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Department of Political Economy

"INCOME STABILIZATION POLICIES
FOR THE COTTON PRODUCERS OF THE SUDAN"

Thesis presented for the
degree of
Doctor of Philosophy
by
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This study is concerned with the problem of the instability of the Sudan's cotton sector which is created by wide fluctuations in yield as well as in world cotton prices. The study has two main objectives. The first is the appraisal of the existing stabilization policies and the second is the improvement upon them or suggestions of new policies which can reduce the instability of the income of the cotton producer in the Sudan. In order to achieve these objectives, the author has provided a background by describing the cotton schemes and areas, and has had to rely on inadequate published sources on the Sudan which unfortunately are in many ways inadequate for this purpose. As far as the existing stabilization policies are concerned, the author has mainly relied on unpublished\(^{1}\) sources such as annual reports and files of these cotton schemes and the Ministry of Agriculture, and also on information and data supplied directly by the Chief Accountant of the Gezira Board, the Manager of the White Nile and the Gash Schemes, the Manager of the Equatoria Projects Board and the General Manager of the Nuba Mountains Cotton Industry. The author is, therefore, grateful to those officials for their help and co-operation.

The author has intended to take the period of study and data analysed to be the ten years between 1949 and 1959, but because of unavailability of data, it has not been possible to maintain this rule all the time. The cotton schemes and areas surveyed in this thesis produce the bulk of the Sudan's cotton. The Gezira Scheme by itself produces not less than 70% of the Sudan's cotton. They also represent the different types of organization under which cotton is produced in the Sudan.

\(^{1}\) except perhaps for the Gezira Ordinance 1959 and the Gezira Scheme Act 1960.
The picture, in this thesis, varies from a typical cotton scheme such as the Gezira Scheme, where the cotton producer is just a tenant, to the Nuba Mountains, where the cotton producer is a real farmer and who can vary, to a great extent, the crops he produces and the area under them.

The conclusions reached here apply only to the Sudan, and only for the near future, which is taken to mean the coming ten or fifteen years. Throughout the analysis, the author has been aiming to reach policy recommendations that are feasible.

Acknowledgement

It only remains now to express my thanks to those who assisted in the preparation of this thesis. While I alone am responsible for the method adopted and the conclusions reached in this study, I wish to express my indebtedness and sincere gratitude to Mr. I.G. Stewart for his encouragement, advice and supervision throughout the whole of this work. Thanks are extended to Mr. H.W. Ord with whom I have had fruitful discussions. I am also grateful to Mrs. F. Bostock for reading the manuscript.

Finally, without the award of a scholarship by the University of Khartoum, this study would have been impossible. To the University of Khartoum, therefore, and to all those who helped in any way, I am deeply indebted and will remain so.

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Ali Ahmed Suliman.
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A. The Country

The name by which the country is known is a contraction of the Arabic expression "Bilad El Sudan", 'the lands of the blacks', which refers to the fact that the Arabs came in contact with the negro people of Africa when they began to penetrate Africa after the fifteenth century.

The Sudan is a very large country of about one million square miles and it extends from the borders of Egypt in the north to those of Uganda in the south. It is the bridge between the Arab World and Central Africa. This fact gives the Sudan one of its unique features - it is an Afro-Arab state, with two races and two cultures which have mixed but have not mixed enough.

Although the Sudan is a large country, it has the monotony of any flat one. There are only small areas that are so high as to enjoy a markedly different climate from other parts of the country at the same latitude. This flatness, however, makes possible large schemes of gravity irrigation.

The climate of the Sudan is wholly tropical, for there is no part of the country where the sun does not pass directly overhead at some time of the year. The whole country can, however, be divided roughly into three main climatic or vegetation regions: the North, the Centre and the South.

The North, from latitude 19°N to the Egyptian frontier
experiences a cool and dry winter for about four months and the rest of the year is a long, extremely hot and dry summer. The rainfall is negligible, and there is no irrigation except for some parts of the narrow banks of the Nile where people for centuries have lived on small farms with mixed crops and a few animals.

The Centre, which really includes central as well as western Sudan, has three seasons: a cool winter, a hot, dry summer, and a less hot autumn. The highest mean daily maximum is $102^\circ$F, at El Obied in May. Most of central Sudan gets its rainfall in the period June - August with wide annual fluctuations, and the rainfall here varies from about three inches in the north to thirty inches a year in the south. This region produces the bulk of the Sudan's 'dura' (millet which is the staple food of about 80% of the Sudanese), gum, groundnuts and sesame. In the northern half of this region the rain is just enough for the cultivation of such crops so in years of low rainfall both yield and area drop considerably. In early days - before permanent irrigation, storage facilities and transport - famines or semi-famines were known in most of the northern part of this region, and, in this context, 1906 is still remembered for its horror. Most of the Sudan nomads spend the greater part of their time in this region, and look upon it as their home, though when rains are rather heavy they move north, and in summer when it is dry they move south for water and grazing.
3.

The South has a climate that is between tropical and equatorial, and the outstanding climatic feature of this region is that winter which is the hottest season falls between December and February. The rest of the year is wet and cooler. The rainfall here is quite adequate as it is over thirty inches a year. However, this region sometimes imports food crops, besides other commodities for its subsistence, because it is very undeveloped in relation to the rest of the country. Transport is totally inadequate and little trade is done. Each farmer tries to produce just enough for himself and his family, using a small piece of land near his home. Shifting-cultivation is the practice.

B. History and Government

Ancient Egyptian records are the source of our knowledge of the early history of the Sudan, which is restricted to the Northern Sudan. The earliest of these events are raids by the Egyptians of the Old Kingdom in about 2300 B.C. Two hundred years later the Egyptians were carrying on trade with the Dongola area, and an expedition may have gone as far as Darfur. During this period the Sudan was occupied by groups of people engaged in agricultural and pastoral pursuits, ignorant of the arts of writing and of the working of metals.

During the Middle Kingdom of Egypt, beginning about 200 B.C., the Egyptians colonized the Northern Sudan as far as the Fourth Cataract. The Northern Sudan was dominated for some centuries by Egypt, though with some discontinuity at times.
About 300 B.C. the Axumites invaded the Sudan from the east and established two kingdoms. The Southern Kingdom, Alwa, survived very long and it was in the fifteenth century, as a result of alliance between immigrant Arabs and the Funj, that Alwas was overthrown.

The Funj and their allies established a Muslim Kingdom with Sennar as its capital. But the Kingdom was nothing more than a loose feudal confederation. Eventually the failure to build up a centralized administration brought about the disintegration of the Kingdom. The end of the eighteenth century saw one after another of the local chieftains throwing off their allegiance to Sennar, and by 1820, the authority of the Funj scarcely extended north of Khartoum.

In 1820 Mohammed Ali, the Turkish Pasha of Egypt, sent two military expeditions into the Sudan, and this began a period of Turko-Egyptian rule in the Sudan which lasted until 1885. A new capital was founded at Khartoum, and the country was divided up into provinces and districts with Turks or Egyptians in charge. It seems that Mohammed Ali invaded the Sudan chiefly in the hope of obtaining gold and black recruits for the army which he was to use against his own master, the Ottoman Sultan. In 1874 Darfur was conquered and added to the Sudan and in 1876 the Sudan boundaries were pushed up the Nile as far as the Great Lakes. Khedive Ismail (1863-79) employed European administrators in the Sudan, such as Sir Samuel Baker and Colonel Gordon. Communications were improved by laying of a telegraph line connecting Darfur with
Egypt, via Khartoum. Under Gordon's administration a great effort was made to abolish the slave-trade and this met with some success; but little effort was made to develop the country. Generally speaking, the Turko-Egyptian government of the Sudan did not meet with great success. The officials lacked public spirit, taxes were heavy and the Sudanese were not accustomed to central and strong authority. However, almost the whole of the present Sudan was united under an effective administration for the first time in its history.

In 1881 a religious leader, having been proclaimed the Mahdi (the expected Guide or Messiah of Islam), initiated a revolt against the government. The rebellion, which was a movement for both religious and political reform, was widely successful and culminated in the capture of Khartoum, where General Gordon was killed in 1885.

Various reasons, including British fear of the establishment of French influence in Upper Nile, led to the reconquest of the Sudan, and this was carried out by an Anglo-Egyptian force under Kitchener between 1896 and 1898.

The rule of the Mahdiya had been accompanied by considerable dislocation of Sudanese economic life, and a new administration had to be established. The old Turko-Egyptian system of provinces and districts was reintroduced but with British officers in key posts. The future government of the Sudan was defined in the 1899 Condominium Agreement between Britain and Egypt. This had the effect of giving the Sudan a separate
administration from that of Egypt, with a predominant British influence in administration. The events since 1820 have influenced the modern Sudan and its economic development up to the present day, particularly in the case of the development of the Gezira Scheme.

The political development of the country during the Condominium may be divided into three periods:

1898-1938. During this period civilians were substituted for military officers in the administration, and after the First World War Sudanese tribal leaders were encouraged to take over subordinate local administration. In this period British officials seemed to have had quite a large degree of independence in making their policies, which shaped both the political and economic life of the Sudan.

1938-1951. With the foundation of the Graduates General Congress at the beginning of this period, there began an indigenous political movement of educated Sudanese. The Sudanization of central government was initiated, and, by 1944, Sudanese were sitting on Provincial Councils.

1951-1953. Negotiations about the future of the Sudan started, and in February 1953 an agreement was signed by the British and the Egyptian Governments. This provided for a three-year period of self-government under international supervision, at the end of which Sudanese people were to determine their own future. Elections for Parliament took place in December 1953. This transitional period lasted two years only, and culminated in the declaration of the independence of the Sudan in January 1956.
The period 1951-1956 was a period of great political strife, and general instability. Several trade unions appeared in this period which added to the feeling of resentment and unrest. Between 1956 and 1958 the Sudan was ruled by a Parliamentary government shaped on the British model, but on 17th November 1958 the army came into power and since then the Sudan has been ruled by a military supreme council under President Aboud.

C. The People

As already mentioned, the Sudan is an Afro-Arab state. The 1955/56 population census tells us that 39% of the population of the Sudan claim membership of Arab tribes, while the pure negroid races of the southern Sudan make up about 25% of the total population. Then there are the people who lie between these two blocks of Arabs in the north and negroid races in the south, while in eastern Sudan the Hamitic tribes of the Beja make about 6% of the total population of the Sudan. Foreigners with non-Sudanese status are not more than 2% of the total population of the Sudan; there were only about 7,300 Europeans in the Sudan in 1955/56, and the majority of foreigners are Africans from neighbouring countries, seeking employment in the Sudan.

Another importance aspect revealed by the 1955/56 population census was the degree of illiteracy in the Sudan. No more than 3% of adults are literate and no more than 4% of children go to school with a chance to secure some education. This is a very low standard of literacy if compared to the Sudan's neighbour, Egypt,
which has 17% of the total population literate.

Out of every 100 Sudanese males, 66 depend for their livelihood on agriculture, and 15 on animal wealth. It may therefore be said that 81 depend on the products of the land and water. However, if women working outside the household, and boys and girls under puberty are included, the percentage may be higher than 81%. Thus it is not surprising to find that only 4% of the population of the Sudan live in towns with full urban characteristics, while another 4% live in small urban centres. The rest live in rural areas, including the 14% of the total population who live nomadically and who are not sedentary.

The fact that the Sudan is a large country of about one million square miles, with a relatively small population of about twelve million (1960), has important effects on its economic development. Besides making the provision of public services very expensive because of sparsity of population, it has affected the mobility of the labour force. The inadequacy of transport has made it difficult to tap the sources of man-power in the interior of the Sudan and has discouraged the geographical mobility of labour. This is revealed clearly by the 1956 population census. The average rate of increase of the four largest cities of the Sudan from migration is not more than 1%. Migration from one area to another within the same country occurs chiefly as a result of different economic opportunities in the country, consciousness on the part of people of such differences, and ability to move. In the Sudan
land is abundant in relation to the size of population and therefore very few people have the urge to leave their homes to look for land. On the other hand, the bond of the family and tribe is very strong and many people, though conscious of better economic opportunity elsewhere, prefer to live with their family and tribe rather than try to reach a higher income. (1)

In the census year of 1955/56, 30,000 of males over puberty in the whole Sudan registered themselves as unemployed. Whether this represents the full picture cannot be said. Some observers would claim that the circumstances of the social matrix of the Sudan, with its high degree of mutual self-help, mean that there is a lot of disguised unemployment. In any case the figure 1.1% of the number of males over puberty gainfully employed is remarkably low. These problems of the immobility of the labour force and full employment (or disguised unemployment) have affected the economic development in the Sudan in general, and may affect the expansion of cotton production in particular as we shall try to explain later in Chapter Seven. On the other hand, these social and economic factors have made the size of the labour - which is hired for money and ready to move for a higher wage - very small in the Sudan. In the case of cotton such hired labour only contributes about 5% of all the labour engaged in cotton production. This is one of the factors which has made the supply of cotton in the Sudan rather inelastic - as we shall see in the next chapter.

(1) For further information and discussion on internal migration in the Sudan please see R.A. Henin, "Economic Development and Internal Migration in the Sudan", Sudan Daily, Year I - Nos. 207-215.
D. The National Income

In 1955/56, and for the first time in the history of the Sudan, a National Income estimate was made. The Gross Domestic Product was Ls. 284.2 millions, while the Gross National Product was Ls. 283.5 millions as shown below:

<table>
<thead>
<tr>
<th>Description</th>
<th>Ls. Millions</th>
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</thead>
<tbody>
<tr>
<td><strong>Gross Domestic Product</strong></td>
<td>284.2</td>
</tr>
<tr>
<td><strong>Less:</strong> Earnings remitted and undistributed profits of foreign companies</td>
<td>1.0</td>
</tr>
<tr>
<td>Interest remitted by Government and Public Corporations</td>
<td>0.2</td>
</tr>
<tr>
<td>Earnings of immigrant workers</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Plus:</strong> Earnings on foreign assets</td>
<td>0.5</td>
</tr>
<tr>
<td>Earnings of emigrant workers</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Gross National Product</strong></td>
<td>283.5</td>
</tr>
</tbody>
</table>

It can be seen from this information that the part played by foreign capital in the National Income was quite small, at least until 1955/56, taking into consideration that the rate of reinvestment cannot be large because the total foreign investment in the Sudan has never been of any considerable size. But the picture has not changed since, as far as foreign private capital is concerned. However, the volume of foreign loans borrowed by the Sudan Government, specially from the International Bank for Reconstruction and Development (IBRD), has increased noticeably since 1957. In 1958 the Sudan Government borrowed from the IBRD £39 millions for the railway extension in Western Sudan and in 1959

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(2) A Sudanese Pound (Ls.) is divided into hundred piastres and is equivalent to £1.0s.6d. approximately.
another loan of $15 millions for the Managil Extension was made, as well as other loans from the West German Government and Dutch, British and German firms. By 1959 the Sudan Government had borrowed about Ls. 1.9 millions from those firms so as to buy capital goods from them.

Table 1.2 shows the composition of the Gross Domestic Product of the Sudan in 1955/56. This table may help us in making a rough estimate of the part of the Gross Domestic Product exchanged for money. It will be only a rough measure, but it is better to have this rough estimate than none at all. As a matter of fact the statisticians who prepared the National Income estimates confessed their failure to find out the size of the subsistence sector statistically. In their own words they say, "...Unfortunately it has proved impossible to separate subsistence production from other production, even for agricultural commodities. Total production of agricultural commodities can be estimated. But how much of total production exchanged against money? Statistics available from auction markets are a totally inadequate guide. For there is a very substantial but unknown quantity that is sold in nearly villages and never passes through auction markets."(1)

The economic, social and geographical conditions of the Sudan seem to give it a mixed economy of a large subsistence sector with a tinge of barter side by side with an exchange and developed sector. This type of economy which is called by some economists(2) "bazaar economy", is really prevalent

in many African countries and it will take many years to make the subsistence and barter sector insignificant in the Sudan. Such a sector besides being a hindrance to any social or economic change, makes the national income census difficult and the estimation of itself even more difficult.

Now we will try to estimate the part of the Gross Domestic Product exchanged for money by going through the different items in Table 1.2. It is definite that the cotton and cotton seeds which form 13% of the Gross Domestic Product are exchanged for money, while only a part of the other products are exchanged for money. It is only town dwellers who really buy their food from farmers. In view of the fact that only 8% of the population live in urban centres - but perhaps with relatively higher incomes than the rest of the country - it may be a reasonable guess if we assume that about a fifth of the agricultural products are exchanged for money. That makes - as far as agriculture is concerned - 16% of the Gross Domestic Product that is exchanged for money.

Animal exports make up 1% of the Gross Domestic Product, and with the one fifth of livestock which is consumed by the urban population, this means that 3% of the Gross Domestic Product - as far as livestock is concerned - is exchanged for money.

We assume, as before, that a fifth of the firewood is consumed by the urban population. Timber is produced by the Government and used by it for railways, buildings, etc. All forests in the Sudan are owned by the Government. All gum is exported. In the case of fruits, we assume that half of them are consumed
in the towns and cities of the Sudan because of the high income elasticity. The average city-dweller definitely has a higher income and demand for fruits than the average citizen in the Sudan. Thus about 5% of the Gross Domestic Product is exchanged for money - as far as forest products are concerned.

We assume about half of the fish is consumed in urban centres because most of the Sudan's cities and towns lie beside the Nile, while Port Sudan lies on the Red Sea. The amount is, in any case, small, and it does not matter very much how we divide it. The rest of Table 1.2 can be assumed to be parts of the Gross Domestic Product that are definitely exchanged for money. On a rough estimate, it might be fair to say that 65% of the Gross Domestic Product is exchanged for money. However, we must note that this figure may be an exaggeration of the monetized sector in the Sudan as this 65% includes items which are partly paid for in kind. For example, item 10 of Table 1.2 includes African-style building which is sometimes not paid for in money. There is a well-known system for building houses, especially in rural areas, called "Al Nafeer". According to this tradition a villager can call upon his neighbours and friends to help him in building his house while he offers them drinks and meals. Also transport is sometimes paid for in kind. As it is very difficult even to guess how much of these services are paid for in money, we will just assume that the part of the Gross Domestic Product exchanged for money cannot exceed 65%.

In the Sudan - as in several other underdeveloped
countries - the Government has a dominant position in the money economy. Apart from the administrative and financial measures which shape the economy, the Government is the predominant owner of modern capital establishments and the chief promoter of and participant in large-scale production schemes. It is estimated that more than half of the social capital stock employed in commercial production belongs to the Government. The Government is the main partner in the cotton schemes that produce not less than 80% of all the Sudan cotton. It takes 44% of the divisible returns of the Gezira scheme while the Board and the tenants take the rest.

In public utilities, such as transport and communications where the marginal returns to capital are relatively low, the chief investor is the Government. But the Sudan Government has gone much further than this, because private enterprise seems both shy and ignorant. Thus the Sudan Government invests in fields which, in the non-Communist block, are usually left to the private sector. For instance, the best theatres and hotels in the Sudan are owned and managed by the Government. In the field of banking, too, the scope of Government activities is continually increasing.

In 1959 the Sudan Agricultural Bank was established to help in the financing and marketing of agricultural products. In 1960 the Sudan Central Bank was established and now it has several branches in the Sudan which carry normal commercial business in order to develop banking in the Sudan, to facilitate trade and to speed up

15.

the monetizing of the Sudanese economy. In 1962 the Industrial Bank of the Sudan was established to help in the industrialization of the Sudan by giving long-run loans which were completely lacking in the Sudan before.

Private enterprise prevails in secondary industries, internal trade, traditional handcrafts, and household industries. The production of cash crops other than cotton, i.e. oil-seeds and gum, is almost entirely in private hands.

Table 1.3 shows the part played by the Government (including Public Corporations) in investment in industry. Most probably this investment is made in ginning factories, in which the Government is the predominant owner. The Government part is more important in infrastructure than in industry - as already explained. But 1958/59 is not a typical year, because of the low cotton proceeds for the Government in 1958. In 1955/56 the Government imports of machinery, vehicles and equipment were 86% of total Sudan imports. (1) On the whole, the Government (including Public Corporations) is responsible for about the half of gross fixed capital formation for the period 1955/56 - 1958/59, as shown by Table 1.3.

However, when we compare the resources absorbed by the Government for current expenditure in the Sudan with some other African and Asian countries as shown in Table 1.4, it is clear that the Sudan Government is absorbing rather less than the majority of these countries. This really shows the difficulty of imposing and collecting taxes in the Sudan. For various historical and

political reasons the Sudanese have long hated and resisted taxes.

These considerations have not only influenced the size of resources absorbed by the Government for current expenditure but also the finance and organization of economic development in the Sudan. All the large projects for economic development in the Sudan, such as Sennar Dam, Roseires Dam, Managil Extension, etc., were, or are going to be financed completely by the Government and from foreign loans. The Sudanese private enterprise is shy and ignorant and seems to be interested only in the traditional fields of trade and buildings, as shown by Table 1.5.

With the increase of population of about 3% a year, a higher rate of investment is needed. In 1955/56 the rate of investment for the whole Sudan was 7.9% of the Gross Domestic Product. With an assumed capital-output ratio of 1:4, the increase in output would be less than 2%. Though the rate of investment has gone up in 1956/57 and 1957/58,\(^{(1)}\) it has not yet reached 12%. Looking at the comparisons made between some African countries in the United Nations Economic Survey for Africa - but with some caution - one tends to conclude that the Sudan is not investing as much as it should.

Private foreign capital has not played any part in investment in agriculture, while its part in industry is still small. The only large private foreign investment in industry in the Sudan so far is the Sudan American Textile Factory opened in 1962. It cost about Le. 8 millions.

E. Cotton in the Sudan

The Sudan seems to have been a cotton grower since ancient times, even before Egypt was, contrary to the belief of many. "The earliest record of cotton in the Nile Valley appears to be 525 B.C. and the authors consider the evidence to be strongly in favour of a Sudanese origin for the cotton used in Egypt and Nubia in early times. Reisner's excavations of Moroe showed that cotton was extensively used as textile from about 300 B.C."(1) Later (1173) when Shams El Din, brother of Salah El Din, attacked the Nubian Fortress of Ibrim, a quantity of cotton was captured in the town. About 1770 Bruce visited Halfaya, near Khartoum North, and recorded that the manufacture of cotton home spun (damour) was the chief source of livelihood there and that such cloth was extensively used as currency. In about 1821, Monsieur Jumel introduced for the first time into Egypt a perennial variety of cotton which arose from a tree grown in the garden of Maho Bey who was an early governor of several Sudan provinces. He took various cotton seeds from the Sudan with him and grew them in his garden in Cairo. Jumel collected seed from the best variety, experimented on it and persuaded Khedive Mohammed Ali to take up cotton cultivation. Khedive imported Brazilian cotton seed from 1822 onward, and Sea Island's from 1828. Modern Egyptian varieties are largely the product of Sudan cotton seed and these two imported varieties.(2)

---


Commercial cotton growing in the Sudan started with Mumtaz Pasha, Governor of Sawakin, 1365-72, who imported seed from Egypt and grew it in Tokar under the stimulus of the high prices resulting from the American Civil War. Much of the progress of cotton cultivation on a commercial basis was stopped, however, during the Mahidia rule.

But the real beginning of commercial cotton-growing lay in the lease of land at Zeidab, about 150 miles north of Khartoum, to an American, Mr. Leigh Hunt, in 1904. He developed a mixed farming enterprise with cotton growing, and in order to develop the scheme further, went to London and formed a company called the Sudan Experimental Plantations Syndicate. The scheme at Zeidab was followed by schemes at Tayiba, Barakat, Hag Abdalla and Wad Al Naw in the Gezira. After the 1903 and 1909 good crops at Zeidab, the Sudan Plantation Syndicate Ltd. began to find it non-remunerative to grow cotton by direct cultivation, mainly because of shortage of labour, besides other factors such as costly transport. "The attempt to produce crops by direct labour was abandoned and the Syndicate concentrated on what appeared to be the only paying method of development - a tenancy system." (1) Tenants could grow their own crops, on the Syndicate's land, under the Syndicate's supervision and paying a rent for the Syndicate's water.

Though the rent system failed and had to be modified, it offered a good lesson which has had an important impact on the

subsequent development of the Gezira Scheme. At Zeidab and Tayiba, the rent was fixed at Ls. 2 per feddan for the first season, and raised to Ls. 2\(\frac{1}{2}\) for the second season. The rent system failed particularly where the Syndicate supplied water and seed to the farmers on their own land. "After an initial success, a bad cotton crop caused landowners to lose interest and there was difficulty in convincing them that they should pay the Syndicate for water despite the failure of their crops. The Syndicate was forced to stop water and to sue some landowners in the courts."(1)

This problem was really created by wide fluctuations in yield because of natural factors, while the tenant or the farmer had to pay a fixed money rent. The customary method followed in the Sudan of paying a rent of one-tenth of the crop to the landlord seems to be a fair one, as it throws some of the burden of the fluctuations in the yield on the landlord and thus the tenant suffers less. Even taxes in Islam on crops or land are a fixed proportion of the crop - one-tenth, the "Ushur". All this meant that a new system was needed, and this will be discussed in connection with the Gezira.

The completion of the Kassala-Haya railway in 1924 allowed the effective development of Gash Delta, whilst the opening of the Sennar Dam in 1925 marked the real beginning of the Gezira Scheme. In the rain areas of southern and western Sudan the development of cotton production has been very slow.(2)

Now we turn from the story of the historical development

(1) Ibid., p. 68.
of cotton growing in the Sudan - the rest of which will be told elsewhere - to the significance of cotton in the Sudan economy in the period 1949-60, and shall also try to have a quick look into its economic prospects over the coming fifteen years or so. Cotton has great significance in the Sudanese economy because it is the biggest item for export. In the period 1949-60 it formed 45-78% of the total value of all exports - noting that the value of cotton excluded the value of seeds and of 'scarto' cotton for 1959 and 1960 (see Table 1.1). On the average, lint cotton forms more than half of the value of all exports. Cotton, besides being the biggest foreign currency earner for the Sudan, attracts attention and study to it by its wide annual fluctuations of proceeds.

It is not possible here to go into great detail to show the effects of fluctuations of the income of or proceeds from cotton on the political life of the Sudan in the period under study. Suffice it to mention one important event in the recent history of the Sudan. In 1958 cotton prices dropped severely. The parliamentary government at that time thought that it would be to the benefit of the Sudan not to sell cotton at the low prices but to cut down imports as much as possible and to draw from the foreign reserves of the Sudan abroad. The result was that nearly a quarter of a million cotton bales remained unsold, and as the foreign reserves of the Sudan began to run very low, the Government began to put more and more restrictions on imports and asked the people to "tighten their belts". The people of the Sudan did not like this austere policy and the Government began to lose its
majority outside and inside parliament. At that moment the army interfered and overthrew the parliamentary government on 17th November 1958. The new military government first reduced the cotton reserve price immediately, and then, in January 1959 temporarily abolished it and cotton was sold at auction for whatever price it fetched. With the general improvement in world trade since autumn 1958, and low or no reserve prices, the Sudan began to sell its cotton again and import restrictions gradually began to be lifted. The Sudan foreign reserves rose from Ls. 4.8 million at the end of 1958 to Ls. 30 in August 1959,\(^1\) and the military government claimed that it had led the Sudan to prosperity. What was really obvious, however, was that the people did not like the austere policy of import restrictions of the previous government. Whether or not it was a wrong cotton policy is definitely another matter, and this will be discussed later in connection with stabilization policies suggested for the Sudan.

So much for the role played by cotton in the economics and politics of the Sudan in the period 1949-60. But what about the future - the near future? From Table 1.1 it is quite clear that the share of cotton in total exports has declined in the period under consideration. This is mainly due to the growth of the private sector and the increase in the production of its non-cotton export crops which is perhaps partly encouraged by the fact that these crops have been either free from export tax\(^2\) or have


\(^2\) Export taxes in the Sudan will be discussed more fully in Chapter Six, Section E.
a lower tax on them. The increase in population (with available rain-land) and the expansion of the monetized sector of the Sudanese economy has led to an increase in the production of rain-fed crops such as gum, groundnuts and sesame, which has resulted ultimately in an increase in the surplus ready for export. In the period 1949-60, there has been no substantial increase in the area under cotton production by the Government although the private sector has increased its area of cotton; but the total effect of increase in production is still small if compared to the Sudan's total production of cotton. However, the expansion in the production of rain-fed crops such as gum, groundnuts, sesame, etc., carried on by small farmers, has increased gradually and continuously, encouraged by higher prices, greater demand for goods which can only be bought by money, and better means of transport and marketing. However, the Government has its plans for increasing the area under cotton. The main scheme is the Managil Extension. This scheme will add to the million acres of the Gezira, 800,000 acres, and it was planned to complete it in seven years, 1957-64. The Managil will have a three-crop rotation instead of the four-crop rotation followed in the Gezira. The Managil Extension will therefore increase the area under cotton by about 250,000 acres - doubling the present cotton cultivated area. (1) By 1960 the first stage only was completed and was not producing normally because of administrative difficulties, but perhaps by the end of 1964, the

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Gezira may be able to increase its production by 100%.

The Ten-Year Plan of Economic and Social Development, 1961/62 - 1970/71, seems to confirm such an expectation about the share of cotton in the Sudan's exports. Although the development of the production of new crops for both local consumption and export has been considered in the plan, not one of them is going to be developed widely enough to replace, or even reduce, the importance of cotton. The share of the Ministry of Agriculture in the plan is Ls. 11,180,594. Out of this sum only Ls. 140,000 is appropriated for developing the production of castor seeds; Ls. 600,000 is appropriated for developing the production of coffee and Ls. 430,000 for developing production of rice. (Both coffee and rice are for home consumption.) But Ls. 1,390,000 is appropriated for the developing of cotton production, as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expansion in production of American Cotton</td>
<td>680,000</td>
</tr>
<tr>
<td>Mechanization of cotton picking</td>
<td>70,000</td>
</tr>
<tr>
<td>Additional buildings for Gezira Research Station</td>
<td>480,000</td>
</tr>
<tr>
<td>Facilities for seed heating and treatment</td>
<td>160,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,390,000</strong></td>
</tr>
</tbody>
</table>

Cotton also gets the lion's share of amounts devoted for purposes such as crop protection and pest control. Thus the Government seems to devote a considerable amount of its attention and resources to the development of cotton, while no alternative export crop seems to be developed to any substantial degree, at least until 1970-71 - if the Ten-Year Plan is executed in its scheduled time. Even if the Ten-Year Plan is executed in time,
one cannot expect any alternative crop to replace cotton in a year or two. It takes a long time to experiment on a new crop in order to produce it on a large scale.

Looking at it from the supply side alone, cotton may come to form about three-quarters of the Sudan's exports by 1965 or so. However, if we want to look further ahead, it is not enough to consider the supply alone. The share of cotton in the Sudan's exports does not depend on its supply alone, but also on its demand, as well as on the supply and demand for the other export crops; the most important of which are gum and oil-seeds.

Table 1.6 shows the textile fibre consumption and how the share of cotton is declining gradually. "Total production of man-made fibres almost doubled and the rate of increase has been four times of that of cotton." (1) The competition from man-made fibres is not only based on price but on quality as well. Rayon, for example, which had not been competing very well with cotton, is now changing to new types which have incorporated a new property that was previously one of cotton's important advantages - a high wet strength. Cotton in general and extra-long staple cotton in particular, because it commands the highest price paid for cotton, faces an intense competition from man-made fibres. (2)

Technical improvement in machines has enabled spinners to switch more readily from extra-long staple cotton to shorter

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staples(1) or man-made fibres, and thus it has increased the range of substitution and consequently has made the demand for extra-long staple cotton more elastic. The diameter of the spinning roller in a mill determines, within limits, the length of the staple which can be handled. However, a more complicated spindle may have more than one roller and thus handle more than one staple with a specific length. The census taken in Britain in 1946 shows that only about 65% of total spindles are specialized spindles of a single front-roller diameter. (2)

As far as the final product is concerned, perhaps the only product which has to be made completely out of extra-long staple cotton, to give it the required qualities, is sewing thread. Although this has quite a stable demand, it is a rather small fraction of the total demand for extra-long staple cotton. The bulk of the extra-long staple cotton goes into the production of fine cloth, and here the rate of substitution can be very great between the extra-long staple cotton and the shorter staples on one hand, and man-made fibres on the other. However, the quality of the final product cannot be the same, and that in turn depends on the type of demand for fine cloth - how fine, and how expensive? While there is a trend away from finer cloth in developed countries, there is a trend towards finer cloth in underdeveloped countries. The method of distribution and promotion campaigns can be among the


(2) Ibid, p. 66.
important factors that affect demand for finer cloth. The method of retail distribution, particularly the growth in importance of the chain store in the U.S.A., has affected the demand for finer cloth there. All these and many other factors affect the demand for extra-long cotton and it is very difficult to say exactly what the outcome for the extra-long cotton will be. On the whole one tends to expect, in the face of all this competition from shorter staple and man-made fibres, that the share of extra-long staple cotton will decline (see Table 1.6) and with it prices will decline too. It is impossible to tell, however, how fast the price of extra-long staple will decline.

As far as its significance in the Sudanese economy, or, in other words, its share in exports, is concerned, it seems safe to assume that the trend shown in Table 1.1 will continue, i.e. the relative importance of cotton - which is mainly extra-long staple cotton - will continue to decline in relation to the other crops but it will remain important for at least ten or fifteen years to come. Problems and policy for diversification will be discussed in Chapter Seven.

However, we must note that the decision to produce other crops rather than cotton in general, or extra-long staple cotton in particular, does not depend only on the movement of prices of cotton in relation to the prices of other export crops that can be produced in the Sudan, but on the margin between price and cost. Prices of cotton - or extra-long staple cotton in this case - may have a downward trend, but cotton still remains more profitable than any other export crop in the Sudan. This view was expressed
by the Chief Agronomist of the Ministry of Agriculture in 1952, (1) and by the official representative of the Sudan Government, Mr. Ghandour, (2) in the Twenty-First Plenary Meeting of the International Cotton Advisory Committee in 1962, when he agreed that price is an important factor in choice of diversification, but he added that returns to the country, as well as cost, had to be kept in view. So far no study has been published on the profitability of the different crops in the Sudan - not even cotton, but the Government, which is the dominant partner in schemes producing not less than 80% of all the Sudan's cotton, seems to think that cotton is and will continue to be the most profitable crop in the Sudan.

Cotton in the Sudan contributes 13% of the Gross Domestic Product, but it definitely contributes a greater percentage of that part of the Gross Domestic Product which is exchanged for money. There is nothing yet published on the size of the subsistence and barter sector in the Sudan. As already mentioned, however, and without going into subtle refinements, one may estimate that part of the Gross Domestic Product which is produced and consumed within the subsistence and barter sector to be about 35% (1956). Thus cotton seems to contribute approximately 20% to money incomes generated in the Sudan. With the future development of the Sudan this percentage will fall, but will definitely remain important so


long as cotton contributes a large percentage of the total exports of the Sudan.

F. **The Sudan as a Price-taker**

The Sudan produces only about 4% of the world's cotton. It may double its output by 1964, but world output will increase too, and thus the Sudan will not be producing more than 8% of the world's cotton by 1964, and will still remain a small producer of cotton.

It may be argued that about 80% of the Sudan's cotton is extra-long staple cotton, so making the Sudan the producer of 20% of the world's total supply of extra-long staple cotton - as seen from Table 1.7 - and this may give the Sudan some bargaining power. This can only be true if the rate of substitution between the extra-long staple cotton and the long-, medium- and short-staple cottons on the one hand and the man-made fibres on the other is zero or very small. However, it has been explained that such a rate of substitution is large and will be even larger as a result of advances in both textile machinery and in the quality of man-made fibres in the future. Moreover, it has already been proved that the correlation co-efficient between the prices of American Middling, a short-staple cotton, and the prices of Sakel, an extra-long staple cotton, was 0.8 for the period 1922-36, and that both prices changed in the same direction in thirteen cases out of the fifteen cases studied.\(^{(1)}\)

The fact remains that in the period under study (1949-59), the Sudan could do nothing but accept the price offered to it, as it could not influence the world price by its action alone. Moreover, in the future it seems that the Sudan will remain a price-taker unless some effective international agreement can be made. (The feasibility and effectiveness of such an agreement will be discussed in Chapter Eight)
### TABLE 1.1

The percentage share of Cotton, Gum, Sesame and Groundnuts in the Sudan's Exports, 1949-59.

<table>
<thead>
<tr>
<th>Year</th>
<th>Cotton %</th>
<th>Gum %</th>
<th>Sesame %</th>
<th>Groundnuts %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1949</td>
<td>72</td>
<td>6</td>
<td>Nil (1)</td>
<td>2</td>
</tr>
<tr>
<td>1950</td>
<td>72</td>
<td>8</td>
<td>Nil</td>
<td>1</td>
</tr>
<tr>
<td>1951</td>
<td>78</td>
<td>6</td>
<td>Nil</td>
<td>1</td>
</tr>
<tr>
<td>1952</td>
<td>70</td>
<td>6</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>1953</td>
<td>62</td>
<td>7</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1954</td>
<td>56</td>
<td>9</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1955</td>
<td>62</td>
<td>10</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>1956</td>
<td>64</td>
<td>9</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>1957</td>
<td>45</td>
<td>9</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>1958</td>
<td>51</td>
<td>12</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>1959</td>
<td>60</td>
<td>8</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

(1) less than 1%
(2) Cotton excluding seed and scarto for 1958 to 1959.

