; budgeted military expenditures in 1974 were almost a third of total expenditures. The sources of Mali's difficulties are more complicated, but a key element is the rise in government payrolls at a rate much faster than in neighboring countries -- 14% annually between 1966 and 1973, compared to 5% annually in Upper Volta and 6% in Niger.

(vii) Balance of Payments Effects. It was with respect to the balance of payments that the drought was expected to have its most devastating impact. It would widen already sizeable trade deficits by reducing exports (via its impact on agricultural and animal production), increasing imports of needed foods and increasing transport and related charges for moving heavy food grains to the Sahel from distant ports.

The incidence of the drought can't be separated from the major changes occurring at the same time in the world economy, notably the escalation of fuel and food prices after 1972. These developments raised grave challenges for the Sahel. The Sahel countries produce no petroleum and rely on oil as their main source of fuel. Most are big food importers. Their geographical position makes transport cost particularly burdensome. The drought-induced declines in export volumes meant the Sahel might not be able to take advantage of the commodity price boom at the same time that it would be forced to make massive imports of food and pay much higher oil prices. It is no surprise that balance of payments catastrophe was freely predicted.

In 1974, the United Nations Emergency Operation put together a list of countries "Most Severely Affected" by world price changes, countries whose external balance was most precarious. The six Sahel countries were on the list. And when the expected balance of payments situation of the Sahel countries in 1974 was assessed by the UN Emergency Office, heavy deficits were anticipated. Table X shows the projected 1974 deficits. It also shows more recent estimates of what actually happened in 1974. Niger and Chad are omitted because of unavailability of 1974 data. For the four other countries the table is revealing. It shows that things turned out rather better than had been anticipated even as late as September 1974. Only in Mali were the results even approximately as bad as expected. Mauritania's overall projected deficit seems remarkably on target, but a look at the components shows that this accuracy was strangely compounded -- by balancing errors of large magnitudes in the current and capital accounts. In fact, Mauritania's balance on current account was in deficit by only US \$13 million, half the expected amount.

Preoccupation with the impact of petroleum price rises, which underlay in part the gloomy UN projection, was certainly warranted. But Sahel states were partially shielded from some of the effects of oil price changes by their very poverty. They are among the half dozen smallest users of energy in the world; average per capita consumption of energy in the early 1970's was estimated to be 48 kg. of coal equivalent in the Sahel states, compared with 348 for the developing world as a whole and almost 2,000 for the world. So while rising

oil prices hurt (especially in Senegal, more industrialized than the other states), they weren't crippling. Petroleum products were under 10% of total imports, in 1972, and about 5% in three of the six states. In 1974 the import bill for petroleum doubled or tripled, and the share of petroleum in total imports doubled in most Sahel countries. But it still amounted to relatively small shares of total imports, for example, only 11% in Upper Volta and Mauritania, and 13% in Senegal.

The threat from higher grain and sugar prices was something else again. Food imports were about a quarter of total imports in Mauritania, Senegal, Mali in the late 1960's and early 1970's. In Upper Volta and Chad food accounted for nearly 20% of total imports; only in Niger were they as low as 11%. The trebling of wheat and rice prices was thus a matter of much more moment than the quintupling of crude oil prices. The skyrocketing costs of sugar was also a vital concern, since sugar imports were in some of the countries (Mali for example) a bigger proportion of total imports than was petroleum.

In all the Sahel countries during these years, governments purchased food grains on the open market, in addition to seeking food aid. The value of cereal imports rose nine-fold in Mali between 1972 and 1974, for example, from 2 billion CFA francs in 1972 to 19 billion in 1974. Drought emergency relief amounted to the equivalent of 10 billion CFAF, or half the 1974 increase in the food import bill. In 1974 food imports were almost 60% of Mali's total imports and purchased food imports were 35% of the total. In 1974, food imports cost Mali 60% more than the total value of its exports. In Senegal and Mauritania grain import costs doubled between 1972 and 1973 and rose sharply again in 1974 -- another 30% in Senegal.

These figures indicate a tremendous increase in import costs for the Sahel. Why then did the balance of payments picture fail to turn out as badly as expected -- in the U.N. Emergency Office and elsewhere? Put more broadly, why didn't drought and world price inflation result in generalized balance of payments disaster in the Sahel?

It is well to note, first, that there was one serious casualty -- Mali. In the 1960's Mali -- like most Francophone states -- ran a small deficit on current account, which was financed by foreign aid. The overall balance of payments deficit was small. But between 1970 and 1974 this deficit increased twenty-fold -- from 700 mn. Malian Francs (MF)\* in 1970 to 13 billion in 1974. The trade account shows imports rising four times as fast as exports during this period; export value rose from an average of some 20 billion MF in 1970-71 to 25 billion in 1973 and 29 billion in 1974. Sharp decline in the volume of exports of groundnuts and cotton were more than balanced by higher prices for these commodities. But the value of imports tripled during these years, mostly because of the need to import more high cost foodstuff; 60,000 tons of cereals were imported in 1972, 178,000 in 1973 and 243,000 in 1974. Some of these food imports were financed by emergency relief shipments -- 40% in 1973 and 60% in 1974. But Mali had to lay out from its own or borrowed resources 14 billion MF in 1973 and 35 billion in 1974, as compared to 4 billion in 1972.

