University of Ottawa

Department of Economics

Major Paper:

The Impact of Structural Adjustment on Agriculture in Sudan

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INTRODUCTION

Study of the indirect impacts of macro-economic and non-agricultural policies on the farm sector is a recent research phenomenon in agricultural economics. Important connections between nominal exchange rate movements and agricultural trade and prices were first discussed by Schuh (1974). Several studies researched the impact of exchange rate and other macro-forces on agriculture (Elbadawi, 1992; Helleiner, 1990). Other models, using international trade theory and the real exchange framework, have been used to examine the incidence of foreign exchange, and commercial and macro-policies on the structure of incentives to agricultural producers and internal term of trade (Krueger, *et al.*, 1988; Jaegar, 1991). Limited information, however, is obtained from these models on sectoral adjustment, or aggregated supply-demand responses.

Analytical Framework

Agriculture has featured prominently in the World Bank supported programs when it is believed that agricultural policies and institutions have played an important role in bringing about the balance of payment, growth and inflationary problems that the program is design to tackle. In the Sudan, the agricultural sector is generally conspicuous in several areas of the macroeconomy, such as in employment, GDP, exports and imports, in inputs for industry, and as a source of revenue for the government budget. If agriculture is not very important in one or more of the these areas, it is safe then to say that adjustment programs supported by a Fund stand-by will play virtually no direct attention to it, even though, inevitably, the program will have an impact on the sector.

Typically, Where agriculture is important for macroeconomic performance, the agriculture sector provides livelihood for over two-thirds of the population, and account for over 40% of GDP and, about 90% of exports. Even in situation where the contribution of the industrial sector to employment, exports, and GDP is greater, the agricultural sector can also be crucial for macroeconomic performance, through its supply of raw materials. Furthermore, agriculture may also influence macroeconomic performance through the fiscal impact of subsidies to, and taxation of, agricultural products and inputs.

This paper is an attempt to explain the crisis of the Sudan economy with specific intention to analyze macro-agricultural linkages and evaluate the impact of structural adjustment policies on agriculture. This attempt is accomplished by drawing upon various studies undertaken by multilateral organizations as well as scholars about agriculture in the Sudan. The discussion is also carried in relation to the different policy instruments, which have impact on the determination of the effective price received by agricultural producers. The second level of analysis is to focus on the different effective producer prices among the producers of different commodities. Agriculture production modes can be broadly categorized in three modes: state owned large irrigated production, private large scale mechanized production, and the traditional rainfed production The assessment of political powers of each of these groups is also taken into account in our analysis. This analysis is also carried in conjunction with the type of commodity produced. Whether the product is a grain used for production of food in urban areas, a cash crop marketed by the state to earn foreign exchange or grain used in rural area influences the level of effective producer price received. The discussion here deals with the main crops produced in the Sudan: cotton, gum arabic, sesame, peanuts, sorghum, and wheat.

The last level of analysis deals with evaluating the explanatory power of Bates framework. In this section, we incorporate the international dimensions. Here we reflect on the impact of the colonial legacy of the Sudan, the dependency of Sudan economy as a mono-product agrarian system inherited from the British occupation, the impact of political structure that were empowered during the colonial period, and finally the impact of environmental problems on the Sudan economy.

The first section provides historical, political and economic background to the study of Sudan's economic crisis and the economic roles of Sudan and the international donor community. It describes the close relationships between Sudan's continuing social and political divisions and conflicts and the inability of successive regimes to devise and implement a coherent and consistent set of economic policies since the country's independence in 1956.

Section two and three describe the role of the IMF and the performance of the government of Sudan, mainly from a debt management perspective. Section two situates the study in broader context of Sudan s debt crisis; the dimension and characteristics of the build up of debt and the role of the IMF. Section three discusses the IMF diagnosis and conditionality, the section covers the performance of the Sudan economy when there was an IMF-supported stabilization program in place (1978-1984), and the out come of the IMF program. It covers the period from 1984-1990 when the Sudanese government had no formal agreement with the IMF. It analyses the political and economic factors leading to the breakdown of the IMF program and the rapid build up of areas that followed.

Section four discusses the special characteristics of agriculture in Sudan. The role of agriculture and types of agriculture dependency and allocation of land labor and capital. Section five analyses the agricultural price policy instruments, the implicit taxes in the exchange parity and the producer price policy. Section six discusses the political dynamics of agricultural policy and the bias against agriculture. The explanatory powers in the economy discussed in section seven, with special emphasis on dependency structure of the Sudanese economy and the effect of mechanized agriculture on the environment. The role of the agricultural cooperatives has also been discussed in this section. The final section draws concluding remarks.