**SOURCE:** Computed from Annual Foreign Trade Report, Dept. of Statistics, Sudan Government.
TABLE 1.2


<table>
<thead>
<tr>
<th>Sector</th>
<th>Net Output as Percent of Gross Domestic Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Agriculture (1):</td>
<td></td>
</tr>
<tr>
<td>Cereals</td>
<td>15</td>
</tr>
<tr>
<td>Cotton and Cotton Seed</td>
<td>13</td>
</tr>
<tr>
<td>Oilseeds, Nuts and Kernels</td>
<td>4</td>
</tr>
<tr>
<td>Vegetables and Root Crops</td>
<td>4</td>
</tr>
<tr>
<td>Pulses</td>
<td>1</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>38</td>
</tr>
<tr>
<td>2. Livestock:</td>
<td></td>
</tr>
<tr>
<td>Meat</td>
<td>6</td>
</tr>
<tr>
<td>Dairy Products</td>
<td>5</td>
</tr>
<tr>
<td>Animals Exported</td>
<td>1</td>
</tr>
<tr>
<td>Hides and Skins</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
</tr>
<tr>
<td>3. Forestry Products:</td>
<td></td>
</tr>
<tr>
<td>Firewood</td>
<td>5</td>
</tr>
<tr>
<td>Timber</td>
<td>1</td>
</tr>
<tr>
<td>Gum and Minor Forestry Products</td>
<td>2</td>
</tr>
<tr>
<td>Fruit</td>
<td>10</td>
</tr>
<tr>
<td>4. Fish and Marine Products</td>
<td>2</td>
</tr>
<tr>
<td>5. Transport and Distribution (1)</td>
<td>13</td>
</tr>
<tr>
<td>6. Minerals</td>
<td>-</td>
</tr>
<tr>
<td>7. Manufacturing</td>
<td>1</td>
</tr>
<tr>
<td>8. Public Utilities</td>
<td>-</td>
</tr>
<tr>
<td>9. Craft Industries</td>
<td>3</td>
</tr>
</tbody>
</table>
(contd).

<table>
<thead>
<tr>
<th>Sector</th>
<th>Net Output as Percent of Gross Domestic Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Building and Civil Engineering:</td>
<td></td>
</tr>
<tr>
<td>Civil Engineering</td>
<td></td>
</tr>
<tr>
<td>European-style Building</td>
<td>3</td>
</tr>
<tr>
<td>African-style Building</td>
<td>3</td>
</tr>
<tr>
<td>11. Banks</td>
<td>-</td>
</tr>
<tr>
<td>12. Non-Government Education Bodies</td>
<td>-</td>
</tr>
<tr>
<td>13. Domestic Services</td>
<td>1</td>
</tr>
<tr>
<td>14. Miscellaneous Services:</td>
<td></td>
</tr>
<tr>
<td>Water Carrying</td>
<td>4</td>
</tr>
<tr>
<td>Cinemas and Entertainment</td>
<td>1</td>
</tr>
<tr>
<td>Cafes and Restaurants</td>
<td>-</td>
</tr>
<tr>
<td>Barbers</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>-</td>
</tr>
<tr>
<td>15. Ownership of Buildings</td>
<td>3</td>
</tr>
<tr>
<td>16. Government</td>
<td>6</td>
</tr>
<tr>
<td>17. Total</td>
<td>100</td>
</tr>
</tbody>
</table>

(Note: The sign '*' means less than 0.5%, not necessarily 0%)

TABLE 1.3
Gross Fixed Capital Formation According to Sponsor

<table>
<thead>
<tr>
<th>Year</th>
<th>Government</th>
<th>Public Corporation</th>
<th>Private Enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>1955/56</td>
<td>32</td>
<td>22</td>
<td>46</td>
</tr>
<tr>
<td>1956/57</td>
<td>33</td>
<td>15</td>
<td>52</td>
</tr>
<tr>
<td>1957/58</td>
<td>33</td>
<td>17</td>
<td>50</td>
</tr>
<tr>
<td>1958/59</td>
<td>36</td>
<td>23</td>
<td>41</td>
</tr>
</tbody>
</table>

Source:
TABLE 1.4.

The relative Size of Government Current Expenditure in the Sudan and other Underdeveloped Countries.

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Govt. Current expenditure as percentage of Gross Domestic Product</th>
<th>Current expenditure on education as percentage of Gross Domestic Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceylon</td>
<td>1957</td>
<td>13.8</td>
<td>3.5</td>
</tr>
<tr>
<td>Pakistan</td>
<td>1957/58</td>
<td>11.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Ghana</td>
<td>1953/54</td>
<td>10.4</td>
<td>3.1</td>
</tr>
<tr>
<td>Tanganyika</td>
<td>1956</td>
<td>9.8</td>
<td>2.1</td>
</tr>
<tr>
<td>Sudan</td>
<td>1955/56</td>
<td>8.0</td>
<td>0.8</td>
</tr>
<tr>
<td>India</td>
<td>1955/56</td>
<td>7.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Nigeria</td>
<td>1956/57</td>
<td>5.8</td>
<td>1.9</td>
</tr>
</tbody>
</table>

TABLE 1.5


<table>
<thead>
<tr>
<th>Type of Investment</th>
<th>Govt. (Ls. 000)</th>
<th>Public Corporations (Ls. 000)</th>
<th>Private Enterprise (Ls. 000)</th>
<th>Total (Ls. 000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building and Civil Engineering:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>441 (21)</td>
<td>1,151 (56)</td>
<td>468 (23)</td>
<td>2,060 (100)</td>
</tr>
<tr>
<td>European-style Building</td>
<td>3,208 (31)</td>
<td>711 (7)</td>
<td>6,362 (62)</td>
<td>10,281 (100)</td>
</tr>
<tr>
<td>African-style Building</td>
<td>--</td>
<td>--</td>
<td>2,081 (100)</td>
<td>2,081 (100)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>3,649 (25)</strong></td>
<td><strong>1,862 (13)</strong></td>
<td><strong>8,911 (62)</strong></td>
<td><strong>14,422 (100)</strong></td>
</tr>
<tr>
<td>Machinery, Vehicles and Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>7,466 (35)</strong></td>
<td><strong>3,932 (19)</strong></td>
<td><strong>9,835 (46)</strong></td>
<td><strong>21,233 (100)</strong></td>
</tr>
</tbody>
</table>

TABLE 1.6

(excluding E. Europe, U.S.S.R., and China)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total (1000 metric tons)</th>
<th>Cotton</th>
<th>Wool</th>
<th>Rayon and Acetate</th>
<th>Other man-made fibres</th>
<th>Cotton's percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1957</td>
<td>9858.2</td>
<td>6396.2</td>
<td>1081.0</td>
<td>1997.0</td>
<td>384.0</td>
<td>64.9</td>
</tr>
<tr>
<td>1958</td>
<td>9275.7</td>
<td>6157.7</td>
<td>977.0</td>
<td>1750.0</td>
<td>391.0</td>
<td>66.4</td>
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## Table 1.7


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CHAPTER TWO

PROBLEMS OF STABILIZATION

In this chapter we shall attempt to define the meaning of stabilization, to see how far the Sudan supply of cotton is price-elastic, and then to discuss the problems of stabilization. We intend to discuss what variables are to be stabilized, why there has been a need for stabilization, and how it can be attempted. Finally, we shall look into the problem of stabilization through formulae or a set approach with a special reference to the Sudan.

Stabilization is defined here as the reduction of short-run fluctuations round the long-run trend. This really means just narrowing the range of changes in the variable(s) concerned and not necessarily fixing it or them at one given level. The general principle of pure stabilization(1) is very simple. Stabilization of price or income has to be achieved by setting off successive seasons or years against one another; the surplus of good years are set aside and distributed back to producers when conditions are unfavourable. Thus over the long-run term, the prices received by the producers would normally be the same as the world price and only differ from it through greater stability, being higher when the world price was low and lower when it was high, assuming that supply is inelastic. Stabilization of price or income in practice may mean merely setting a floor or minimum price, or minimum income,

(1) I.e. stabilization which does not involve any income redistribution.
or it may mean reducing fluctuations to a definite range so that price or income can only fluctuate so much above and so much below the average, or it may mean just reducing the change in price or income from one year to another. It should be clear in our minds that stabilization policies are intended for the solution of short-run problems and that they are not supposed to interfere with the long-run trend. However, the long-run is actually made of short-runs and it is rather difficult to differentiate between a short-run change and a long-run trend. There is still a difference, though, between a policy intended to affect supply or demand in the long-run in order to raise or lower price or income, and a policy intended to smooth out fluctuations in income or price.

A. Elasticity of Supply of Sudan Cotton

Before going into any discussion of stabilization for the cotton sector of the Sudan, it may be worth while to try to see how far the Sudan supply is elastic, because elasticity of supply has an important part to play in shaping the policies to be followed for stability. (1)

About 90% of the Sudan cotton is produced in schemes with fixed area and rotation. Thus, in this way, supply tends to be quite unresponsive to changes in prices. However, there are other factors to consider. Although the area may be fixed, the effort of the tenant and his family is variable and one expects it to be

influenced by changes in price of cotton. It is difficult to find out statistically how far the tenant varies his effort with price. Beside the natural factors which affect yield, some of the tenant effort goes into increasing the yield per feddan and some of it goes into improving the quality of the cotton. The lustre, colour and cleanliness of cotton depends to a large extent on the effort of the tenant. It is not possible, however, to find out how much of the tenant's effort goes into increasing output and how much goes into improving quality. On top of all this, natural factors influence yield per feddan very much, thus distorting the relationships between supply and price and making it very difficult to make any measurement of the elasticity of supply of the Sudan cotton. However, the fact that only about 10% of the Sudan cotton is produced by small farmers who can shift some of their land and labour from or to cotton makes one tend to conclude that the Sudan cotton supply is fairly inelastic. But it seems that big changes in price tend to influence supply. It is definite that a big price fall which makes cotton production unprofitable, or almost unprofitable, reduces cotton production significantly. If a price rise takes place, on the other hand, it is unlikely to influence cotton production unless it is sustained for a considerable period. Factors of production are not mobile in the Sudan. Cotton production is very labour-intensive, and for those social and economic reasons, mentioned in Chapter One, Section C, labour is very immobile. This lack of mobility is particularly true of the tenant who is a semi-owner of the land. He is bound to his land by his family and tribe ties. The tenant and his family offer
the bulk of the labour required for cotton, and the production of cotton is, to them, not merely a way of earning an income but a way of life as well. Thus the tenant tends to stay where he is. On the other hand, as far as changing or substituting cotton for another crop is concerned, this is not possible. No less than 90% of the Sudan's cotton is produced in schemes with very fixed rotation. The tenant can neither vary his crop (that is cotton) nor the area under cotton. He can only vary the effort or labour that he puts into the cotton production. Moreover in the private sector, although it is easy to give up a cotton scheme, it takes a long time before one can obtain a licence to establish one and it takes an even longer time to prepare the land for cultivation. On the other hand, the cotton producers (whether tenants or farmers) on the land already used for cotton usually put some regular effort into cotton. They are a part of a well-integrated society from which it is very difficult to get away. It is not easy, therefore, for the cotton producer to put more time and effort into his cotton production, although it may be easy for him to cut down his cotton production, and time and effort devoted to it, and "invest" more time in his social life. As long as cotton is profitable he will continue to devote his usual effort to it but as it becomes unprofitable, or almost unprofitable, it is much better for him to enjoy more leisure, more social life and devote a minimal time to cotton. All this means that cotton production in the Sudan is fairly inelastic except when price falls very much, or rises very much and stays there for two or three years.
We are unable, unfortunately, to make a more accurate measurement of the elasticity of the Sudan's cotton supply than this. Besides the fact that natural factors distort the relationships between price and supply and the fact that the tenant or farmer's effort partly goes into quantity and partly into quality of cotton, there is the lack of comprehensive statistics of cotton supply and cotton prices for the whole Sudan and there is also the lack of information on how the average annual cotton prices which are available for some schemes are compiled. A year is a long time. A price which is low for eleven months and then rises in the last month has a different effect on supply from a price which is high for one month at the beginning of the season then falls and stays low for the rest of the season. Area is most probably determined by the level of price at the time of sowing, while effort or the amount of labour put into cotton is determined by the level of price throughout the season. Most probably price level has a more important impact on the output of cotton at the picking season. If price is reasonably high, cotton is picked to the last bit, but if price is very low, some cotton may be left hanging to the cotton tree. Most likely the cotton prices which are available for some schemes and areas for some years are actually sale prices. As one expects, most sales take place in the middle of the following season as it takes time to transport cotton to collection centres, gin it and send it to the cotton markets. It is highly doubtful that the average actual sale price is the same price which has influenced the cotton
producer to decide how much land to put under cotton production, how much effort to put into looking after the cotton while it is growing and how much of it to pick finally. For all these reasons perhaps it is safer to depend on one's own understanding of the structure and organization of the cotton sector and the mobility of factors of production in the Sudan for determining the elasticity of the supply of cotton, rather than to depend on inadequate statistics with no guide as to how they have been compiled.

B. What to be stabilized?

The variables\(^{(1)}\) of economic interest that may change with the world cotton price (export price) seem to be:

1. Local cotton price paid to the producer (producer's price).
2. Money income of the cotton producer (producer's income).
3. Real income of the cotton producer.
4. Revenue of the government (both as taxes and profits).
5. Output (specially with a big drop in price).
6. Terms of trade.
7. Regional income.

The Sudan - as a producer of only about 4% of the world supply of cotton - cannot influence the world cotton price in any way. It may only be able to do so through international agreement which has the support of the producers of most of the world's cotton. However, such an agreement is difficult to bring about.\(^{(2)}\)


\(^{(2)}\) International Agreements will be discussed in greater detail in Chapter Eight.
mainly because the United States, the world's biggest cotton producer, is reluctant to join. Without the support of the United States it may not be possible to have a big enough slice of the world cotton under the agreement and, moreover, the finance of such an agreement would be difficult. On the other hand, international agreements tend to be static, and it may not be very desirable for the Sudan to join and thus sacrifice all the possible expansion in its cotton production. Finally, cotton is not homogeneous and differences in grades and qualities may make agreement rather difficult to obtain.

Thus it seems that international action in the form of stabilization of the cotton export price is yet in the realm of discussion and may not be a reality for some time to come. Therefore, the Sudan, if it is seeking stability, must assume that fluctuations in the cotton export price are inevitable and try to devise appropriate corrective domestic action which can reduce the undesirable effects of such fluctuations.

There are several variables (as we see above) which are feasible and desirable to stabilize. But perhaps the two most important variables are income derived from cotton and cotton price. It is a controversial question whether to stabilize income or price. Some economists support income stabilization, e.g. Bauer and Paish, (1) while others (2) are mainly concerned with price stabilization. We are going to discuss this question in relation to these variables.

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to the Sudanese economy, and the method of cotton production in the Sudan and its problems. We do not intend to discuss stabilization in the abstract or theorize about it. We are merely trying to find some practical solution to the problems of instability in the Sudan, which is, at the same time, feasible. It is much better to devise a less ambitious policy which can be implemented rather than a policy which promises much but which is very difficult, complicated and expensive to carry out.

If a country produces the bulk of a world crop and the world demand for this crop is rather stable, then changes in its supply are offset by opposite changes; its prices and the gross income or proceeds from that crop will tend to be stable in spite of the fluctuations in its supply. But this is not the case with the Sudan. The Sudan is a very small producer of cotton and at the same time the world demand for cotton is not at all stable. As far as the relation between price and supply is concerned, we have already mentioned that supply is rather inelastic unless price rises very much and stays there for a considerable time, or makes a big fall. Thus when cotton prices fell in 1958 by about 30%, cotton production fell in all cotton schemes in the Sudan. In the Gezira Scheme cotton yield per feddan fell from 6,759 to 1,505 kantars. How much of this decline in output was due to price fall and how much was due to natural factors is not easy to say. It is not, however, unrealistic to assume that such a big fall in price has an important impact upon the output of cotton and perhaps upon its quality too. If such a reduction in cotton output and perhaps
quality - which is necessarily a waste of economic resources - is to be prevented, a policy must be devised to stop cotton prices from falling so low. It would appear that substantial falls in cotton prices frequently lead to a fall in the volume of output, and therefore lower sales proceeds for the Sudan. This also means waste of the Sudanese productive resources. We should not worry about a rise in prices. We should, instead, let it have the full effect in expanding output so that the Sudan can obtain the highest possible proceeds, even though one does not expect such an expansion to be of any importance unless prices stay high for three years or so. At the same time, we are suggesting income stabilization which in the end may indirectly reduce all price fluctuations. Therefore our concern is to reduce the large downward changes of cotton prices. The simplest way of doing this, which is within the reach of the Sudan, is to build a national buffer stock by not selling if prices fall below a certain level. As soon as the price rises from that level all stock can be sold, and as changes in the Sudan's cotton supply are not expected to affect the world cotton price in any way, cotton which is not sold in a bad year can be sold a year or two later at higher prices. This policy, as a matter of fact, was tried in 1953 but it could not be maintained because the Sudan's foreign exchange reserves were exhausted and there was a demand for imports. Thus the Sudan Government had to sell cotton at low prices to be able to import. A small quantity of 1958 cotton which was not sold in 1958, was sold in 1959 at a higher price. Therefore to make a national buffer stock successful,
the Sudan needs to build up foreign exchange reserves equal to the exports of a year or so. There are already reserve funds for almost all the cotton producers in the Sudan. But they are not enough and, moreover, they may be used for income stabilization. A reserve fund can be built gradually by charging the cotton producers an annual premium as an insurance against wide falls in cotton prices. Once a reserve of an amount of cotton proceeds for a year or so is accumulated, such a national buffer stock can be initiated. The aim behind such a national buffer stock is not only to keep the cotton in store until it can be sold at a higher price in a year or two, but also to guarantee a minimum price to the cotton producer at the beginning of each new season.

The question is, how is this minimum price to be determined in advance? Perhaps the best way to solve this problem is to use a moving average as an indicator of the level of cotton prices. At the same time, to avoid the problem of paying a higher price than that actually received by the agency, and to avoid the problems of deficits as well, it may be wise to get the producer a price a little lower than the moving average. Moreover this derived minimum price must be adjusted to the size of the buffer stock. If the stock is growing or decreasing continuously, it may mean that the minimum price is not in harmony with the long-run trend of world cotton prices. Although tying the guaranteed minimum price to the size of the buffer stock has the advantage of helping the Sudan's supply of cotton to adjust itself to demand in the long run, it may be argued that it makes it easy for
speculators to take advantage of the fund. If the size of the stock reaches a certain high level they know that the minimum price will be lower in the following season, and if the size of the stock diminishes very much, they will know that the minimum price will be higher in the following season. Even though such an argument seems attractive, it cannot be true unless the demand and supply of cotton in the following season remains the same as in the former season. With highly fluctuating supply and demand, the price in the following season is very difficult to forecast and thus speculators cannot take much advantage of the fund unless there is some indication of changes in world demand due to certain world crises, or of changes in Sudan supply due to expansion in large cotton schemes. However, the same difficulty of forecasting prices for the next season will be facing the agency of the buffer stock. Wrong forecast of price may lead to de-stabilization of price and income.\(^1\) Thus because of the difficulty of accurate price forecasts and the inadequacy of trained staff in the Sudan it may be a good idea to avoid price forecasting. Price can be calculated from a moving average for a period of a few years, ending at the time of sowing in every new season. Then the minimum should be announced and should remain fixed for the rest of the season in order to give the producers some security. If the minimum price is frequently adjusted downwards, it may become very ineffective. It is always better to determine it rather low (but not very low) and maintain it there than to determine it initially rather high and then to

lower it during the season. Once the cotton producers lose faith in the minimum price it will be good for nothing and it will take a long time to regain its acceptability.

We have already explained that the aim behind price stabilization through a guaranteed minimum cotton price is to reduce the fall in output of cotton production in years of very low prices and to reduce the waste of resources. Another equally important aim behind the stabilization of the price of cotton is the stabilization of the income of the cotton producer. But will the stabilization of price stabilize the income of the cotton producer in the Sudan?

Price stabilization will automatically lead to income stabilization if production is stable while price is the fluctuating variable. But this is not the case in the Sudan. Income is the product of the area under cotton, the yield per feddan and price. The area under cotton in the cotton schemes is quite stable. But the yield per feddan is highly fluctuating. From Table 2.1, which refers to the Gezira Scheme, we notice that the yield of cotton per feddan in the period 1950-59 has an average annual rate of fluctuation (fluctuation from year to year) of 57% while the price per kantar of sakel has an annual rate of fluctuation of 22%. This indicates that the average rate of fluctuation in yield in those ten years is more than twice the average rate of fluctuation in price. Thus the stabilization of price alone is not enough to create stable income for the cotton producer in the Gezira Scheme or in the Sudan.

(1) I.e. Gross money income from cotton, as we shall explain later in this chapter.
As a whole. As fluctuations in yield per feddan are due to natural factors, some of which are impossible to interfere with, e.g. temperature, sunlight, winds, amount of rainfall, etc. it becomes necessary to try to smooth the fluctuations in income directly. With the Sudan being a small cotton producer, with world demand for cotton fluctuating very much and with the yield per feddan fluctuating even more, the relationship between the price of cotton and the income from cotton is very weak. In one year, cotton price may fall but income from cotton may rise because of higher yield per feddan, or price may rise but income from cotton may fall because of lower yield per feddan. For example, Table 2.1 shows that in 1953/54 price fell from Ls. 13.5 to Ls. 11.5 but the tenants' income rose from 5.1 to 6.5 millions, while in 1954/55 price rose from Ls. 11.5 to Ls. 14.6, but the tenants' income fell from 6.5 to 5.1 millions because of lower yields...and so on. Table 4.3 shows that the same cotton prices are maintained in 1951, 1952 and 1953, but the total payment to farmers or, in other words, the income from cotton, was Ls. 92404 in 1950, then fell to Ls. 37529 and fell further in 1953 to Ls. 35823. Thus inspite of the fact that price remained the same, income in 1953 was only about one-third of that in 1950 because of the lower yields of cotton. In 1955 and 1956, the same price was maintained but income almost doubled in the season ending June 1956 in comparison with the income of the season ending June 1955...and so on. Table 5.1 shows that the same cotton prices were maintained in 1956/57 and 1957/58 but income from cotton almost doubled because of higher cotton yields in 1957/58. In the period 1950-59, as shown by Table 2.1, only in four years out of ten were
changes in yield per feddan offset, to some extent, by changes in prices. Thus price stabilization in most years of the period 1950-59 would have resulted in destabilization of the cotton producer's income. We do not wish to imply by this that cotton supply in the Sudan moves in an opposite direction to price or that price stabilization will always destabilize income. Whether or not price stabilization in the Sudan for any span of time will lead to income stabilization depends on the movement of cotton prices, which are controlled by changes in the world supply and demand for cotton, and depends on the changes of yield of cotton per feddan, which are controlled, to a great extent, by natural factors. If the yield per feddan and cotton prices move together for most of the period under consideration, then price stabilization will lead to income stabilization, but if they move in opposite directions, price stabilization will destabilize income from cotton. It is impossible to forecast for the coming ten or fifteen years whether cotton yield per feddan and cotton prices will move in the same direction or not for most of the years. All we want to prove is that there is no direct relationship between cotton prices and income from cotton in the Sudan, and that price stabilization does not necessarily stabilize income. It is feasible and desirable to stabilize the income of the cotton producer directly through using a moving average and also a reserve fund. Such income stabilization will take care of upward fluctuations in price (if they affect income) and fluctuations in yield. As already mentioned in Chapter One, the long-run trend of cotton prices is expected to decline but at the same time productivity in
the Sudan is increasing because of the spread of education, agricultural research, etc. Thus cotton income may be expected to be steady over the long-run and therefore the use of a moving average for smoothing out short-run income fluctuations is not going to be faced with chronic deficit or surplus.

Now we turn to consider briefly some of the other variables. The advantages of stabilizing the export price seem to be the reduction of fluctuations in foreign exchange earnings, the stabilization of government revenue from export taxes and perhaps the stabilization of the terms of trade. This last advantage turns really on the relative movement of import prices. In the case of both prices of exports and imports rising and falling together, the stabilization of any one of them may lead to the destabilization of the terms of trade for the country concerned.

Stabilization of the real income of the producer is a big problem because it does not depend only on the movements of the price of his produce alone, but also on the prices of the goods he buys. As such a policy needs huge administrative machinery and adequate statistics, which are both lacking in the Sudan and other underdeveloped countries, it is better to ignore it.

Government revenue is probably destabilized if it tries to stabilize cotton prices and income directly through taxation and subsidy. But fluctuations in Government revenue are not as serious as they seem. They can easily be smoothed out through some method of averaging. However, the stabilization schemes we have suggested here do not destabilize the Government revenue because they are mainly independent. They are finances by the tenants and the cotton
producers themselves. The instability in the Government revenue will continue, however, because of the fluctuations in its share (in absolute terms) and also because of changes in revenue from taxes such as export tax. The Government can and must stabilize public expenditure at an average level of revenue over a number of years rather than spend at the current level of revenue. In fact, the Sudan Government did attempt such a policy. In 1949 a Revenue Equalization Account was established with the object of stabilizing Government revenue in order to avoid drastic reductions in Government current expenditure in years of low revenue. The major credit to this account was made from a budget surplus of high export proceeds in 1951/52. A substantial part of this account was used to finance an irrigation project. Since 1951/52 no additions have been made to the account. It was a good policy to establish such an account, but unfortunately it was used for the wrong purpose. Such an account should have been used for the stabilization of Government revenue in low years (e.g. 1958/59) and not for the economic development of the country.

C. Why Stabilize Price and Income?

So far in this chapter we have argued the case for stabilizing price and income and now we shall attempt to explain why. We have suggested a guaranteed minimum cotton price under a national buffer stock as a way of stabilizing the cotton price in the Sudan. This is a very modest way of stabilization. This method of stabilization besides being desirable from an administrative
point of view because of its simplicity, is mainly desirable
because it reduces the waste of the Sudan's productive resources.
By maintaining a minimum guaranteed price for cotton, cotton produc-
ing may never become unprofitable or almost unprofitable in any
single season because of short-run price falls. If cotton production
becomes unprofitable or almost unprofitable in any season the tenant
in the cotton schemes will not find it attractive to put any
substantial effort into the cotton production in that season, and
the small cotton farmer of the Nuba Mountains will definitely reduce
both the area under cotton and the effort that goes into cotton
production. Most probably the tenant puts a certain money value on
his labour and if cotton prices fall to such an extent that he does
not get what he expects for his labour, he will definitely prefer
to have more leisure and less cotton. Assuming that more cotton or
a higher income is better than more leisure for the tenant, price
instability can lead to waste or to a loss of productive resources
which could have been utilized in more cotton production and could
perhaps have led ultimately to a higher rate of growth for the Sudan.
However, if such a value judgment about the preference of the tenant
for higher income and less leisure cannot be accepted, there is still
some waste of economic resources in the sense that the tenant cannot
use his labour or effort in the best possible way (or in the case of
Private Cotton Pump scheme, the owner cannot allocate his investment
in the most profitable way) because of cotton price fluctuations.
At the beginning of any season it is quite possible that the cotton
price may drop drastically and remain low for most of the season or
perhaps until the cotton is picked. Cotton production thus becomes
unprofitable or almost unprofitable and therefore the tenant may decide to reduce the effort that he devotes to cotton, though the area under cotton remains the same due to rotation. Towards the end of the season, or after the cotton is picked, world demand for cotton may increase and cotton prices may rise considerably. Then the tenant would find it too late to increase his cotton production or improve its quality for that season; and the opposite is equally true if prices are high during the season and fall sharply at the end of it. The tenant cannot allocate his effort or time between leisure and cotton production in the most satisfactory way because of cotton price fluctuations and his inability to forecast such fluctuations. Thus over the years the tenant’s satisfaction or well-being can be greater with a more stable price which is guaranteed at the beginning of the season, even if he does not produce any more cotton.

In the case of the cotton farmer of the Nuba Mountains, who is free to use less land and less labour for cotton, the possibility of growing some other alternative crops complicates the problem of waste. However, as the prices of most agricultural products move together, and the total area under all crops may tend to fluctuate too, one can still detect some waste of productive resources. (This question will be discussed more fully in connection with the Nuba Mountains and the production of alternative crops.)

It may be worth while here to summarize the advantages of the stabilization scheme of an agency of a national buffer stock:
1. Because it is a modest and simple scheme, it does not require a huge administrative machine.

2. By putting a floor to price fluctuations it prevents waste of productive resources.

3. By carrying cotton stocks until world prices rise, it gives the Sudan and the cotton producers higher prices, higher output and even higher cotton proceeds.

4. By adjusting the minimum guaranteed price to the size of the stock and by allowing prices to fluctuate above the floor it does not choke the price mechanism and thus it does not isolate supply from demand conditions in the long-run.

We have already mentioned that price stabilization may not necessarily lead to income stability. But income stabilization is important for certain economic and social considerations.

Wide fluctuations in the incomes of the cotton producers (whether tenant or farmer) may create great hardships for them. Small cotton producers and tenants are unlikely to have the self-restraint and foresight to set aside in good times a part of their incomes as a reserve to cushion the effects of bad times. It seems clear that the social factors must be put in the forefront of those which affect the making of national policies for stabilization. The social objective of these policies, in view of the wide income fluctuations, is social justice, through action by the state. This social aspect is much more important in the production of agricultural raw materials than in the exploitation of mineral resources. While the former is generally carried out by many small producers whose income is relatively low and who have no means of counteracting its fluctuations, the production of minerals is usually concentrated in the hands of large companies which are often themselves in a
position to devise an adequate policy to iron out fluctuations. When income is generally low, any downward fluctuations in it can cause very great hardships for the farmer or the tenant and his family. However, some may argue that the principle of social justice may require income stabilization for the whole agricultural sector in the Sudan rather than for the cotton sector alone. But the bulk of agricultural producers in the non-cotton sector in the Sudan are in the subsistence sector. This really means, in the first place, that they produce a host of crops and perform a lot of services to themselves directly. In the second place, money income means very little or nothing to them. And this in turn means that by producing such a large number of crops and animal products their income may be more stable than income (in money or physical sense) in the cotton sector. Moreover, it is very difficult to carry such wide effective policies to stabilize incomes in the subsistence or non-exchange economy, and perhaps this can only be done through improvement in irrigation, methods of cultivation, etc., which are already carried as far as the Government can go. So, for these considerations (and three more economic considerations), it is both feasible and more desirable to stabilize the income of the cotton producers in the Sudan.

Foreign direct investment\(^{(1)}\) has not, and is not, likely to finance any significant proportion of the Sudan's future developments. As to international aid, this evades any chance of prediction as it seems to depend largely on political factors

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(1) Discussed in Chapter One, Section D.
rather than on economic premises. It appears, then, that the Sudan will have to rely on self-help, at least in the early stages of its development. The first possibility here is the borrowing from the public, or mobilisation of voluntary savings. This method is not likely to result, however, in a substantial supply of funds, at least in the near future. Neither foreign nor native enterprises have in the past relied on internal public borrowing. The former bring their own capital to the country from abroad and the latter rely on the capital of the owners of enterprises. Private enterprise has, to some extent, been assisted by governmental loans and advances, but it is not possible to say to what extent the internal development has been financed out of ploughed-in profits of businesses.

Though there are no developed financial institutions like the money and capital market, the lack of individual or personal savings is the major reason for the absence of public lending in the Sudan. Thus every possible means should be attempted to increase voluntary savings. By stabilizing the income of the cotton producer through a moving average, or, in effect, by forcing him to save in the short-run when his income rises, we may make him save more voluntarily in the long-run. A more regular income, besides reducing his hardships, helps him to organize and plan his consumption and this may lead to more saving in the long-run. When incomes are rising from a bad year to a good year it is easy to increase consumption, but when income falls it is not as easy to cut down consumption and cotton producers may find it necessary to borrow
in an attempt to maintain the same standard of living as before. In 1951 and thereafter a big change came over Gezira. This is revealed by a social survey: "Housewives instead of grinding flour themselves sent grain to the mill to be ground; instead of drawing water themselves from the well they bought it and sent their washing to the laundry. They had new standards of dress and with them new expenses in soap and toilet requisites."(1) With a great rise in income "everyone engaged in a vast spending spree."(2)

Stabilization of prices or, ultimately, income of the export sector is not only desirable for the sake of the export sector alone, but also for the sake of regional and national stability. We have already seen how economic instability can lead to political instability. Wide fluctuations in the income of the cotton growers who are concentrated in three big regions - Gezira, Nuba Mountains and Gash-Taker area - can easily lead even to wider fluctuations in the incomes of these regions and to fluctuations in the national income too. Fluctuations in expenditure, resulting from fluctuations in incomes from cotton met by inelastic home supply of food materials while imports are changing after a lag, can easily lead to general instability in the economy. This instability is actually accentuated in the Sudan by the fact that cotton boards deposit all their surpluses with commercial banks. At the end of December 1959 advances arose by Ls. 10.8 million. This increase in advances was financed to the extent of Ls. 5.8 million by the increase

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(2) Ibid., p. 317.
in the deposits of cotton boards.\(^1\) This shows clearly the importance of the role played by the surpluses of cotton boards in the creation of advances in the Sudan, though 1959 was not in any way a year of exceptionally high cotton proceeds. In years of high cotton proceeds, in which both national income and demand are high, banks, because of the surpluses of cotton boards, are able and willing to expand advances, while the opposite is true in years of low cotton proceeds. Wide changes in the size of advances lead to more fluctuations in expenditure and add to the general instability of the economy.

Another interesting aspect of cotton production in the Sudan, which may have some bearing on transmitting instability from income derived from cotton to the whole economy, is that the whole cotton production is done mainly by Sudanese capital and labour. About a quarter of the hired labour in the Gezira in 1958/59 came from Nigeria and French Equatoria. Private owners of cotton pump schemes, specially the small ones, may borrow capital on short-term bases for running their schemes. Some of this capital used to come from foreign banks in the early 1950s before the Ministry of Finance and Economics made available to such people some loan facilities; later in 1960 the Agricultural Bank was established for this purpose. As the whole private sector produces much less than 20% of the Sudan’s cotton, and a small fraction of that finances by foreign capital, it seems that the bulk of the cotton income goes into Sudanese pockets. Though this has the advantage that the Sudanese

alone enjoy almost all the fruits of their land, it has the disadvantage of making them bear alone the full burden of fluctuations in cotton income, while the foreigners who help them in the production of their cotton get a very stable income in form of profits, wages and interest. (1) The conclusion is that the stabilization of the income of the cotton producers in the Sudan is absolutely essential for the stability of the whole Sudanese economy.

On the other hand, wide fluctuations in the income of the cotton producer may lead to waste by demanding structural changes in the economies of the producing country because of making hired labour fluctuate between the agricultural or the cotton sector and the industrial sector. When cotton producers receive high incomes from cotton, especially those who have small families and the old, they cut down some of their labour, substituting it with hired labour, and consume more leisure. The tenancy in the cotton schemes of the Sudan, whether Government or private, is designed with the view that the tenant and his family supply all the necessary labour for the production of cotton. There is a certain amount of permanently hired labour, but this constitutes a very small percentage of the total labour force engaged in cotton production. Changes in this hired labour force do not have any important effect on the supply of cotton in the Sudan because, besides the fact that the size of the hired labour force is only a very small percentage of the tenant labour, it is also complementary when the incomes of the tenants become high. Tenants who are old or have a small family

cut down their labour and substitute hired labour when their incomes become high. Though these changes in the size of the hired labour force are not important as far as the cotton sector is concerned, they are important for industry and the economic development of the Sudan. Such permanent hired labour is the only potential supply of labour for all industries in the Sudan. It is, however, made unstable through the instability of the cotton sector. When cotton income is low, and wages are low in the cotton sector, the labourers, or part of them at least, move to industry, and as soon as wages rise in the cotton sector because of higher incomes they move back. They are not getting high enough wages to keep them in industry because industry is still in its infancy and its productivity is very low. These shifts of the labour force will certainly reduce its efficiency, through the lack of specialization, and may discourage entrepreneurs from investment in industry due to the uncertainty of the labour supply. It will make it more difficult for them to calculate their profits. These structural changes will definitely reduce the rate of economic development of the Sudan. Therefore when we stabilize the income of the cotton producer, we do not only stabilize his consumption of goods, increase his savings, but also stabilize his consumption of leisure and ultimately reduce shifts of the labour force and stimulate economic development. (1)

(1) We cannot go more fully into this problem because we are mainly concerned with the partial analysis of instability of the cotton sector rather than with the general analysis of economic growth in the Sudan. However, the relation between stability and growth will be discussed in the final chapter of this thesis.
D. How to Stabilize?