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\* 1 MF = .5 CFA francs.



In addition to food costs, other factors contributed to balance of payments deterioration. The value of oil imports rose by 125% in 1974, while volume was growing only by 8%. Transport and related services cost the Mali economy almost twice as much in 1974 (17 billion MF) as it had in 1973.

Foreign aid inflows grew at a very substantial rate: from some 11 billion MF in 1972 to 22 billion in 1973 and 38 billion in 1974. But the overall deficit in the balance of payments nonetheless grew from 1.5 billion MF in 1972 to 8 billion MF in 1973 and 15 billion in 1974. This was financed mainly by the French Treasury, which allowed Mali's cumulative deficit in the Operations Account (where franc zone and related country reserves are kept) to rise to 55 billion MF in 1974 (\$114 mn. or SDRs 95 mn.) In 1970 the Mali deficit in the Operations Account had totalled \$US 54 mn. (SDRs 45 mn).

Mali's finances were highly precarious by 1973. Her outstanding public debt is in the order of \$US 280 million. Debt service due in 1973 amounted to about \$US 26 mn, a quarter of the value of its exports and about 45% of total government revenue that year. Debt service was supposed to remain at that level for five years, but Mali appears to have achieved an unannounced rescheduling its debt (65% of which is held by communist countries), since the budget no longer (1975) has a significant item for it.

Several of the other Sahel states had one year of balance of payments stress, but returned to equilibrium. Senegal, for example, had a huge deficit in 1973 but this was wiped out in 1974. Chad had two years of overall deficits (1972: 5.1 million SDRs; 1973: 10.7 million). But it appears that a surplus of over 5 million SDRs appeared in 1974. In Niger, the virtual disappearance of groundnut exports in 1974 appears to have led to its first balance of payments deficit in 1974 -- an estimated 14 million SDRs; during the four years 1970 to 1973 Niger had an overall surplus every year averaging over 11 million SDR's annually. Upper Volta and Mauritania accumulated reserves throughout the period.

Of the six Sahel states, then, five came through the holocaust of drought and the menace of world inflation with their external economic stability reasonably intact. Stability of course is no goal in itself, and the stability in question is one in which the Sahel economics remain at a very low level of economic development and welfare. But the maintenance of external balance is nonetheless an important achievement.

A number of factors help explain this rather unexpected outcome. First, and most important in terms of resource availability, was the favorable terms of trade enjoyed by the Sahel through this period. Crude oil, wheat, rice and sugar prices all soared after 1972, but so did phosphates, copper, iron ore, groundnut products, uranium concentrates, and -- less persistently -- cotton. The Sahel states' low consumption of fuel diluted the impact of crude oil price rises, and food aid went a long way in meeting the burden of increased food prices. At the same time these specialized economies benefitted from the price buoyance of their main exports.

The second major factor was the international aid response. As Table XI shows disbursements to the region as a whole doubled between 1972 and 1973 -- from about \$150 million to \$300 million, and probably stayed at this level in 1974. And the overall aid role was much more significant and diverse. The French, for example, cancelled their old FIDES debts, significantly relieving the debt burden of the Sahel states. They also extended the large line of credit in the Operations

Table XI: Net Foreign Aid Disbursements to the Sahel,  
1965-1974  
(billions CFA francs)

	Average 1965-1968	1969	1970	1971	1972	1973	1974
Chad	5.8	6.1	6.7	8.0	6.2	12.2	11.2 <sup>3/</sup>
Mali	5.0	5.9 <sup>5/</sup>	4.2	4.0	5.3	10.8 <sup>4/7/</sup>	18.9 <sup>2/7/</sup>
Mauritania <sup>8/</sup>	2.2	5.1	1.6	2.0	3.0	8.0	5.5 <sup>1/</sup>
Niger <sup>6/</sup>	5.5	10.0	6.9	9.4	10.6	12.2	17.2
Senegal	12.4	13.7	11.9	16.4	13.0	15.5 <sup>2/</sup>	13.6 <sup>2/</sup>
Upper Volta	4.7	6.7	6.4	7.6	8.4	12.6	16.7
Total	25.6	47.4	36.1	48.6	36.8	71.3	69.0

1/ Forecast.

2/ Estimated.

3/ Forecast.

4/ Provisional.

5/ 1969 and pre-1969 figures from UNCTAD report.

6/ Niger is the only country for which we have a comparable series of commitments and disbursements.

The figures in the table are disbursements. Commitments are as follows:

1970: 6.9; 1971: 11.9; 1972: 15.8; 1973: 11.2; 1974: 17.2.

7/ Does not appear to include food aid.

8/ Includes food aid.

Account which allowed Mali to continue its massive imports of grains in 1974. The Arab oil producers began to play a significant aid role, with known credits to Mauritania and Chad, and probably to other Sahel states as well. Also, the IMF's Special Oil Facility was utilized by Chad and Senegal and perhaps others. The communist countries which hold two-thirds of Mali's external debt (not counting the Operations Account credits), gave major assistance to that country by either rescheduling or abandoning their claims. So the effort to help the Sahel was genuinely international, cutting across old ideological lines, bringing in new donors such as the IBRD and particularly the United States, which had before been only marginally concerned with the Sahel region.