SECTION ONE
The Sudan Economy:
A background

1.1 Political History:

The area currently known as the Sudan came to be under a unified central political system for the first time under the Turko- Egyptian Rule (1821-1885). Before that time the Sudan consisted of different kingdoms which did not have rigidly defined territories though each was centered in a heartland given its coherence by geographical factors. The second regime in the Sudan was an independent Sudanese Muslim theocracy founded and directed by the famous Mahdi and his followers (1885 -1898). The Mahadist in their turn were overthrown by the Anglo-Egyptian Army (1898 - 1956), which yield place to sovereign Sudan in 1956.

1.1.1 The Colonial legacy and the Introduction of Cotton:

Long before the end of the nineteenth century, even though Sudan's economy consisted largely of subsistence activities, a market economy in domestic and international trade had also developed. Indeed, with the substantial increase in the manufacture of confectionery and paper in Europe, the collection of gum arabic for export had grown rapidly in Sudan, by 1880 it had become the major supplier to the United Kingdom, which was then the world's large user (Niblock, 1987). By the end of the nineteenth century the British government had became concerned that its interests in Egypt were being threatened by the growing presence of other European powers in the region- the Italians, Belgians, and French (Holt, 1961). The British were particularly concerned that their controlled over the reaches of the river Nile, the water of which Egypt depended heavily on, should be safe-guarded.[1]

Like most of its other colonies, the British began to establish direct commercial interests in Sudan. Sudan was to become an important source of cheap raw materials.

[1] This was expressed explicitly by Wingate, the British high commissioner in Egypt, and ex-governor general of Sudan, who wrote 'As long as we hold the Sudan we hold the key to Egypt because we control the source of its water supply' (cited in First (1970) p. 128).

Although gum arabic was already being supplied by traditional producers, another crop, cotton was soon to become Sudan's major agricultural export.[2]

By the end of the nineteenth century, in the face of growing competition from other European textile producers, the British also were eager to find an alternative, cheaper source of raw, long-staple cotton for the Lancashire mills (Barnett 1975). In 1902 a British Cotton Growing Association was formed for the purpose of securing an increased supply of cotton for the British cloth industry, from among its colonies. It was found that Sudan's climate and terrain were suitable for the growing of long-staple cotton (Niblock 1987). The Gezira irrigated cotton scheme, located in the triangle of land south of the confluence of the two Niles thus came into being. The Gezira scheme was established in 1911 by the Sudan Plantation Syndicate, a private British consortium.[3] Ultimately covering an area of over two million feddans, it was to become the world's largest single farming enterprise under one management and the most important source of foreign revenue for Sudan (Brown, 1992).

The British political colonial policy had three objectives: to encourage tribalism as an alternative to nationalism, to detach the Southerners from the Arab and Northern influences. In 1922 the British started the so called closed District Policy and required the Northern Sudanese to obtain a travel permission if they wanted to go to the Southern Sudan. In 1925 the northern Sudanese merchants were banned from going to the Southern Sudan. The British administration banned the Southern Sudanese from practicing any traditions of northern Sudanese, e.g. dresses and wedding parties.[4]

The third objective was to prevent a linkup of Egyptian and Sudanese Nationalist. The British were not successful in the first objective.

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[2] The gum from the variety of acacia trees found in the rainland belt was collected mainly by nomadic and semi-nomadic people of the western regions of northern Sudan, during their seasonal migrations. It is still collected today, purely as cash crop almost all of which is exported.

[3] The original acreage of Gezira was 1.2 million feddans irrigated from water stored behind the Sennsr Dam on the Blue Nile. The completion of the Roseires dam allowed the addition of nearly 1 million feddans of adjacent land known as the Managil extension. See Arthur Gaitskill, *Gezira: A Story of Development in the Sudan* (London: Faber & Faber, 1959).

[4] See Bashir, Mohamed Omer, The Southern Sudan: background to Conflict C Hurt and Co. London 1968 pp. 128. In Arabic pp. 79-94.

1.1.2 The Colonial Custody to the Sectarian Power

The two families around whom most political influence came to be concentrated during the condominium era were those of Abdel Rahman El Mahdi, of the Ansar Sect, son of the famous Mahdi, and Ali al Mirghani, leader of Khatmiyyah Sect. These two leaders enjoyed substantial economic power during the condominium era, and commanded much popular support through their religious followings among Sudan's middle and lower socio-economic strata.