Whatever the main objective of price or income guarantees, whether to raise or stabilize production, increase producers' welfare, etc., the determination of actual price and income levels involves a careful balancing of various factors and interests. Thus account must be taken of the interests of the producer and the consumer (in case of domestically consumed products), of the claims of agriculture in relation to other sectors of the economy, and, within the agricultural sector, of the agricultural products and systems of farming. One way of describing this balance of interests and factors is to go into the criteria used for establishing price and income levels and analyse it. While some countries use ad hoc methods, other countries have made a determined effort to work out a set approach to price or income fixing. There are, possibly, two main reasons for this. One is that it reduces the farmers' feeling of insecurity to know exactly what factors enter into the price or income fixing process. The other is that it reduces as much as possible the area of political pressure and corruption, or, at least, controversy and arbitrariness. (1) The choice of any definite formula or set approach for fixing the level of price or income is an arbitrary one in itself, but it is much less arbitrary than leaving all current decisions on price or income levels to be made on an ad hoc basis.

The most commonly used formulae or set approach for the

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determination of price and income levels appear to be the following: (1) (a) Cost of Production Formulae. This type of formula is used in Spain for olive-oil, the Netherlands, some Latin American countries and Australia where the support level or the minimum guaranteed price is related to estimated costs or to changes in a cost index covering the main items in production. However, such a method creates lots of problems in calculation of the actual support price. Owing to the interdependence of many farm costs, it may be very difficult to estimate the cost of individual products. Thus the cost of cattle or camels depends in part on the imputed cost of millet stalks for feeding them. Other items of cost are difficult to assess. There is, for instance, the question of how to treat unpaid labour by the farmer (or the tenant) and his family. Moreover, in the Netherlands, the Government has been faced with the problem of wide regional differences in the cost of production of the main commodities and therefore its agricultural support objective could be more satisfactorily reached by the means of price differentiation between the regions rather than by the means of a uniform support price to all farms irrespective of their location. The country can be divided into regions on the basis of variation in soil, fertility, size of the farm, farm rents, type of farming, etc. But the main criticism of such a regional price differentiation is that it impairs inter-regional competition within the country. Regional price systems are apt to encourage production

in high cost areas and restrain production in low cost areas as production in such areas is kept below the level that it would have reached if uniform prices were applied to the whole country. (1)

(b) Parity Formulae, as is the case in the United States and Japan. Under this type of formulae, in the United States, support or parity prices are related to a historical or base period average prices received by the farmers for their commodities as well as average prices paid by them. The aim behind such Parity Formulae is to give any unit of farm produce the same average purchase power that it had during a period of comparative stability and prosperity, (1910-14). (2) Many difficulties of calculation which are faced by the other types of formulae such as the question of how to treat unpaid labour by the farmer and his family or how to allow for depreciation are avoided by the Parity Formulae which concern themselves only with prices and price relationships. Other difficulties in the cost of production formulae arise from differences, for example, in the efficiency of management, the size of the farm or the system of farming. For instance, the costs of cotton production by perennial irrigation on a specialized cotton farm are definitely very different from those of a mainly subsistence farm with a small amount of cotton produced by rainfall. Thus the decision as to the level of costs to cover the guaranteed price or income very often becomes associated with the decision as to whether all farms, or whether one particular type of cotton production, is to be supported. Though the Parity Formulae avoid such problems of

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of cost calculation, they are too complicated for a country like the Sudan which has neither enough statistics nor trained staff. The use of Parity Formulae presents the problems of assembling the necessary data and constructing the relevant indices. At the same time the choice of a suitable base period in a developing country which may be changing rapidly socially or economically may be very difficult. (1) On the other hand, as far as the determination of the guaranteed minimum price for the Sudan buffer stock is concerned, although we have suggested the use of a moving average as an indicator of price, we believe that it may be better to use ad hoc methods for the actual and adjust minimum price so as not to make it easy for speculators to take advantage of the buffer stock. Thus when the minimum price is not only a guaranteed price to cotton producers or farmers but may also be a reserve price for selling a crop when prices rise, it may be better to leave the determination, at least to some extent, to ad hoc methods, rather than to a formula which may be easier to discover. This simplicity of Parity formula is evidently achieved at the cost of some comprehensiveness. Farm incomes depend not only on prices but also on the volume of output. Some of the criticism of the traditional parity formula, as used in the United States, appears to stem from a certain lack of flexibility in the way it has been applied. For example, parity prices are still calculated in relation to prices paid by farmers in the base period 1910-14, though according to

the pattern of expenditure in 1937-41. This criticism brings out one of the disadvantages of using a formula or a set approach for fixing price or income level, and that is rigidity. But this can be handled by subjecting the formula to periodic adjustments. However, the parity formulae approach cannot be very suitable for handling the instability of the income of the cotton producer in the Sudan because it ignores the fluctuations in the yield which are a very important factor in creating income instability.

(c) **Multiple Factor Formulae:** In New Zealand a method of establishing guaranteed price levels has been devised which takes into account recent demand trends as indicated by a moving average of overseas prices, future prospects, costs of production and the general level of costs, wages and prices in New Zealand; the weights allocated to these factors vary somewhat from commodity to commodity. The drawback of this method is that there can be considerable argument about the weight to be attached to the various factors. Thus this formula allows a good deal of scope for bargaining between the various interests. Indeed, to some extent, it gets away from the concept of a rigorous formula and goes a long way towards the ad hoc method of determining price level. However, such a method of stabilization, besides being very complex and requiring a lot of statistics on prices, as well as other data, may ultimately involve support or subsidies which mean income redistribution from tax payers in general to the agricultural sector or from the industrial to the agricultural sector. But in a country like the Sudan, and where we are concerned with stabiliza-
tion of the cotton sector, it seems highly undesirable to subsidize the cotton sector which has, in any case, a higher income than the rest of the agricultural sector. As a matter of fact the tenants, especially in large schemes like the Gezira, are in the highest income group, if we exclude the professional skilled labourers and employees of Government and firms. Thus any subsidy to such tenants is inequitable. Moreover, such a subsidy besides being inequitable may be so large that it may be a drain on Government revenue and thus it obstructs the Government from performing its normal functions as well as reducing the tempo of economic development in the Sudan. The cotton sector forms about 13% of the Sudan Domestic Product, while all the resources absorbed by the Sudan Government in a year are only equal to about 8% of the Gross Domestic Product. However, there is a small minority of tenants who deserve a subsidy, e.g., tenants in the Gash area, and this question will be discussed in Chapter Four, Section B. Therefore, for the bulk of the cotton producers in the Sudan, stabilization must be self-financed. 

(d) **Income Formulae**, as in Norway, Sweden and Switzerland: under such a formula the contention is to provide the farming population with a standard of living not unattractive in comparison with that of workers in other industries. The income formula is the most comprehensive and seems to reflect most faithfully the economic situation of agricultural producers. However, net income formulae run into the difficulty of relying on a concept which is extremely difficult to pin down statistically. At one extreme it can be defined simply as the difference between cash receipts and cash
expenses, which is wrong because it does not take into account the cost of buildings or the running down of capital equipment and livestock. At the other extreme, it represents the difference between all forms of actual and imputed receipts and all forms of actual and imputed expenses, all of them adjusted to the current year base. Apart from conceptual difficulties, a considerable margin of error is liable to enter into the calculation. On both sides of outputs and inputs there may be a large margin of error in calculating some real items, e.g. fertilizers or fuel, while other items, such as depreciation of machinery, are imputed on a necessarily arbitrary basis. Again, a calculation of net cotton income for the average farm or tenancy throws no light on the prosperity of different classes of cotton producers in the Sudan.

In the Sudan cotton is produced either by tenants in cotton schemes, or by small farmers using rather primitive methods. In the case of the tenant, the income he gets is mainly for his labour as all the expenses on capital goods, fertilizers, pest-control chemicals, etc., are paid for from the share of the board and Government. The small farmer, on the other hand, does not incur such expenses because of his simple and primitive methods. In such cases there is little difference between net and gross money income from cotton. (1) To avoid all conceptual problems and excessive costs incurred in compiling information on prices and costs in order to compute a net income for the cotton producer, it is much better if we use a gross money income concept instead.

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(1) The case of the tenant in the Gezira is more fully explained in Chapter Three, Sections C and D.
Before leaving the discussion on the formulae approach, or the set approach, it may be worth while to discuss a directly linked and interesting problem. We have already suggested the use of a moving average for smoothing out income fluctuations. The choice of the length of the period over which the producer's income is to be averaged out is an important problem. This question brings out the essence of income stabilization which is really a compromise between efficiency and equity. Any decision made as to how long the period should be is arbitrary but we can say that if the period chosen is very long, say ten years, then production may become detached from the conditions of demand, and, on the other hand, if the period chosen is very short, the hardships created by a fluctuating income are not reduced enough. Thus a compromise has to be made and perhaps a period of three or four years may be suitable.

Finally we come to discuss how actual stabilization policies for the cotton sector in the Sudan can be carried out, or implemented through alternative means. So far we have discussed price stabilization through a national buffer stock, and income stabilization through the use of a moving average together with the use of a reserve fund. However, there are three other methods, or groups of tools for the stabilization of price and/or income, the physical measures, fiscal policy and control. These can be used with the above-mentioned measures to create greater stability in price and income for the whole Sudan, or can be used alone. Price and income fluctuate because of changes in supply and demand. The Sudan cannot change or influence the world cotton demand or supply,
but she can take certain measures to affect or regulate the flow of her supply of cotton, not in order to influence the world cotton supply and price, but merely to reduce the fluctuations in the cotton yield per feddan and ultimately smooth out some of the income fluctuations of her own cotton producers; and we have already seen from Table 2.1 how far the cotton yield per feddan fluctuates from year to year. Perhaps the most effective measures in this respect are the regulation of the flow or supply of water by replacing rainfall by perennial irrigation through the use of dams and reservoirs on the Nile and other rivers, further research to find more effective pest-controls and more pest-resistant cotton plants, the training farmers and tenants and perhaps diversification. A major difficulty about making more extensive use of such physical measures is their cost. In general the cost of such measures falls on the Government, and to shift the emphasis of stabilization from buffer stock, reserve fund and fiscal policies to physical measures may mean, in the Sudan (and other underdeveloped countries), that a heavy economic burden is transferred from the cotton producers to the treasury and tax-payers. This may be more equitable in developed countries where taxes are graduated with incomes and where farmers fall in a lower income group than the rest of society. At the same time, however, such physical measures cannot be ignored completely in the Sudan (or any other underdeveloped country). (1) The other type of stabilization tool is fiscal policy. Taxation can stabilize both income and price and may be used with or without

(1) This question will be discussed more fully in Chapter Three, Sub-Section A.I.
subsidy. (1) Control can be used as a means of price stabilization, but, besides only affecting price, it can only be exercised within the national boundaries. Cotton, being an export crop, makes its price outside the Sudan Government control. Only when the time comes when the Sudan's cotton is processed and consumed in the Sudan can control be an effective tool for the stabilization of cotton price. (2) However, control, besides interfering with the price mechanism and allocation of resources, may require huge administrative machinery to carry it out and at a great cost; and, in any country which does not have enough trained staff and citizens with sense of civic responsibility, control may lead to corruption and bribery.

(1) Taxation as a means of stabilization is discussed more fully in Chapter Six.

(2) The question of industrialization will be discussed further in connection with diversification in Chapter Seven, Section B.
TABLE 2.1

Average Annual Prices of Sakel per Kantar and Average Annual Yield per Feddan and Their Percentage Changes 1949/50-1958/59.

<table>
<thead>
<tr>
<th>Season</th>
<th>Average Annual Price (1)</th>
<th>Price Change (%)</th>
<th>Average Annual Yield (2)</th>
<th>Yield Change %</th>
<th>Tenants Income (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1949/50</td>
<td>L. S. 15.5</td>
<td>41.290</td>
<td>L. Kantar 4.586</td>
<td>47.884</td>
<td>5.8</td>
</tr>
<tr>
<td>1950/51</td>
<td>21.9</td>
<td>5.936</td>
<td>6.782</td>
<td>54.290</td>
<td>18.1</td>
</tr>
<tr>
<td>1951/52</td>
<td>23.2</td>
<td>43.103</td>
<td>3.100</td>
<td>51.935</td>
<td>6.9</td>
</tr>
<tr>
<td>1952/53</td>
<td>15.5</td>
<td>15.441</td>
<td>4.710</td>
<td>4.246</td>
<td>5.1</td>
</tr>
<tr>
<td>1953/54</td>
<td>11.5</td>
<td>29.956</td>
<td>4.690</td>
<td>8.656</td>
<td>6.5</td>
</tr>
<tr>
<td>1954/55</td>
<td>14.6</td>
<td>13.698</td>
<td>4.284</td>
<td>13.562</td>
<td>5.1</td>
</tr>
<tr>
<td>1955/56</td>
<td>16.6</td>
<td>3.614</td>
<td>4.865</td>
<td>43.288</td>
<td>7.3</td>
</tr>
<tr>
<td>1956/57</td>
<td>17.0</td>
<td>23.529</td>
<td>6.759</td>
<td>77.733</td>
<td>8.3</td>
</tr>
<tr>
<td>1957/58</td>
<td>13.0</td>
<td>23.076</td>
<td>4.505</td>
<td>212.956</td>
<td>0.9</td>
</tr>
<tr>
<td>1958/59</td>
<td>10.3</td>
<td>4.710</td>
<td></td>
<td></td>
<td>5.9</td>
</tr>
</tbody>
</table>

**TOTAL** | **195,643** | **514,550** |

**AVERAGE ANNUAL RATE OF FLUCTUATION** | **21.738** | **57.172** |

**Source:** (1), (2) and (3) from Gezira Board Headquarters, Accounts Office.

**NOTE:** Change in price and yield, is taken as the difference between two years and then calculated as a percentage of the first year.
CHAPTER THREE

THE GEZIRA SCHEME

In this chapter we shall try to describe briefly the Gezira Scheme, to discuss the problems of measures designed to reduce fluctuations in cotton yield per feddan, to outline its historical development and, finally, to describe and appraise its reserve price policy as well as its Tenants' Reserve Fund which aims at reducing the fluctuations in the tenant income.

A. The Gezira

"Gezira" in Arabic means island; but the Gezira is not really an island. It is that part of the Sudan which lies between the Blue and White Niles from their junction southwards to the railway line. This region is an extremely flat plain of approximately five million acres, of which three millions are irrigable. The Gezira Scheme started with 300,000 acres, and its area then increased at intervals. The Gezira Scheme - excluding the Managil Extension - is approximately one million acres. In any year more than half of this area is fallow, 250,000 acres under cotton, 125,000 under 'dura' (sorghum) and about 60,000 acres under 'lubia' (dolichos lablab). (1) The Gezira specializes in growing extra-

(1) The different types of 'dura' are the main source of bread for the majority of Sudanese, while 'lubia' which is a shrub, is mainly used as a fodder.
long staple cotton, and, on the average, produces about 300,000 bales (about 50,000 tons) of raw cotton a year. It produces about 70% of all Sudan cotton. In spite of the wide fluctuations of yield and prices, the Gezira Scheme has been a profitable one and has become a source of wealth to the Sudan.

This perhaps has depended on the suitability of its soil, cheap irrigation and the general organization of the scheme. The basis of this success is the ecological suitability of the Gezira for extra-long staple cotton. The satisfactory exploitation of this fact owes much to the adequacy of the preparations and trials which had preceded the main project. The irrigation site of the Gezira Scheme has been another important natural advantage which has played a significant part in its success. "The Blue Nile River afforded huge quantities of water alongside huge areas of irrigable land. The slope of the river enabled the Dam at Sennar to operate both as a barrage and storage reservoir at a point where it could command most of the Gezira plain by gravity flow. This location and the gentle incline of the land from this point northwards had a basic effect on costs for the heavy capital expenditure on one single dam could be spread cheaply over a large paying area." (1)

The unique features of the Gezira soil are that of being alkaline cracking clay of great depth and superficially very uniform. The clay fraction varies around 60% and, as there is a high sodium content, the soil is very impermeable. Soil cracks are

considered to be of great importance in maintaining structure and allowing free movement of water and air, while soil which is impermeable has important bearing on irrigation as irrigation canals do not need lining and there is virtually no seepage.

The Gezira lies within that part of tropical Africa subject to continental climate and characterized by very hot summers and cool dry winters. It is within the summer rainfall zone. The mean annual rainfall in the Gezira is about 16 inches, falling mainly during the period July-September. The amount of the rainfall and its distribution over the season are liable to considerable variations from year to year, and though rainfall is of little importance as a source of water for irrigated crops, its influence on them is considerable. The Syndicate had observed some relationship between heavy rains preceding the sowing season and high subsequent yields, and between severe shortage of rain before the end of the sowing season and bad yields. However, more research has revealed the existence of a strong and definite relationship between rainfall and cotton yield. "Dr. Frank Crowther at the Research Institute put his data into an equation, giving a certain weight as a factor decreasing yield to every fifty millimetres of preceding years' rain, and a certain weight as a factor increasing yield to every fifty millimetres of pre-sowing rains. These rainfall statistics were of course known at the time of planting, and the equation was used to foretell the probable yield before a seed went into the ground." (1) Of course a few of these calculations

had to be adjusted sometimes to take into consideration factors which might affect yield after sowing. Though irrigation has substituted rain, rain has continued to affect the cotton yield in two main ways. In the first place, it affects the physical structure and permeability of the soil and thus it affects the nitrogen-forming bacteria in the soil. In the second place, it affects the cotton yield through its effect on pests. It is believed that pre-sowing rains may provide weeds enough for insects outside the cotton-cultivated area, thus keeping them content and happy so that they do not need to attack cotton for food. On the other hand any heavy rains after sowing season may help cotton disease to develop faster by speeding its spread from one plant to another, while very late rains may help a lot of insects to survive the dry season thus making them a menace to young cotton plants in the next season. Though cotton pests and disease can be controlled to some extent, there is nothing that can be done to affect the timing and quantity of rains and their effect on the soil in the Gezira. Another important factor which affects cotton yield, and has to be accepted, is temperature. (1)

In addition to the problem of fluctuations in yield came the problem of fluctuations in grade or quality of cotton. The qualities of cotton, upon which the grade of cotton is assessed, such as the length of the staple, the fineness, lustre and percentage of waste, vary widely from one season to another. In years of low yield, usually the quality of cotton drops too.

(1) For more information on the climate of the Gezira, please see J.D. Tothill, Agriculture in the Sudan, Oxford University Press, (London), 1948, 64-83.
I. Measures for stabilizing the yield per feddan

These wide fluctuations in yield per feddan, as seen in Table 3.1, which have made the income of the cotton producer or the tenant in the Gezira Scheme fluctuate widely, have two important implications for the stabilization policies for the Gezira Scheme or for the whole cotton sector in the Sudan. The first is that some physical measures for regulating the cotton supply or yield per feddan are desirable, and, secondly, direct income stabilization is essential. We have already mentioned in Chapter Two that to shift the stress of stabilization to physical measures may result in a heavy burden on the Treasury and the tax-payers who may not be better off than the bulk of the cotton producers. Thus such a policy may not result in an equitable income re-distribution. Another drawback of such a policy of physical stabilization of supply is that such measures may lead to over-supply of the export crop which may result in much reduced prices and therefore defeat their own purpose. However, this kind of drawback is not important in the case of the Sudan because it is a very small producer of cotton and an increase in its supply by such measures cannot influence the world cotton price. The real problem in the Sudan for such physical measures is the lack of capital for financing them.

In the case of the Gezira every measure should be financed by the tenants themselves because they have a high income in relation to the bulk of the tax-payers in the Sudan. As a matter of fact, all the expenditure on research, pest-control, etc.,
is made from the Gezira cotton proceeds. But it may be said that not enough physical measures have been taken to stabilize the cotton yield per feddan in the Gezira - and more so in the case of other schemes and areas producing cotton in the Sudan. It is very difficult to say how far physical stabilization should be carried versus direct stabilization or price stabilization. This depends completely on the ratio of benefits to costs of each. Unfortunately we cannot go into the analysis and the determination of their ratios here. Besides definition and conceptual problems, there is the usual problem of lack of statistics which are vital for the measurement of benefits and costs. In practice if such measures are to be carried far there is the problem of the lack of capital for investment in big schemes such as dams. The only way the Sudan may manage to solve it - unless national savings increase greatly - is through loans from abroad. If any measure or an agricultural scheme can be financed from foreign or national loans, which can raise and stabilize supply of cotton or any other export crop, then it may be possible to pay back the loan from the net increased returns. This is what has happened with the introduction of gravity irrigation into the Gezira Scheme. By 1950 it paid all its capital loan, besides some net profits, to the Sudan Government. Such a scheme does not involve any income re-distribution. Thus it seems clear that we cannot generalize about such physical measures of stabilization.

They depend on several important factors:

1. whether these measures increase supply and reduce price or not;

2. whether these measures can be self-financed because of increased productivity or because the producers themselves are able to finance them or not;

3. where they are not self-financed, whether the income re-distribution resulting from them is desirable or not.

We do not know how production fluctuated before the establishment of the Gezira Scheme, and thus we cannot find out the benefit from the change from rainfall to perennial irrigation in terms of less yield per feddan fluctuations. Moreover, several measures are used together—research, use of pest-control, fertilizers, etc. How much of the increased stability in yield per feddan is contributed by each of these measures? However, the benefit and cost of direct income stabilization is much easier to find. We can measure the annual average rate of fluctuation with and without the effect of the payment into and out of the Tenants' Reserve Fund and find out the stabilization effect—that being the benefit. We can also calculate the cost by finding out the interest on the Tenants' Reserve Fund for the period under consideration. Without proper money markets in the Sudan it may not be easy to say exactly what rate of interest can be used in calculation of cost, but it may be estimated. Other administrative costs may also be estimated.

However, the use of these physical measures, as we call them, does not exclude the use of direct income stabilization, as already mentioned. Natural factors which affect the cotton yield per feddan can be divided broadly into two groups. One group,
such as fluctuations in supply of rain or flood, water or pests, can be reduced effectively by physical measures, but there is another group of natural factors, such as sunlight, wind or temperature, which are rather impossible to interfere with on a large scale. Glass-houses may be a solution but cannot be used on such a large scale as to enclose a cotton scheme or a cotton farm. Such natural factors have to be taken for granted and policies for direct income stabilization should be devised so as to reduce their impact on the income of the cotton producer.

II. Historical development of the Gezira.

The present organisation or partnership under which cotton is produced in the Gezira can only be understood through its history and we do not need to be detailed here. There are, of course, natural factors which have helped in making such a large scheme possible and successful. But these are not of interest to us here. There is one important factor which developed the Gezira and gave it its present organisation, or the present system of partnership between the tenants, the Sudan Government and the Gezira Board (which replaced the Sudan Plantations Syndicate in 1950). This main factor is the failure of the early rental system adopted by the Syndicate.

When the rental system at Zeidab as well as at Tayiba in the Gezira failed, because of wide fluctuations in cotton yield and income from land while the tenant had to pay a fixed money rent, a new system had to be worked out. A system of sharing the cotton profits was introduced in 1913 on the basis that the Sudan
Government would get 35%, the tenants 40% and the Syndicate 25% of total gross profits. In 1927 the Kessala Cotton Company was granted a concession on the same lines as the profit-sharing system started in the Gezira Scheme. As a matter of fact, the profit-sharing system has become the rule in all cotton schemes which use tenants - even in private cotton pump schemes. The wide use and continuance of this system of profit-sharing reflects its success because it has solved, to some extent, the problem of fluctuations in yield. The income of the tenant in the Gezira has definitely been stabilized, to some extent, by taking it in a form of percentage of cotton profits, which really means that the rent he pays for land, water, etc., varies in absolute terms in relation to his income from cotton.

The Agreement signed between the Sudan Government and the Syndicate in 1913, besides laying down the share of each partner, also laid down the costs to be borne by each.

The Government had to pay the interest on the loan to be used for the development of the Gezira, amortization, maintenance of irrigation works and canals and rent to the natives for the lease of the land.

The 25% which went to the Syndicate had to cover the cost of roads, drainage, subsidiary canals, clearing and levelling, agricultural supervisory staff, accounting staff and profits.

The 40% which went to the tenants, had to cover cost of labour, seeds, agricultural implements, use of tillage, animals and tenants' profits.
74.

No change has taken place in the percentages of profits until 1950.

The Sudan Government then tried to get a loan from Britain for building Sennar Dam and developing the Gezira as a cotton scheme. The First World War delayed the whole plan and brought changes in the estimates of the cost of the dam, and the amount of the loan had to be raised from three to six million pounds. The British Treasury guaranteed the loan and the Sudan Government managed to get it in 1919. The Dam was finished in 1925, and this marked the real beginning of the Gezira Scheme which in the period prior to 1925 was merely a large pump scheme.

By ordinance the Government leased all the land in the Gezira for fifty years and undertook to pay an annual rent of about two shillings for a feddan - which is really a nominal rent to give the natives of the Gezira a sense of ownership. The whole land was then pooled and distributed into tenancies of thirty feddans each for growing cotton mainly although small plots can be used by the tenant for 'dura' and 'lubia'. Therefore the money income comes from his cotton, while he can get enough 'dura' for himself and family and enough fodder from 'lubia' for his animals.

This system of partnership or organisation in the Gezira seems to be some sort of compromise between private and public ownership in an attempt to obtain and combine what is good in both. The tenancy is a planned family holding with a tenant-manager in each who has a personal stake in success. He has to follow a prescribed rotation and to follow the advice of the agricultural
staff or he will be evicted. He is not allowed to assign, mortgage or sub-divide his tenancy. This, really, has solved the chronic problem of land fractioning, a big one in many countries of the Middle East. These measures are designed to help the tenant to reap the maximum gain out of his effort, and while the tenant can reap the fruits of his hard work, the whole scheme is run like one unit with various large-scale economies, with the nation at large benefitting from its economic development.

B. Cotton Marketing

After the tenant picks his cotton, he takes it to the nearest collection centre on his own donkey or camel, where it is weighed, and he is paid for his cotton at a price which is not known before the time of picking. It is usually somewhat less than the expected average price for that season. Later, when the Gezira cotton is sold, the tenant is paid the residue just before the sowing season to help him in financing cultivation. It is usual that the Gezira Board (or the Syndicate before 1950) sells the bulk of its cotton before the beginning of the next season. It was only in 1958 that the Gezira had a large carry-over of cotton which it sold in 1959.

Then cotton is carried by the Gezira's own railways to ginneries where it is ginned and classified, after which it is carried to the nearest Sudan railway station from where it is transported to be stored at Port Sudan while waiting for buyers.

The Syndicate started by selling all of its cotton at
Liverpool through the British Cotton Growing Association for a commission. However, in 1926, the Syndicate tried to sell part of the cotton by public auction at Barakat (headquarters town) as an experiment. But the experiment was not successful as very little of the cotton offered was sold. The Syndicate was criticised for giving little time for sampling and selling such amounts of cotton. Several firms protested to the Sudan Government. But the Government was rather in support of the Syndicate as it seemed that both of them were suspicious of middlemen and they felt that prices in England were much higher than prices at the auction at Barakat - taking into consideration the cost of transport.

The method of selling cotton at Liverpool through the British Cotton Growing Association had its problems too. By sending all cotton varieties, to offer buyers the widest possible choice, to Liverpool, and storing them there, the Syndicate had to bear heavy charges for storage, especially when sales were slow. By 1935 the view of the Sudan Government about auction began to differ from that of the Syndicate. The Government wanted to resume local public auctions as a means of increasing the rate of cotton sales. In 1935 cotton auctions were started again, without disclosing reserve prices, and at Port Sudan instead of Barakat. Reserve prices were related to actual sales made in Britain or to valuations made by the firm of Wolstenholme and Holland. But again the auction method was criticised on the grounds that not enough time was given for sending samples abroad and receiving orders for purchase of cotton. Some merchants complained that lots of cotton after being offered for sale
and failing to reach the reserve price were withdrawn for good. This meant that when an order came late from abroad the lot of cotton had already been withdrawn for good and the commission agent could not buy it even if he wanted to pay a higher price than the reserve price.

Local auctions have remained the main channel of marketing the Sudan cotton and future markets, or Liverpool Exchange in this case, were abandoned completely by the Syndicate in the late 1930s. The experience of the Syndicate shows that future markets are not intended as a means of insurance against annual or cyclical price fluctuations for such large quantities of cotton. Moreover, future exchange is a type of a market where deliveries of actual commodities rarely occur. (1) "Although it is perfectly legitimate to tender cotton under a futures contract, the use of this method of selling cotton on any extensive scale, in lieu of spots sales, would have upset the whole mechanism of hedging," and could have wrecked a delicate instrument like a futures market. (2) But the main objective of any cotton board or agency is to get rid of its crop at a rather steady price. Therefore, as futures markets cannot be used for the actual selling of the cotton they can only help as an insurance against price fluctuations through future selling. They may be used by a manufacturer to transfer the risk of price rise of raw materials which may rob him of his profits, if he enters into a contract to deliver certain amount of goods at certain prices. He


(2) A. Gaitskell, Op. Cit., pp. 185 and 186. (Tendering means delivering actual cotton against futures contract, instead of settling or honouring the contract through money payment to cover the difference between spot and future prices.)
may hedge to insulate himself from the contingency of price rise of materials used in the production or in stock, but he also automatically denies himself the possible chance of enjoying a windfall profit. This is also true of any future selling of cotton which guarantees a certain price in the future at the expense of foregoing any rise in price plus the difference between spot and future prices. Future markets can be very helpful to a farmer who wants to obtain the same price at the time of sowing when he harvests his crops by selling them in advance. But all such future selling or buying in practice is only for about three to six months. However, if a cotton commission or a board wants to hedge or sell in advance large quantities of cotton, it may be very difficult to find enough brokers who are ready to take such big risks. The operation of concluding future contracts can be very slow, and this has been one of the main reasons which has made the Sudan Government persuade the Syndicate to concentrate on local auctions. (1) However, though spot and future prices maintain a reasonably stable margin or premium between them, they both fluctuate very much from month to month and from year to year and therefore if a cotton board wants to sell its cotton through future contracts, it may find the price reasonable or may not find it satisfactory depending on the cotton situation in the world because, in general, all future quotations tend to move together; and they in turn keep in general harmony with spot prices. Moreover, future exchanges besides being influenced by genuine economic factors, may be

affected or distorted by what may be termed as "technical reasons". For example, the market is apt to know when a large uncovered position exists and therefore those who have gone "long" will hold off selling their futures in hope that those speculators who want to buy to cover themselves and honour their contracts will be forced to bid prices higher and higher. When this happens a "squeeze" is said to exist and prices rise sharply for a short time and then fall drastically. The opposite can happen when too many speculators have gone long and people waiting to buy futures contracts hold off their purchases in the hope that the price fall which has already occurred can be pushed even lower. Thus a squeeze has a disturbing effect on the market as a whole. (1) As futures markets cannot be used for actual selling of cotton, they can only serve as a means of insurance against price falls and this can only be done if the Sudanese cotton boards or whatever authority marketing it can play their cards well most of the time against those professional speculators. It is highly doubtful that this would be the case. As a matter of fact the Syndicate had been squeezed many times with catastrophic results the last of which in the winter of 1934-5. (2) In the Sudan today, and with lack of skill and experience in dealing with futures markets, it is much better to rely on local auctions, and a national buffer stock which can help to reduce, to a great extent, downward movements of cotton prices

while this does not deny the cotton producer taking advantage of rise in world cotton prices - as already explained in Chapter Two. Even if the skill and experience are available, it is too much to expect a cotton board to be a speculator in international futures markets so as to be able to stabilize cotton prices. We should learn from our experiences in the 1920s and 1930s, and though the Sudan cotton production has increased in volume and has gained more recognition and respect for its quality in the last thirty years or so, the basic problems of selling it in foreign futures markets have remained the same.

Then the Second World War came and changed the scene. Sales of cotton in local auctions almost came to nothing. In March 1941 Liverpool market was closed, and the British Government took control of raw cotton. In August 1942 the Syndicate closed its sales office in Port Sudan. During the war and until 1953 the Sudan sold its cotton mainly through bulk contracts with the United Kingdom Raw Cotton Commission and with the Indian Government as well.

In 1954 the Gezira Board re-introduced the auction system, with many improvements, as the main outlet for selling its cotton. Public auctions are held five times a week at Khartoum, instead of Port Sudan. (Khartoum is the capital and, besides having many facilities such as hotels and banks, it is easier to do business there because most of the foreign firms have their head offices there.) Prior to the auction, buyers are offered samples of the auctioned cotton to despatch to their customers abroad. Thus, when buyers attend the auction, they are given the opportunity to examine
the cotton, despatch samples to their customers and receive instructions.

The reserve prices for the Gezira cotton are based on prices of similar cotton in the world major exchanges such as Alexandria (before it was closed in 1960), Liverpool, New York and Bombay. The Board's policy is to change reserve prices in accordance with changes in prices in these important world markets. The aim behind the reserve price is merely to give the cotton producer a 'fair price' in the sense that it gives the producer the same price if he sells his cotton in any of the world markets, minus, of course, the cost of transport. It does not aim at stabilizing the cotton price at all, but merely does not allow the price of cotton to drop for artificial reasons such as speculation or perhaps collusion in the Khartoum Cotton Auction Market. At the same time, though the reserve price is based on cotton prices in organized cotton exchanges, it does not move with them all the time. The Board is keen not to change its reserve price in response to very short-term price fluctuations reflecting speculative forces and play of random variations in those markets. Other fluctuations are of some definite trend resulting from genuine changes in world demand and supply of cotton, and according to such changes in world cotton prices that the reserve price is adjusted.

Though the reserve price is calculated by the Gezira Board and the cotton auction, too, is run by the Gezira Board, the latter is open to all cotton producers of the Sudan. As the bulk of the cotton produced by Boards, and those sell their cotton through
the auction, a very small percentage is sold outside the auction and usually the prices of those outside sales follow the auction prices.

With the establishment of an agency for running the national buffer stock - as we have suggested in Chapter Two - it must be made clear that all cotton sales outside the auction are illegal as well as all buying from the cotton producer except for the agency. Without such a law the agency cannot function properly. On the other hand the administration of buffer stock will be too large to be handled by the Gezira Board and therefore it must be put under an independent body such as a marketing board. This change, besides being necessary for an administrative point of view, may have desirable psychological effects on the private cotton producer. Such a change may make him feel that the cotton marketing is not run just for the benefit of the Gezira Scheme but for the whole Sudan.

C. The Gezira Board

The year 1950 and the year 1960 are very important in the recent development of the Gezira Scheme. 1950 saw the Gezira Scheme Ordinance (Ordinance No. 16) and 1960 saw the Gezira Scheme Act (Act No. 30). The Ordinance changed the management of the Gezira Scheme from the hands of the Sudan Plantation Syndicate to the hands of the present Gezira Board, put down in black and white what was already routine, and also introduced some reforms as far as the Tenants' Reserve Fund, Social Development of the Gezira and
changed percentage shares of the three partners were concerned. The 1960 Act introduced further reforms to the Tenants' Reserve Fund and also changed the percentage shares of the three partners.

The Board is composed of the Managing Director, besides two other officials from the Ministry of Finance and Ministry of Commerce and according to the Ordinance, the Governor General of the Sudan was supposed to appoint other directors, of whom three would be Sudanses, after taking into consideration views of the Executive Council of the Sudan. The Act allows the Council of Ministers to appoint not less than three and not more than six other Directors besides the two officials from the Ministry of Finance and Ministry of Commerce, and the Governor of the Blue Nile Province. Thus the Act allows for the appointment of more than four people who may be non-government officials, but at the same time it introduces that an official from the Ministry of Commerce may be appointed, while in the Ordinance one official, from the Ministry of Finance, is appointed on the Board of Directors. Thus there is a wider representation of the agents of the Sudan Government, but a smaller proportion of Government officials, in the Geïra Board in 1960 than there was in 1950. Both the Ordinance and the Act bar the entry of any tenant to the Board.

The Geïra has a Local Committee charged with giving advice to the Board on those living and working within the Scheme area and on all matters affecting the welfare of the inhabitants of such areas. It is charged also with making recommendations concerning the allocation of funds available for social development.
The 1960 Act changed the composition of the Local Committee as far as the tenants' representation is concerned. According to the 1950 Ordinance only ten members of the Local Committee could be appointed by tenants or by persons elected by tenants, while the 1960 Act allows the number of tenants' representatives in the Local Committee to rise to twenty, while the number of Government officials representing Ministries and Departments rises from five to six. This may be the result of the increase in the power of the tenants as a body and their ability to decide upon matters concerning their own welfare.