There was, finally, an array of smaller factors of a compensatory or countervailing kind. Because of distress in affected areas, outmigration increased and those already abroad sent home more money. Remittance inflows thus increased very substantially. Tourism, which had been slowly gathering steam in Senegal, began to really advance, and growth in tourist receipts was an important balancing element in Senegal in 1973 and 1974. In Niger, uranium mining came on stream after 1973, bringing important revenue increases for the budget and important foreign exchange inflows for the balance of payments.

#### 6. Intangible Effects.

We have thus far considered only the tangible effects of the drought. But the most important long-term economic consequences of drought are intangible. These are both negative and positive.

##### 1. Negative Intangible Effects

(i) Human Suffering. The drought damaged the people and societies of the Sahel in a pervasive way. It shook the lives of millions of people. It involved hunger for many and painful uncertainty for virtually everyone in the affected regions. For hundreds of thousands, perhaps millions, it meant forced movement for survival. At the peak of the crisis, in April-June 1974, there were some 200,000 people entirely dependent on food distribution in Niger. In Mauritania, 250,000 people moved temporarily and under dismal conditions into towns, completely destitute. In Mali, another 250,000 may have been forced into total dependency in towns. These intangible effects in terms of human suffering and generalized disruption of life represent the greatest "loss" or "cost" of the drought.

(ii) Inter-State and Inter-Group Conflict. Movement of people and animals across national frontiers caused numerous inter-state frictions, especially since these movements were sometimes associated with charges of ethnic discrimination. The upheavals and migrations not only caused friction between states but between different social groups -- herders and farmers for example.

##### 2. Positive Intangible Effects

(i) Expanded Intra-Sahel Cooperation. If it has caused new tensions, the drought has also brought the Sahel states closer together in key areas. To coordinate drought relief efforts, and also to make joint proposals for regional development (especially river development) schemes, a number of coordinating bodies were created, and some which previously existed (Senegal River Organization, Lake Chad Basin Commission) have been given new life.

(ii) Warning Signal Effect. The experience with the disaster of the drought has signalled the need, both locally and in the world community, for

closer attention to the human and ecological problems of the Sahel region. It can be argued that major policy changes are almost never initiated except by catastrophic natural events<sup>1/</sup> or by major crisis of some other sort. There certainly now exists a far wider awareness of the delicacy of the Sahel environment, the vulnerability of its people and its resources, and the need to know and do more to bring the region into better ecological balance and its people to a better life. Everybody knows there will be future climatic changes which will threaten disaster once again, and that something must be done to reduce their impact.

(iii) New External Relations. This new awareness of the special needs of the Sahel is translated in more concrete terms by a much broader and more intensive set of relationships between the Sahel countries and the outside world. Aid relationships have in particular become more diversified. The region is now open to many more countries and to a much more intensive degree than five years ago. The world has become involved in the Sahel, and is not likely to drop this involvement quickly.

(iv) Social Learning. A certain amount of social learning has occurred, and institutional competence developed. Some of this is in the area of disaster relief and rehabilitation. Both local governments and donor agencies gained enormous experience. This learning and competence may obsolete or disappear in a few years, but over the next couple of years, when the Sahel is particularly vulnerable, it provides some abstract protection. The region is far better equipped than it was in 1972 to deal with another drought. More important, farmers and herders learned new responses to climatic catastrophe, new limits to migratory behavior, for example.

(v) Restoration of Ecological Balance. In the 1960's, the size of Sahel herds grew very substantially. This was partly due to government policies, anti-pest campaigns, provision of deep wells, etc.) and partly to the relatively abundant rainfall of the decade. The 1968-1974 drought cut herd populations back to a size more consistent with the carrying capacity of the region at existing levels of technology. This painful process of contraction is an "intangible" only in the sense that it is a social benefit achieved at great private cost.

(vi) Stimulation of Innovative Behavior. The drought has stimulated adaptive behavior in a variety of ways. Farmers have shown quick responsiveness to relative returns. Cattle herders displayed extraordinary energy and ingenuity in finding haven for their animals. Thousands of villagers sought (and -- judging from remittance evidence -- found) work in far-away coastal countries. This is perhaps no more than the energy of despair. But it is constructive nonetheless. It is indicative of increased flexibility in individual economic agents and in these economies as a whole. And it suggests a greater receptiveness to innovation, even to such profound changes as are involved in sedentarization of nomadic people.

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<sup>1/</sup>This is suggested in P. Slovic, H. Kunreuther and G.F. White, Decision Processes Rationality and Adjustment to Natural Hazard, in G.F. White, editor, Natural Hazards, Oxford University Press, N.Y., 1974, p. 190

## II. Drought, Inflation and Income Distribution

All events - earthquakes and groundnut price increases alike - touch the lives of people and institutions in different ways. This is obviously true of drought and inflation, the Sahel's main economic events of recent years.

With respect to the impact of the drought on the Sahel and its people, the differential effects were very pronounced.