Mahmoud argues that the first Sudanese agricultural capitalist was Abdel Rahman El Mahdi.[5] In a deliberate political decision in 1933, Mahmoud continues, the colonial power selectively gave Abdel Rahman El Mahdi a license for agricultural production. In his letter to the Colonial Secretary of Economic Development in Khartoum dated 9 April 1933, the Colonial Administrator of the White Nile Province urged permission to Adel Rahman El Mahdi of Ansar Sect as a political figure. He was also given a subcontract to construct of Sinnar Dam.[6] Another Mahdi descendant was given the concession to extract gold with an Italian partner.[7]

Similarly Ali Elmirghani of the Khatimia sect was generously given some concessions.[8] These two sects with the assistance of the colonial power, developed into the major two political Sudanese political parties, the Umma Party (UP); that favored independence from Britain and Egypt, and the Democratic Union parties (DUP); that favored union with Egypt.

The colonial administration custody to these two parties (sects) has had a strong impact on the dynamic of geopolitical life of the post-independence era.

The two main religious leaders combined their existing popular support and growing economic power, with substantial political influence among the leadership of the country's educated elite. One of the most important characteristics of the Sudanese

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[5] See Mahmoud, Fatima Babiker " The Sudanese Bourgeoisie: Vanguard of Development" Khartoum University Press Khartoum, 1984.
[6] ibid. pp. 45.
[7] ibid. pp. 55.
[8] ibid. pp. 56.

politics since independence, has been the failure of the political elite to establish sufficient cohesion to act as a coherent and unified force in governing the country. From independence in 1956 until the end of 1989.[9] Sudan has had seven different regimes. These have alternated between civilian, parliamentary regimes (involving a succession of coalition governments of the two main political groupings), and the military.

1.2 Culture and Diversity:

Sudan is the largest country in Africa, in terms of area, occupying one million square miles of the continent's tropical zone. Ethnically, Sudan is virtually a microcosm of the whole Africa continent. More than hundred different tongues are spoken by at least fifty major ethnic groups, with almost six hundred sub-groups (Voll, 1971).

At the time of independence (1956), the population of the Sudan was slightly more than ten millions: 39% Arabs, 20% central Nilotic, 9% Fur, 6% Nubians. At that time Arabic was spoken by 51%, Nilotic tongues accounted for 18%, and tribal languages of central Sudan represented 12% (UPA, 1971). According to the UN 1994 estimate, Sudan has a population of 29,419,798 with a population growth rate of 2.36%. A population that is highly diversified, as is Africa, with more than hundred tongue spoken in Sudan by at least significant seven hundred ethnic groups. Broadly speaking of the 29 million population 52% are Africans, 39% Arabs, 6% Beja, 3% foreigners and unclassified. In terms of religion, 70% are Sunni Muslim, 25% indigenous African beliefs, and 5% Christian (Thomas, 1992).

1.3 The Economic Potential and Structure

The Sudan economy is largely agrarian economy with agriculture (broadly define to include crops, forestry, livestock and fishing) providing the livelihood of 80% of its population even though less than 30% of land suitable for agriculture is under cultivation.

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[9] Al Mahdi was overthrown, after the escalated civil war, state of emergency and strikes in protest to food price increase, in 1989 in a military bloodless coup led by Brig. Omer Hassan Al-Bashir. Al-Bashir's government survived two coup attempts in 1990.

Sudan is the largest county in Africa with a total area of 2.51 million square kilometers, and it has a relatively huge economic potential.

Ali (1990) stated this potential in terms of the following indicators:

a) *Arable land:* The physical characteristics of the Sudanese agriculture production potential are impressive: Out of the total area it is estimated that 85.46 million feddans[10] (35.14 million hectares) are arable land.

b) *Grazing land:* 40% out of the total area of the country classified as grazing land, part of it is utilized a relatively large live stock population.

c) *Water resources*: The land potential of the country, it is believed, is supported by adequate water resources. The latest available information estimates the net water potential of the country as 34 milliard cubic meters per year. Approximately 50% of the water potential are currently used.

d) *Human Resources*: Compared to its land resources Sudan is relatively sparsely populated, with an average density of 10.5 per square kilometer (27.2 per square mile). In terms of arable land, the country has an average density of 1.2 per one hectare

e) *Mineral Resources*: Apart from petroleum reserves which were discovered in the late 1970, Sudan has other mineral resources such as gold, iron ore, copper, chromium ore, zinc, tungsten, mica, and silver. As with the "oil" however this does not imply that the Sudan would not have a potential in that respect.

Admittedly this potential has to be fully exploited, and Sudan economy is classified as an underdeveloped one. The extend of these underdevelopment may best be looked at in terms of the structure of the economy.