According to the Ordinance, Chapter Two, Section Five, "the Functions of the Board shall include the carrying out of all such activities as may appear to the Board to be requisite, advantageous or convenient for the discharge of its duties under the preceding section, and in particular without prejudice to the generality of the foregoing shall include:

a) The clearing and levelling of land from time to time added to the Scheme area for the purposes of the Scheme.

b) The construction and maintenance of the subsidiary canalization (as defined in the First Schedule) necessary for the irrigation of the Scheme area.

c) The allocation and letting of tenancies within the Scheme area to tenants by means of agreements in a form upon which the tenants have been consulted and which has been approved from time to time by the Executive Council.

d) The supply to the tenants of suitable cotton seed and, at the Board's discretion, of other seeds for sowing.

e) The operation of heavy agricultural processes.

f) The provision of fertilizers.
g) The conduct of bulk control operations.

h) The supervision and instruction of the tenants in their farming.

i) The collection and transport of cotton, produced within the Scheme area from the Board's collecting stations.

j) The ginning and baling of such cotton.

k) The storage and marketing of such cotton.

l) The making of loans, at the Board's discretion, to tenants for their farming operations.

m) The conduct of agricultural research.

n) The promotion of social development services by any means having as main object the benefit of the tenants and other persons living within the Scheme area, the assistance of Local Government Authorities and other bodies in providing such services, and, where it thinks fit, the provision of such services by the Board.

o) The setting up and management of such provident or other trust funds for the benefit of its employees as the Board may from time to time think fit, with power of its discretion to make contributions thereto.

p) The conduct of social research.

q) The provision and maintenance of:
   i) such store-houses, dwellinghouses, offices, workshops and other buildings;
   ii) such ploughing and other heavy agricultural machinery;
   iii) such vehicular and other transport;
   iv) such ginning factories, gins, baling-presses and other machinery;
   v) such equipment, stores and supplies as may be necessary to enable the Board to perform its duties and functions hereunder.

r) The engagement and employment of such staff as may be necessary for the purposes aforesaid.
The fostering of tenants' consultative bodies and consultation therewith.

Such other activities as are in the opinion of the Board calculated to facilitate the carrying-on by the Board of any of the activities above-mentioned.

The Board, by carrying and paying all these expenses from its share, makes the difference between the tenants' net and gross money income very small.

In the 1960 Act the same functions are repeated and a sub-paragraph is added to (r) which says, "the making of housing and car loans to staff on such conditions as may be from time to time prescribed by the Board," This seems to reflect that more attention is given to the welfare of the top staff of the Gezira Board who can buy houses and cars.

D. Cost-and Profit-sharing

The joint costs, which are the liability of the three partners, include the following:

i) the cost of transport of cotton from the Board's Collecting Stations to the Ginneries and from the Ginneries to the market;

ii) ginning and baling;

iii) warehousing;

iv) insurance of cotton crops;

v) usual and proper marketing expenses;

vi) any other expenses incurred for the benefit of the cotton crops as a whole;

vii) export duty. (1)

(1) Export duty, by being included in joint costs, has certain implications for its use, as we shall see in Chapter Six, Section E.
The 1960 Act has added the cost of pulling cotton stalks and the cost of any changes in the irrigation system carried by the Board, to secure the best use of it, to the Joint Cost Account of the Gezira Scheme.

The 1950 Ordinance has divided the gross profits (total revenue minus joint costs) as follows:

<table>
<thead>
<tr>
<th>To the Government</th>
<th>40%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot; Tenants</td>
<td>40%</td>
</tr>
<tr>
<td>&quot; Board</td>
<td>20%</td>
</tr>
</tbody>
</table>

while the 1960 Act has divided the gross profits as follows:

<table>
<thead>
<tr>
<th>To the Government</th>
<th>42%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot; Tenants</td>
<td>44%</td>
</tr>
<tr>
<td>&quot; Local Government Councils in the Scheme</td>
<td>2%</td>
</tr>
<tr>
<td>&quot; Social Development Fund</td>
<td>2%</td>
</tr>
<tr>
<td>&quot; Board</td>
<td>10%</td>
</tr>
</tbody>
</table>

The share of the tenants has risen from 40% in 1950 to 44% in 1960. But we must note that according to the Act the tenants' share is in fact 42% as 2% of the gross profits has to go into the Tenants' Reserve Fund - as we shall explain later in this chapter. Also, besides the rise in the percentage share of the tenants, some of the cost which used to be borne completely by the tenants is now added to the Joint Cost Account, eg., the cost of pulling cotton stalks. At the same time the establishment of the Welfare Development Fund, though very small, seems to increase the real income of the tenant indirectly, and this may also be the case in the subsidizing of Local Government Councils in the Gezira who may provide things such as clean water for drinking besides other public services.
E. Independence of the Board

In both the Ordinance and the Act, Chapter Two, Section Six, paragraph six, says: "For the avoidance of doubt, it is hereby declared that the Board as such body corporate is an independent entity and neither the servant nor the agent nor a department of the Government, nor are its members, officers, or employees, as such, Government servants; and so that for all purposes including the employment and conditions of services staff, the holding of land and payment of taxes, the Board has all the rights and liabilities of an independent corporation."

As the Gezira Scheme produces about 70% of all the Sudan cotton, and cotton contributes 13% of the G.D.P., the Gezira Board must be playing an important part in the Sudan economy. Thus, in spite of the fact that it is neither agent nor servant of the Sudan Government, one wonders whether it is really independent of the central government or not? Looking through both the Ordinance and the Act, one comes to realise that there is a wide chance for the Government to influence many of the decisions of the Gezira Board directly, besides the fact that the Council of Ministers can change all or a part of the Act, though this cannot be done very often.

In both the Ordinance and the Act, Chapter Two, Section 15, paragraph (1), "the Minister of Finance (Financial Secretary in the Ordinance) with approval of the Council of Ministers and after consultation with the Board may from time to time give the Board directions of a general character as to the exercise by the
Board of its functions with regard to the Scheme matters which appear to the Council of Ministers to affect the national interest; and the Board shall carry out such directions.

It is very obvious that the phrase "national interest" is vague and can mean anything. Given the significance of the Gezira cotton in the Sudan economy, the Sudan Government seems to be able to interfere with any major decisions to be made by the Gezira Board. However, there are specific items for Government interference, for example in the provision that the Board cannot borrow more than £2, 2 millions without the approval of the Minister of Finance. Payments both in and out of the Tenants' Reserve Fund have to be approved by the Minister of Finance (or the Financial Secretary in the case of 1950 Ordinance).

F. Reserves and Stabilization Policy

It may be worth while here to start by going into the origin of the Tenants' Reserve Fund in the Gezira Scheme in 1937. In that year the Sudan Government and the Syndicate agreed to establish a Tenants' Reserve Fund. "It had three objects: to repay the bad debts of the depression years, to afford security for future loans, and to provide an equalization fund to stabilize profits in future bad years."(1) The drop of prices in the depression of the early 1930s was accompanied by an even sharper decline in yield as shown in Table 3.1. Thus low prices with very low yields in 1930, 1931 and 1933 made the tenants unable to pay

(1) A. Gaitskell, Op. Cit., p. 165
back the advances which they obtained from the Syndicate. The Government and the Syndicate tried to solve this problem partly by reducing costs on the tenants. The Government reduced freight on cotton from Gezira to Port Sudan while the Syndicate reduced its rate of interest on advances to tenants. In 1935 it was decided that the charge made to tenants for depreciation of ploughing machinery and for ginning was higher than was actually needed and thus the difference was put into the Tenants' Reserve Fund, as a start. But that was not enough and the Sudan Government and the Syndicate agreed to make the tenants contribute to their reserve fund by paying a flat rate per Kantar of cotton. Each tenant paid 12.25 piastres. (1) It was a collective fund without any individual record. This had two inequitable features. On one hand the tenants of 1934 and after paid for the debt of the tenants of 1930-3 who might have not been the same, while on the other hand those who worked hard and produced more cotton paid more than those who had not produced so much.

Then came the years of the early 1940s with improved prices and higher yields (as seen from Table 3.1), which helped in liquidating most of the bad debts, and both the Government and the Syndicate were ready to waive the remainder of their claims. Thus the first objective of the Tenants' Reserve Fund, of recovering the bad debt, came to an end and it was decided by the Government and the Syndicate to build a Tenants' Reserve Fund to serve its third objective, an equilization fund. With the coming of the

(1) P.T. or a piastre is equal to about 2.4615d.
Second World War, the supply of imported goods shrank and it was decided by the Government and the Syndicate to increase the rate per kantar\(^1\) of cotton paid by the tenants. The Tenants' Reserve Fund began to increase as no payments were made out of it, except in 1944 when the sum of only Ls. 71.228 was paid to the tenants. The amount of the Tenants' Reserve Fund in 1945 was equal to about a year and a half of profits - at 1946 prices. In 1950 when the Gezira Board took over from the Syndicate the Tenants' Reserve Fund had a balance of Ls. 992,460.

Part I of Schedule IV of the 1950 Ordinance contains the reserve policy. If the Board's share in any year exceeds the sums of (1) interest on temporary loans, (2) the Business\(\text{Report}\) Tax and (3) the equivalent of Ls. 3.5 per feddan\(^2\) cultivated under cotton, one half of such excess would be paid by the Board into the Tenants' Reserve Fund and the remaining half would be placed to the Board's General Reserve. However, if at any time the amount of the Tenants' Reserve Fund amounts to or exceeds three million Sudanese pounds, any excess payable by the Board would be credited to the Tenants' Collection Account of that year, i.e., paid to the tenants directly. On the other hand, if at any time the Board's General Reserve should amount to or exceed three million Sudanese pounds, any excess due to the Board's General Reserve will not be placed to the Board's General Reserve but shall be paid by the Board to the Government.

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\(^1\) A kantar is a Sudanese weight which is equal to 99.05 lbs, but in the Gezira and the Gash Delta a large kantar is used, which is equal to 311.85 lbs.

\(^2\) A feddan is equal to 1.038 acres.
The 1960 Act raised the share of the tenants from 40% to 44% of gross profit, but has at the same time made them pay for their own reserve fund. As long as the Tenants' Reserve Fund is short of an amount equal to Ls. 25 per feddan under cotton, 2% of gross profits, or a lesser amount, would be transferred from the tenants' share to the fund. In the period 1950-1960 there were usually 250,000 feddans under cotton each year. Thus the maximum amount of the Tenants' Reserve Fund, under the Act for the Gezira Scheme excluding the Managil Extension, is Ls. 6,250,000. The maximum of the Tenants' Reserve Fund has therefore been doubled by the Act.

According to the Ordinance, the Board has to pay its residue into the Tenants' Reserve Fund. Such payment is highly indeterminate and does not seem enough anyway. The Act has improved the situation by making tenants pay the 2% of gross profits or lesser amounts if the Tenants' Reserve Fund is short of Ls. 25 per feddan under cotton. However, 2% of the gross profit is a small sum compared to the income of tenants in good years. The deduction of 2% of gross profits from the tenants' income in high income years such as 1951 (when income tripled) or 1950 or even 1957, cannot have any effect in reducing the upward movement of income and at the same time does not contribute a large enough amount to the Tenants' Reserve Fund to make it big enough to cushion downward movements of income. If we apply the 1960 Act to 1951 we find that the total tenants' share was Ls. 18.1 millions while their contribution would have been not more than Ls. 990,000 (being 2% of Ls. 45 millions).
For such a rate of deduction to be an effective tool of income stabilization, it must be **progressive**. If income falls below the average of a certain number of years, then there should be no deduction; on the contrary, payment should be made out of the Tenants' Reserve Fund to subsidize the tenants, while the higher the income above that average the higher should be the rate of deduction. As a matter of fact according to the exact words of the Act, the tenants should pay 2% of gross profits as long as the Tenants' Reserve Fund is below Ls. 25 per feddan under cotton, even if their income has fallen greatly. At the same time, according to the exact words of the Act, the tenants should not pay anything as long as the Tenants' Reserve Fund has reached its maximum, even if their income has risen greatly.

However, if we do not want to be involved in problems of equity and income redistribution among tenants, the contribution to the Tenants' Reserve Fund - when made according to this progressive percentage system - should be taken from the gross profits of each individual tenant **separately** and credited to his own account and, later, when repayment is made, this should also be debited to his account. Thus those who produce more, and pay more into the Tenants' Reserve Fund, should be subsidized further when their income falls, and vice versa. The Gezira Board already keeps separate individual accounts for each tenant in the Gezira Scheme, and therefore there will be **no more additional cost** in this operation of the stabilization scheme.

It might be of interest to compare the reserves of the
Gezira Board with those of the Cotton Marketing Board in Uganda - the Sudan's neighbour. Table 3.2 shows that the amount of the reserve in relation to the producer's income in the same year, or to the average of the producers' income in the period 1949-60, is much larger in Uganda than in the Sudan. In Uganda the reserve has not been below 93% of the producers' income in any year, while in the Sudan it has been as low as 17%. Even if the Tenants' Reserve Fund had risen in 1960 to its maximum of Ls. 6,250,000, it would have made only 65% of the tenants' income or share in June 1960. The reserve reached 122% of the tenants' income in June 1958 simply because the tenants' income dropped from Ls. 8.8 millions in 1956/57 to Ls. .9 million in 1957/58.

Thus it becomes clear that the reserve of the Gezira Board is not sufficient. It is impossible to make a rigid rule about how much reserve should be accumulated in relation to the income it is supposed to stabilize. However, the larger the reserve, the larger becomes the ability of the authorities in question to stabilize the income of their patrons. But the larger the reserve the greater the cost of maintaining it. Part, or all, of the reserve may be invested, but if all, or the greater part, of the reserve fund is to be liquid or fairly liquid all the time to meet the downward fluctuations, the total revenue coming from such investment cannot cover all the cost of maintaining the reserve fund. Moreover, if a very large reserve is accumulated by taking a big percentage from the tenant income, this may have disincentive effect on him. Thus a compromise has to be made between cost and
disincentive on the one hand and a large reserve with large stabilizing effect on the other.

To the criticism that the Gezira Board has not accumulated sufficient reserve funds for the stabilization of the tenants' income, officials of the Board have replied that this was due to the reluctance of the tenants to take a large share of their annual income. But, to my mind, such an answer cannot be accepted in view of past experience. The tenants might have been reluctant to pay a large percentage of their annual income into the Tenants' Reserve Fund, but that does not mean that they cannot be persuaded to pay. It merely seems that the Gezira Board is not really keen to go to the trouble of doing this persuasion because there is no direct benefit to it, as a separate entity from the body of the tenants. In 1950 the tenants wanted to have all their income paid to them immediately, while the Sudan Government wanted the payment to be spread out over a year. After a stormy meeting between Mr. Chick (the Financial Secretary of the Sudan Government) and Sayed Mohammed Awam (the Tenants' Advisor) with the forty representatives of the tenants, they agreed to the latter because they came to understand the inflationary problems of such an immediate payment of all of their income.\(^1\) The power of the tenants might have increased after 1950 but one supposes that their ability to understand and co-operate has also increased.

When one comes to examine the payments made out of reserve funds, as shown in Table 3.2, one tends to observe that the Cotton Marketing Board in Uganda has been more consistent than

the Gezira Board - except, perhaps, for its payment of £7.2 millions in 1959 which seems to be too large. The Gezira Board has not, on the whole, been so consistent. In 1952/53 when the tenants' income was Ls. 5.1 millions, Ls. 93 million was paid, and when it rose to Ls. 6.5 millions, Ls. 35 million was paid from the Tenants' Reserve Fund as well. When the tenants' income rose to Ls. 8.8 millions in 1956/57 the Board went on and paid Ls. 49 million to the tenants, while when it fell from Ls. 8.8 millions to Ls. 9 million in 1957/58, only Ls. 1.9 millions were paid to the tenants as subsidy.

The obvious inconsistency in both the time and year of payment and the amount paid out of the Tenants' Reserve Fund seems to reflect a basic fault in the present method of working the reserve fund - arbitrariness. The payment out of the Tenants' Reserve Fund depends on the arbitrary decision of the Gezira Board, if approved by the Minister of Finance. However, the approval of the Minister of Finance does not make it less arbitrary in any way. The objection to such arbitrary decisions is that they are open to pressure and bargaining from different sides, although once a definite rule is established, it is not easy to change it, and even when it is easy to change there must be a reasonable explanation. The use of a moving average would have resulted in more consistent decisions and a more stabilizing effect - with the same amount of reserve fund - than those arbitrary ones.

The Tenants' Reserve Fund seems to be the only available tool for stabilizing collectively the tenants' income in the Gezira, though not to the extent one would have desired. Under such
conditions it may be desirable to seek other alternatives which may help in reducing the fluctuations in the tenants' income. For instance, the Sudan imports dried milk, dried eggs, and butter and cheese for not less than Ls. 200,000 a year, in spite of the high import rates on them. The home supply is small and means of transport are inadequate. A large part of the demand is from towns. It may be a successful scheme if dairy and poultry are introduced in the Gezira. With the fodder produced in the Gezira, each tenant can have his own animals, which can be bought during high income years. Then the processing and marketing can be done on a co-operative basis. Capital for the processing plants can also be contributed by the tenants from good years. Such a scheme when fully developed can provide more stable income for the tenants, as output can be stable while national prices are easy to control. On the other hand, it provides milk, eggs, butter and cheese for the several towns in and around the Gezira as well as saving foreign exchange for the Sudan. The scheme can be introduced gradually, as it is highly divisible.

The 1960 Act has introduced a scheme for the stabilization of income of the individual tenant. Interest earned on bank balances and investment representing the Tenants' Reserve Fund used to be credited to the Tenants' Collective Account, but, according to the 1960 Act, it is to be credited to a Special Account until the balance equals or exceeds an amount of Ls. 15 per feddan under cotton and then such interest is to be credited to the Tenants' Reserve Fund.
Paragraph (2) of Section 7 of Part III of Schedule VI of the 1960 Act says: "The Board after consulting the tenants may make payments out of the said Special Account to any individual tenant whose share of profits, owing to circumstances other than gross negligence on his part, appears to the Board to be inadequate to his means of substance and to the earnings of other comparable tenants". These circumstances, other than negligence, seem to be the natural factors which may affect only a small number of tenants, or affect these more severely than the rest. Such an arrangement seems to take good care of such situations, but it also means a subsidy by the whole body of tenants to the unfortunate. In a way it is income redistribution. However, perhaps it is better to look at it as some sort of insurance each tenant pays to guard himself against those calamities of nature which are sometimes tragic to a minority. This scheme is really very much in accordance with the collective spirit of the Gezira Scheme.

However, it is not easy to say whether the size of the Special Account is adequate for such purpose or not, because it was only initiated in 1960 and there is no available information on the payments made out of the Special Account; how they have been distributed and how much the income of the tenants subsidized has been affected. But it is easy to see that the decisions of whom to pay and of how much to pay are arbitrary too. Arbitrary decisions in such cases may not lead to bargaining or pressure from those benefitting as they will only be a very small minority of the tenants. However, they may lead to inconsistent decisions
or, perhaps, to favouritism, or even corruption. It would have been much better if a more exact rule was introduced for deciding whom to pay and how much. According to the Act, payment is made in regard to the tenant's means of subsistence and to the earnings of other comparable tenants. Terms such as "means of subsistence" and "earnings of other comparable tenants" are rather vague. It would have been much better if it was laid down that the unfortunate tenant would be paid if his income fell to a certain percentage of the income of the average tenant in the Gezira Scheme, and to be paid in a regressive method at a laid-down schedule. Such details do not need to be embodied in the Act itself and can be left to the internal laws of the Gezira Board, which helps in running the Scheme.

Finally we come to summarise the main points which have emerged from the discussion on the stabilization of the income of the tenants in the Gezira:

1) The fact that the tenants take their income as a percentage has some stabilizing effect on their income, though such an effect is very small.

2) The reserve price is not meant to stabilize the price of cotton, but rather not to allow it to drop for artificial reasons.

3) The policy to have a Tenants' Reserve Fund is good in itself but
   a) the Tenants' Reserve Fund is not sufficient;
   b) payment out of it is arbitrary;
   c) payment into the Tenants' Reserve Fund should not be a small and fixed percentage;
   d) the Tenants' Reserve Fund is collective and therefore it may redistribute income in favour of those who do not work hard and produce less.
4) Alternative schemes for stabilizing the tenants' income should be introduced.

5) The scheme for stabilizing the income of individual tenants is good in itself, but also arbitrary.
TABLE 3.1
Price and Yield of the Gezira Cotton 1930-46

<table>
<thead>
<tr>
<th>Year</th>
<th>Yield in Kantars Per Feddan</th>
<th>Price in Pence per Lb.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1930</td>
<td>2.3</td>
<td>7.9</td>
</tr>
<tr>
<td>1931</td>
<td>1.4</td>
<td>6.4</td>
</tr>
<tr>
<td>1932</td>
<td>4.1</td>
<td>8.5</td>
</tr>
<tr>
<td>1933</td>
<td>1.9</td>
<td>8.1</td>
</tr>
<tr>
<td>1934</td>
<td>2.3</td>
<td>8.6</td>
</tr>
<tr>
<td>1935</td>
<td>4.5</td>
<td>8.2</td>
</tr>
<tr>
<td>1936</td>
<td>3.7</td>
<td>7.9</td>
</tr>
<tr>
<td>1937</td>
<td>4.5</td>
<td>8.6</td>
</tr>
<tr>
<td>1938</td>
<td>4.6</td>
<td>5.9</td>
</tr>
<tr>
<td>1939</td>
<td>4.5</td>
<td>6.2</td>
</tr>
<tr>
<td>1940</td>
<td>3.8</td>
<td>9.6</td>
</tr>
<tr>
<td>1941</td>
<td>4.0</td>
<td>8.9</td>
</tr>
<tr>
<td>1942</td>
<td>4.0</td>
<td>9.1</td>
</tr>
<tr>
<td>1943</td>
<td>4.8</td>
<td>9.3</td>
</tr>
<tr>
<td>1944</td>
<td>3.1</td>
<td>10.6</td>
</tr>
<tr>
<td>1945</td>
<td>4.9</td>
<td>10.6</td>
</tr>
<tr>
<td>1946</td>
<td>3.4</td>
<td>10.3</td>
</tr>
</tbody>
</table>

Source:
### TABLE 3.2
Comparison between Reserve Funds and Subsidies Paid out of them by the Gezira Board and the Cotton Marketing Board of Uganda, 1949/50 - 1959/60.

| End of Season | **THE GEZIRA BOARD** | | | | | | **THE COTTON MARKETING BOARD OF UGANDA** | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| | Total Actual Payments to Tenants | Amount of Reserve Fund | as a percentage of average of (1) | Payments out of Tenants Reserve Fund | as a percentage of average of (1) | Total Gross Income from Cotton | Amount of Producers Reserve Fund | as a percentage of average of (1) | Payments out of Producers Reserve Fund | as a percentage of average of (1) | |
| June 1949 | Ls. m. | Ls. m. | % | Ls. m. | % | £ m. | £ m. | % | £ m. | % | |
| " 1950 | 4.5 | n.a. | | | | | | | | | |
| " 1951 | 8.1 | 3.0* | 43 | 17 | 0.75 | 10 | 13 | 7.6 | 8.5 | 72 | 112 |
| " 1952 | 6.7 | 3.0* | 43 | 16 | | | | 10.7 | 21.4 | 182 | 200 |
| " 1953 | 5.1 | 3.0* | 43 | 16 | 0.93 | 13 | 18 | 12.3 | 22.3 | 190 | 181 |
| " 1954 | 6.5 | 2.8 | 40 | 16 | 0.85 | 5 | 5 | 10.7 | 20.3 | 173 | 190 |
| " 1955 | 5.1 | 2.9 | 40 | 16 | 0.70 | 10 | 14 | 13.3 | 21.7 | 185 | 163 |
| " 1956 | 7.3 | 3.0* | 43 | 16 | 0.99 | 7 | 6 | 11.9 | 18.8 | 160 | 158 |
| " 1957 | 8.8 | 3.0* | 43 | 17 | 0.94 | 7 | 6 | 13.0 | 19.3 | 164 | 148 |
| " 1958 | 0.9 | 1.1 | 15 | 15 | 0.49 | 7 | 6 | 13.5 | 20.3 | 173 | 150 |
| " 1959 | 5.9 | 3.0* | 43 | 16 | 1.9 | 27 | 211 | 13.2 | 13.1 | 112 | 99 |
| " 1960 | 9.2 | 3.4* | 49 | 15 | 1.9 | 27 | 211 | 12.1 | 11.5 | 96 | 93 |

**NOTES:**
1 - * estimate of the highest possible figure as we do not have the actual one.
2 - n.a. not available.
3 - all payments to tenants or farmers are the total from June to June while reserve funds are the balances on end of June of each year.

**Source:**
In this chapter we shall try to describe the organization of these cotton schemes very briefly. Then we shall attempt to outline and appraise their reserve and stabilization policy.

A. The White Nile Alternative Livelihood Schemes

In the early thirties the Egyptian Government, with the approval of the Sudan Government, constructed Jebel Aulia Dam to improve her own irrigation system. This meant the raising of the level of the White Nile south of the dam and that the people who lived on the banks of the White Nile between Jebel Aulia and Gabalain could not go on living in their usual way as all their farms on the banks of the White Nile and their villages would be permanently flooded. The Egyptian Government paid the compensation agreed upon. The Sudan Government wanted to pay part of this compensation in cash to the people, while investing the rest in some agricultural schemes; and to move the people and make them settle in a more concentrated way round these schemes. The schemes were meant to be an alternative livelihood but they were not engaged in the production of the mixed subsistence crops that these riverain people used to produce on their traditional farms on the banks of the White Nile.
These people used to produce 'dura', some vegetables, fruits and a small quantity of cotton, mainly for their own consumption, and perhaps used to keep some animals, such as goats, for milk. However, the White Nile Schemes were supposed to produce mainly cotton as a cash crop, with small lots of land for 'dura' and 'lubia' for the tenant - as the case in the Gezira Scheme.

As soon as the schemes were established, people began to desert them and arrange among themselves that a few tenants, who would be staying in the scheme, should look after a large number of near-by tenancies for a share in the crop. Those who deserted their tenancies wanted to go and live somewhere on the banks of the Nile in the old way while their tenancies were looked after by tenant-partners. The authorities of the schemes, the local government, exerted a tremendous effort to make the original tenants come back to their tenancies or fill them with workers who came during picking season looking for employment. However, that was not easy because cotton yield in these schemes - though the land was virgin - was low and fluctuating not only due to natural factors but also because most of the tenants lacked the experience of cotton growing in the first place, and cultivation under gravity irrigation in an organized large scheme in the second place. In 1938 malaria spread widely in all the White Nile Schemes because tenants, after irrigating, left large deposits of water in the canals and these became nurseries for mosquitoes. The malaria resulted in a high rate of deaths, and consequently more desertion of the tenancies. Thus it took
some years to make tenants settle permanently in the White Nile Schemes.

This reflects the difficulties that arise in changing the place of residence of people, the organization or method of their cultivation or the crop they produce. In agriculture the life of the people and the process of production of any crops are very much related. Agriculture under the farmer or tenant is a way of life as much as it is a function for producing a crop. The change in the place where the crops are produced, the method of production or the crop produced makes a change in the pattern of the life of people - a pattern which they may have been followed for centuries. Large schemes demand a certain discipline which is lacking in traditional farming in the Sudan and in other underdeveloped countries. Without long preparation and sufficient training for the tenant, per capita output may fall for some time despite the huge capital investment and large-scale economies.

The total area of all the White Nile Schemes (including Abdel Magid Scheme) is about 20,000 feddans which is equal to about 3% of the area of the Gezira Scheme. It also produces a similar percentage of the cotton produced in the Gezira Scheme. The White Nile Schemes consist of seven pump schemes between Jebel Aulia and Gebalian and a large scheme at Abdel Magid in the Gezira Area, which is, in effect, a special extension of the Gezira Scheme. It is irrigated by gravity as is the Gezira Scheme. The organisation under which the cotton is produced (the partnership between the Government,
the Board and the tenants, the rotation system, the sharing of the grass profits, etc.) is very similar to that of the Gezira Scheme. However, there are some important differences which may be worth noting. The bulk of the cotton is irrigated by pumps. Thus the pattern of expenditure is, in this respect, different from that of the Gezira Scheme. This means that the amount spent on pumps, spare parts for pumps and fuel constitutes a large percentage of the total expenditure by the White Nile Schemes Board, while in the Gezira Scheme, after the Sennar Dam has been paid for, irrigation does not create any capital expenditure. There is only the cost of running and maintenance to contend with. However, all the costs of irrigation are borne by the Boards and the Government in all the schemes and they do not affect the tenant in any way. The Government and the Board are simply earning less income per feddan or kantar of cotton in the White Nile Schemes than in the Gezira Scheme at present. This difference in methods of irrigation means different inputs. However, all these cotton schemes hardly buy any inputs of Sudanese origin from other sectors of the economy, if we exclude labour and land. They may perhaps buy some baskets and ropes, but such items will add up to much less than 1% of their total expenditure. The bulk of the expenditure of these cotton boards is on machinery, chemicals, fertilizers, and (in the case of pump irrigation) fuel. With the exception of fuel, all these items are imported directly by the cotton boards. Fuel is bought from foreign companies such as Shell or Esso. This means little profit is created for firms in
the Sudan by the cotton sector. But even if large quantities of inputs are bought from such firms, and large profits are created for the, this cannot affect the Sudanese economy in any way as these are all foreign firms which transfer their profits abroad. Thus any fluctuations in expenditure, resulting from fluctuations in earnings of cotton boards, do not generate any further instability in the Sudan as they are transmitted abroad through foreign inputs.

The more that Sudanese inputs are used by a cotton scheme, the greater the instability transmitted to the whole of the Sudanese economy, given that either the quantity or the price of the input varies with changes in cotton prices or proceeds. This can be illustrated by the difference between the irrigation systems of the Gezira Scheme and the White Nile Schemes. The irrigation system in the Gezira Scheme, by being more labour-intensive than that of the White Nile Schemes, may create greater instability in the Sudanese economy through changes in wages. This is in addition to changes in the wage bill of labour employed directly by tenants in all those schemes.

However, the instability created in the Sudanese economy by fluctuations in cotton proceeds is not from the fluctuations in the wage bill paid to labour employed by the tenants or the cotton boards directly, as such wages and salaries cannot exceed 5% or so of the cotton proceeds. The main instability really comes from the fluctuations in the incomes
of the tenants which is not less than 42% of the gross profits—coupled with a very high marginal propensity to consume. (1)

The capital costs of the schemes were regarded as collectively owned by the tenants because they came from the compensation paid by the Egyptian Government which was paid collectively. The land developed is Government-owned (beneficiaries had been compensated nominally for their submerged lands). The White Nile Schemes Board followed the same crop-sharing percentages as the Gezira despite the fact that the capital in these schemes belongs to the tenants. This is perhaps partly offset by the fact that land in the Gezira originally belongs to the tenants and that it is compulsorily hired by the Government at a nominal rent.

I. The Emergence, Composition and Powers of the Board:

The White Nile Schemes were managed directly by the Sudan Government, through the Department of Agriculture, from the time of their establishment in 1937, until 1946. During those nine years the need for decentralisation and more efficiency became obvious. Thus in 1946 the Governor General of the Sudan approved the Charter which set up a board for the purpose of taking over

(1) There is no statistical measurement of the marginal propensity to consume for tenants in the Sudan, but the social survey mentioned in Chapter Two indicates that the marginal propensity to consume is high for tenants.
and managing the White Nile Schemes and specified its composition. The Board is composed of the Governor of the Blue Nile Province as Chairman, the Director of Agriculture as Managing Director, the Director of Irrigation and the Director of Finance. Thus it is composed of top Government officials. Not only is the Board composed of purely Government officials but also any important decision that it makes has to be approved by the Central Government. Perhaps the only decision which does not need the approval of the Government is the appointment and remuneration of staff - and even in such decisions the Board has to conform with the Government's general policy as far as possible. The price to be paid each season to the tenants for their cotton has to be submitted to and approved by the Financial Secretary. The Government controls the amount of overdrafts required by the Board and also the formation of reserves. Sales of cotton are controlled by the Director of Agriculture in accordance with a general policy which is approved by the Board from time to time. Any expenditure on items exceeding Ls. 250 has to be approved by the Governor-General-in-Council. Any balances of cash remaining in the tenants' cotton share account at the end of the year has to be transferred to the Tenants' Equalization Funds, and similarly any overpayment on Tenants' Share Account has to be debited to that fund, subject to approval of the Financial Secretary in each case. The Board cannot, in any manner whatsoever, borrow, charge any property with the repayment of any monies or raise any loans, without the previous and express
sanction of the Governor-General-in-Council. The Board may borrow from the Sudan Government up to an amount approved by the Financial Secretary.

Thus it seems that the Charter simply makes the White Nile Schemes Board a mere vehicle for carrying out the Government orders rather than an autonomous body following a general policy dictated by the Government.

II. Stabilization Policy:

The Income of the tenants in the White Nile Schemes is stabilized through cotton price rather than directly. The White Nile Schemes Board estimates a price for each season with the view of reducing the fluctuations in the producers' price. Though the ultimate aim of such a policy is to stabilize the income of the tenant, it does not take into consideration the fluctuations in yield per feddan. The area under cotton is pretty well fixed in these schemes.

One average price is estimated towards the end of the season when it becomes easy to find out the world prices for cotton at that particular season. However, the whole price is not paid at the delivery of the cotton, but in four instalments, the last of which is just before the next sowing season to help the tenant in financing his next cotton crop. The price is liable to change if world prices have changed very much. It seems tempting to ask here, why have such stabilization policy?

To my mind, there seems to be no benefit from such price
stabilization policy. One of the important benefits or aims of the price stabilization for the cotton sector in the Sudan, particularly in the case of big price falls, is to stabilize output and prevent or reduce the waste of productive resources. But the price stabilization followed by the White Nile Schemes Board cannot have such an effect. The price is announced too late to have any substantial effect on the tenants' effort that goes into the cotton production. It can only affect output through picking or not picking the last of the cotton which is sometimes left hanging to the cotton tree. The guaranteed price, besides being announced as late as after the picking season has started, is liable to change downwards greatly if the world price does so. The tenant cannot have much confidence in it and therefore it cannot help him to make a rational choice between leisure and work in any season.

On the other hand, having a single price for all grades of cotton is very obscure. It does not seem to be considered by the Board as a price for cotton which can be of quite different grades but rather a price or a wage for the average effort put into a kantar of cotton by the tenant. Moreover, even if such an explanation is accepted, the price (or the wage) paid for such average effort per kantar of cotton varies from year to year in response to world prices. This single price policy has sometimes created a need for subsidies in some schemes, while other schemes have a surplus. In 1959 Abgar Scheme had two thousand pounds
surplus while the rest of the schemes had a deficit, because of the difference in the quality of the cotton produced. This single price is estimated for the expected average quality of the cotton produced in all the schemes, but the price actually realized for a kantar of cotton depends on the quality or grade of cotton as well as on its type.

The share of the tenants in gross profits is taken as a percentage and at the same time it is supposed to be equal to the value of all cotton produced, multiplied by the average price. The difference, whether a deficit or surplus, is covered through the tenants' reserve fund - or the Tenants' Equalization Fund as it is called by the White Nile Schemes Board.

However, before going further into discussing the effect of such single price policy on the size of reserve funds required, it may be worth mentioning here that those who produce cotton above the expected average quality actually subsidize those who produce cotton below the expected average quality, under such policy of single price and method of payment. Though it may be that the quality of cotton is, to a large extent, the product of natural factors, one cannot completely ignore the effect of the tenants' effort in this respect. Though we may not be able to measure the effect of changes in the tenants' effort on the quality of cotton, we are certain that it plays a part in determining the quality of the cotton produced and this means that there is some income redistribution from those who put more effort into improving the quality of their cotton to those who do not - as long as only a
single average price is maintained for all the grades of cotton.

This single price policy makes the subsidy paid to the tenants from their reserve fund or the surplus paid into their fund not only the function of the difference between the world price for the extra long cotton produced in the White Nile Scheme and the average price paid to the tenant, but also a function of how far the actual quality of cotton above or below the expected average quality. It is not easy to estimate the average quality of cotton, even when picking has already started, and thus there may be a big difference between the estimated or expected average quality of cotton and its actual average quality. If the tenants need a subsidy from the reserve fund, and a large quantity of cotton in that season is above the expected average quality, then the subsidy actually taken from the reserve fund will be smaller, and vice versa. Thus a single price policy may sometimes lead to greater fluctuations in the amount of subsidy from or surplus paid into the reserve fund. In the first place it depends on whether it is subsidy or surplus, in the second place it depends on the quality of cotton above or below the expected average and in the third place it depends on how big the difference is between the expected and the actual average. It is quite possible to foresee the situation or the season in which each of these factors accentuate the others rather than offset them; thus we may get in one season a large subsidy, a large quantity of cotton which has a quality below the actual average, and vice versa. To cope with
such possibilities the reserve fund should be larger than for a policy with multiple prices for the different grades of cotton which are used in world markets. This may involve more administrative costs but it is highly improbable that such costs will be more or equal to the cost of maintaining larger reserve funds, besides the disincentive effect of income redistribution.

Thus it seems that defects of the price policy of the White Nile Scheme Board are that price is announced too late to have any substantial effect on output, that it changes too frequently to have the confidence of the tenant and that by having a single price for all cotton grades it redistributes income inequitably and requires larger reserves. All these defects must be avoided in our suggested price policy to be followed by the proposed agency for the national buffer stock.