1. It is obvious that the drought affected some of the Sahel countries more than others, because of their different locations. Mauritania, Mali and Niger, the most "northern", and the driest countries, were the most affected by drought. Upper Volta and Senegal, with 80-90% of their territory in areas which normally get more than 500 mm. of rain annually, are at the other extreme.

2. There is a related factor making for differential impact: the rainfall and climatic variation within each country, which makes for severe intra-country differences in rainfall, harvests, access to money income and so on.

These intra-country variations can be extremely large. In Mauritania, 1974 rainfall was generally good, but major oases, like Atar, were suffering severe drought. In 1975, rainfall in the Zinder area was very poor, while Niger rains were generally good.

This means that drought is inherently inegalitarian in its incidence, and that to a considerable degree, incidence is a function of location. Senegalese and Voltans in general were less damaged and, within each of those countries, people in some zones lost everything, while others were untouched.

3. Animal-raising people were more hurt than any other socio-economic group. Herders were afflicted with hunger, increased vulnerability to disease, forced movement from traditional places of residence or transhumance. Virtually no wage earners endured this kind of privation, and relatively few farmers. Moreover, most farmers lost only current income; herders lost their capital stock.<sup>1/</sup> The drought for most farmers involved few non-reversible losses. For herders it will be years before they can reconstitute their herds.

4. Within the animal-raising community, the drought appears to have affected some groups more than others. Those nomadic groups which traditionally move in relatively restricted areas suffered much greater losses than more mobile groups, accustomed to long transhumances. In general, the distinction is between Tuareg (or Maures in the West) and Fulani. The Fulani are widely believed to have lost fewer animals than the Tuareg, in part because of their wide network of kinsmen scattered throughout West Africa, including many across the frontiers of the coastal states. This proposition is asserted in the European Development Fund report, Etude sur la situation Actuelle de l'Elevage dans le Sahel (1974), and is subscribed to - among others - by an ORSTOM geographer currently studying the matter in the Upper Volta.

<sup>1/</sup> The same loss of capital stock would of course affect sedentary farmers who owned cattle and lost them in the drought.

5. It has been suggested by some observers that the drought had a strongly egalitarian impact on all the pastoral societies of the Sahel. The argument is that cattle ownership is highly concentrated in these societies. Many men are very poor. They have no cattle of their own, but simply look after animals belonging to others. To the extent that this is true, the drought, with the new herd structure it led to in many areas, exercised a levelling influence on the nomadic societies in particular.

There appears to be little Sahel evidence on cattle ownership patterns. East African studies among the Masai do show high concentration of ownership. According to one such study, one-third of the pastoralists (heads of family) owned 200 beasts, others none at all.<sup>1/</sup> These studies also suggest much social mobility - disease, drought and cattle theft making rich men poor overnight.

Other views have been put forward on the distribution effects of drought on pastoralists. One writer, for example, suggest that richer herders can recover from disaster losses more quickly because their herds are bigger.<sup>2/</sup> Other observers stress the drought's impact on small farmers: since such farmers can only save by accumulation of cattle, drought-induced slaughters (at low prices) wiped out small farmer savings for the benefit - it is argued - of traders and consumers, mainly civil servants.<sup>3/</sup>

Although the state of knowledge would not seem to warrant any strong position on this matter, and there are undoubtedly big differences between regions, two factors suggest that on balance the drought's impact would be of a levelling character: first, the incidence of drought is geographically-specific; given locations are affected with equal severity, so that in badly-hit areas, herds of the whole group would be decimated, those of rich and poor men alike. And secondly, cattle owned in areas of sedentary farming were less afflicted than those further north, and these cattle would also tend to be more mobile, so losses of savings in this form would probably be relatively low.

6. Drought is something that happens in rural areas, to rural people, and the Sahel has provided no exception to this rule. All sorts of distinctions among the rural populations would have to be made if the drought's rural impact were to be systematically and fully appraised. For present purposes it is enough to distinguish three elements of rural activity: cash crop production, subsistence production, animal raising.

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1/ H.E. Janke and H. Ruthenberg, "Organizational Aspects of Livestock Development in the Dry Areas of Africa" in Second International Seminar on Change in Agriculture, Reading, England, 9-19 September 1974. The authors point out that there are many redistributive mechanisms at work within pastoral society which reduce the significance of differences in property ownership: rich men employ herders, who receive payment in milk and sometimes a calf; ceremonial slaughters are plentiful; there is not much difference in patterns of consumption between rich and poor; and social mobility is great.

2/ David Dalby, in D. Dalby and R. Harrison Church, (editors) Symposium on Drought in Africa (London, 1973), p. 20.

3/ J.F. Barres, Analytic Bibliography on the Sahelian Zone, FFHC/AD, Rome, 1974. Mimeographed.

Taking the animal-raising activity first, it is likely that cattle-owning sedentary or semi-sedentary farmers were the least affected by animal loss. They are located south of the 500 mm. rainfall line. Their access to water and pasturage was reasonably easy. Such herders, however, are a small proportion of the total animal-raising population. In Mali, for example, about 80% of the cattle are raised by nomadic and semi-nomadic people (40% by Fulani, 30% by Tuaregs, 10% by Marues), but these groups make up only 10% of the population.