However, on examining Table 4.1 it seems that the reserve fund of the White Nile Schemes Board for the period 1950-60 is as inadequate as that of the Gezira Board (Table 3.2). The tenants' reserve funds of these two Boards have never been more than half of the average tenants' income in this period. The Tenants' Reserve Fund of the Gezira Board has been inadequate even with different prices estimated for the different grades. Therefore the reserve fund of the White Nile Schemes Board, or the Tenants' Equalization Fund as it is called, is definitely inadequate and needs to be much larger, especially under this single price policy.

In other respects, such as reserve accumulation and
payment out of it, the White Nile Schemes Board policy is very similar to that of the Gezira Board. The reserve is accumulated from the residual of the Board and the surplus from tenants in good years. In 1960 the maximum size of the reserve fund was limited to £14 per feddan while it was £25 in the Gezira Scheme. Thus the White Nile Schemes Board will have smaller and more inadequate reserves for its tenants (relative to its size) than the Gezira Board. Payment out of the reserve fund has also been arbitrary. The inconsistency of such a policy is obvious from Table 4.1. In 1952/53 14.8% of the tenants' average income in 1950-60 was paid to the tenants as a subsidy while only 8.8% was paid in 1957/58 when the tenants' income in 1952/53 was about four times that of 1957/58. All the improvements suggested for the Tenants' Reserve Fund of the Gezira Board, payments out of it, etc., are recommended for the Tenants' Equalization Fund of the White Nile Schemes Board.

B. The Gash Scheme

The Gash is a small river which springs in Eritrea, flows into the Sudan and ends in a delta south of Kassala Town. It flows only during the rainy season. It is a swift river and heavy with silt, the heavy deposits of silt making the storage of its water impossible. Only protection banks can be built in places which it tends to break away. Its water supply varies from one year to another according to the amount of rain in each year. In good years it may irrigate 200,000 feddans and in bad it may
only irrigate 100,000 feddans or even less. Not all the area irrigated is cultivated with cotton. Some of it is not cultivated at all for some reason or another, e.g. too many weeds. Also small lots are cultivated with 'dura'. Table 4.2 shows the total area under cotton, total output of cotton and the yield per feddan. All these three variables show very wide fluctuations from one year to another.

The Gash Delta has an excellent clay soil which is renewed every season by deposited silt. It produces extra long staple cotton which is equally as good as that of the Gezira Scheme.

Before the Turkish Rule, the inhabitants used to grow crops for their food plus a small amount of cotton for their own consumption. Mumtaz Pasha introduced commercial cotton growing during the American Civil War. Between 1905 and 1918 cultivation was carried on by the inhabitants and supervised by the Province Staff. Between 1918 and 1924, the Department of Agriculture controlled and organized the irrigation and general cropping of the Gash Delta. In 1924 the Kassala Company assumed the management of the Gash Delta. All claims to land ownership were abrogated and the whole area was transferred to the Company as a concession. After three seasons the Company surrendered its rights in the Gash Delta and was granted a block of land in the Gezira instead. The agricultural administration of the Gash Delta then reverted to the Government, and a Board was formed which is a part of the White Nile Schemes Board.

As we see from Table 4.2, there are wide fluctuations
in the area under cotton (unlike the Gezira Scheme) and in the yield per feddan too. These fluctuations depend mainly on the change in the volume of flood water of the Gash. In years of greater flood water and larger irrigated areas, the yield per feddan also tends to be high, if other natural factors do not interfere very much. It is these wide fluctuations in area and yield per feddan which have made the Kassala Company give up its concession in the Gash Delta after three seasons only and ask for a block in the Gezira Delta.

Land in the Gash Delta is allotted every year, but, in fact, it is usual for the same tenant to get the same piece of land. The wide fluctuations in the area under cultivation make it necessary for the size of the tenancy to vary too if the bulk of the old tenants are to be given some land to cultivate to earn some sort of a living. Some tenants, especially those whose performance in previous seasons was not considered satisfactory, are not given any land when the flooded area drops very much. In such cases the money income of such tenants from cotton drops to nothing. However, it is usual for the people in the Gash Delta to have some animals such as goats, sheep, cattle or camels. It is the traditional occupation of boys and girls to look after such animals while the father, the mother and perhaps the elder son look after cultivation. The size of the income derived from animals varies from one family to another and it is not exactly known. Some officials of the Local Government think, however, that about one third of the money income earned in the Gash Delta comes from
animals while the rest mainly comes from cotton. Animal breeding as a source of rather stable income has not been the result of any policy by the Government but rather of the discretion of the inhabitants of the Gash Delta who know very well that they cannot survive if they depend completely on cultivation.

The reserve fund policy followed by the Gash Board is very similar to that of the White Nile Schemes Board and we do not need to discuss it any further. However, it may be of some interest to note the sharing out of gross profits among the three partners and how it changes with increase in production.

<table>
<thead>
<tr>
<th>Production</th>
<th>Tenants</th>
<th>Government</th>
<th>Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 40,000 cwt. of lint</td>
<td>50</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>Next 20,000 cwt. of lint</td>
<td>50</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Further excesses</td>
<td>50</td>
<td>30</td>
<td>20</td>
</tr>
</tbody>
</table>

The tenants' percentage share does not change with production. The Government gets more as more cotton is produced. It seems that the aim behind such a scheme of division of gross profits is to tap as much as possible of the Board income, after a certain point, and add it to the Central Government revenue. The tenant, by receiving his share as a percentage, achieves some income stability in absolute terms, but, as already mentioned, the effect of such stability is very small. By leaving the percentage share of the tenant in the Gash Delta unchanged, in the face of such wide fluctuations in both area and
yield per feddan, his income fluctuates greatly, and in some cases his money income from cotton may fall to zero. To my mind, the best way to deal with the problem of fluctuations in income of the tenants in the Gash Delta is to make their percentage share change inversely to gross profits, coupled with larger reserves than at present. The Government share should become variable from one year to another and should go down so as to help in building the reserve fund required. This may mean that the Government is subsidizing the Gash tenants. However, when a small number of tenants like those in the Gash Delta (about six thousand) are facing such wide fluctuations in the main part of their money income, critical issues of equity are not raised. It is really an administrative problem as well as an equity one, when half or a quarter or so of the population has to be subsidized all the time by the rest of the population. (1) Everyone of those who are subsidizing will feel a certain reduction in his welfare. In this case, the majority of the nation, or those who are subsidizing, should accept the sacrifice as equitable – for some reason or another. But when a nation of about twelve million people needs to subsidize only a group of about six thousand tenants once in every two or three years, it does not reduce the welfare of any member of the rest of the nation in such a way as to

raise a question of equity. Moreover why should the Gash tenants
do the same work as is done in the Gezira Scheme or White Nile
Schemes and get not only a less income but a much more
fluctuating income?

C. The Zande Scheme

The Azande (the plural of Zande) is a tribe of mixed
Sudanic and Bantu origin. It is for their social and economic
development that the Zande Scheme was established.

The Zande district comprises 20,000 square miles, and
has a population of about 165,000. There are no workable mineral
resources, cattle are excluded by tsetse, and the area has to
depend on its agricultural products for its subsistence, shifting
agriculture being the usual practice. The Zande district is far
away from the centre of administration in the capital as well as
from Port Sudan and other African ports.

The scheme was originally put forward in 1943 by Dr.
J.D. Tothill in an official memorandum (unpublished) entitled
'A Suggested Experiment for the Social Emergence of Indigenous
Races in Remote Areas.' "The policy recommended is to make these
areas very nearly self-contained.... Accordingly the basis of the
scheme was a self-sufficiency plan whereby the primary products of
Zandeland would be processed on the spot, thus eliminating heavy
export and import costs." The ultimate aim behind all this is
"the complete social emergence and economic stability of the Zande
people."
The plan of the scheme is to bring the Azande who live scattered in the forest into organized groups so as to facilitate the social services offered to them and at the same time making it easier to supervise the cultivation and collection of cotton. The Azande, prior to the establishment of the scheme in 1946, used to grow a host of crops for their subsistence. They produced all that they needed and their needs were pretty simple. Cotton was selected as the cash crop which was to be produced in addition to their subsistence crops. It suited the climatic factors and at the same time is easy to process. The Azande have been settled into groups near roads running across the forest. The structure of the tribe has been kept intact as every group has remained under its chief and has kept the same laws. At first the whole project looked very successful as the Azande accepted it readily, but after a year or so the situation began to change. It seems that the first success was merely due to the childish delight of the Azande in novelty of those new 'games', and as soon as this wore off, their true reaction was apparent, and compulsion had to be used to make them stay in their new villages.

The Equatoria Projects Board which runs the Zande Scheme was formed, consisting of Government officials, and it has small powers, like those of other small Boards in the White Nile Schemes and the Gash Delta. It has been entrusted with the management of production and trading projects. Briefly, the Production Division is to supervise, produce and process raw
materials produced in the Zandeland, while the Trading Division is to market the products of the scheme, to undertake wholesale and retail trade in locally produced and imported goods. The objective of the Trading Division is to develop a true sense of money values in a community which was not used to a money economy and to provide useful trade goods of good quality and at the lowest prices.

Under the supervision of the Production Division, each farmer has to cultivate at least half a feddan for himself and one-tenth of a feddan of cotton for each wife in the household, by law. Then the Board buys the cotton at a price fixed at the end of the season. The cotton is classified into three grades and each grade has a separate price. From 1955, cotton has been classified into two grades only.

Other crops such as tobacco and coffee are encouraged by giving free seedlings and advice to the farmers, and these two crops particularly, besides other food crops such as groundnuts, are supposed to cater for the local demand in Equatoria Province. However, the Zande Scheme has no surplus of tobacco or coffee yet and, as a matter of fact, the Equatoria Province is still a net importer of these items. Besides the production of cotton and food crops, other new crops such as decan hemp, or jute, and palm were included in the plan. Several pilot schemes were established to carry the research and production of these new crops.
All the cotton produced in the Zande Scheme was supposed to be processed by the Production Division of the Equatoria Projects Board. However, it was decided that it would be wise to make a start with the smallest spinning and weaving unit that could be run efficiently and to add to it later. It was decided that the ultimate target of production should be 10,000 bales or about 50,000 small kantars. Now, about 80% of the Zande Scheme cotton is processed annually, while the rest is exported and perhaps in the near future the rest will be consumed by the Sudanese American Textile Factory. The expansion of cotton production has been faster than the industrial expansion in the Zande Scheme. Cotton production started in 1946 while cotton was not processed for the first time in the Zande Scheme until November 1951, and the factory still cannot process more than 80% of the cotton produced in the Zande land.

The palm oil and the jute projects failed completely even though they were produced directly by the Board. In the first place the amount of them actually produced was much smaller than what was planned and in the second place there was not enough capital to buy the necessary plant. The lack of knowledge about those new crops and the lack of skilled labour in both agriculture and industry contributed greatly to this failure. The jaggery and soap projects, although started and continued for some time, had to be closed down because of big losses. It seems that the origin of this failure is the lack of skilled labour in industry in the Sudan in general and in the Equatoria Province in particular.
It is not easy to create a trained and disciplined labour force in a short time. On the other hand, competition from cheaper imports continued, and it was not possible to close the Equatoria Province to foreign imports. (1)

I. Price Stabilization:

Perhaps one of the most interesting aspects of the Zande Scheme is the cotton price policy followed by the Equatoria Projects Board. The Equatoria Projects Board buys the cotton from the farmers at prices fixed at the end of the season, or just after picking season. Officials of the Board go to pre-announced places at a fixed time and buy from the Azande all the cotton they can offer, after classifying it. As it is considered that the most important objective of the scheme is to make the Azande use money and trade, it has been decided to stabilize the price of cotton or, in effect, to try to keep the value of the money which they get through selling cotton constant so as to increase their confidence in money. This policy is reflected in Table 4.3 - except perhaps for the first four years in which prices gradually went up - which shows that a price is usually maintained for at least three consecutive years. But what destroys the confidence of the Azande in money and its use is not the increase in prices of cotton, but the fall in prices of cotton, and perhaps even

(1) The question of diversification and industrialization will be discussed more fully in Chapter Seven.
more important are the changes in the prices of goods they buy, or are persuaded to buy. Most probably the Azande would have more confidence in money and cotton if cotton prices went up all the time while prices of the commodities they buy were constant or falling.

In spite of this price stabilization, we note wide fluctuations in the total payment for cotton or the money income of the Azande from their cotton, as shown in Table 4.3. In the seasons 1950/51, 1951/52, and 1952/53 the same price for each grade is maintained. This is true also of the three seasons 1953/54, 1954/55 and 1955/56. For grade number three the same price is maintained from 1950/51 until it is cancelled in 1954/55 season. But wide fluctuations took place in the income from cotton of farmers within these periods of rigid price fixation, purely because of changes in yield per feddan and quality of cotton from one season to another. From season 1950/51 to season 1951/52 the area under cotton increased from 16945 to 22649 feddans and prices went up but still income fell from Ls, 92404 to Ls, 83529. From season 1952/53 to season 1953/54, the area fell from 22697 to 17524 feddans while prices went up only for grade number one, and the income almost doubled...and so on. Will a stable cotton price with such highly fluctuating money income from cotton win the confidence of the Azande for cotton and the disciplined life they are supposed to go through?

While it is desirable to reduce the wide fluctuations
in the income of the Zande farmer and reduce big falls in cotton prices, so as to reduce any hardship that is caused by such fluctuations as well as waste in production resources, it may be wise to let him understand and get interested in the market economy by allowing him to come face to face with some price fluctuations. In such a situation he has to make decisions about how much to produce and what to produce, and through such decision-making he will learn. Why try to isolate the Zande completely from price fluctuations for any number of years when they cannot cause him any important hardship - because of income stabilization and guaranteed minimum cotton prices - when they can help him to be sophisticated and economically minded by bringing him to realise the alternative open to him for using his land and effort, and the risk involved in making such decisions. As long as we accept, and live in, a market economy, we should try to improve it by a touch here and a touch there rather than try to choke it. The Zande must come to understand the economy he is living in or he should have been left in the jungle as a happy brute. Perhaps it may be said that he should not be given the dose fully, but, at the same time, too much paternalism is harmful. The Zande farmer must face some of the fluctuations of world cotton prices, but also there must be some means of making him understand the situation in a simple way through the Government officials or through his own chief.

The defects of such a price policy, of maintaining
the same price for the three seasons or more, have been reflected in the season 1956/57 when prices of cotton dropped. The Zande farmers did not understand the situation and they thought that they were cheated by the cotton staff. They complained to their chiefs who in turn complained to the Governor of the Equatoria Province. The Assistant Governor of Equatoria Province at Yambio, and his administrative staff, went out and carried surprise checks with a view to discovering any cheating, but none was found. (1)

It was realised later that it was merely the drop in the prices of cotton, for the first time, which had caused all the trouble.

This incident shows clearly how the Azande failed to understand price fall, though they started growing cotton in 1946. They have been protected against the market for about ten years and they have never come to understand price fluctuations. Thus it is high time to remove this rigid stabilization of cotton prices for any number of years. It is better to make the Azande come to bear a part of the fluctuations of cotton prices, even if they suffer a little. This is the way that any group of people develops economically, and within a reasonable period of time becomes sophisticated. In this situation one can look to economic development as some sort of a compromise between giving up the "happy" primitiveness, facing some hardship and depending on one's own initiative and endurance on one hand and getting more

material goods on the other. One cannot get both except perhaps in Paradise. One of them has to be partially sacrificed for some of the other. The choice for the Azande was already made many years ago when it was decided that they were going to be economically developed, and that is the way they are going to have it.

On the other hand, fixation of area to be cultivated with cotton for the Zande farmer and his wives by law seems to reduce the chance of the Azande to evaluate and decide. Perhaps it was thought that because the Azande love hunting, fishing and games in general they would not cultivate any cotton if they were left without the coercive arm of the law. But it is vitally important to realise that the people who get used to coercion remain forever docile and need to be pushed in order to do anything. Even if some coercion was needed to begin cotton cultivation so as to ensure that every Zande cultivates some cotton for a few years so that all the Azande get acquainted with the process of cotton cultivation in order to have the necessary 'know how', it does not seem appropriate to subject them to such a coercive law up to the present and without any indication of removing it in the future. The Azande are getting very fond of bicycles (which are becoming prestige goods) and colourful clothes. They need all the money they can get to buy such attractive goods and as they produce no other cash crops they can only get more money through producing and selling cotton. The Equatoria Projects Board could have the high prices which make some cotton cultivation more attractive than hunting or games initially, and once the Azande get
used to cotton growing prices, these could be brought down gradually to real levels. High prices do not mean rigidly stabilized prices, and thus fluctuations of cotton prices in world markets should not be removed completely from the prices paid to the Azande. Price fluctuations should have been introduced to them gradually. After ten years or so from the establishment of the scheme, they should not have been protected from price fluctuations except for big falls in price, and the situation should have been explained to them through their chiefs or local authority. In this way they could understand and accept the market economy, the use of money and trade and (with direct income stabilization) develop economically the least hardship.

Another interesting aspect of the Zande Scheme is that industrialization or processing of cotton has not solved the problem of fluctuations in cotton prices. If the Zande cloth is to compete and get sold in the market the cost of the cotton processed should be based on the price of similar cotton in the world markets. In such circumstances, when the new cloth is sold to merchants, they find that the stock left from previous season, with relatively higher prices, is very difficult to dispose of, and vice versa. The expectation of lower prices in the following year discourages merchants from buying large stocks which may need to be carried over to the next season. In this way distribution and sale of the Zande cloth may be reduced. Moreover, prices of imported similar cloth fluctuate too. As it takes some time to transport the cotton to the textile mill, manufacture
it, and bring it back to the consumer, prices of imported cotton textiles of the same type and quality seem to change after a time lag, after the change in prices of the Zande cloth. With cotton prices going up and down, and with prices of the Zande cloth changing after a much shorter time lag than prices of similar imported cloth, fluctuations in demand and sales of the Zande cloth become more complex and more difficult to solve. (Industrialization as a method of stabilization will be discussed further in Chapter Seven.)
<table>
<thead>
<tr>
<th>Year</th>
<th>End of Season</th>
<th>Tenants Reserve Share as % of Average End of Season</th>
<th>Subsidy to Tenants as % of Average End of Season</th>
<th>Tenants' Reserve Fund as % of Average End of Season</th>
<th>Tenants' Reserve Fund and Subsidies Paid out of Them in the White Nile Schemes, 1950/51 - 1959/60</th>
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Notes: Column (2) includes payment of interest.
### TABLE 4.2

Area, Total Yield of Cotton and Yield per Feddan in the Gash Scheme, 1951/52 - 1961/62.

<table>
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<th>End of season</th>
<th>Area in Feddan</th>
<th>Total Yield in Kantars</th>
<th>Yield per Feddan Kantar</th>
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<td>&quot; 1957</td>
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<td>&quot; 1962</td>
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**Source:** compiled from:

File No. A & F/94.0.1

Ministry of Agriculture Headquarters, Khartoum.
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<th>End of Season</th>
<th>Cotton Area</th>
<th>Output</th>
<th>Yield per Feddan</th>
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<th>Grade II</th>
<th>Grade III</th>
<th>Total Payment to Farmers</th>
<th>Payment to farmers (Cotton Gross Income)</th>
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Notes: n.a. = not available.

Source: Equatoria Projects Board, Headquarters Office, Juba.
CHAPTER FIVE

THE NUBA MOUNTAINS COTTON INDUSTRY AND PRIVATE COTTON PUMP SCHEMES

In this Chapter we shall briefly describe the Nuba Mountains Cotton Industry, then discuss its price policy and the need for establishing a board for it. In the second half of the chapter we shall discuss the growth of the private Cotton Pump Schemes in the Sudan.

The Nuba Mountains Cotton Industry and the Private Cotton Pump Schemes are really the only private producers of cotton in the Sudan. In all other producing areas, cotton is produced in Government Schemes where the Government is the dominant partner. In spite of the fact that the Sudan Government interferes with the Private Cotton Pump Schemes through regulations or advice and interferes even more with the Nuba farmer through determining the cotton price for him, marketing and ginning his cotton for him, the basic decisions of what, where and how much to produce are made by the producer himself, whereas in all other cotton schemes such decisions are made by the Government and the Board. The tenant has to follow the rules laid down for the running of the scheme, otherwise he is dismissed. However, this private cotton sector, with its two components, does not produce more than 15% of the Sudan cotton and when the Managil Extension becomes fully productive its share may fall to not more than 8%.
A. The Nuba and Cotton

The Nuba inhabit a mountainous area in the south-west of Sudan which bears their name. The Nuba Mountains consist of a number of isolated hill masses made up of a variety of rocks. The actual hill tops are almost bare of soil or vegetation, but the steep upper slopes are often covered with trees and shrubs. Some soil has accumulated in the pockets and protected positions, but soil which is really deep and wide enough for cultivation is in the plains between the hills.

The Nuba are a cheerful people, often of good physique, and are keen hunters. Their national sport is wrestling. They have always been good fighters and have managed to defend their hills very well.

The Nuba, who number about 700,000, are mainly cultivators and before the British Administration they devoted all their labour to the production of subsistence crops. Their villages are mostly situated on the tops and sides of hills or in inaccessible interior valleys for the purpose of protection. Their huts usually have a small door so as to make the entrance of any invader difficult. All these things are an inheritance of the past. With the security increase in the last forty years or so they have begun a gradual descent and started to build their villages in the plain at the foot of the hill. The land in the village is distributed among villagers and use is made of every patch of ground however

unfertile. On many hillsides there is extensive terracing which is sometimes carried on in the most unfavourable circumstances to produce tiny fields of not more than a few square metres. The farms of the Nuba are now of three types, the 'house farms', 'hillside farms' and 'far farms'. Immediately around the huts, in which people live, are the home farms. Such farms are usually small and they are used by the women for growing vegetables and other food crops. They are cultivated every year though they have a thin soil. These fields are often ridged up into a close network of small squares to prevent the rain water from running rapidly downward, and most probably they are manured regularly from animals kept in the homestead. Not far away, and within the hill masses, there are the hillside farms which are used for food crops and perhaps for cash crop(s) or partly cash crops. Further off, perhaps as far as five miles away, there are the far farms situated in the clay plains but their remoteness means a waste of time which could be devoted to work. The far farms are usually cultivated for four or five years and then left fallow. Shifting cultivation is practiced in the clay plains, which indicates the abundance of land. They are used for growing cash crops. The principal cotton areas are those situated near the ginning factories. Private ownership of land has tended to emerge in the land near the villages while communal ownership is still prevailing in lands further away. Any farmer can secure a piece of land (perhaps the very piece of land he wants) each season by just asking permission from the Chief of the Tribe. Some of the merchants in the Nuba
Mountains, who are mainly from the North and Central Sudan, are also able to obtain farms in the clay plains and use them for producing cash crops, employing hired labour.

The Nuba keep a number of domestic animals. The average Nuba homestead has one or two cattle. There are also numerous sheep and goats, a few pigs in each household (since the majority of Nuba are not Muslims) and a small number of donkeys used for transport to market.

The Sudan Government in 1923 decided to try to introduce cotton as a cash crop in the Nuba Mountains area. Several meetings took place in London between representatives of the Sudan Government, the Sudan Plantations Syndicate, the British Cotton Growing Association, the Empire Cotton Growing Corporation and a group of Lancashire spinners. Early in 1924 it was decided to form a Company to introduce cotton and to run the industry on commercial lines. But, after due consideration by the authorities at Khartoum, it was decided that it was not possible to grow cotton there. It was accordingly decided that observational plots of American-type cotton should be grown by the Government. The result was promising and it was further decided that the Department of Agriculture should go ahead and endeavour to establish a cotton growing industry in the Nuba Mountains.

Seeds were distributed to the Nuba farmers free and production in season 1925/26 totalled 13,000 small kantars of seed cotton. In the following season output doubled. About that time, a further attempt was made to finance and handle the growing
cotton industry. This resulted in a suggestion by the Governor-General-in-Council, whereby the British Cotton Growing Association and Empire Cotton Growing Corporation were to take equal shares with the Government in a company whose object was to buy, gin and market the cotton grown in the Nuba Mountains. The Council, however, considered that the formation of such a company should be deferred on the grounds that it was impossible to foresee exactly on what lines the cotton growing industry ought to be handled. It was therefore decided that it would be preferable for the Government to retain a free hand and keep the industry under its sole direction at least for the time being. "Thereafter production increased rapidly and eight ginning factories were erected in the more important centres. By the 1934–35 season a crop of 406,820 small kantars of seed cotton had been produced, and it became evident that with the existing population, varying according to the suitability of the season, between 300,000 and 500,000 small kantars of seed cotton might be produced provided that the price payable to the grower did not drop below an average of about P.T. 35 per small kantar of seed cotton."(1) The Government did not want to interfere with the method of agriculture of the people or to impose any system of rotation. It merely introduced cotton as an additional crop which might provide some cash for the farmer. It offered free seeds and advice to those who wanted it. In addition to the cotton observational plots some experimental farms were managed by the Department of Agriculture for growing the old local food crops of 'dura', sesame, groundnuts and 'dukhun'.

Improved varieties of these crops have been tried, but no startling results were obtained. However, heavy yielding dukhuns (Pennisecu, typhoides (Burn) Stapf and Hubbard) from West Africa proved very successful, and seeds from these were bulked and issued to the local cultivators. A more productive type of groundnut from French Equatorial Africa has been treated in the same way.

At the present, a branch of the Ministry of Agriculture with a huge Headquarters at Kadugli (the largest town in the Nuba Mountains), looks after the ginning, transport and marketing of the Nuba cotton. It also helps in pest control if the damage becomes widespread in a certain area. The Government is supposed to open and maintain enough roads for the transport of cotton during the dry season, and to arrange for drinking water at the production centres, besides the other public services. For all these special services offered to the Nuba cotton producer, the Government takes 20% of the gross profits of cotton. The Nuba farmers take the rest minus a surplus or plus a subsidy paid out of the reserve fund - this was started in 1942 but is still rather small.

I. Price Stabilization:

It is the policy of the authorities of the Nuba Mountains Cotton Industry to stabilize the producers' price. The aims behind such a policy seem to be (1) the stabilization of the income of the farmer from cotton and (2) the stabilization of the area under cotton as a means of stabilizing the output of cotton. We shall not discuss
the first aim any further here because enough has already been said about it in the previous chapters. We shall, however, look into the policy of the stabilization of price as a means of stabilizing the area under cotton, and the output of cotton, given the method of cultivation and the crops cultivated partly for cash in the Nuba Mountains.

Both cotton output and area are affected by changes in the prices of cotton as well as by the other alternative crops. However, the area under cotton alone is not expected to be affected by the substitution in production between cotton and the other alternative crops, while the yield per feddan of cotton (or any other crop) and the total area under all crops are very much influenced by natural factors, e.g. rainfall. But we shall try to ignore the effects of natural factors here and try to appraise the price policy followed by the authorities of the Nuba Mountains Cotton Industry and see what sort of price policy is more appropriate to adopt for stabilizing both area and cotton output.

As the producers' price is announced at the end of the season, the Nuba farmer does not know what price he is actually going to get when he is sowing his cotton seeds. As he cannot forecast the actual price for the next harvest or picking season, he seems to assume that the prices of the previous season will prevail at least for another season. Table 5.1 (for the seasons 1957/58 - 1961/62 for which there are comparable statistics for the area under crops in the Nuba Mountains) shows that the area under cotton in some seasons changes with prices, and, in others, changes in spite
of the fact that the price of cotton has not changed at all. In the seasons 1956/57 and 1957/58 the same price was maintained and the area changed from 166,458 feddan in 1957/58 to 188,800 feddan in 1958/59. But the price fell by a big margin (from Ls.1.3 to Ls. .8 for grade I for example) in the season 1958/59 and the area under cotton diminished greatly in the following season. With the rise of the cotton price in 1959/60 season, the area under cotton increased in the following season also. But, again, the cotton price is maintained at the same level for each grade for the seasons 1960/61 and 1961/62 while the area under cotton increased. This seems to be mainly the result of changes in the prices of other alternative cash crops which can be grown by the Nuba farmer instead of cotton. The Nuba farmer follows a simple and primitive method of cultivation without any definite crop rotation and thus he finds it very easy to change from one crop to another. Thus if the price of any of the alternative crops has gone up more than the stabilized price of cotton or, perhaps, has gone up while that of cotton has been the same, then the area under cotton will decrease in favour of that alternative crop and vice versa. The bigger the new difference between the price of cotton and the alternative crop or crops, the bigger will be the change in area. However, the total area under all the crops cannot increase beyond a certain size as it is limited by the amount of his labour. The cotton farmer in the Nuba Mountains does not hire any labour.

Table 5.1 shows rather clearly that when the area under cotton drops, the area under one or more of the alternative cash
crops increases, and vice versa. This explains and proves that changes in area under cotton are due to substitution of the area of one crop for another and not to rain or other natural factors which affect the yield per feddan. If the area under all crops changes equally for each crop up and down, one may take this as a result of rain and other climatic factors. But this is not the case, as seen from the Table. For example, in the season 1959/60 when the area under cotton fell from 188,800 to 90,298 feddans, the area under two alternative crops increased, and vice versa for the season 1960/61. While in the Season 1958/59 we find that the area under sesame increased by about a third of the area in the previous season, and the area under cotton 'dura' and 'dukhun' increased slightly, the area under groundnuts decreased. All this discussion obviously reveals the fact that what really determines the area under any crop in the Nuba Mountains is not the price of that crop alone but the prices of all the alternative crops as well. This is why, perhaps, the cotton price stabilization policy in the Nuba Mountains has not been successful - it has not taken into consideration the prices of the other alternative crops. It is quite possible that the Nuba price policy, by preventing cotton prices from rising very much, e.g. in 1956/57 while the prices of the alternative crops rose freely and at the same time failing to prevent cotton prices from falling very much, e.g. in 1958/59 while the prices of the other food alternative crops did not fall very much, has reduced the total cotton

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(1) Land is not fixed, but the farmer's effort is. The substitution of area of one crop for another reflects substitution of efforts as well.
production (in the period under consideration in Table 5.1). The productive resources which would have gone into cotton production are either substituted for the production of the other crops in the years of high prices or wasted (in more leisure consumption) in years of low prices for agricultural crops.

The only situation in which the effective stabilization of the cotton producers' price can stabilize the area under cotton in the Nuba Mountains is when the alternative crops have stable prices too. If the margins (1) between the price of cotton and the prices of the other alternative crops keep the same while all the prices fluctuate up and down together, any stabilization for the price of cotton may destabilize the area under cotton. On the other hand, if it is usual for the price of cotton to move in the opposite direction to the prices of the other alternative crops, price stabilization is necessary to reduce the fluctuations in the area under cotton. But the prices of such agricultural materials - whether food or raw materials - are expected to move in the same direction, most of the time. The margins between the price of cotton and the prices of the other alternative crops may change its size as well as its sign from prosperity to depression. In boom the price of cotton may have

(1) In the mind of every farmer producing a number of alternative crops, there is a set of margins between the different prices representing in a rough way the difference in cost of producing them. Most probably this set of margins coincides with the real situation in a normal year with normal prices and relatively equal profits per feddan for all the crops. As soon as the margins change from this norm, the relative profitability of the different crops changes and the farmer has an incentive to shift area from one crop to another.
a margin above the prices of food materials, and vice versa, and at the same time the size of the margin may change during the uptrend of the boom or the down-swing of the depression. However, as cotton is an industrial raw material while the other alternative crops are food materials which are mainly consumed domestically, cotton prices tend to fluctuate more widely and this may make the margin between the price of cotton and that of the other alternative crops change more often than the margins between the four alternative crops. But the change in the margin between the price of cotton on the one hand and the prices of the other alternative crops cannot be great as long as all the prices fluctuate together. (This can be proved statistically if price data for the alternative crop were available.) Thus any policy which adjusts cotton prices very much in order to arrive at a stable producer price may in fact destabilize the area under cotton, unless the prices of the other alternative crops are stabilized as well. Without price stabilization for the four alternative crops, any price stabilization for cotton should aim at stabilizing the margin between prices, rather than cotton prices as such, in order to stabilize the relative profitability of cotton. This means:

1. Cotton price fluctuations create less waste in the Nuba Mountains than in cotton schemes such as the Gezira Scheme which has a fixed crop rotation.

2. Less price stabilization is necessary in the Nuba Mountains than in cotton schemes.

3. Cotton price stabilization has to take into consideration price movements of the other alternative crops (if it is administered by a separate body whose main concern is the welfare of the Nuba cotton producer).
In the time between introduction of cotton in the Nuba Mountains and the early thirties when the Nuba farmer had cotton as the only cash crop because the Government bought it from him while other crops could not find buyers due to the lack of merchants and means of transport, the Nuba farmer either produced cotton - plus the usual amount of his own food - or had leisure. From what has been quoted earlier from "Agriculture in the Sudan"(1) that output only changed between the limits of 300,000 - 500,000 small kantars provided that the price did not drop below P.T. 35 per small kantar of seed cotton, it seems that stabilization of cotton prices sounds necessary and effective. But this was possible under the circumstances of one alternative to cotton (that is leisure) which seems to have a somewhat fixed money value. The enjoyment of leisure in a community like the Nuba is determined by many social factors which do not change from year to year and thus the value of leisure tends to be constant. The only policy which was initiated under such circumstances cannot be carried on when there are four alternative cash crops besides cotton. It has to change in the way suggested above. At the same time leisure as a fifth alternative to cotton is still there. If the price of cotton or any crop falls below what the farmer thinks worthy of his effort, he may cut down the production of such a crop or stop producing it completely until prices rise again. Above a certain point changes in prices of his crops will most probably not have any effect on the supply of his efforts (or consumption of leisure) but below that point

(1) Ibid, p. 843.
his demand for leisure (or supply of effort) is very sensitive to a fall in the prices of his crops. This means that the price of cotton cannot fall below a certain level or otherwise no cotton, or only a very small quantity of it will be produced. We have already suggested, in Chapter Two, the establishment of an agency for a national cotton buffer stock which guarantees a minimum cotton price. Such a policy helps in reducing the waste of the productive resources which are usually devoted to cotton production in the Nuba Mountains. But such an agency cannot take into consideration the prices of the other alternative crops produced in the Nuba Mountains, if it is to have national cotton prices. If such an agency is to have price differentials for the different small areas producing cotton in dissimilar conditions, then this may create a lot of administrative problems. On the other hand, a great part of the alternative crops is produced for subsistence and therefore their prices may drop very low without reducing this amount produced for subsistence. It may be interesting and worth while to go into the general economic implications for the Nuba Mountains of the uniform cotton prices that are made for the whole Sudan. The Agency of the national cotton buffer stock, by not allowing cotton prices alone to drop below a certain point, makes cotton production always very attractive and even more attractive in periods of general low prices for all agricultural products, when a considerable part of the land under the alternative crops will be shifted to cotton production. This may help to induce the Nuba farmers to cultivate more cotton and less food crops. Such an increase in cotton production may be
be criticised on the grounds that it makes food crops inadequate in the Sudan or the Nuba Mountains. But such an argument is open to two main objections. First, it assumes that no further import of food crops is possible. Secondly, it ignores the fact that the Sudan has natural advantages in producing cotton and therefore it may be more profitable to produce cotton rather than these alternative crops. Moreover, the more the Nuba farmers produce cotton, the more they abandon the subsistence sector and enter into a specialized exchange economy which may give them a higher standard of living. Specialization and division of labour are the key to higher production and a better standard of living in the Sudan, as elsewhere. The Nuba Mountains area produces about 5% of the Sudan cotton supply while the Sudan produces about the same percentage of the world cotton supply. Such an increase in cotton production of the Nuba farmers will increase their income and the Sudan cotton proceeds - without depressing the world cotton price.

We conclude that though it may be expected of an agency for a national cotton buffer stock to maintain uniform national cotton prices, the authorities of the Nuba Mountains Cotton Industry have failed to follow a policy of price stabilization for cotton which takes into consideration the prices of the other alternative crops. If it is feasible for the agency to widen its guaranteed minimum prices to include all agricultural crops, the total waste of production resources will be even more reduced. In 1958/59 when all

the prices of agricultural crops dropped very much, the total area in the following season fell from 525,100 to 391,834 feddans besides the fall in yield per feddan when it fell from 3 to 2.7 small kantars in the case of cotton. But perhaps it is too ambitious to suggest for the Sudan a stabilization policy of minimum guaranteed prices for all or most agricultural products now or in the near future.