The degree to which farmers were hurt in their subsistence-oriented activities or, more precisely, the degree to which subsistence-oriented farmers (the majority of the rural population) suffered depends on two main factors: where they are located, and their ease of access to relief supplies.

If we think of a subsistence farmer as an abstract "ideal type", producing only for self-consumption, paying no taxes and purchasing no off-farm inputs or consumer goods from the outside, then clearly his loss of income from drought would be measured by the extent to which his output declines from "normal", minus such relief supplies as he would get. To the extent that drought-induced crop failure results in disappearance of the community's food reserves, the community of subsistence farmers as a whole experiences increased uncertainty and moves to a lower level of general welfare.

What the drought may do, of course - and about this there is very little information - is persuade some villagers to abandon village life. It may be the last straw for many young men, who will stay south, or move there. Since the drought very probably did stimulate migration into paid employment in the coastal countries, particularly from Mali, Upper Volta and Niger to the Ivory Coast, this longer-term "intangible" effect may be very important.

It is possible to be more specific about the rural community in its cash crop growing aspect, about the impact of the drought on those producing for sale.

The drought, combined now with world inflation, weighed heavily on this group. Rural money incomes remained stagnant or declined, while prices of things farmers buy rose more sharply than in the pre-drought period. Many farmers reduced their commitment to cash crops and turned more land and time to food crops. The money economy regressed.

Table XII shows the evolution of producer money returns and prices since 1970 for the two main Sahel cash crops - cotton and groundnuts. Given the considerably different prices chosen to represent producer prices, and various divergencies on estimates of marketed output, these indices may differ in detail from some made elsewhere - some IBRD estimates, for example. But there is little dispute possible about their general tendency.

The indices in Table XII show that the growers of these important crops did very badly in terms of money income: groundnut growers in Mali, Niger and - a little less clearly - in Senegal; cotton growers in Chad, Mali, Niger and Upper Volta. The consumer price series given at the bottom suggest that growers of these crops did even more badly in real income terms.

An assessment of trends in producer welfare should also take into account the movement of producer prices. Producer incomes only tell us what has happened to aggregate payments to growers of the crop as a group. If producer incomes rise because new growers have entered, the existing producers

Table XII: Indices of Producer Proceeds from Groundnuts and Cotton, Producer Prices and Consumer Goods Prices, 1969-1975

(1969/70 = 100)

		1969/70	1970/71	1971/72	1972/73	1973/74	1974/75
<u>Groundnuts</u>							
Mali	Proceeds	100	129	106	88	76	153
	Prices	100	100	100	100	100	133
Niger	Proceeds	100	89	106	89	23	10
	Prices	100	112	117	133	156	306
Senegal	Proceeds	100	82	162	100	118	-
	Prices	100	100	128	128	141	229
Upper Volta	Proceeds	100	134	139	235	253	309
	Prices	-	110	110	114	112	144
<u>Cotton</u>							
Chad	Proceeds	100	80	97	93	103	137
	Prices	100	100	108	112	119	165
Mali	Proceeds	100	142	179	174	106	242
	Prices	100	111	111	111	111	167
Niger	Proceeds	100	95	63	63	13	158
	Prices	100	105	106	113	113	166
Senegal	Proceeds	100	97	103	161	188	274
	Prices	100	100	82	90	98	125
Upper Volta	Proceeds	100	60	78	89	83	101
	Prices	100	100	100	100	110	126
<u>Consumer Price Index, Capital City</u> (1970=100)							
Mali <sup>1/</sup>		100	121	130	168	194	-
Niger		100	105	115	128	137	-
Senegal		100	106	114	135	147	-
Upper Volta		100	102	99	107	116	-

<sup>1/</sup> Foodstuffs only.



may not be better off at all. Prices, which tell what is being paid for a unit of land and labor devoted to the crop, help us to get at this dimension of the problem.

In this respect, the situation has been worse than with respect to proceeds for Sahel cash crop producers. The table demonstrates that producer prices rose very little in the 1970's. It is not until the 1974/75 crop year that prices really rose significantly, although in a few cases (Senegal and Niger groundnuts, for example), the prices paid between 1970 and 1974 were well above their level of the late 1960's.<sup>1/</sup>

Table XIII brings together proceeds from individual crops into a set of indices for total farmer incomes from main cash crops, by country. The table is on a 1967-69 base to give a little more historical depth and to show more clearly the movements of the 1970's. It shows changes in the statutory minimum wage, and consumer prices; where possible or meaningful, the table also gives real income estimates for farmers and wage earners. Except in Mali and Upper Volta, farm incomes - even in money terms - were appreciably below their level in 1967-1969. In Senegal, during the 1970's (except for 1971-72) real farm incomes never reached much more than 80% of their 1968-1969 average, and the same was true in Niger. Farm incomes rose most (in money terms) in Mali, but so did consumer prices, and there is no way to accurately deflate the farmer money income series. The Upper Volta series shows slight reductions in real farm incomes during the 1970's but the consumer price series there is suspiciously stable, and the retail price decline of 1973 - unique in West Africa - raises particular doubts.