II. A Board?

Since cotton has been introduced into the Nuba Mountains as a cash crop, there has been some discussion going on in the administrative circles of the Sudan Government about forming a company or a marketing board which can make the running of the Nuba Mountains Cotton Industry work more smoothly and more efficiently. Now it is out of the question to form a company because of political reasons which we do not intend to go into at all here. However, the proposal of establishing a board for the Nuba Mountains Cotton Industry is still there, although asleep in the files of the Sudan Government since it was shelved for the wrong reasons in the late 1940's. We hope that this following discussion may revive the question again so as to be considered appropriately and fully. We shall not enter into the discussion of whether to have a board for the Nuba Mountains Cotton Industry or leave the whole question of cotton marketing, finance, etc., in the hands of the cotton merchants. A good case can be made in support of establishing a board rather than not having it at all. (1)

market in West Africa before the Second World War served nobody's interest. As a matter of fact, it was very much against the interest of the cocoa producers because of the purchases of cocoa in advance of the season by African money-lenders at prices allowing a large margin of profit, the use of false weights and the sale of badly prepared cocoa by the farmers. (1) Also, without interference from the Government or the control of a board, it is not possible to insulate the producers from fluctuations in world prices. In this chapter, we are basically concerned with the question of whether to transfer the present administration from the hands of a department of the Ministry of Agriculture of the Sudan Government to an "independent" board or not.

There are certainly some important technical and administrative arguments which favour the establishment of a board. If a marketing board is really more efficient than the present branch of the Ministry of Agriculture, then perhaps it will not only help to increase the productivity of farmer or feddan in the Nuba Mountains but also it may be able to initiate and execute better stabilization policies than what are practical now, especially policies for reducing fluctuations in the cotton yield per feddan which seem to receive very little attention from the present administration.

We shall first consider marketing boards in a general way that is relevant to the Nuba Mountains also, and then touch briefly upon some of the specific problems of establishing a board there.

(1) ibid. p. 46.
The establishment of a marketing board anywhere has some advantages or benefits as well as disadvantages or costs. Some economists in recent years have been critical of boards on the grounds that they have been used as revenue-collecting bodies thus disguising taxes as price assistance contribution. This criticism seems to spring from a desire to have marketing boards entirely independent of the Government or operating under legislation which reduces the opportunities for Government interference. Really the essence of all the advantages and disadvantages of a marketing board is the independence or the autonomy of the boards. It is not absolute independence, of course, but it is the relative independence of boards compared to that of a branch of the Ministry of Agriculture or any other Government agent, which matters. However, if the marketing boards are concerned with the country's main export crop (e.g. cotton boards in the Sudan) they are concerned with a large and most important sector of the economy and it is impossible to imagine that the Government will not feel itself bound to interfere and consider the important decisions of such boards. Such decisions do not only affect the welfare of the producers of the crop handled by the boards but the macro-economics of the country as a whole. Thus one expects that the Government at least lays down the general policy for marketing and stabilization by the board, while the board carries day-to-day decisions and business independently of the Government. But a branch of a ministry or a department of government - with or without a general policy - needs approval for every important decision it takes. A board may not be completely.
independent but it is certainly more independent than a department of the Ministry of Agriculture, which can be equally used as a means of disguised tax. Mr. W.J.F. McEwen, the General Manager of the Nuba Mountains Cotton Industry, in his handing over of notes in 1955 says that he found it frustrating and time-consuming to get approval from the Ministry of Agriculture in Khartoum on minor routine matters such as extra posts, upscalings, promotions, increase of pay, etc. He thinks that with a board, and more autonomy, such routine matters can easily be dealt with and save all the correspondence. Another advantage which springs from independence of the Board is the ability of the board to attract better staff and maintain their services for a reasonably longer time. A Board may be able to offer higher salaries than the Government and attract exceptionally qualified and experienced managers as in the case of the Gezira Board. A branch of the Ministry of Agriculture, like the General Manager Office for the Nuba Mountains Cotton Industry, by being an integral part of the Ministry of Agriculture, cannot stop the changes of staff between it and the rest of the Ministry whereas commercial efficiency requires continuity of staff with many years of experience of the area and its problems. Also, a board, by being more independent and solely concerned with the welfare of a special group of producers such as the Nuba cotton farmers, has the advantage of being more able to offer specialized services which a department or a branch of the Ministry of Agriculture may not be very inclined, or able, to offer. A board - besides selling the

cotton of the Nuba farmer for him and stabilizing his income - may help him to reduce his indebtedness by offering him credit facilities at a reasonable rate of interest\(^{(1)}\) or help him to solve some of the special problems of the Nuba Mountains area such as soil erosion.

The establishment of a board for the Nuba Mountains Cotton Industry will certainly entail more costs because the board will set up its own ancillary services when it finds that those facilities offered in common to all the Government units by the technical departments concerned are too slow or too hide-bound in their ideas to meet the board's specific, slightly different requirements. It was because of such additional costs that the Investigation Commission which was set up in the late 1940s to look into the establishment of a Board for the Nuba Mountains Cotton Industry shelved the idea. But if the establishment of a Board incurs expenses, it offers benefits and thus they have to be compared together and if the benefits are equal or more than the total cost of a board should be established. Another disadvantage, or rather a problem of establishing a marketing board, which may lead to further political and economic problems, is that when the standard of literacy is very low (like the Nuba Mountains) and the farmers are very ignorant and cannot take part in directing the board, there is always a great possibility that the board may grow so big that the interests of the constituents do not seem to matter very much. For example, West African Boards in addition to their powers

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derived from ordinance, the possession of their very large funds places them in a dominant strategic position in the economies in which they function.\(^1\) These reserves which they have accumulated during good years come to mean to them prestige which they are very keen not to give away when bad times come. As a matter of fact, the Gold Coast Cocoa Marketing Board has been accused of destabilizing the incomes of cocoa producers. Perhaps that is why the small cotton boards in the remote areas of the Sudan such as the Gash Boards or the Equatoria Projects Board have much fewer powers than the Gezira Board, in spite of the important part played by the Gezira Board in the Sudanese economy. The standard of literacy is much higher in the Gezira than in those other parts. But perhaps these boards need more freedom in routine matters and a more elaborate general policy than at present.

As the Nuba Mountains are far from the capital and the means of transport are completely shattered during the rainy season, it may be better to give it a board which can be independent - within the pre-laid general policy. But from a geographical point of view this may be difficult as the Nuba farmers are scattered over a wide area. Any closer administration - which comes with the Board - will mean a lot of travel for the administrative staff and more cost. We cannot go into the actual measurement of all benefits and costs that arise from establishing of a cotton board for the Nuba Mountains area, but the impression of the writer is that it may be beneficial to do so. However, we cannot simply reject the

idea of establishing such a board because it merely incurs additional costs - as the Investigation Commission did in the late 1940s. A precise and correct decision can only be reached after evaluating and comparing both costs and benefits of such a board.

B. Private Cotton Pump Schemes

In spite of the great popularity and the obvious increase in industrialization in the Sudan, we should not overlook, at our present stage of economic development, that agriculture still offers much higher returns than industry. As long as the Sudan lacks a skilled labour and adequate transport as well as capital, it is much better to concentrate on agriculture as it does not require skilled labour and it offers higher returns. Moreover, its produce can be transported through the traditional means which use animals kept in the farm and virtually costing nothing. In the meantime efforts should be made to improve our system of communications and technical education and try to create a disciplined industrial labour force. Until then we should not rush into industry because such pre-mature attempts may slow down our economic development for many years to come.

At the present (1) not more than 20 per cent. of the cultivated lands of the Sudan are irrigated. This does not mean the discouragement of development of agriculture in the rainlands of the Sudan, but more should be directed to expanding cultivation under irrigated land, because of the greater stability in yield

(1) 1960.
and better productivity of irrigated lands. The development of cultivation the Sudan can either be carried by the Government through, in large doses, and expanding gravity irrigation or by encouraging and helping the private pump schemes. With the great success of the Gezira Scheme and the availability of water, the expansion of gravity irrigation depends very much on the amount of foreign aid and loans which the Sudan Government gets and which is beyond its control. However, the expansion in private pump schemes poses a number of problems which the Government needs to look into and solve, but most of these problems are outside the scope of this thesis. In this Chapter we are only interested in the problem of the relation between fluctuations in cotton prices and the expansion in the private cotton pump schemes.

Between the establishment of the Gezira Scheme in 1925 and the Managil Extension in the late 1950s, most of the expansion in irrigated lands has been in the field of pump schemes. The gross area under pump schemes in the whole Sudan increased from 38,000 acres in 1925 to about 625,000 acres in 1956. "The expansion in the Blue Nile Province has at a rapid pace.... This rapid rate of expansion has been maintained even during periods of declining cotton prices, and had a favourable stabilizing effect on the whole economy."(1) But there was not a very big decline in prices except in 1958 when they stopped expansion of the area of the Private Cotton Pump Schemes.

(1) Omer M. Osman, "Some Aspects of Private Pump Schemes", Sudan Notes and Records, Vol. XXXVII, 1956, p. 40. Private Cotton Pump Schemes are concentrated and homogeneous in the Blue Nile Province and thus Mr. Osman has taken them as the subject of his study.
There are certain factors which have helped to bring about this rate of growth over the years and maintain it in spite of the decline in cotton prices in some of them. Water has never been a serious problem and the Nile Pump Control Board has always been ready to grant licences to any applicant with a moderate degree of eligibility. Suitable land has always been abundant and free from tenure problems. Therefore the deciding factors have been the availability of capital in the country and the rate of profits or return on capital. In the immediate post-war period, capital has been available as a result of the war-time controls which greatly curtailed consumption. Cotton prices rose very much after 1948.

But have the cotton price fluctuations affected the expansion of private cotton pump schemes?

"It is not easy to detect a straightforward correlation between the changes in cotton prices and the expansion of pump schemes."(1) Mr. Osman thinks that what distorts the correlation between the cotton prices and expansion in pump schemes is the cost of construction, running and maintaining the pump schemes and the time lag between applying for the scheme and actually constructing the scheme, as it takes two or three years perhaps to obtain the approval of the Nile Control Board, obtain the necessary capital and construct the pump scheme. To my mind, the most important factor which distorts the correlation between changes in prices and expansion in pump schemes or helps to maintain the expansion of

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(1) Ibid., p. 42.
pump schemes in periods of declining prices (taking the lag into consideration), is the fluctuation in yield per feddan. Even if we assume that it does not take any time to obtain a licence and construct a pump scheme and that all costs per feddan are constant, changes in cotton prices cannot induce changes in area of private cotton pump schemes, unless changes in cotton prices mean similar changes in cotton profits. In industry, where climatic factors do not interfere with the process of production and thus the per unit cost is rather stable from one year to another, changes in prices can be very much associated with changes in profit. But in agriculture when climatic factors interfere very much, in spite of the fact that total cost may be constant, per unit cost fluctuates very much because of fluctuations in yield per feddan. What is important to the investor in a cotton pump scheme is not that prices are high or low but what net rate of profit he gets on his invested capital. As already shown in Chapter Two, changes in yield per feddan are bigger than changes in prices of cotton and thus their effect on the net rate of profit is greater than that of changes in prices. In 1951 what induced a lot of people to invest in cotton pump schemes were the very high profits resulting from high prices coupled with very high yield per feddan which was the product of suitable temperature and just enough and well distributed rains over the season. In 1958 both the yield per feddan and the price of cotton were very low and most of the private cotton pump schemes made losses, and the total area of the private cotton pump schemes, instead of increasing at its usual high rate, decreased in
1958/59. (1) Fluctuations in the cotton yield per feddan are short-run phenomena. In the long run most probably cotton prices trend plays the most important part in expansion or decline of the cotton production in private pump schemes. (The relationship between growth and stability will be discussed further in Chapter Nine).

I. Instability of Income from Private Cotton Pump Schemes:

Private cotton pump schemes by being large, cannot be worked by the owners alone. Moreover, according to the regulations the owner has to divide them into tenancies and divide the gross profits in percentage shares similar to the Government schemes. The scheme owner plays the parts which are played by the Board and the Government in the Gezira Scheme. For example, he usually follows the rotation system following in the Government schemes because it is the best, given the soil and climate of the Sudan.

In the private cotton pump schemes, both the owner and the tenants get all the income they earn in the same year. There is not any arrangement to reduce the fluctuations in their income. It is very important to introduce a system for the stabilization of the income of the tenant in particular because he is in no position to save and build up a reserve in good years to help him in bad ones. Perhaps some of the owners - especially owners of large schemes who are usually partnerships or companies - have reserve funds, but definitely not the tenants.

It is high time to form a board to look after the stabilization policy for the private cotton pump schemes. We have already suggested an agency for a national cotton buffer stock. This will take care of the problems of marketing their cotton and the downward fluctuations in their cotton prices. However, the board is needed to look after the income stabilization of both the owners and tenants as well as offering them other necessary services, such as finance, etc. The board can be of great help in reducing the downward fluctuations of yield which are important factors in raising average cost of production and therefore ultimately reduces profit and discourages expansion of such schemes. The board can offer specialized services such as pest-control and research. If it is not possible to establish a board for some reason or other, the services of the Agricultural Bank have to be enlarged to embrace these necessary functions and services. The Agricultural Bank already helps - though in a limited way - in short-term finance and markets their cotton for them, but it does not have any scheme for income or price stabilization for them. It may be a good idea to make both the owner and the tenant have a savings account with the Agricultural Bank in which they have to deposit a certain percentage of their income, if it is above a certain level and the higher the income the higher the percentage, while in bad years from the lower income more can be withdrawn from the account. This will reduce their hardship, increase their savings in the long run and create greater regional and national income stability for the whole Sudan,
as already discussed in Chapter Two.
### TABLE 5.1


<table>
<thead>
<tr>
<th>Season</th>
<th>(1) Cotton Area</th>
<th>(2) First Part of Price L.s.</th>
<th>(3) Second Part of Price L.s.</th>
<th>(4) Total Payment to cotton farmer (gross Income from cotton)</th>
<th>(5) Dura Area Feddan</th>
<th>(6) Sesame Area Feddan</th>
<th>(7) Groundnut Area Feddan</th>
<th>(8) Dubull Area Feddan</th>
<th>(9) Cotton Yield per Feddan Small Kantar</th>
<th>(10) Total Area under Main Crops = (1) + (5) + (6) + (7) + (8).</th>
</tr>
</thead>
<tbody>
<tr>
<td>1956/7</td>
<td>n.s.</td>
<td>0.3</td>
<td>1.3</td>
<td>1.2</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>478,838.</td>
</tr>
<tr>
<td>1957/7</td>
<td>166,458</td>
<td>0.8</td>
<td>1.3</td>
<td>1.2</td>
<td>2192,926</td>
<td>40,410</td>
<td>30,050</td>
<td>6,240</td>
<td>3.0</td>
<td>525,100.</td>
</tr>
<tr>
<td>1958/7</td>
<td>188,800</td>
<td>0.5</td>
<td>0.8</td>
<td>0.7</td>
<td>1559,346</td>
<td>60,200</td>
<td>25,900</td>
<td>6,400</td>
<td>3.0</td>
<td>525,100.</td>
</tr>
<tr>
<td>1959/60</td>
<td>90,298</td>
<td>0.9</td>
<td>0.9</td>
<td>0.8</td>
<td>1787,189</td>
<td>67,700</td>
<td>19,850</td>
<td>11,330</td>
<td>2.7</td>
<td>391,338.</td>
</tr>
<tr>
<td>1960/61</td>
<td>163,362</td>
<td>1.0</td>
<td>1.0</td>
<td>0.9</td>
<td>243,918</td>
<td>67,700</td>
<td>23,100</td>
<td>3,200</td>
<td>3.6</td>
<td>505,862.</td>
</tr>
<tr>
<td>1961/62</td>
<td>203,000</td>
<td>1.0</td>
<td>1.0</td>
<td>0.9</td>
<td>238,000</td>
<td>74,000</td>
<td>46,300</td>
<td>26,300</td>
<td>2.8</td>
<td>592,600.</td>
</tr>
</tbody>
</table>

**Notes:**
- n.a. = not available.

**Source:**
- (1), (5), (6), (7), (8), (9) and (10) from Annual Report of Nuba Mountains and Kordofan Province Cottons, Table II.
- (2), (3) and (4) from Nuba Mountains Cotton Industry Headquarters in Kadugli.
CHAPTER SIX

TAXATION AS AN ALTERNATIVE OR SUPPLEMENTARY POLICY

So far we have been mainly concerned with the policies dealing with the stabilization of the income of the cotton producers through reducing price and income fluctuations directly by the help of a reserve fund, in theory and as practised in the different cotton areas and schemes of the Sudan. But stabilization of income or/and price can be achieved through taxation as well. In theory, any tax levied on a commodity can help to stabilize its price, while all direct taxes can be used to stabilize income. Indirect taxes cannot differentiate between different types of income earners and in this way they are not appropriate tools for stabilization of income of a group of people such as the cotton producers in the Sudan. While direct taxes such as income tax can stabilize the income of the cotton producers, especially if it is progressive. A specific tax can never be a tool of stabilization, unless it is changed with changes in the variable it is supposed to stabilize.

The present tax system of the Sudan consists of a Land Tax, Animal Tax, Date Tax, Ushur (tenth or tithe), Poll Tax, Import Duties, Export Tax and Business Profit Tax. In this chapter we shall examine these taxes (with the exception of the Animal and Date Taxes), their effectiveness and feasibility in stabilizing the income of the cotton producer in the Sudan.
The following appraisal of these Sudan taxes as tools of stabilization for the income of the cotton producer in the Sudan will reveal that none of them is really effective. This means that it is necessary either to reform them or to make the method of direct stabilization of price of cotton or the income of the cotton producer more efficient, or perhaps it is better to combine these two steps. The Sudan in general and the cotton producers in particular will definitely have more stable income if stabilization is carried through fiscal policy as well as through the direct channel of reserve funds and buffer stock rather than through one of them alone.

The present taxes of the Sudan are generally ineffective for the stabilization of the cotton producer, but some of them are very ineffective and very difficult to reform and these are the Land Tax, 'Ushur', Import Duties and especially the Poll Tax. The Export Tax can be made into an effective tool of stabilization of the cotton price or income from cotton, but, by being specific in the Sudan, it is rendered blunt, while the Business Profit Tax has many un-neutral effects and can only touch a small part of the cotton producers in the Sudan, as we shall see from the following appraisal.

A. Land Tax

It was imposed under the Taxation of Land and Date Trees Ordinance, 1925. This tax was introduced immediately after the re-conquest of the Sudan as a cultivation tax on land other
than land dependent on rainfall and was first confined to that part of the Northern Sudan known as Dongola Province. It was later introduced to other provinces. It is used now:

(i) As a tax on the potential value of land without any consideration of what is produced or how much loss or profit is made by the tax-payer from the land. The Taxation of Land and Date Trees Ordinance of 1925 provides a scale of rates in 10 P.T. to 100 P.T. per feddan according to the value of the land. This means that the potential value of the land is taken as a base for taxation and not its area and therefore the Land Tax seems to take into consideration the quality of the soil and its approximity to markets, but it ignores completely the annual fluctuations in yield and price. On the other hand such a tax system requires maps and registration of ownership of land. Considerable areas in the Sudan are under communal ownership e.g. in the Southern Sudan and the Nuba Mountains, and therefore such a tax cannot be applied easily, and where private ownership does exist, it may be very costly to map and register all the farms in such a vast country as the Sudan.

(ii) The Land Tax is used as a corresponding tax to 'Ushur' on rain lands. In this case the tax is really a crop tax assessed on the gross value of the crop produced on the land each year. The tax takes into consideration the fluctuations in
yield and price. But in assessing the Land Tax no consideration is taken of changes in Cost of Production. However, it may be argued that when the tax changes with changes in yield this partly may offset changes in costs. But it is quite possible that while yield drops, total and average cost of production may go up because of natural factors and disease. In the case of fighting pests, yield is reduced and more labour is needed and perhaps wages may go up too. This second form of the Land Tax is becoming the recognized method and in actual practice the Land Tax in the Sudan is developing into a fixed crop tax assessed as a percentage of local value.

Such a land or crop tax, taken as a percentage, may reduce income fluctuations slightly, but it cannot be a tool of stabilization for the income of the cotton producer - or the producer of any other crop - as long as it is small and a fixed percentage. In some cases it is only about 5% of the local gross value of the crop. Moreover, it cannot be applied over considerable areas in the Sudan because of lack of maps and registration of ownership of land. Moreover, tenants in all of the cotton schemes are exempted from the Land Tax by law and therefore it is not applicable to the bulk of the cotton producers in the Sudan. However, it has never been meant as a tool of stabilization. The only aim behind such a tax is just to raise revenue for the Sudan Government. Experience with land tax in other underdeveloped countries teaches that it is a laborious task to build it into an efficient instrument of agricultural taxation.
The Two main inherent problems in which satisfactory solutions have proved hard are that the land tax is not adaptable to changes in commodity prices and production, and that it does not allow for the personal and economic status of the individual tax-payer. (1)

B. 'Ushur'

It was imposed under the Taxation of Rain Land (Ushur) Ordinance, 1924. 'Ushur' (tithe) is a tax on crops grown on land watered periodically by rain or flood on which no land tax or rent in lieu of land tax is levied. It originated from the Moslem 'Zakat' and, as the name implies, amounts to one-tenth of the crop on which it is imposed. The tax collected at a specific rate per 'Ardeb'. (2) The actual money rates are fixed by the Minister of Finance in consultation with each Provincial Governor and with due regard to the trend of local market values each season for each kind of crop.

They vary not only between provinces but also between districts, the proximity of the bigger centres of population or the railway and other local conditions being considerations to be borne in mind in addition to market values of the crop.

Assessment of the gross value of the crop is laborious


(2) A measure of capacity for agricultural produce equalling 198 litres.
and requires inspection of all ripening crops by assessment boards comprised of selected natives and local government authority. The tax is then collected in money, but with the approval of the Minister of Finance; a part or the whole of the 'Ushur' can be paid in kind. Owing to the variation in rainfall in different localities from year to year and other climatic factors which affect crops during the period of their growth, the revenue from this tax is always fluctuating.

What has been said as criticism of the Land Tax as a tool for stabilization of the income of cotton producers is also true of the 'Ushur', but at the same time as the bulk of cotton in the Sudan is not produced under rain or flood cultivation, such a tax cannot be effective if used alone.

C. Poll Tax

It was imposed under the Hut and Poll Tax Ordinance, 1925. This tax is imposed at a flat rate per adult male without reference to any particular characteristics. Now it is LS. 1 per adult male. It is entirely restricted to the Southern Sudan and was introduced in lieu of cultivation and animal taxes as being more suitable to the backward conditions of the people concerned. The aim behind such a tax - besides raising revenue - is to force the people of the Southern Sudan to work for money so as to be able to pay the tax, which can only be accepted in money. Obviously, such a tax cannot be used as a tool of stabilization because it is a fixed amount of money and only applicable in the
Southern Sudan. The "ideal" tax, in the sense of generating no change in behaviour, is a lump-sum tax. This means that the tax is imposed on the individual quite independently of his income, his wealth, his occupation, his work habits, his family status, or any other distinguishing characteristics. Only when the tax is completely unrelated to any of these characteristics, that the individual will find it impossible to escape the tax burden. It is questionable whether such an "ideal" tax could ever be devised in practice, but the closest practical equivalent to it is a poll tax. But in terms of tax theory, it is a bad tax. Its base is the individual person and not his income or any near or distant relative of it. It cannot be accepted on grounds of equity or fairness. Moreover, it is useless as a tool of stabilization because it is a fixed lump-sum tax and not related to income at all.

D. Import Duties

Import duties of the Sudan are progressive in the sense that what is considered as a luxury has a higher import duty on it than what is not. The import duty on motor cars, for example, is 60% of its import price while on necessary consumer goods, such as grey cotton cloth, it varies between 25 and 5% of its import price, depending on the quality of the cloth. This progressivity of the import duties makes them a possible tool for stabilization of income. The higher the income, the more luxury goods are

imported and the more tax is paid and vice versa. But import duties in the Sudan have been a small and fixed percentage on the bulk of the Sudan imports, which are considered as a necessity. However, such taxes cannot be used to stabilize the income of any particular group such as the cotton producers.

E. Export Tax

An export tax can either be a specific duty or an ad valorem duty or various types of sliding scales of duties. Under a specific tax structure a certain sum of money is paid per unit of export crop regardless of the selling price. Such a system is very easy to administer and makes it possible for the Government to forecast with some degree of accuracy its income from this source in any particular year, since the volume of exports is the only variable. But such a specific export tax has the disadvantage of being unable to stabilize price or income of the export producer. It replaces a great burden on the producer when prices fall while during price rise the Government does not get all the necessary revenue, unless the export tax is frequently adjusted. An ad valorem export tax may be either a fixed proportion of the export price or a fixed proportion of the excess of the market price above a certain level. In theory an export tax based on sliding scales is most effective - but such a system is very susceptible to abuse by local traders - while a proportional export tax is more effective than a specific one.
In practice in the Sudan, export tax on cotton is specific while on some other export crops such as sesame and groundnuts it is ad valorem (proportional)!

The use of export taxes as an effective tool of stabilization has been a controversial question in the literature of fiscal policy. Some economists, notably Buchanan and Ellis,\(^1\) W. A. Lewis,\(^2\) and several others, advocate the use of export tax for economic and political reasons, while some other economists, such as Professor Nurkse,\(^3\) advocate the use of general taxation instead of export taxes, and Charles E. Staley\(^4\) concludes that "export taxes should not be regarded as stabilization devices" in the case he studied, and supports the view of Professor Nurkse.

But what are the merits and demerits of export taxation?

Export tax has one important political advantage and that is that it is easy to hide from the general public or to persuade them that such a tax is borne by the foreign buyers.

The economic effects or the economic advantages and disadvantages of export taxes depend on the one hand on the incidence of the tax which in turn depends on the elasticity of

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supply and demand of the taxed export crop, and on the other hand on the expenditure of the revenue collected from the tax. If the importer has inelastic demand and the exporter's supply is inelastic, the tax is shifted forward, and if the demand is elastic and the supply inelastic, the tax is shifted backward. As the Sudan produces only about 4% of the world supply, the demand for its cotton is more elastic than the world cotton demand. Though the Sudan is mainly a producer of extra-long staple cotton, the high rate of substitution between the different types of cotton makes the demand for the Sudan cotton rather elastic and therefore the export tax is expected to be shifted backward, to the Sudanese producer. But in a boom such as the Korean Boom, most probably the demand for raw materials like cotton becomes very strong and inelastic for all the producing countries and, in such a case, the export tax is shifted to the foreign buyer. If all the tax is shifted to the foreign buyer, then it has no stabilizing effect on the income of the cotton producer. It merely increases the total proceeds of the Sudan for cotton. The cotton producer would have the same income while the Government would have more revenue. If the Government spends that revenue in the boom then it may lead to increasing the pace of inflation which may have already gone very far. If the export tax is borne by the exporting country, then there is a number of possibilities for sharing the incidence or the burden of the tax. It is possible that all or a part of the burden of the tax is borne by foreign firms in the exporting country depending on the
part they play in the export crop. As the profits of such firms are usually sent abroad, the effect of such a tax on the instability in the export country will only be to the extent that it affects retained and invested profits. But in the case of the Sudan, as foreign firms play no direct part in producing the cotton and a small part in exporting the cotton (which they usually do for a commission as buying agents), it seems that the effect of such a tax cannot be important in this respect. The bulk of the tax burden will be borne by the indigenous producers, the tenants, the boards, the Government and the owners of the pump schemes. In such circumstances it will stabilize their income and may reduce their consumption or investment. It is not highly probable that all or most of it will be shifted to the workers because the size of the hired labour employed for the cotton production is small and a considerable part of it is used during the picking season and there is always a great labour shortage during that season. In 1961 and 1962 the Government had to call the students and the army to help in the cotton picking in the large schemes.

But as it is more probable to get mild booms such as those of 1955 and 1959 rather than that very strong boom of the Korean War, it is possible to have a reasonably effective and progressive export tax which can help to stabilize the incomes of the cotton producers of the Sudan. But such a progressive export tax may have disincentive or misallocation effects. This depends partly - as already mentioned - on the use of the revenue
collected from the tax. If the revenue from the export tax is used to subsidize the cotton producers in bad times, then most probably there will be no movement of capital and labour from the cotton sector as income earned in the cotton sector will simply be stabilized at the same level, while an export tax without a subsidy means income stabilized but at a lower level. At the same time if the export tax proceeds are used to finance public expenditure which benefits all the sectors of the economy rather than the cotton sector, then there may be disincentive effects associated with the export tax. (1) In the case of the Sudan, the Government already takes a certain percentage from the cotton producers (except the Private Cotton Pump Schemes) for providing any special services to the cotton scheme or area. So any increase in the export taxes on cotton in the Sudan - under the present system of percentage sharing and marketing of cotton - will mean an increase in the Government revenue and more expenditure on all the sectors of the economy and ultimately means income redistribution in favour of the other sectors of the Sudanese economy, benefiting people such as all Government, firms' and banks' employees who do not pay any income tax and perhaps no other direct tax. As the per capita income of a considerable part of the cotton producers in areas such as the Nuba Mountains, the Zandeland, Gash, etc., is much less than the bulk of such

employees, it seems very unfair from an equity point of view that such an income redistribution takes place. Furthermore, it may be argued that though export taxes may accomplish their goal of stabilization of cotton prices, they may encourage the cotton producers, especially in remote areas, to move into the subsistence sector.\(^{(1)}\) Though stability of income and prices of the cotton sector is very desirable, equity and efficiency of the economy cannot be completely sacrificed for it.

As a matter of fact the export tax on cotton in the Sudan, though higher than on the other crops, is low compared to the export tax on cotton in other countries such as Uganda. In addition to creaming off part of the export proceeds through the marketing boards, the Government of Uganda levied an export tax on the two key commodities. From 1948 to 1958 the proportion of the taxes collected varied between 15 and 20 per cent of total cotton and coffee proceeds.\(^{(2)}\) In the Sudan the export tax on sakel was Ls. 5 which meant about 25\% of export price during the Korean boom. It was reduced to Ls. 2 in 1957 which was equal to 12\% and in 1958 it was reduced further to Ls. 1.5, while it has been only about 5\% on sesame and groundnuts from 1954.\(^{(3)}\)

Table 6.1 shows that the only important export crop which pays a higher export tax is gum. However, the gum export tax has fallen

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\(^{(3)}\) Percentages calculated from letter of Permanent Under Secretary, Ministry of Finance, No. MFE/90.6.28, XR/32.4.2. of 20th Jan. 1963 (English).
more rapidly than that on cotton. It has already been shown that the share of some of the other export crops is increasing because of the growth of the private sector. Perhaps this relatively high export tax on cotton is the explanation why the private sector expanded in the direction of those other crops rather than cotton. If the export tax is to be effective as a means of stabilization of the income of the cotton producer, it has to be **progressive and high**. But at the same time the effect of such a tax on the expansion of the cotton or any export crop cannot be ignored. Professor Nurkse quotes the case of Argentina as an example of how high export tax can harm the export sector, reduce export supply and damage the country’s major source of foreign exchange.\(^\text{(1)}\)

But, in spite of these demerits, export tax has important administrative and economic advantages which make it very attractive to use. It is very easy to administer in the first place. Elaborate accounting is not necessary and evasion is rather difficult.\(^\text{(2)}\) In the second place, it can tap increases in income as soon as they arise. Most of the underdeveloped countries suffer frequently from export-induced inflation and a progressive and high export tax can be very effective for the prevention of such inflations, or at least can reduce them to a


great extent. As a matter of fact no other tax in the Sudan at present can tap increases in income of the export sector as soon as it rises effectively and can be easily administered. If the land tax is to be used for such a purpose it will entail great administrative work and cost, while the Business Profit Tax only touches the owners of the private cotton pump schemes who form a small percentage of the total cotton producers in the Sudan. Other general indirect taxes, such as import duties or general sales tax which are rather easy to administer, cannot be used until the rise or fall in the income of the export sector is generalised through the economy. In the case of a rise in the income (vice versa for a fall) of the export sector this means an improvement in the terms of trade between the export sector and the rest of the economy. Such was the case in the Sudan in the Korean Boom, the export sector or the cotton sector with high income demanding more and better food materials and services. Supply being rather inelastic, prices rise and the terms of trade of the other sectors of the economy begins to improve too against the export sector. When the benefits arising from the export sector have been generalized then it will be possible to introduce higher import duties or higher general sales tax as everyone will have a higher income and more taxable capacity. But before that, no higher indirect tax can be used without making all the people in the non-export sector suffer. Therefore, if, in the Sudan where there is no income tax, we accept Professor Nurkse's suggestion of using general taxation rather than export tax and
using some indirect taxes because they are easier to administer, we can only stabilize the income of the cotton producers or the export sector after we let instability spread to the whole economy first, or sacrifice equity!

However, taking into consideration the fact that the instability in the income of the cotton producer in the Sudan arises from fluctuations in the yield per feddan as well as from the price of cotton and that the fluctuations in the yield per feddan are greater than the price fluctuations, using progressive export tax which acts on export price alone may not lead to consistent stabilization of the income of the cotton producer. In one year the cotton producer may have high prices but very low yields and vice versa in another year. Perhaps a progressive income tax can be more consistent because it operates directly on income rather than upon just one of the variables that makes income.

In the past, prior to 1953, the Sudan cotton was sold directly to foreign buyers. The Sudan Plantations Syndicate used to export and sell its in Liverpool Cotton Exchange, as already mentioned. During the war years and until 1953 the Sudan Government, mainly representing the cotton boards, sold cotton directly to the United Kingdom Raw Cotton Commission and to the Indian Government. In the case of such direct sale of cotton from the public schemes, the Government, the boards and the tenants were the exporters. As export taxes have been included in the joint cost accounts of such cotton schemes, the Sudan
Government had to pay about 42% of the export taxes by one hand in order to get the revenue from them by the other. Thus export tax on cotton was not particularly popular with the Government and was not taken seriously as a tool of stabilization. After 1953 cotton began to be sold in the Khartoum Auction and cotton merchants and Commission-agents began to pay the export taxes on it. After the Sudan independence in 1956, direct cotton selling by the Sudan Government to the Soviet Block began to expand. In the period 1957-60 about 10% of the Sudan's cotton was sold to communist countries through bilateral agreements. However, it is not highly probable that the amount of cotton sold directly to the Soviet Block will be a big percentage of the Sudan's cotton exports in the near future. But if the cotton sold directly by the Sudan Government, or the cotton boards, through bilateral agreements or in cotton futures markets, becomes of any considerable size at any time in the future, the Sudan Government will tend to appreciate export tax less as a tool of stabilization or as a revenue raiser, if the present system of cost accounting and its sharing out remains the same.

Finally we conclude that the other problems of export taxes which we have already discussed in this section of this chapter, seem to indicate that export tax cannot be used as the only effective tool of stabilization and therefore other taxes and other means have to be sought and applied.
F. Business Profit Tax (B.P.T.)

The B.P.T. in the Sudan is progressive. Thus it can work as an automatic stabilizer for the income of the cotton producer as well as for any other citizen. At the same time, being levied on profit, it takes into consideration the fluctuations in the yield of cotton per feddan - as already explained in Chapter Five, that profit is a function of both price and the yield per feddan. But to my mind, the present B.P.T. is un-neutral in several of its aspects. By un-neutrality is meant partiality of treatment of tax-payers and hence justice in taxation cannot be achieved. Impartiality does not mean identical treatment for everyone because all people are not equal. One of the most widely accepted principles for the distribution of taxes among individuals states that individuals in similar situations should be treated similarly or, in other words, equals should be treated equally. This is a protection against arbitrary or discriminatory treatment in distributing taxes. However, the principle of neutrality is not important only for equity but for the economic development of the Sudan as well. It affects the incentive to work, save and invest as well as affecting the allocation of the limited resources especially in the under-developed countries such as the Sudan. But what are these un-neutral effects of the B.P.T.?

The practice in the Sudan is not to tax the high income arising from the investment in erecting houses, apartments and

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(1) For rates please see Sudan Almanac, 1960, p. 130
commercial buildings. The argument is that such undertakings are not business. Such an interpretation of the word 'business' is very narrow. The legislator, when taxing business and professions profits, was taxing the income arising to persons involved in such undertakings. Building an apartment in Khartoum, for example, is work executed or an undertaking carried out in the Sudan for gain. The result of not subjecting the income from such undertakings to the B.P.T. has grave consequences on the economy. Capital owners would be tempted to invest their capital in such safe and profitable undertakings instead of investing it in industrial projects which are badly needed for the economic development of the country. There is a great temptation for two or three businessmen, who are contemplating a productive and risky project and at the same time are subject to the progressive business profit tax, to get together and build a big apartment building which bears no tax except the house tax (property tax) which is proportional.

Quite a large percentage of buildings in the Sudan are erected by merchants, money-lenders, etc., by hiring labour and buying materials directly. Later they either rent or sell them for a profit. Such a profit is not taxed under B,P,T., because erecting buildings is not considered the normal business of such a merchant or money-lender. This has grave implications for the allocation of investment and the economic development of the Sudan.