The general conclusion is that cash crop producers suffered a substantial decline in real incomes in the 1970-74 period; the extent of that decline varied between crops and countries, as indicated in Tables XII and XIII. The declining real return to cash crop growing has everywhere been a strong contributory factor to the movement away from export crops to expansion of food crop production which characterizes the present agricultural situation. It is one of the factors which led to the very large producer price increases in the 1974/75 crop year - increases bigger than anything in the past. In 1975 the Sahel's cash crop producers enjoyed money and real incomes well above anything they have known in recent years.

7. Wage earners (modern sector) as a group were hurt least of all by the drought. Table XIII shows "real wage" movements, based on statutory minimum wages.

(a) Wage earners as a whole seem to have done better than producers of cash crops, at least until 1974. But they did not do all that well either. The main increases came at the end of 1974, when governments were forced to reduce their subsidization efforts with respect to food. The wage increases thus followed large food price rises, and were intended as compensation for these rises.

(b) The increase in the SMIG was by far the largest wage rate increase in the wage structure. Wage rates of skilled and educated people generally rose very little during this period. Civil servants at higher ranks - the majority of educated workers - have seen their living standards seriously eroded by inflation. Indeed, if we take seriously the apparently unchanged

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<sup>1/</sup> These, however, were lower than they had been in the early 1960's.

Table XIII - Changes in Farmer Incomes and Urban Wage Rates, 1967 - 1975

(1967-1969 = 100)

	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75
<b>CHAD</b>								
1. Index of farmer incomes from main cash crops	82	118	91	72	88	85	93	124
2. Index of statutory minimum wage rate, unskilled labor	100	100	100	119	137	137	137	-
3. Consumer Price Index	-	-	-	-	-	-	-	-
4. Estimated real income indices:								
(a) Farmers	-	-	-	-	-	-	-	-
(b) Unskilled wage earners	-	-	-	-	-	-	-	-
<b>MALI</b>								
1. Index of farmer incomes from main cash crops	102	98	143	204	235	198	53	269
2. Index of statutory minimum wage rate, unskilled labor	100	100	100	100	100	100	136	194-219 <sup>9/</sup>
3. Consumer Price Index	85	89	94	112	135	146	179	218
4. Estimated real income indices:								
(a) Farmers	-	-	-	-	-	-	-	-
(b) Unskilled wage earners	118	112	106	89	74	68	76	89-100
<b>MAURITANIA</b>								
1. Index of farmer incomes from main cash crops	-	-	-	-	-	-	-	-
2. Index of statutory minimum wage rate, unskilled labor (Jan. 1973 = 100)	95	95	110	110	121	121	121	143-277 <sup>9/</sup>
3. Consumer Price Index						(100)	(129)	(149 <sup>8/</sup> )
4. Estimated real income index:								
(b) Unskilled wage earners.						(121)	(94)	(96-186 <sup>11/</sup> )

Table XIII: cont Changes in Farmer Incomes and Urban Wage Rates, 1967-1975 (continued)

	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75
<b>NIGER</b>								
1. Index of <sup>1/</sup> farmer incomes from main cash crops.	103	97	97	86	96	84	34	114
2. Index of statutory <sup>2/</sup> minimum wage rate, unskilled labor.	99	99	102	110	110	110	110	154-176 <sup>9/</sup>
3. Consumer Price Index. <sup>2/</sup>	97	98	106	106	112	122	137	139
4. Estimated real income index:								
(a) Farmers	106	99	92	81	86	69	25	82
(b) Unskilled wage earners	102	100	96	104	98	90	80	111-127
<b>SENEGAL</b>								
1. Index of <sup>1/</sup> farmer incomes from main cash crops.	113	87	84	69	137	87	104	267
2. Index of statutory <sup>2/</sup> minimum wage rate, unskilled labor.	93	100	107	107	107	107	114	154-226 <sup>9/</sup>
3. Consumer Price Index. <sup>2/</sup>	99	100	102	106	110	113	121	139
4. Estimated real income index:								
(a) Farmers	114	87	82	65	125	77	86	192
(b) Unskilled wage earners	94	100	105	101	97	95	94	111-163
<b>UPPER VOLTA</b>								
1. Index of <sup>1/</sup> farmer incomes from main cash crops.	80	120	125	96	109	136	133	163
2. Index of statutory <sup>2/</sup> minimum wage rate, unskilled labor.	99	99	101	106	106	107	117	144
3. Consumer Price Index. <sup>2/</sup>	98	98	105	109	111	108	116	122-161 <sup>9/</sup>
4. Estimated real income index:								
(a) Farmers	82	122	119	88	98	126	115	134-101 <sup>12/</sup>
(b) Unskilled wage earners	101	101	96	97	95	99	98	118-89 <sup>12/</sup>

1/ Cotton.

2/ Calendar years 1967/68 = 1967, etc.

3/ No African index exists.

4/ Cotton, groundnuts and rice.

5/ The price index includes only foodstuffs.

6/ No African consumer price index exists for Mauritania. The index in the Table is our estimate, based on prices officially collected in Nouakchott.

7/ Cotton and groundnuts.

8/ January 1975.

9/ The second number is the index as of the beginning of 1975.

10/ Since the Mali CPI is composed only of foods, which farmers produce themselves, it is not legitimate to derive a real income index for farmers from the CPI.

11/ 186 = the real wage estimate as of November 1974.

12/ The lower figure is the index as of beginning 1975; the larger is the average for 1974.

wage rates for senior civil servants, then it would imply a brutal cut in real income over the past decade, and particularly in the past three years. Civil service wage structures remained basically unchanged between 1960 and 1972 in the Sahel countries. Then, with the price rises of 1973 and 1974, changes were made, but small increases were granted to those at the top of the wage ladder. As Table XIV shows, between 1972 and 1975 university graduates received increases of only 15% in Mali, 4% in Niger and 21% in Senegal, while consumer prices rose by 50% in Mali, 4% in Niger and almost 25% in Senegal. Actually, the picture is worse if it is recognized that since the late 1960's, consumer prices have more than doubled in Senegal and Mali, and increased by some 70% in Upper Volta and by 40% in Niger. Rates of pay of civil servants remained unchanged until 1972.

One distinction should be made. Erosion of wage rates has taken place in the sense that the premium paid for education in the Civil Service has fallen drastically over the past 15 years. But this doesn't mean that individual civil servants employed in these positions have suffered a decline in real income. Civil service incremental scales favor the more highly paid workers, and these have tended to protect against real income declines at the top. For example, the typical Category A civil servant (university graduate cadre) in Francophone Africa receives an increment in the neighborhood of 5% annually, much more than lower-paid workers. This is probably a bit higher than the average rate of price inflation between 1960 and 1972. So highly educated civil servants who have been employed for some years have probably not suffered any real income decline before 1972. Since then, however, this has changed. There is involved in all of this a devaluation of the returns to education of very substantial magnitude.<sup>1/</sup>

(c) Wage earners have done better than farmers. This comes out only partially in Table XIII. Comparison between farmer income and wage rates in towns shows that farmers in Mali and Upper Volta have done better than wage earners in the 1970's. In Niger, Chad and Senegal (and undoubtedly in Mauritania, though the data don't exist to show it) wage rates were strongly ahead of farmer incomes. The producer price indices in Table XII also illustrate the general tendencies. Cotton producers in particular had very small rises in money returns per unit of output; comparing the price indices with the consumer price series suggests sharp reductions in real returns to cotton growers. Groundnut prices clearly did better everywhere except Mali and Upper Volta, but it is important to recognize that the late 1960's were a period of historically low groundnut prices, because of the removal of French and (later) EEC special subsidies.

(d) All inflationary situations create new opportunities for realignments of wage differentials. In the Sahel countries, where trade unions have very

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<sup>1/</sup> The numbers of people affected by this redistributive process, and by the shrinking of salary differentials, is relatively small. In the Upper Volta in 1972, for example, there were about 350 civil servants in the "A" cadre, out of 11,000 civil servants, or 2.7% of the total. In Senegal, the same group (those earning over 60,000 CFA francs monthly) was 3,000 in October 1974, out of a total establishment of 42,000. And in Niger there were only 157 Cadre "A" civil servants in 1972, or about 3% of the total. But it is of course a significant group in many ways - the key administrative cadres, the higher income elements of the bureaucracy, the group whose income is critical in shaping income expectations and educational decisions.

Table XIV: Wage Changes by Skill Level, 1967-1975  
(1967-1969 = 100)

	1970	1971	1972	1973	1974	1975 <sup>1/</sup>
<u>Mali</u>						
Unskilled Rate (SMIG)	100	100	100	136	193	217
Middle-level Manpower Rate <sup>2/</sup>	100	100	100	100	111	116
University Graduate <sup>3/</sup>	100	100	100	103	109	115
<u>Niger</u>						
Unskilled Rate (SMIG)	100	100	100	100	140	160
Middle-level Manpower Rate	100	100	100	100	100	112
University Graduate	100	100	100	100	100	104
<u>Senegal</u>						
Unskilled Rate (SMIG)	100	100	100	106	145	212
Middle-level Manpower Rate	100	100	100	100	120	136
University Graduate	100	100	100	100	109	121
<u>Upper Volta</u>						
Unskilled Rate (SMIG)	99	99	100	109	134	150
Middle-level Manpower Rate <sup>4/</sup>	n.a.	n.a.	100	100	108	175

1/ January.

2/ Typical rate, middle-level worker, Civil Service (except for Upper Volta, where it is private sector rate.)

3/ Starting rate, University graduate (Licence), civil service.

4/ Actual rate, one employer, private sector.

limited presence or influence on wage determination, government and employers have been able to take advantage of these opportunities to meet public or private managerial objectives. As noted above, the main Government preoccupation has been with protecting living standards of unskilled workers, and this has led to sharp reductions in differentials for education. Private sector employers were probably more inclined to maintain differentials; the Upper Volta data shows a greater percentage increase between 1972 and 1975 for highly skilled workers than for unskilled or lightly skilled workers. At least one government (Niger) also used the occasion of wage readjustments to eliminate what some officials felt to be unfair differentials between blue and white collar workers. During the 1960's the privately bargained collective agreements specified lower wages for manual workers than for clerical workers in equivalent categories of skill.