Another example of un-neutrality in the B.P.T. in the Sudan is the arbitrary classification of the Ordinance as to who
is subject and who is exempt from the tax. Section 9 (1) (b) states that no tax would be levied on the profits of "any agricultural undertaking the water for which is supplied by shaduf, sagia, matara, natural flooding or rainfall." The legislator subjected these agricultural undertakings to either the land tax or to Ushur tax. In both taxes the rate is proportional and quite low. The logical interpretation of the purpose behind which this sub-section was inserted may be to favour the farmers and encourage them because their profits arising from the use of shaduf, sagia, tambur, rainfall and so forth of such primitive methods of irrigation are assumed to be small. Unfortunately, such an assumption is unrealistic. It may happen that a farmer using such methods of irrigation might realise greater profits than a farmer using water supplied by modern irrigation schemes.

Suppose A and B are two farmers each cultivating an equal piece of land and getting the same amount of profits. According to the B.P.T. Ordinance, A is exempt because his land is supplied by water from sagias and/or rainfall, while B, who has the same ability to pay, is subject to the B.P.T. because he happened to cultivate a piece of land supplied by modern irrigation schemes. Here we have a clear tax differentiation based on irrelevant differences between A and B. According to the basic principles of public finance, tax differentiation must be based upon a relevant difference between A and B. A relevant difference is one which pertains to the relation of each of these men to the Government and the payment of
taxes. A difference of their annual profits and not the method of irrigation used is an example.

When it is a definite fact that A's income is small as a result of using sagia, (1) shaduf, (2) rainfall, etc., and B's income is large as a result of using water supplied by modern irrigation systems, then such differentiation is based upon a relevant difference between the two persons. The equitable way for the B.P.T. Ordinance to encourage small cultivators, whether they are using shaduf, sagia, etc., or water supplied by modern irrigation schemes, could be achieved by letting a maximum amount of profits for each cultivator go untaxed. If such an amount is exceeded then all equal taxpayers would be treated equally tax-wise. Also, such an exemption tempts cultivators to use outmoded and primitive ways of irrigation on a large scale to avoid the B.P.T. The result, needless to say, would have a bad impact on the economy of a country like the Sudan which is trying to increase efficiency and productivity.

The same type of criticism could be applied to sub-section (1) (ii) and (iii) of section 9 of the B.P.T. Ordinance. In sub-section (1) (iii) of section 9, the law exempts pump schemes growing fruits, vegetables, food crops for human consumption or fodder from B.P.T. Upon what basis is such an exemption granted? The aim might be the encouragement of production of fruits, vegetables, food crops for human consumption

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(1) Sagia is a water-wheel, usually driven by an ox.

(2) Shaduf is a hand-operated water-lifting device. It is on the seesaw model with the water container counterbalanced with a lump of clay.
and fodder. If this is the case, then the B.P.T. Ordinance gives an indirect subsidy to the producers of fruits and vegetables and penalizes the producers of raw materials for industrial consumption such as cotton. The Government may encourage and help producers of such crops directly through increasing the provision of extension programmes, technical advice, better seeds, better irrigation and drainage systems, etc., rather than by an indirect subsidy through the tax system. Otherwise there could be unequal treatment of equals and the kind of crops and not the availability and amount of profits would determine whether the person would be liable to the B.P.T. or not. The owner of an agricultural scheme would be taxed on his profits by the B.P.T. while the grower of vegetables and fruits would go untaxed because the former happened to grow cotton which is subject to B.P.T., while the latter happened to grow vegetables and fruits which are exempt from the B.P.T., even though he may realise far more profits than the cotton grower. Besides the resulting inequity there are certain economic effects involved. For example, such exemption will affect relative outputs of both taxed and untaxed products and consequently resource allocation.

Another point regarding the application of B.P.T., and hence its economic effect, is Section (20) sub-section (1) of the B.P.T. Ordinance which states:

The Minister of Finance may, on the application of any trader liable to business profits tax who is also liable
in any other country other than the Sudan to any tax, the assessment of which involves the assessment of the profits of his business in the Sudan, direct that, if such trader produces a certificate showing the sum at which such profits have been assessed in any year for the purpose of such foreign tax, the assessment board shall assess the profits of such trader for that year as the same shown in the certificate aforesaid. (1)

In other words, the Sudanese Ordinance of the B.P.T. permits and allows other countries, i.e. other foreign tax officers, to assess the tax for the Sudanese tax officers. There is no doubt that such a section is out of place in a tax code of a country like the Sudan which is trying to raise more revenue for economic development. Such a section puts the assessment of profits of business taking place within the Sudan and arising to taxpayers who happen to be 'also liable in any other country other than the Sudan to any tax' in the hands of foreign assessors far away from the place where the actual business and profits took place.

The un-neutrality and hence inequity arises because traders whose business is confined to the Sudan and who are subject only to Sudan B.P.T. are deprived from the probability and chance of under-assessment of their profits which is available to traders who are also liable to pay taxes in countries other than the Sudan.

Another loophole in the B.P.T. which may be considered is Section 21 of the 'Traders Licence and Taxation of Business Profits Regulations' which states that:

_______________________________________
(1) Underlining supplied.
Partnership whose partners are not identical shall be assessed separately. Thus if A carries on trade by himself and also in partnership with B and also with partnership with C, A shall be assessed for the business carried on by him, and the partnership of A and B and of A and C shall each be assessed separately. (1)

Section 7 sub-section (5) of the B.P.T. Ordinance states that:

A trader other than a company shall only be liable for business profits tax if his aggregate net profits from all businesses taken together exceed the tax-free minimum specified in Schedule 11. (1)

while Section 8 sub-section (1) of the B.P.T. Ordinance states that:

...every Sudan trader shall be assessed for business profits tax on the whole of his profits whether or not any proportion of such profits arises from activities exercised outside the Sudan... (1)

Now, in the meanwhile, we find that the rates of the B.P.T. are progressive, i.e. the effective rate increases when income increases. There seems to be quite a contradiction between the above mentioned sections of the B.P.T. Ordinance and those of the B.P.T. Regulations. Under the regulations in section (21) a trader shall be assessed for the business carried on by himself; at the same time if the same trader is carrying on a trade in partnership with another, the business of the partnership shall be assessed separately. In other words, the business profits of our trader from the partnership are not added to his profits from the business carried on by himself as might be understood from the

(1) Underlining supplied.
above mentioned section 7 sub-section (5) and section 8 sub-section (1) of the B.P.T. Ordinance. Unfortunately, the Department of Taxation in the Sudan does not apply section 7 sub-section (5) and section 8 sub-section (1) in the case of traders involved in different partnerships with different partners.

The purpose of the legislator when the B.P.T. was introduced and levied was to tax the whole of the profits and not each amount of the profits of partnership assessed separately. Is it logical that the legislator in section 8 sub-section (1) combines the whole profits of a Sudan trader arising from different partnerships with different partners although all arise from activities exercised in the Sudan? Why would the profits arising from outside and inside the Sudan to a Sudan trader be taxed on the whole and be subject to the progressive rates while the profits arising in the Sudan to a Sudan trader from partnership with different partners, each partnership assessed separately and consequently be taxed separately? Would it not be possible that a large proportion of the profits arising outside the Sudan to a Sudan trader is the outcome of different partnerships in different countries, and according to section 8 sub-section (1) should not all be added and aggregated together and be subjected to the B.P.T.?

When the legislator levied progressive rates he aimed at achieving certain economic and social goals. Would such aims be realised if each amount of profits from partnerships is assessed separately and each share belonging to one trader left without aggregation? The answer is in the negative. By such contradiction
between Ordinance and practice, the aim and application of the law, we are letting the door wide open for avoidance. For example, if X is a partner in different partnerships with different partners he could avoid being subject to the high brackets of the B.P.T. by dividing his activity instead of combining it all together. Mr. X can organise his business activity on the following form:

X partnership for import and export  
X      "      " tourism  
X      "      " transport

all with different partners, but still Mr. X is the one who organizes and controls each partnership. By such an arrangement he could draw a salary from each partnership and be tax free as stated in section 17 sub-section (1) of the B.P.T. Regulations:

...in the case of traders who submit certified accounts, reasonable management expenses shall be allowed as a charge against the profit.

In addition to that he would enjoy the rates of the lower brackets of the B.P.T. In other words, the tax would probably be more proportional than progressive and the intention of the legislator in subjecting such taxpayer to progressive taxation would be avoided. Such avoidance has a bad effect from the economic, equity and morale point of view. Regarding the economic aspect, less revenue is collected because the high progressive rates are not applied when each amount of profits from different partnerships - organized and controlled by one or two persons - is assessed separately. Such an assessment of profits, by reducing the progressivity of the B.P.T., reduces the automatic stabilizing effect of the B.P.T. and creates undue discrimination
among taxpayers.

Finally, the B.P.T., by being levied on profits alone, exempts employees of the Government, firms, banks, etc., however high their income is. As far as the cotton schemes are concerned, the B.P.T. is paid by the boards and not by the tenants — from their own share of the profits — and thus the present B.P.T. cannot help at all in the stabilization of the tenants' income.

For all these defects, as far as stabilization is concerned and its un-neutral effects, the present B.P.T. of the Sudan has to be reformed and preferably substituted by a progressive income tax. However, whether it is an income tax or B.P.T. or export tax, no tax can be perfect and no tax is completely neutral except perhaps a flat poll tax, which in any case cannot be used as an effective tool for stabilization.

The conclusions which seem to emerge from all this discussion are that (1) the present B.P.T. in the Sudan should be replaced by a progressive income tax. (2) It is better to use a mixed system of taxation (e.g., income tax, export tax, import duties, etc.) at moderate rates rather than to rely completely on one single tax as the only fiscal tool for stabilization, besides using reserve funds and direct stabilization schemes by the boards. Such a system of mixed progressive taxation at moderate rates will create balance and stability in the economy with the least disincentive and misallocation effects. A change in income which escapes one tax cannot escape the other.
(3) Stabilization through taxation (perhaps with the exception of export taxes especially if they are increased or decreased gradually over the years) has the advantage of allowing supply of export crops to adjust itself to long-run trends of demand, while price stabilization - especially if carried very far - may isolate supply of the export crop from the long-run conditions of demand.
<table>
<thead>
<tr>
<th>Crop</th>
<th>1949</th>
<th>1954</th>
<th>1959</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Value expr. tax</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$ per seer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>As % of export</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sesame (dardab)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value expr. tax</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$ per ton</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>As % of export</td>
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<td>$ per kantar</td>
<td></td>
<td></td>
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</tr>
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<td>As % of export</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gum (Hajab)</td>
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</tr>
<tr>
<td>Value expr. tax</td>
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<td>$ per ton</td>
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</tr>
<tr>
<td>As % of export</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Note:** Computed from the letter of the Permanent Under Secretary of Ministry of Finance No. MFE/90.6.20, XE/32.4.2 and Foreign Trade Department, Department of Statistics, (Khartoum).
A. Agricultural Diversification

In this chapter we intend to survey very briefly the diversification carried out so far in the Sudan and to appraise diversification as a policy for stability. We cannot make any definite policy recommendations as to what crop or sector is to be increased or decreased in relation to production or to exports; but, rather, we want to explore the problems connected with diversification as a policy for stability and to indicate the way such problems may be solved. The reason we cannot do this is due to the lack of information on such questions as the area of the Sudan under different export crops, their profitability, mobility of factors of production, etc. Given that no adequate information is available for making concrete policy recommendations and measuring their consequence on stability and growth, it may be worth while to discuss diversification in a general way, which is relevant to the Sudan, rather than to ignore it completely.

Though diversification has frequently been suggested by several economists as a means for stability in primary producing countries, the problems of actual application and consequences of such a policy are usually skipped over because of lack of data and information concerning crops produced or potential, magnitude of price and yield fluctuations as well as the relative profitability
of each crop in underdeveloped countries. For example, Mr Belshaw, commenting on the IBRD Report on Uganda, says that, though diversification is mentioned several times in the Report, its application to Uganda's present economic position is not analysed. The effect of diversification on Uganda's export earnings, the extra degree of insurance provided by further diversification, the cost incurred in diverting resources perhaps from some profitable production and the degree of flexibility between one product and another are all left without being measured or discussed. Diversification really means reduction in the large contribution of a particular crop (cotton in the case of the Sudan) or a sector to exports and, ultimately, to national income, by either actually reducing the production of that crop, or increasing the production of one or more of the old crops, or introducing a totally new crop or industry. If the supply of any factor of production is completely fixed, then diversification cannot take place except by substituting one crop or sector for another, if the way in which the factors of production are combined is fixed too. But if the supply of all factors of production is elastic all the time, then new crops or industries can be introduced and the contribution of the old crops or sectors to exports or national income will dwindle continuously.

We may note here that there is a marked difference between

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(1) D.G.R. Belshaw, "Public Investment in Agriculture and the Economic Development of Uganda", The East African Economic Review, Vol. 9, No. 2, December 1962, p. 87. Mr. Belshaw is referring to the Report by a Mission organized by the IBRD.
diversification and 'balanced growth'. (1) In the case of diversification the increase in the production of crop or sector may be carried out even if it is less profitable than the dominant crop or industry. Some profit may be sacrificed for the sake of greater stability. However, in the case of 'balanced growth' the introduction or expansion in the production product or sector may not be profitable as far as that product or sector alone is concerned, but it must be equally or more profitable than any other product or sector in terms of the whole economy, otherwise it would not be carried out.

In the case of the Sudan, diversification can take place within the cotton sector itself by increasing the production of shorter staple cotton instead of specializing in the extra-long staple cottons. As a matter of fact, the Sudan, because of acute shortage of labour during the picking season - especially after the Managil Extension - has to mechanise picking, and as extra-long staple cotton cannot be picked by machines, the Sudan can only expand its production by growing the American type which is a short-staple cotton. Extra-long staple cottons such as the Sakel do not lend themselves to machine picking mainly because of natural factors such as the lack of uniformity in the length of the cotton trees, and in the time of ripening. Sakel ripens gradually and if

(1) For definition and further discussion:
it is not picked immediately it falls and becomes dirty. Moreover, the fineness of the extra-long cottons, which command a premium over shorter-staple cotton, is very much reduced when such cottons are picked by machines. The Sudan can also diversify by increasing the production of export crops or domestically consumed crops or by industrialization. Industrialization, in its early stages, however, will tend to mean little more than processing the agricultural products. On the other hand, if diversification is to create more stability for the Sudan, the crops which are to be increased in production must have either a more stable yield or a more stable price than cotton, or, even better, their prices should move in an opposite direction to cotton. One expects that the prices of all industrial materials, including fibres, will move together. Although food prices may fluctuate less widely than those of industrial materials, especially in great depressions or booms, the prices of food as well as those of industrial materials have tended to move together most of the time, as we see from Table 7.1 In Table 7.1, out of the seventeen price movements recorded, it is only five times that the price movements of food and tobacco have not coincided with those of industrial materials. Moreover, in those five times the price changes are relatively small. Thus if the Sudan succeeds in diversifying its economy by producing and exporting food crops most of the time the prices of the food materials will move with the prices of cotton. They will offset each other's changes very infrequently. But even if the diversifi-
cation of exports is carried out successfully and stable export prices for the Sudan are achieved, it will not solve the problem of the income fluctuations faced by the producer as these depend on natural factors which tend to affect all crops similarly. However, there seems some hope that diversification through dairy products and poultry as well as producing them for domestic consumption may create certain income stability in some of the cotton schemes - as already mentioned and explained in Chapter Three, Section F. But the problem with such measures is that they cannot be carried very far because of the narrowness of the market, and once the produce is exported, price instability becomes outside the control of the Sudan, if the Sudan could compete with other producers.

Another important problem which has to be considered is that diversification in the Sudan - for the sake of large-scale economics and crop rotation - has to be in terms of schemes rather than in terms of individual producers. Some schemes will continue to produce cotton while new or old schemes produce other crops or different cotton staples. This means that some system of compensation has to be worked out by the Government, whereby the income (or at least the price of cotton) of the cotton producer is stabilized at the expense of the other schemes. But these are not all the problems of diversification in the Sudan. As already mentioned, there is the problem of cost of production and profitability to be considered very carefully. The irrigated cotton schemes of the Sudan which produce about 90% of the Sudan's cotton
have proved, after a long period of trial, they seem to be most suitable to extra-long cotton, Sakel. Diversification in terms of short-staple cotton or food crops may reduce the average rate of the net return in the long run. The choice has to be made between a smaller but more stable income and a fluctuating but higher income. What will determine the choice is the extent of the stability created and the extent of the income reduction. We can only know this for sure through research into the price fluctuations of the different crops, as well as research into their cost of production and yield fluctuations.

The Sudan Delegation to the Twenty-First Plenary Meeting of the International Cotton Advisory Committee in May 1962 said, "It is worth mentioning that we have already diverted areas of over 50,000 feddans, previously grown long staples cotton to sugar cane in Gineid Area along the White Nile, 15,000 feddans to castor beans in the Gash Area and in 1961/62 season Tokar Delta - again previously grown long staple - has been diverted to shorter staples."(1)

This is very small when we compare the 50,000 feddans of the Gineid Area to the Gezira Scheme which includes the Gineid Area as a part of it. The Gezira Scheme has a total area of 800,000 feddans and its Managil Extension will have about one million feddans. The area diversified with sugar cane, taken as a percentage of the Gezira Scheme and its extension, will be less than 3%. The Ten-Year Plan of Economic and Social Development in the Sudan has attempted to encourage diversification of agriculture. The Plan provides for

(1) Annex to Proceedings, Twenty-First Meeting of the International Cotton Advisory Committee, May 1962, p. 34.
increased production of oil seeds, particularly groundnuts and sesame, as well as foodstuffs such as sugar cane, rice, wheat, coffee, tea and fruit which are intended mainly to substitute for imports. (1) However, the amounts devoted to the expansion of these products are very small compared to the amounts devoted in the Plan to the development of the cotton sector, as already mentioned in Chapter One, Section E. However, perhaps the real criticism to the diversification policy carried out in the Sudan is not that such a policy has not been carried far enough but perhaps that the problem of diversification has not been studied enough from the technical side or from the side of the cost of production and profitability. The Geneid Sugar Scheme has not progressed well and has produced very small amounts of sugar so far. In fact it seems to be a failure. Sometimes the reason given for this failure is that the crop failed for two consecutive years and at other times the reason given is that there is a technical fault in the factory itself. The failure of the Geneid Sugar Scheme reveals an important fact about diversification - that a long time is needed before it can actually be carried out. It is a long-run policy. In the case of the Geneid Sugar Scheme, sugar cane was tried for two years only and proved successful. Such a short period is not enough for experiments which may be affected by weather cycles which may continue for a period of three to five years. If diversification is carried through after insufficient research, it may result in a reduced income rather than in a stable one. Any diversification which

requires saving and investment means a sacrifice equal to the interest foregone in the process of transforming a flow of income into a capital stock. Then, if the new net income is at least equal over the years and more stable than the old one, it may be worth while to diversify in that direction. But it may not be justified to carry out diversification or industrialization for the sake of stability if the sacrifice is very considerable, say 12% or so reduction in real income in the long-run. Stability can be achieved through other means such as fiscal policy or direct stabilization of price or income through reserve funds, which may be less expensive. If diversification or industrialization results in more stable but less income, it becomes a matter of evaluating the extra stability in terms of money. Perhaps stability can be taken to be equal to the interest necessary to keep a reserve fund for stabilizing the income in question. If agricultural diversification or industrialization adds to stability but reduces real income by more than 12%, it does not seem justifiable as the cost of a reserve fund which can stabilize the cotton producers' income or a foreign loan to counteract downward movements in income from cotton cannot be as high as that. As a matter of fact, the Sudan pays a rate of interest of about 7% on its foreign loans. But, of course, the supply of such loans is rather limited.

In some cases it may be desirable to diversify gradually to avoid or reduce the unpleasant effects of changing the pattern of the society, if diversification requires so. If new crops have to be introduced or the production of some of the old crops has to
be increased through better and new methods of cultivation, and this affects the pattern of life of the people, it may be difficult to do it in a short period or it will result in reluctance or the desertion of the people, as has already happened in the Zande Scheme and the White Nile Schemes. In such circumstances, instead of income being stabilized, income is being reduced, and perhaps for quite a long time. Thus diversification has to be looked upon as a long-run policy which cannot be applied to solve problems immediately.

B. **Industrialization**

Industrialization has been suggested by many economists as an effective measure for creating stable incomes, and, at the same time, increasing them and really developing the country concerned economically. Here, we are not concerned with the growth of industry (as such) and its problems, but we are interested in industrialization in so far as it is a means of stabilizing the incomes of the cotton producers of the Sudan.

It has already been mentioned in Chapter Four, in connection with the Zande Scheme, that the cotton cloth produced has been meeting wide fluctuations in demand and problems in selling or distributing it. This scheme shows that industrialization or processing the

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crop as such, is not a solution to the problem of price fluctuations. Industrialization is a means of stabilization in so far as it causes the price of the crop to be determined nationally rather than internationally, and national prices are easier to determine, control and stabilize than international prices. But as long as the national market is open and tied to international markets and prices, through imports, industrialization as such cannot help in stabilizing the prices of the processed cotton or any other crop. Thus when a crop is processed, it is better to do it on such a scale as to satisfy the whole home demand without any imports of similar products. Such price stability that comes with industrialization is the direct result of price control. But can industrialization or the processing of cotton into yarn or cloth give it a stable price in the closed but free market economy of the Sudan? If the Sudan becomes as industrialized as the U.S.A. or the United Kingdom or Germany, etc., it will still have cyclical fluctuations. Although some economists may disagree as to what is the real origin of these economic fluctuations in advanced countries, and although fiscal, monetary and control policies have reduced such fluctuations, no economist can deny the existence of cyclical fluctuations in prices, production, and employment in these industrial countries of the world. With such cyclical fluctuations in the closed but free market of the Sudan, prices of the cotton cloth, and ultimately of raw cotton (as well as other crops), will fluctuate too. A small agricultural sector in a highly industrialized economy is not free from fluctuations in its share of labour forces, price and income.
Prosperity or depression starts first in the industrial sector and then spreads to the agricultural sector. Labour force may shift between these two sectors according to the relative prosperity of each, especially when expansion in one of them is sustained for a few years. Prices of agricultural produce and farmer's income move in close sympathy with the fluctuations in the industrial sector.

In a highly developed and industrialized country such as the U.S.A., the agricultural sector has become completely integrated in the exchange economy, is very dependent on selling and buying from the industrial sector and has thus become very vulnerable to fluctuations in the level of activity in the industrial sector. As the industrial sector cannot be expected to be a stable one, the agricultural sector cannot be expected to be stable either. Professor T.W. Schultz has dealt with this problem of unstable agricultural sector in a stable economy at length and he seems to think that "the experiences of inter-war years indicate that the American agriculture at times paid dearly for its dependence on the exchange system," (1) and on these grounds he claims that agriculture deserves help and support.

It is only through special policies such as price support, monetary, fiscal and control measures that the price of cotton or any other crop can really be stabilized. However, the Sudan is in a totally different situation and cannot process and consume all of its cotton. At the same time the Sudan is not expected to process and export its cotton in the near future. The first textile factory of any considerable scale is only a few years old. Moreover, the Sudan

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cotton, being of high quality, is processed into fashionable cloth requiring a high standard of manufacturing which the Sudan cannot reach in the near future. As the Sudan is not expected to consume more than 20% of its cotton, it will remain a cotton exporter for a long time to come.

If the Sudan is ever going to be industrialized to the same extent as Western Europe or the U.S.A., this will be in the very far future, and cannot be of our concern here and now. What is expected of the Sudan in the future is to remain dominantly agricultural with an industrial sector which contributes perhaps about 10% or 15% to the national income. In such circumstances, how far can industrialization help to stabilise the Sudan's closed economy in general, and the cotton sector in particular, assuming that the Sudan produces cotton only for its own consumption? Such an economy with a dominant agricultural sector, while the industrial sector is mainly engaged in processing the agricultural products and manufacturing simple consumer goods, looks like the general picture in Western Europe and the U.S.A. in the nineteenth century, which has inspired so many economists, such as Professor H.S. Jevons, W.C. Mitchell and H.L. Moore, etc., to formulate and expound their theories on trade cycles, which originate in fluctuations in the agricultural output. (1) Professor H.S. Jevons has a theory, supported by some statistical evidence, of a three-and-a-half year cycle in barometric pressure which leads in due course to a cycle in

trade. (1) The links in this chain are rainfall and harvest. Fluctuations in harvest or yield per acre determine the industrial fluctuations too. Bountiful harvests have wonderful effects in stimulating trade, and vice versa. A bounteous harvest is a gift of nature and therefore a case of greater supply at approximately the same cost. If demand is elastic (2) an increase in receipts will tend to increase the aggregate demand for goods and stimulate the whole economy - and vice versa. The farmer will consume more, but some of the surplus will pass to the rest of the economy. Wealthy farmers will take the opportunity of carrying out drainage schemes, building new barns or houses, etc. In the Sudan in the rural areas people usually build new houses or marry in good harvest years, especially in areas or among tribes where part of the dowry is paid in agricultural produce of the area. Merchants handling agricultural produce and railways and steamers transporting the crop all benefit greatly by abundant crops, and businessmen and the Government either spend their extra profit and revenue or invest them. This, in turn, means a greater boost to trade. Professor Jevons, to remove any doubt about the validity and significance of the dependence of trade activity upon harvest, takes the production of pig iron in the U.S.A. as an index of trade and shows the dependence of the production of pig iron in the U.S.A. on agricultural produce.


(2) A.C. Pigou, Op. Cit. p. 56, "On the pre-war evidence as a whole I conclude that demand elasticity for agricultural produce in general is greater than one ..." Professor Pigou is referring to the U.S.A.
production in the period 1865-1910.\(^1\)

With the farmer's consumption of his own product changing with his output and storage being carried by him, the middleman, the marketing boards and the Government, one expects to find that price fluctuations are smaller than fluctuations in supply. Thus the farmer has both real and money income changing with changes in harvest. In good harvest years he saves more and this increases the supply of loanable funds, and reduces the rate of interest, which may stimulate investment even further. At the same time the price of raw materials, by being lower, increases the profits of the manufacturers and, in turn, stimulates trade activity further. This is particularly important, as one expects in the model for the Sudan economy of the future that the bulk of the industrial sector will be engaged in the processing of agricultural products which means that the cost of the raw materials forms a very large percentage of total cost and therefore has an important impact on profits. Also the method of production may be labour intensive, and, if the food prices affect wages, then changes in prices of agricultural products will affect profits even further, and ultimately affect the level of trade activity.

However, in contrast to agriculture, industrial production is not affected by weather, disease or pests, and therefore industry can have a more stable physical output than agriculture. However, for its supply of raw materials and labour,\(^2\) the prices of its

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\(^2\) The effect of fluctuations in the cotton sector on the supply of labour for industry in the Sudan is already discussed in Chapter Two, Section C.
products and the demand for them, industry will have to depend on agriculture, and the industrial activity will be very much affected by the fluctuations in the prosperity and demand of the cotton or the agricultural sector in general.

In the coming ten or fifteen years, which concerns us in this thesis, industry in the Sudan cannot be of any considerable size and it will merely process agricultural products and therefore it cannot create any appreciable stability in the Sudanese economy. In fact, it will merely fluctuate with the cotton or the agricultural sector, because the tail cannot wag the dog - it is the other way round. This means that, though industrialization cannot be ignored as a policy for growth and stability, especially in the far future, other more effective policies which can have immediate results, such as a national buffer stock or reserve funds or taxation, have to be sought and applied.

The general conclusions which seem to emerge from this discussion about industrialization as a tool of stabilization are that even if the closed economy of the Sudan becomes highly industrialized fluctuations will come from the industrial sector itself - while if it remains dominantly agricultural with a small industrial sector, fluctuations will continue to come from changes in harvest or yield per acre, and if it is an open economy, fluctuations are apt to be transmitted from abroad. Diversification in the agricultural sector, or industrialization, may help to increase stability but its total effect cannot be expected to be great. It seems that the only effective solution is to formulate and carry
out policies which will reduce fluctuations immediately rather than depend on diversification or industrialization. At the same time, while carrying on with cotton as the major export crop in an almost completely agricultural and nomadic economy, research should also be carried out for the finding out and measuring both the benefits and costs of diversification and industrialization.
<table>
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<th>Year &amp; Quarter</th>
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<th>(2) Change</th>
<th>(3) Industrial Materials</th>
<th>(4) Change</th>
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<td>1957 I</td>
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<td>- 3.1</td>
<td>104.5</td>
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<td>- 2.1</td>
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**Source:** Economic Review, National Institute of Economic and Social Research, Numbers 5 and 27, Tables 20 and 27 respectively.

**Notes:**

i. The above line indicates a change in the weights.

ii. (3) and (5) are computed.
CHAPTER EIGHT

INTERNATIONAL COMMODITY ARRANGEMENTS AS ALTERNATIVE OR SUPPLEMENTARY POLICY

The Sudan is a small cotton producer and therefore it cannot influence the world cotton price, in order to stabilize it, by its action alone. However, it may be able to do so if it joins hands with the other cotton producing countries of the world, and perhaps cotton importing countries as well, in an international cotton agreement. The Sudan can either rely on its national stabilization policies alone or use both national and international policies together. However, international commodity agreements cannot be used without national policies to implement them. As a matter of fact, the benefit or the loss that comes to any country from an international commodity agreement depends to some extent on the national policy adopted by that country for the fulfilling of its international obligations. We are not going to discuss this question, however, although we intend to review some of the international commodity agreements and the principles on which they are based, in order to bring out the basic problems behind such arrangements. We do not intend to appraise the relative merits or demerits of the different international commodity agreements and suggest one for the Sudan. After all, the decision for the emergence of an international cotton agreement can hardly depend on the Sudan. Therefore our aim in this chapter is to answer the basic questions of whether such international commodity
agreements are effective, feasible and desirable from the point of view of the Sudan or not. The essence of some of these basic problems of international commodity agreements was clearly outlined in the resolution adopted by the World Monetary and Economic Conference held in London in 1933(1). The resolution indicated that international commodity agreements should be comprehensive as regards the commodities to be regulated. They should not be so narrowly drawn as to exclude related or substitute products because their inclusion is important for the success of the plan. They should also include a substantial majority of both producers and consumers. They should be administratively practicable. They should be of adequate duration so as to give assurance to all concerned, but at the same time they should be very flexible. They should also encourage efficient production. But whether it is possible to reconcile all these conflicting factors and interests in an international commodity agreement or not is a very big question. These problems, and several others, will be discussed when we come to describe and analyse some of the international commodity agreements which have already taken place. Between the Second World War and 1960 all the international commodity agreements were based primarily on three principles: (a) The Multilateral Long-Term Contract on which the International Wheat Agreement was based; (b) The Principle of Quota Restrictions on Exports on which the Sugar Agreement was based and

(c) The Buffer Stock Principle on which the Tin Agreement was based. (1).

A. The Multilateral Long-Term Contract.

So far there have been three International Wheat Agreements: The 1933 International Wheat Agreement which failed after a few months of trial, the 1942 Drafts Convention which was never implemented and the International Wheat Agreement of 1949 which was completed in July 1952.

According to this last International Wheat Agreement, each importing country undertakes that not less than a certain percentage of its total commercial purchases of wheat in any crop year shall be purchased from exporting countries in that year at prices within the price range. On the other hand, exporting countries undertake, in association with one another, that at prices within the price range wheat from their countries shall be made available for purchase by importing countries in a crop year in quantities sufficient to satisfy the commercial requirements of those countries. This means that, in effect, each exporter is assured of a market for a wheat quota and at not less than a fixed minimum price and each importer is assured of supply equal to his quota and at not more than a given maximum price(2).


The International Wheat Agreement covers about 60% of world wheat trade, and thus it can be argued that such an agreement is flexible because it is operated only for a part of the world wheat trade, therefore allowing changes in world supply and demand to have full impact upon the world price for wheat, which would be operative for all trade not covered by the importers' and exporters' guaranteed quotas. The world price can thus be used to help in adjusting supply and demand, therefore it can escape the basic criticism of international commodity agreements, which is that they are very static by nature. But "an agreement which fixes maximum and minimum prices for a part only of the total volume of a commodity traded is likely to give rise to more violent fluctuations of prices than would otherwise occur." (2)

Another problem raised by the International Wheat Agreement, as well as by the other international commodity agreements, is the difficulty of inducing enough members to join the agreement and remain constantly loyal, so that the agreement may be workable. A large exporting country staying out of an agreement may under-bid the market price agreed upon or sell such large quantities as to foil all plans for bringing about a balance between supply and demand. This was the case when U.K., the major importing country

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failed to participate in 1953 on the justifiable grounds that the new price range had been set too high. Far from bringing consumption and production into balance, the agreement tolerated the rise of world wheat stocks to record levels\(^{(1)}\). This is perhaps the most important problem which makes an international agreement on cotton very hard to achieve - at least in the near future. The U.S.A., being a main producer of cotton, is very reluctant to join any international cotton agreement because it wants to remain free in its trade operations for economic and political reasons. This leaves the possibility of an international cotton agreement in the realm of academic discussion alone. Any international commodity scheme such as the International Wheat Agreement by having both exporters and importers joining in, has a better chance of succeeding as a tool of stabilization, because it can have the advantage of not merely being a monopolistic abuse by exporters, like the Stevenson Rubber Scheme of the 1920's, and at the same time it will be easier for it to obtain financial resources and experienced staff. Exporting countries, who are mostly underdeveloped countries, may not be able to contribute the necessary funds and qualified staff.

But there is another basic and inherent problem in all such international commodity agreements, which include both exporters and importers, namely the difficulty of reconciling the interests of producing and consuming countries. It is easy to

say that in principle both groups of countries are interested in reducing the short-run fluctuation around the long-run trend. It is much more difficult to determine what the long-run trend of price is, what is a reasonable price or price range at any given time and what adjustment should be made to reflect changes in the long-run conditions. It is very difficult to find an objective criterion to guide discussions on these matters which have to be reached through negotiation between exporting and importing countries. What makes reaching an agreement difficult in practice is that importing governments tend to see little or no advantage in international commodity agreements when the price of the product is low or falling, which is, of course, the precise time when the exporting governments are eager to go into such agreements. At times of high or rising prices importing countries wish to have such controls while exporting countries prefer to sit back and enjoy their prosperity. Though "the question of an international cotton agreement has been studied by experts in this field for years, up until now there has been little unanimity between cotton exporting and importing countries"(1).

Perhaps drawing a comparison between wheat as a commodity for an international agreement (which is a multilateral contract type agreement) and cotton as an international commodity, may

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demonstrate some of the problems which make any international cotton agreement difficult to bring about whatever form it may take, and difficult to maintain:—

1. Wheat is not usually processed in importing countries for re-export, whereas exports of cotton textiles are of major importance in most importing countries.(1) The usual practice of mark-up pricing(2) followed in re-exporting countries, which uses original cost of raw materials, enables the manufacturer to transfer the instability of cotton prices to the foreign consumer. Importing countries, by being able to re-export cotton in the form of textiles and thus shift its price instability over the border, are not at all keen on an international cotton agreement. Such a method of pricing does not put any individual manufacturing country at a disadvantage, because one expects that cotton prices will move together in the world. This shifting of cotton price instability with the manufactured cotton textile, assumes that such internationally traded manufactured goods have an inelastic price-demand, and such an assumption sounds reasonable - at least to some economists(3).

2. Consumption of wheat is reasonably constant and, therefore,


more easily predictable over a period of time. Cotton consumption, on the other hand, both in total, and in individual countries, is at times subject to considerable and unpredictable variations. A reasonably constant demand for any international commodity helps to plan production and thus it is easy to avoid serious problems of wide shortage or surplus and this helps to keep the members of the agreement loyal all the time.

3. Wheat trading is limited to a relatively small range of qualities. In the United States alone there are well over 500 different qualities of cotton even ignoring spinner preferences and technical factors. There are large numbers of cotton growing countries, producing many different growths, ranging in staple from 13/16", to 1½", with many grades in each staple, different characteristics in the same growth and widely different characteristics between growths. Though there may be a large rate of substitution, of 30% or so, between the different cotton staples, price differentials between the different staples and growths cannot be ignored in any international agreement. No cotton international agreement could operate without fixing the price relationships for different growths in advance or providing some mechanism (such as a price equivalents Committee) for the determination of price equivalents for the various growths. But should the agreement set maximum and minimum prices for each growth or for only one basic growth within a category? And if the latter, how should the prices of other growths be related to
the basic growth? Within each growth, should prices be determined for one type only, for several types or for an average? Should there be a provision for currency differentials and if so, what form should it take? In what monetary terms should the agreement prices be expressed? When all or most of these problems are solved, there is the problem of whether cotton prices should be related to an international cotton market or determined by an equivalent price committee. It seems that there is not really an international cotton market which deals in all cotton growths and which is free from local conditions and speculation (especially after the rise of an international cotton agreement which will make all the present international cotton markets shrink greatly) and it is therefore very difficult to find an international scheme which is acceptable to all world producers and consumers of cotton(1). In the case of all the international cotton markets becoming diminished in importance and can no longer be taken to reflect changes in world price levels for cotton, or in the case of their complete disappearance because of the agreements, the second possible method of fixing price differentials between growths is to delegate to a committee the task of saying what would be the correct price. It is very difficult to see how a committee will accept such a responsibility, or how countries will accept price determination at the discretion

of such a committee. Most informed cotton experts would give different opinions. The values between growths would depend on the end-use to which the cotton and cotton products would be put as well as the individual spinners' preference. The relative values between growth vary from one mill to another in the same country and between spinners in one country and another country due to various characteristics of cotton staple length and grade, machinery, labour conditions and other technical factors.