In most categories the differences were between 15 and 25%. In the 1975 wage changes in Niger these differences were abolished. The result was not only to bring manual and clerical parity, but to give especially big increases to manual workers, many of whom received 50-60% rises, or two to three times as much as comparable clerical workers.

(e) There have been some differences between countries in the magnitude of the wage changes of the past two years. Senegal, Mali and Mauritania have all doubled their SMIG. The others have been more restrained. It is not clear whether this reflects real differences or simply correctly perceived differences in cost of living changes.

In conclusion then, the distributive impact of drought and inflation has been partly in the direction of widening differences in income and wealth, partly in the direction of income levelling. Until 1975, rural-urban income differentials were widened, though this may not have been so in Mali and Upper Volta. Also, and this has not previously been stressed, income differentials between those in the "formal" and "informal" sectors undoubtedly widened, as in-migration increased in urban areas and returns to labor in that sector tended to become more depressed, while statutory minimum wages, applicable only in the "formal" sector, increase substantially. Finally, income differentials between countries tended to widen, as did those between agroclimatic zones within countries, as a consequence of the differential geographical incidence of the drought.

The major income levelling effects have taken place within the modern sector, among wage earners. Higher income wage earners in the public sector have received substantially smaller wage increases than have those at lower skill levels. And, it is essential to stress, the unprecedented increases in producer prices in 1974-75, combined with the likelihood of bumper harvests have brought big income increases to the Sahel's cash crop growers, increases which will outstrip the wage increases of 1974, bringing significant relative gains to the rural sector.

### III. Some Policy Issues and Implications

#### 1. The Need for Agricultural Expansion.

The drought made brutally evident the need to focus more intensively and effectively on agricultural development in the Sahel. As shown earlier, output of most crops had been stagnant or grown only slowly even before the severe drought in 1972 and 1973. This is now widely recognized to have been due in part to generally inadequate policy attention, in terms of agricultural infrastructure, research extension, etc. It is also generally recognized now that provision of sufficiently attractive producer prices is basic for agricultural expansion. Part of the reason for the slow agricultural growth of the 1960's and early 70's was that prices paid to producers were generally too low. Finally, the drought made more critical the need to explore potentials of irrigated production throughout the region.

#### 2. Food Subsidization Policies

Related to the issue of general agricultural development is the matter of subsidization of basic staples. Sahel governments, like most others, have always regulated the local prices of basic foods. In 1973 and 1974 they felt compelled to devote extremely large amounts of money to subsidies, particularly for cereals and sugar, in an effort to protect consumers from the rises occurring on world markets. The amounts involved were quite staggering, by Sahel standards: at least 500 million ouguiyas in Mauritania in 1973 (18% of the current budget expenditures in 1973), and probably more in 1974; twenty billion Malian Francs in Mali for rice and sugar subsidies in 1974; (an amount equal to three-quarters of locally-raised budget revenues in that year.) In Senegal, between October 1973 and November 1974, subsidies on rice, sugar and cooking oil amounted to about 12 billion CFA francs - equivalent to one-quarter of the Senegalese recurrent budget. These costly subsidy policies had profoundly negative effects: transfer of resources from potential developmental use to current consumption; redistribution of income from export crop growers to largely urban consumers, with consequently negative incentive effects on production as well as dubious equity implication; stimulation of smuggling; stimulation of consumption; and stimulation of consumption of imported grains (rice) as against local sorghum and millet. They raise the broad question of the extent to which such policies are compatible with an expansive agricultural policy, particularly a policy aimed at reducing dependence on external food supplies.

3. Livestock Development and the Common Property Problem. The crisis among herders which was brought on by the drought underscores one of the fundamental constraints on the expansion of livestock production in an economically and socially rational way: the fact that animals are privately owned while grazing rights are held in common. Thus herders have no economic incentive to restrict herd size. There is a divergence here between private and social benefits and costs. The result is a built-in propensity toward overgrazing via excessive herd size. Unless this matter is confronted by effective range management, the Sahel herd will once more grow plentiful, but only to be decimated when a cycle of bad weather strikes again.

4. Marketing Policy. The food shortages of recent years, and government price policies, put private traders in a peculiar position. Because of the introduction and extension of government marketing institutions (often inadequately staffed and equipped to do the job), and because of price-fixing arrangements,

big profits were often available via black marketing or smuggling. Many traders throughout the Sahel took advantage of the opportunities that arose. Government response has commonly been to further curtail or regulate private trading activity, and to extend the state distribution system. Since the resources and capacities of the public sector in this intricate area remain limited, there is some danger that bottlenecks in the distribution sector will hamper the post-drought development effort.

5. Budgeting and Public Sector Effectiveness. General public administration is under stress. Already sapped by long years of austerity (i.e. sparseness of appropriations for supplies and transport and small allotments for maintenance of roads, building and equipment) the public sector must now absorb the large wage increases of late 1974 and 1975 at a time when the real costs of government activity have sharply risen because of higher prices for virtually all other inputs. New development programs will demand counter-part local expenditures, and all Sahel governments are anxious to increase capital investment. Somehow, amidst all these strains, additional resources must be made available for recurrent purposes, so that public sectors can operate at some reasonable level of effectiveness, and the national capital stocks can be maintained.