4. On the import side, a large volume of trade in wheat is under government control. The cotton trade is essentially the domain of the private trader. International agreements can only be implemented if all the member governments are ready and able to control their trade in the commodity concerned to the extent necessary to carry out their obligations to purchase or sell stated amounts within stated price limits.

5. In general, wheat is traded in large contracts, whereas, cotton is often dealt with in small lots. This would be particularly important in any multilateral contract type of cotton agreement, in which every transaction would have to be recorded.

6. The currency problem is much simpler in the case of wheat than it would be for cotton due to the limited number of exporting countries. This is particularly important because some important currencies are still not freely convertible.
B. Quota Restrictions on Export

This is the second type of international commodity agreement which makes provision for the limitation of exports, in so far as this is necessary in order to secure some degree of price stability. This principle is operated in the international Sugar Agreement. The Agreement, in the form negotiated in 1953 (1), relied on a system of export quotas for the so-called free market sector which accounts for less than one half of the world sugar trade and which excludes a large proportion of the British Commonwealth and the total imports into U.S.A., which are controlled by special agreements. It differs from the export quota agreements concluded before the Second World War in that it contains automatic provisions for an increase in quotas whenever the world price exceeds a certain maximum for a certain period and for a similar decrease in quotas when it falls below a certain minimum, and that it imposes an obligation on importing countries to procure a certain part of their supplies from participating exporters. Article 20 of the 1953 Sugar Agreement says that for the purpose of the agreement the price of sugar shall be considered equitable both to consumers and producers if it is maintained within the zone of 3.25 to 4.35 cents U.S. currency per lb., avoirdupois free alongside steamer Cuban ports on the basis of the New York No. 4 (World) contract and that automatic adjustments to

quotas will be taken where the limits were exceeded for 15 days. Should the Sugar Council fail to agree on the amount of such adjustments, a cut of 5% or an increase of 7\(\frac{1}{2}\)% will operate as appropriate.

"The effectiveness of export restriction agreement depends to a very large degree on the comprehensiveness of the agreement, i.e., the extent to which it brings under its control all important sources of export, actual and potential, on the extent to which substitutes are available and on the importance of international trade on the commodity in relation to world production and consumption."(1) Though sugar - unlike cotton - has no synthetic substitutes which have any large demand, the International Sugar Agreement covered only about half of the world Sugar Trade and some of the members were not loyal all the time. Brazil broke away in 1955(2), Taiwan wanted to operate outside the Agreement, while in 1958 the Philippines - with excess capacity - wanted either larger quotas or withdrawal(3).

Mr. Gard Grave in his article "The International

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Commodity Agreements", after examining prices of some of commodities - among which is sugar - in the controlled and uncontrolled periods, has reached a definite conclusion about the effectiveness of the International Sugar Agreement. "The Analysis leaves no doubt that the Agreement for sugar did not produce any positive results"(1). Sugar prices were not really stabilized and made big jumps in 1956 when a short European crop coincided with the strong demand caused by the Suez Crisis. With prices running well above the maximum all quotas became automatically inoperative. In July 1957 prices of sugar made a big jump down because Brazil offered sugar at prices well below parity with Cuban Sugar. In more recent years, the efficiency of the Agreement has been impaired by the drastic changes in the pattern of trade due to the cessation in the purchase of Cuban sugar. Since January 1961 all operative provisions have been suspended owing to the inability of the participating governments to agree on the distribution of quotas. "Clearly it was one of no value to continue a pact based upon the limitations of exports unless there were complete agreement as to what those limits should be and unless there were an absolute assurance that all member countries could restrict shipment accordingly."(2).

We mentioned earlier that one of the problems of international commodity agreements is the conflict of interest of

importing and exporting countries. This is not to suggest that the interests of all producers are identical. The interests, for example, of high costs or increasing costs producers may be quite different from those of low costs or decreasing costs producers and this is a frequent source of difficulty. For countries like Brazil which have a comparative advantage in producing sugar rather than any other export crop, or the Sudan which seems to have a comparative advantage in producing cotton rather than any other export crop (and planned its economy to expand cotton production), the continuous increase in export of sugar or cotton is vital to their economic development. Thus they must have continuously expanding quotas rather than fixed quotas or a fixed range of quotas. For the coming ten or fifteen years, the Sudan seems to be going out for more cotton, rather than any other export crop (and there seems no other alternative export crop the production of which can be expanded to such an extent as to replace cotton and obtain the necessary foreign exchange for the economic development of the Sudan in the near future) and thus it is not desirable for the Sudan to join an international cotton agreement "because of the essentially static character of such agreements as the allocation of quotas, determined through bargaining and reference to past performance rather than on the basis (constantly changing) of economic consideration"(1). And this is exactly why the

International Sugar Agreement broke in 1962. Brazil left the Agreement because it wanted bigger quotas, because it needed more exports for its economic development. The Philippines too wanted bigger quotas because of decreasing costs. For Cuba it was impossible to be content with the old quotas because of the American ban on Castro's sugar. From an economic point of view "such quota arrangements are apt to introduce an undesirable rigidity into world production and trade in the commodity in the commodity-concerned, since they make it difficult for a low-cost exporter to expand his output at the expense of a high-cost producer. Moreover, they are liable to break down unless the agreement covers virtually all exporters or unless importing countries in the agreement take effective measures to limit their imports from outside countries. Otherwise suppliers are apt to make hay while the sun shines by expanding their output for sale at prices which are maintained high by restriction on the exports of the member countries"(1). Because of the big liability that international commodity agreements may break down any day for political or economic reasons, it is always better for any small primary producing country such as the Sudan to rely chiefly on its own national measures and to look upon international agreements as only supplementary.

C. Buffer Stock Principle. (1)

The third type of agreement, (2) on which particularly high hopes were put in the early post-war years, consists of the establishment of the international buffer stock, which stabilizes prices by buying whenever the world prices fall below a certain minimum and by selling when the prices rise above a certain maximum. The well known problem of a buffer stock scheme, of the availability of adequate finance to enable the manager of the buffer stock to carry out his functions, is closely related to the difficulty of successfully forecasting the future relationship between supply and demand, and securing international agreement on a range of prices which is consistent with the expected movement of the long-term world price, which can achieve a balance of supply and demand. Unless the trend of this long-term world price is stable or rising, a buffer stock is not likely to be successful in reducing the fluctuations round the trend for more than a limited period of time. The reason for this short-lived success is that with a falling trend the necessary downward adjustment of the operating range of prices cannot be secured with sufficient promptness, even if the experts were successful in distinguishing between what is a fluctuation and what is a trend. With a rising trend, the same

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(2) The Tin Agreement is also documented in Cmd. 38 and Cmd. 9222.
difficulty presents itself, but since this does not impair the finances of the buffer stock authority (on the contrary, it tends to strengthen them), the authority of the buffer stock can resume its operations once agreement is reached on the range of prices\(^1\). Such an international scheme cannot thus be used for cotton, for which we have expected a long-term downward trend of prices\(^2\).

However, the International Tin Agreement, which is based primarily on the principle of buffer stock, provides for export control. Tin has been one of the few commodities for which, in recent years, the relationship between world consumption and production has been favourable to producers. Nevertheless, the scheme ran into problems in less than two years after its establishment in 1956, when the prices fell heavily and the manager of the buffer stock used up all his cash resources in the purchase of tin but without succeeding in stabilizing the price of tin. Subsequently, the world price was held up by export controls, provided in the Agreement. "Over the first full year of control, the overall reduction of exports by participating countries was no less than 41 per cent and over the second full year it was 36 per cent. Despite this, and on account of considerable supplies from the Soviet Union, the price collapsed in


\(^{2}\) We have explained why we expect a long-term downward trend of cotton prices in Chapter One, Section E.
the last quarter of 1958" (1). It was only when agreement was reached with the Soviet Union that it became possible for the tin price to recover. The success of the International Tin Agreement will always depend on how far the Soviet Union will be ready to co-operate in regulating its supplies of tin. On the other hand, the conflict of interests is not only between suppliers and producers, but also between producers and consumers. U.S.A., the largest consumer of tin in the world, has consistently charged producers with adopting policies of restricting supply in order to raise tin prices. If the U.S.A. does not like the level of the ceiling price in any time in the future, there is every likelihood that it may re-impose restrictions on tin imports, tin sales and purchases and tin usage in the manner of 1951-52, which was so successful that it reduced tin prices by about 50% from February to August 1951. Such action, if often resorted to by U.S.A., would be bound to create violent price fluctuations in spite of the agreement (2), because U.S.A. is such a large consumer that the reduction in its consumption of tin in 1958 was greater than that of the whole world, if U.S.S.R. is excluded (3). On the other hand, the market opinion was so strongly influenced in


the 1957-58 crisis that the high price created by the Tin Agreement led to excess capacity and also encouraged research into economizing techniques and the discovery of the best methods for the use of lead and aluminium as substitutes for tin (1). This shows another aspect of the conflict of interests between producers and consumers which may take international agreements less effective and more expensive at the same time.

The problems of financing the International Tin Agreement are not only created by a long-term downward trend - as already mentioned - but also by the way in which price is determined and the inconvertibility of the currencies of some of the participating countries. Any rigidity in determining buying and selling prices, even with a formula which attempts to adjust them gradually to the trend of the free market, offers great scope for private speculators and traders. Thus the management should have the maximum discretionary powers as to when to buy or sell and be able to operate if necessary (2). But this will make it very difficult to persuade the main governments concerned to contribute substantial amounts into a common fund, for the operation of the buffer stock. National Governments may hesitate to commit really large sums to the discretionary use of an outsider. Moreover, it may be difficult to form a large fund as some of the currencies concerned may be convertible while others may be unconvertible.

With insufficient financial resources the buffer stock may lead to the destabilizing rather than the stabilizing of the commodity concerned.

Another problem of any international Cotton Buffer Stock is the great number of cotton qualities or growths - as already mentioned in connection with the Multilateral Long-term Contract earlier in this Chapter. It is very difficult to decide what qualities to stock and how much of each. As surpluses tend to accumulate in qualities for which there is less demand, the danger is that the buffer stock, as a potential source of supply, would be unbalanced and thus lose much of its effectiveness as a means of stabilization. In addition to this, there is still the problem of determining the price differentials for all these growths of cotton in the world.

D. International Compensatory Finance.

This is an international organization, or really an agency which is supposed to operate within the framework of the United Nations; and not an international commodity agreement. It has not so far been tried but a considerable amount of literature has been written on it (1), so perhaps it is worthwhile

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(1) e.g.  


to go through this suggestion briefly. Both of the United Nations reports, after reviewing the present international organisations for providing short- and long-term finance, reach the conclusion that they are neither enough nor appropriate for solving the problems of the export instability faced by the primary producing countries. They also examined the international capital movement and concluded that the purpose and mechanism underlying the flow of long-term capital were generally not well suited to compensatory action in mitigating the effects of short-term fluctuations in exports. A good deal of borrowing—both commercial and by the governments—does not take place on occasions where receipts from normal merchandise trade unexpectedly decline, but much of this is of an ad hoc nature. The main source of capital, whose function is internationally compensatory, is the International Monetary Fund (IMF). The structure and operations of this lending mechanism, however, were designed to meet balance of payment difficulties in a manner tailored to each situation rather than to provide automatic compensation to meet the repeated needs generated by export instability. The extent to which a member country can draw from the resources of the IMF is determined in the first place by its quota, which in most cases reflects a subscription paid one-fourth in gold and three-fourths in national currency. Drawing rights are not

automatic and while a country usually has no difficulty in borrowing up to 25 per cent of its quota - the so-called gold tranche - the conditions under which additional borrowing is permitted become progressively more difficult. (1) This lack of automaticity of drawing and the inadequacy of funds create uncertainty. The Committee of Experts has found that the "enhancement of the compensatory role of the Fund is desirable and that the place of the Fund among other instruments of compensatory finance may hinge largely on the reduction of this element of uncertainty" (2). They felt that even if a reasonable degree of progress was made by the Fund in the direction indicated above, in some cases the uncertainty attached to the drawing from quotas of the dimension required - or the limitation on national policies that must be accepted in order to reduce this uncertainty - will offer a serious handicap to the important object of continuity in development expenditure. Moreover, it may not be feasible for the Fund to adjust its policies further than suggested above (3). This conclusion has led the Committee of Experts to examine and seek other possible international measures of compensatory finance. To them the major object of compensatory finance is to facilitate the smoothing of fluctuations in developmental expenditure - that would


(3) *Ibid*, para. 71 (Underlining supplied). It would have been much better if the problem of fluctuations treated separately from the problem of growth. It makes issues clearer.
otherwise result - or achieve "continuity in developmental expenditure" as they put it. The International Bank for Reconstruction and Development might act in a compensatory manner. But there are certain practical problems involved here. This is especially so when the Bank is engaged in large scheme projects which require a long period of planning and execution. Also the Bank's dependence on the sale of its securities in the capital market in order to finance its operation militates against its system of a large contingent liability\(^1\). As a matter of fact, no systematic use of long-term finance, in a compensatory manner, has so far been used on the international plane. International lending on the whole has tended to be \textit{ad hoc}.\(^2\)

Two plans, or a combination of them, is proposed for the scheme. According to Plan I the cash benefits from the Development Insurance Fund (DIF) become the full property of the claimant. According to Plan II, the claimant country would only acquire drawing rights and would be pledged to pay back any drawings into the DIF if its losses were quickly succeeded by gains, but not if the recovery in its affairs was incomplete or long delayed\(^3\). A combination of both plans seems to be preferred by the Committee. "There might be advantages in a

\begin{itemize}
\item[(1)] \textit{Ibid} para. 74.
\item[(2)] For further discussion on international organization such as the Inter-American Development Bank, see \textit{Ibid}, para. 76-81.
\item[(3)] \textit{Ibid}, para. 98-125.
\end{itemize}
system under which part of the loss in export proceeds would be carried by a final settlement and another part by a contingent loan"(1).

The advanced industrialized countries contribute more than they draw from the DIF while the underdeveloped or primary producing countries draw more than they contribute. It is an essential feature of the DIF Scheme that resources are transferred from high income countries with relatively stable export earnings to lower income countries with less stable incomes(2). This international income redistribution is based on a value judgement made by the Committee of Experts.

"The World will continue to need a growing supply of primary commodities and, so long as the under-developed countries continue to be the main producer, it seems unreasonable that they should be asked to bear the principal burden of the harmful social and economic consequences that arise from the instability in commodity trade. Only in exceptional circumstances can the producing countries charge market prices that compensate them for the 'social costs' incurred by their dependence on primary commodity exports. This underlines the need for some international machinery to share the burden of

(1) ibid, para. 118.

these costs among both producing and consuming countries(1).

Whether the advanced countries of the world will accept this view (or value judgement) or not, is the question(2).

The whole success depends on the availability of financial resources which will mainly come from advanced countries, who may not like the same view as the Committee of Experts.

The DIF Scheme does not interfere with the expenditure of the compensation and leaves it to the government concerned to pay all, or part, of it to the local producer of the export crop(s), invest it partly or wholly or use it as reserve. Mr. Stern argues(3) that the Committee of Experts paid comparatively little attention to this question and for this reason their proposal ran into the danger of not fully realising either the stabilization or development objectives sought. But, to my mind, it is very difficult to be rigid or specific about such national policies to be followed by a host of countries, each with its own problems, who may be rather sensitive to too much interference from outside in their national economic affairs. For one country in one year it may be better to stabilize by paying a certain part of the compensation into the reserve fund while paying the rest to the


local producers. For the same country, or another country, in the same year, or another year, it may be better to invest the whole compensation in quick yielding agricultural or industrial project(s)......and so on. It seems wise to leave such decisions to the discretion of the government concerned. If a government, of a primary producing country, lacks this discretion completely, such a scheme, however well-planned, will be a mere farce for that country concerned. However, it could be made clear to the Governments of the underdeveloped countries concerned, that if much payment is made to the producers out of the DIF compensation, this may lead in the long-run to increased production and greatly reduced prices. It may be better to use the compensation mainly in industrializing and diversifying the economy rather than merely subsidizing the producers of the export crop(s).

The problem of inadequacy of financial resources comes back again when the question of eligibility for the DIF membership is considered. The bulk of the net revenue of the DIF would probably come from relatively few contributors and, similarly, a fairly small number of claimants would probably draw the bulk of its net expenditure. Over three-fourths of the net transfers that would have been affected during the period of 1953-1960 would have gone to ten countries only (1). If a

large number of primary producing countries were to become members, the compensatory effect would be too small to create any stability for any one of them, and therefore it might be a better idea if the membership of the DIF was limited to the ten or so primary producing countries who need it most. Eligibility qualifications would have to be defined. To my mind the most relevant criterion is the dependence of the primary producing country on exports (taking exports as a percentage of the Gross Domestic Product). If such a criterion is adopted, the Sudan would be excluded. Table 6.2 shows that the Sudan has only medium dependence on exports, while it has low export instability compared to other primary producing countries. There are more than ten other primary producing countries with a high dependence on exports, and there are more than five other countries with a medium dependence on the exports - like the Sudan - but who have high export instability. Thus the Sudan seems to have a very small chance of being accepted as a member in the suggested DIF and therefore, this cannot be proposed as a practical solution to the problem of the Sudan's export instability in general, or cotton in particular.

Finally, it may be interesting to mention something to the credit of the DIF, which also brings out some of its merit as compared to international commodity agreements in general. The Committee was rather divided on the usefulness of the international commodity agreements approach and they argued that
"they are difficult to negotiate and difficult to operate"(1)

But one would have expected that the realization of the DIF would be even more difficult than international commodity agreements. However, the DIF is more comprehensive as it is expected to cover the total proceeds of the exports of several countries rather than the prices of a few commodities. Price stabilization of the major export crop is not enough to stabilize the country's proceeds or gross income from exports because of the even wider yield fluctuation due to natural factors(2). The economic stability of any country, and its development, do not depend only on the price it gets for its export but on the proceeds or the income. However, there is the criticism that if DIF is to cover proceeds, this may induce some exporting countries to manipulate the volume of their exports. But if the compensation is to be based on a moving average, any reduction in the volume of exports will ultimately lead to reduction in compensation. On the other hand, international commodity agreements have marked disadvantages in that they may well prolong, and often accentuate, further misallocation of resources by maintaining high cost sources of production(3).

(2) We already explained this in the case of the Sudan in Chapter Two, Section B.
E. **Bilateral Trade Agreements**

The Sudan, since its independence in 1956, has entered into several bilateral trade and payment agreements, e.g., a Payment Agreement with Czechoslovakia\(^{(1)}\), and Trade Agreements with China\(^{(2)}\) and Bulgaria\(^{(3)}\) in 1962 alone. It is very unfortunate that the whole purpose behind all these payment and trade agreements was just to facilitate payment and stimulate trade between the Sudan and these other countries. So far the Sudan Government has not tried at all to use such trade agreements for stabilization, nor is there any indication that they are going to be used for such a purpose in the future. There is no mention of a range of price or quantity of cotton or any other crop in these agreements. As a matter of fact, all these trade agreements state that prices will be established on the basis of the world prices prevailing in the principal markets for the respective goods.

Every country in the world is keen to increase its exports and secure markets for them. The Sudan can take advantage of such a drive. It may not be possible to sell all or most of the Sudan cotton through bilateral trade agreements, but it will certainly be possible to sell a part of it in this

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\(^{(2)}\) *ibid*, June 1962, p. 1 (in English).

\(^{(3)}\) *ibid*, April 1962, p. 1 (in English).
way. The importing country can guarantee a range of prices and a range of quantity of cotton (or at least one of them) to buy each year, while the Sudan guarantees to spend a certain sum or a percentage of its proceeds from cotton bought by that country in that country every year. The bilateral agreement can be renewed every few years. It will be possible to find countries to whom such agreements are beneficial as much as they are beneficial to the Sudan, as they would increase stability in both of the countries concerned.

F. Conclusions and Proposals

The above discussion has shown that international commodity agreements are very difficult to negotiate or to operate, and may even be ineffective, besides being static by nature. In addition to these inherent problems of international agreements, cotton has special features as an international commodity which complicate the question even further. For the Sudan, international agreements cannot be very desirable - at least not in the near future - because they will hinder the expansion of its cotton, the most profitable Sudanese export crop, which is necessary for its economic development.

We have already suggested national policies which can help the Sudan to solve its instability problems. It may take a long time before an international cotton agreement becomes a reality (and desirable from the point of view of the Sudan)
and therefore it is very important for the Sudan to realize this fact in order to initiate its own national policies for stability and progress. At the same time bilateral trade agreements can be developed and used as a means of stabilizing cotton proceeds or at least cotton prices.
## Table 8.1

**Distribution of Countries According to Ratio of Primary Production to Gross Domestic Product**

<table>
<thead>
<tr>
<th>Per capita income b/</th>
<th>Export stability c/</th>
<th>Export dependence d/</th>
<th>Countries in which the percentage of primary production to gross domestic product is</th>
<th>Less than 15</th>
<th>16 to 30</th>
<th>31 to 45</th>
<th>46 and over</th>
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<td>Low</td>
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<tr>
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<td>High</td>
<td>Medium</td>
<td>United Kingdom, Germany (Federal Republic), Canada, Norway</td>
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<tr>
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<td>El Salvador, Ceylon, Congo (Leopoldville), Kenya</td>
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<td>Brazil</td>
<td>Republic of Korea, Ceylon, Congo (Leopoldville), Kenya</td>
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<td>Medium</td>
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<td>Medium</td>
<td>Bolivia</td>
<td></td>
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*Notes:*

- **Primary production** consists of that portion of the gross domestic product originating in agriculture and mining.
- **b/ Average annual per capita income, 1957-1959:** high - over $700; medium - $300 to $700; low - under $300.
- **c/ Based on average annual decline from three year moving average of export earnings 1953-60:** high stability - less than 2 per cent; medium - 2 to 4 per cent; low - more than 4 per cent.
- **d/ Average ratio of exports to gross domestic product, 1957-1959:** high - over 24 per cent; medium - 12 to 24 per cent; low - under 12 per cent.

*Source: U.N. Consideration of Compensatory Financial Measures to Offset Fluctuations in the Export Income of Primary Producing Countries, Table 40.*
CHAPTER NINE

STABILITY AND GROWTH

In this final chapter we shall discuss the relation between stability (or instability) and growth. To bring out this relation clearly in this Chapter, it seems that we will have to sum up all the policies discussed in the previous chapters and see their relative effects.

A. Macro- and Micro-growth

Economic growth which concerns the whole economy or aggregates, such as the national income, or total production is called macro-growth\(^1\) while economic growth which concerns an individual commodity or market is called micro-growth\(^2\). In this chapter - as well as in this thesis - we are interested in the cotton sector and its stability. We will not discuss the trade cycle as such or its relation to macro-growth\(^3\). We shall concentrate mainly on the relation between the fluctuations in cotton prices and income on the one hand and the expansion or growth of the cotton production on the other, and we shall very briefly touch on the relation between stability (or instability) of the cotton

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\(^1\) Macros is a Greek word for large, while micros is the Greek word for small.


\(^3\) For more discussion and references on this problem, please see N. Kaldor, "The Relation of Economic Growth and Cyclical fluctuations", Economic Journal, March 1954.
sector and the economic development of the Sudan. The effect of expansion (or contraction) of the cotton sector on the growth of the national income of the Sudan can only be dealt with through partial analysis which has its own shortcomings(1), as we shall see later in this chapter.

B. Instability and Growth

There is no agreement among economists as to whether instability (in macro or micro-term) is favourable or unfavourable to growth or whether it is part of growth or not. To Professor Nurkse, 'The instability of the export markets for primary commodities makes any steady development policy difficult, discourages investment in primary production itself, generally limits the economic horizon, and destroys the sense of continuity so necessary in private as well as public planning.'(2) But Sir Sydney Caine does not agree with Professor Nurkse and does not think that fluctuations act as a deterrent to investment(3). It seems that this disagreement among economists is the result of the difficulty of generalizing about the relationship between the short-run price or income fluctuations (or instability) and the long-run phenomena of growth or expansion of a crop or sector or of the whole economy.


(3) Sir Sydney Caine, "Comment", Kyklos, Vol. XI, 1958, p. 188.
Such a relationship depends on a large number of considerations which sometimes make the above generalization true although in other circumstances they make it invalid, and we intend to discuss some of these considerations in this chapter, with particular reference to the Sudan and its cotton.

Sir Sydney Caine does not agree with Professor Nurkse because he thinks that fluctuations are not a deterrent to investment, at least in the case of tree-crops such as rubber which takes five or more years to mature so that its economic worth can only be calculated over a period of twenty or thirty years of continuous yield thereafter (1). The producer of rubber has to take a long-run point of view. In practice, over the period of fluctuation covered by the United Nations study (2) there had been continuous investment in these long-term crops in such countries as Malaya and Indonesia. But cotton is not a tree-crop and therefore the cotton producer cannot take a long run view and thus price or income fluctuations may create a sense of discontinuity and discourage him from the investment which may reduce cost or expand the cotton production in the Sudan. However, the relationship between instability or fluctuations and growth is not only affected by the length of the production period which effects the attitude of the producer towards instability and investment, but, also, the type of the producer, and the way in which the crop is produced have an important role to play in this relationship. In the Sudan more (1) Sir Sydney Caine, op. cit., p. 188. (2) Instability in Export Markets of Underdeveloped Countries, (New York), 1952.
than 80% of the Cotton is produced by the tenants, the boards and the Sudan Government on large schemes. It is highly improbable that price fluctuations can affect the attitude of the Sudan Government or the boards (the partners who do all the capital investment in the cotton schemes) towards investment in equipment or research to reduce cotton costs or expanding the area under cotton. In such circumstances the long-trend of cotton prices is the dominant factor in determining the size and expansion of the cotton sector. But in the private sector it is most probable that cotton price fluctuations may discourage investment in general. In the case of the private cotton pump schemes, the Korean Boom with its exceptionally high cotton prices (ignoring the effect of high yield) increased both the area of these schemes and their cotton production, while with the sharp decline of prices in 1958 the area of the private cotton pump schemes shrank, though perhaps not to the same extent as it rose in 1950-2. It is very difficult to tell how much of this expansion in area is due to price rise and how much is due to the government policy, which was initiated in 1949 to increase the area of Private Cotton Pump Schemes (1), and how much of the decline in area in 1958 was prevented by Government policies such as offering loans at low rates of interest to cotton producers, which really meant subsidizing them. It is also impossible to tell how much investment in equipment, machinery, land improvement etc., has been discouraged in the private cotton-pump schemes by the sense of discon-

(1) Memorandum on the Budget Estimates of the Republic of the Sudan for 1949, Printed by the Sudan Survey Department, (Khartoum), 1949, p. 5.
tinuity created by price fluctuations. We must note that though the area of the private cotton pump schemes has not shrunk to its 1949 level, the actual utilization of the area of the schemes may be equal to that of 1949, or may even be less. There may have been a lot of excess capacity in these cotton schemes in 1958. This means waste of economic resources which can act as a deterrent to economic development of the Sudan.

On the other hand, the expansion of the area of the private cotton pump schemes or the increase in the number of these schemes in 1950-2 may not mean economic development at all for the Sudan as a whole, or may mean much smaller growth than the expansion in the area or number of the schemes seems to indicate. Such investment in new cotton schemes was perhaps drawn from other sectors of the Sudanese economy which did not seem to offer the same rate of profit in 1950-2. We cannot tell whether such investment was made from savings or idle resources or whether it was merely a transfer. Also we cannot tell how far investment in cotton schemes was more profitable than it was in the other sectors of the economy in the whole period under study, 1949-59. It seems that the bulk of the investors in the cotton sector during the Korean Boom were businessmen drawn to the cotton sector by their speculative attitude and get-rich-quick mentality and who are and will be discouraged away from further investment by any sharp downward price fluctuations. The aggregate net affect of the private cotton pump schemes on the growth of the Sudan National Income would have been much greater had a more elaborate and
continuous price and income stabilization policy (in the way we have suggested) been initiated before 1958 to sustain the expansion of the area of the schemes as well as the investment in machinery, equipment, etc.

Another aspect of the relationship between stability and growth which interests us is the effect of the fluctuations of income of the cotton sector on the economic development of the Sudan as a whole\(^{(1)}\). We have already mentioned that the stabilization of the income of the cotton producers (e.g. the tenants in the Gezira Scheme) will reduce the shifts of the labour force and will encourage industrialization. At the same time income stabilization may increase savings. But we must note that although increased savings are necessary for development they are not sufficient. The problem of growth is not only the creation of more savings but also the transferring of such additional savings into the most profitable investment. This is another fact which makes generalization about the relationship between stability and growth difficult, as one cannot say income stability will lead to more savings and automatically to economic development. However, in the Sudan now the Government has quite a number of important schemes for expanding both transport and irrigation as well as for increasing the production of common goods, which await finance. Once the Government can tap such increased savings of the cotton sector through public borrowing or taxation, to finance such investment, the pace of economic development in the Sudan may

\(^{(1)}\) We shall not discuss political instability and its effect on economic development which can be created by economic instability in the cotton sector.
become faster.

Also the stabilization of the income of the cotton sector in the Sudan may create the price stability which is favourable to investment or executing economic plans. Export-induced inflation like the one which came with the Korean Boom and stayed after it for some years, can be a hindrance to the Government in the carrying out of its economic planning, which is becoming the fashion for economic development in the Sudan as well as in other under-developed countries. With an inelastic supply of the factors of production, inflation tends to prevent the Government from further investment. The Government has to compete with the increased demand created by increased export income and this leads to further inflation. For example, in Britain in 1956-59 a higher level of physical production could have been achieved had the money expenditure been running at a higher level and that was partly in the consequence of deliberate restraint adopted by the Government and banks because of fear of further inflation (1). Though there are wide differences between the Sudan and Britain, yet the problem of government expenditure to increase the economic growth in an inflation in the same. The problem is perhaps more acute in countries like the Sudan where the Government expenditure forms the bulk of the money economy. Thus it seems it is very desirable to have some effective policies to stabilize the income of the cotton sector. "Economic growth requires planning, and violent and unpredictable fluctuations in

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export proceeds may act as a major handicap."(1) Once inflation becomes rapid (because of increased government expenditure or for any other reason), two serious disadvantages develop. The distortion of the price mechanism by clouding relative costs, causes misallocation of resources: the competitive element no longer ensures the triumph of the most economical method of production. At the same time, the rapid movement of prices opens opportunities for middlemen of every kind, and much good business ability is, from the point of view of the people's need for useful goods, just wasted. Thus a rapid inflation (into which a continuing slow inflation inevitably progresses) is damaging to economic progress, even if it does not lead to a general collapse of production activity. This, of course, is besides the other bad effects of inflation such as being unjust to creditors and people with fixed money incomes, and also, "by force or by fraud it frustrates the choice of consumers in distribution of their income between its various uses"(2). However, at the same time we must note that the control of inflation or stability of the price level does not mean automatically economic growth(3).

Two other important considerations make generalization about the relationship between stability and growth very difficult. Firstly, if stability is achieved, it does not necessarily lead to

(3) Joint Economic Committee, Congress of the United States, Employment Growth and Price Levels, (Washington), Dec., 1959, p. XXII.
economic growth. On the contrary, it may reduce the rate of growth because the policies designed for stability may discourage growth. Secondly, if stability is achieved and the export sector has expanded, this cannot always mean growth in national terms. The whole export sector, or of the bulk of it, may be in foreign hands, or the expansion of the export sector may have had bad effects on the rest of the economy which may cancel the benefits achieved from the increased proceeds, or the expansion may lead merely to equal increase imports of raw materials, etc. These are some of the short-comings of partial analysis.

We have already suggested price stabilization through a national buffer stock, income stabilization through a reserve fund and moderate and comprehensive taxation. We believe these policies together will create stability and will not discourage growth in the Sudan. Price stabilization, by reducing the sharp downward movements, will reduce the waste of productive resources, while income stabilization, besides increasing saving, will increase general economic stability and reduce the uncertainty of labour force for the industrial sector. If price stabilization is achieved through high and progressive export tax (and not through a national buffer stock in the manner we have suggested), it may discourage all investment and expansion of the cotton sector in the Sudan. This ultimately may lead to reduced cotton proceeds, less foreign exchange and less import of the capital goods which are absolutely vital for the economic development of the Sudan. This brings us face to face with the interesting question of whether to use fiscal
policies or price and income stabilization to reduce instability and stimulate growth. If the factors of production are mobile and their supply, and ultimately the supply of cotton, is very elastic it is better to use a fiscal policy and to leave the price mechanism free to play its role of allocation of resources, while in the opposite case price and income stabilization is more desirable(1). At the same time, carrying price or/and income stabilization very far may isolate supply from the long-run conditions of demand and the price mechanism cannot allocate resources in the best way favourable to the producers or the country as a whole. Also, if stabilization is carried very far through high progressive taxation, it may discourage the emergence of the exchange economy which is vital to the economic development of any country. Thus how far stability and growth can be achieved depends on what policies are adopted for such purposes and how far they are carried out. In the case of the Sudan, a minimum guaranteed cotton price operated through a national buffer stock, income stabilization through a reserve fund by using a moving average of a period not too long to isolate supply from demand and not too short to be ineffective, and a balanced taxation (as we suggested in Chapter Six) seem to be the best solution for the problem of stabilization and growth. It is very important to have a balanced tax system because of the often conflicting considerations: the point of view of incentives and the point of view of resources. If the tax system has unfavourable effects on incentives, this may

lead to insufficient growth and investment. While, on the other hand, if the Government does not have enough resources, it may not be able to provide the non-revenue-yielding and essential services for the economic development of the country. Therefore a happy compromise is the best solution.

An international cotton agreement (if it is possible to conclude it) though it may be an effective method of stabilizing world cotton prices, has a very serious drawback as far as the expansion of the cotton sector in the Sudan and the economic development of the Sudan, which partly depends on such an expansion. International Agreements (as already mentioned) are very static in nature and prevent shifts in output.

Given that economic stability leads to expansion in the production of the export crop, will such an expansion necessarily lead to economic growth? It is definite that not every increase in the production and export of a crop leads to economic development. In the first place whether increase in production will bring increased proceeds depends on the elasticity of the demand for that crop. With a very inelastic demand, an increase in the export of a crop may result in an equal reduction in the price of that export crop and therefore the total proceeds may remain the same in spite of the increase in the production and export of the crop. Besides the problem of inelasticity of demand, there is

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the question of the indirect effects of an increase in the production and export of a crop. Different primary productions have different inputs, different income distribution, and sociological and technical effects.\footnote{1} Different export raw materials and primary products have different external dynamic effects on the national economy. For example, furs proved to be 'a poor commodity for growth.'\footnote{2} But in the case of expansion in the cotton production in the Sudan, it seems that the indirect effects will not be unfavourable to economic development, if not very favourable. The cotton sector is the most monetized agricultural sector in the Sudan. This is not merely because it is an export sector but because cotton has been deliberately introduced by the Sudan Government as a cash crop. For example, in the case of Gum Arabic, though it is the second largest export crop of the Sudan, a great part of it, especially in remote areas and from small producers, is bought on some sort of barter system\footnote{3}. The cotton sector is highly organized and carries a lot of research. However, it is very unfortunate that the cotton sector does not use substantial quantities of Sudanese inputs, except labour. But perhaps the expansion of the cotton sector may encourage the production of fertilizers in the Sudan. The cotton sector is perhaps the only

\footnote{1}{C.P. Kindleberger, \textit{Op. cit.}, p. 201.}
\footnote{3}{Ali Ahmed Suliman, "Gum Marketing in Western Sudan", \textit{The Sudanese Economist}, Issue No. 22, March, 1960, p. 10.}
sector in the Sudan that uses fertilizers. On the other hand, the expansion of the cotton sector - especially short-staple cotton - may encourage, the textile industry in the Sudan, by making the basic raw material for such an industry available all the time and at low prices. The expansion of the cotton sector so far, has already encouraged the emergence of an oil-pressing industry in the Sudan, which thrives on the cotton seeds. Greater expansion in the cotton sector may encourage this infant industry even more. Finally as foreign labour and capital contribute almost nothing to the production and marketing of the Sudan Cotton, any increase in the proceeds from cotton will mean an equal increase in the income of the Sudan, which can be used for the purchase of capital goods for further economic development. On the question of demand elasticity, an increase in the production of such small producers like the Sudan cannot be expected to affect world price.

We conclude that it is very difficult to generalize about the relationship between stability (or instability) and growth, especially between micro-stability and macro-growth because of these special considerations. In effect, it is the limitation of partial analysis. It is therefore impossible to draw any conclusions from the relationship between stability and growth in the context of Sudanese Cotton which can be valid for another crop or another country, unless conditions are exactly similar. In the case of the Sudan, given that stability of the cotton sector is achieved through the policies which we have suggested in this thesis, we expect that the growth of both the cotton sector and
the Sudan National Income will be stimulated.
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