Like any other Sub-Saharan African countries Sudan has been, since the late 70s experiencing what may be called an economic crisis. Ali (1990) stated that the economic crisis is generally exhibits itself in seven inter-related phenomena:

[10] Feddan = 0.42 Hectare, (1.05 Acre).

i) slow growth.

ii) worsening balance of payments.

iii) deterioration term of trade.

iv) slow growing exports.

v) worsening budget balance.

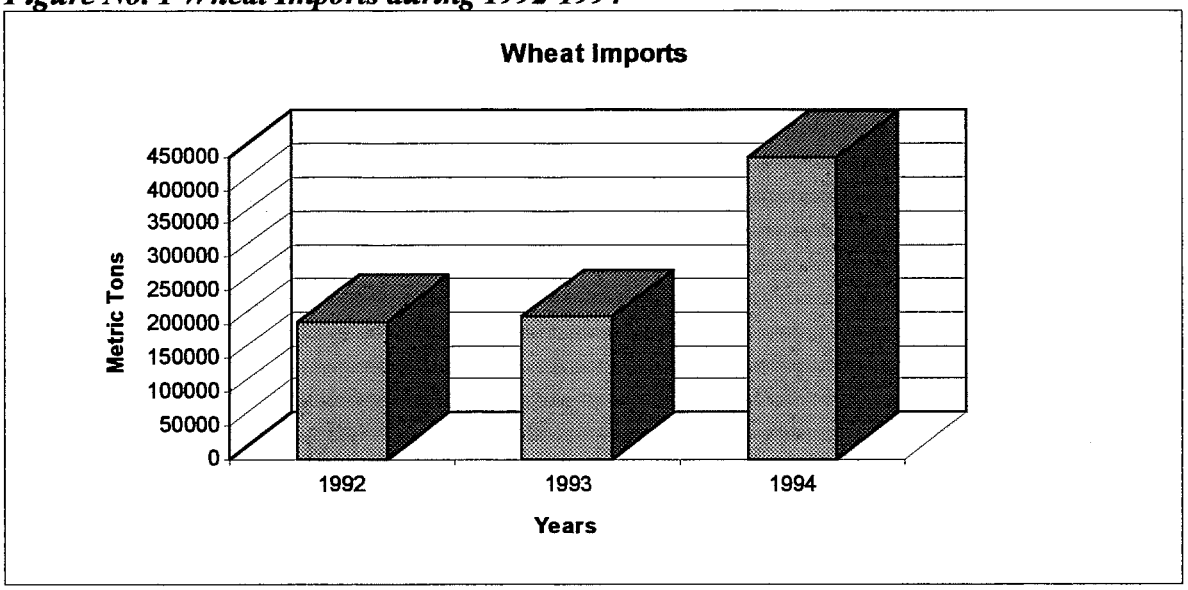
vi) mounting debts.

Agriculture however, after several disappoint years, enjoyed slight favorable growing condition in 1991. *"We eat what we produce and wear what we manufacture"* became a popular slogan of the government. Agricultural policy focused on diverting irrigated land from cotton to the main cereals, sorghum and wheat, and to groundnuts in an effort to attain greater food self-sufficiency. Accordingly the government mobilized both government and private resources for the production of food crops, especially sorghum, and wheat. Although this will inevitably reduce export revenue, in the long run if food production rises appreciably it will provide the country greater scope to mitigate the increasing effects of drought and food shortage. However, this favorable growing condition followed by unfavorable pricing conditions. To finance the government expenditure and the war in the South, the government forced the farmers to sell one third of their production, in 1991, at a price below the production cost, and additional taxes were levied on them making their business unprofitable. It turns out to be not more than a political slogan and new reform program was announced.

The current regime of Al-Bashir is embarking an economic reform program (as part of the Comprehensive National Strategy)[11] , that aims at slashing the fiscal deficit, liberalizing foreign exchange regulations, and lifting most price controls. Current economic policy also, aims to encourage growth through private sector development, restrict public enterprises and control inflation. Real growth in Gross Domestic Product (GDP), in the order of 2 to 3.5 percent per annum in recent years has been due to increased crop production and favorable commodity prices

[11] The Comprehensive National Strategy (1992-2002) is a ten years plan. One could argue that it is a form of home grown structural adjustment. See The Comprehensive National Strategy, volume 1.Sudanese Colourphotos, Khartoum (1992)

Figure No. 1 Wheat Imports during 1992-1994



However, the process of economic reform is constrained by the possibility of a domestic backlash arising from the austerity necessitated by such program. Wages have not kept pace with inflation and increases in consumer prices have reflected general inflation but additionally have been affected by transport difficulties and the removal of subsidies on some goods. The consumer price inflation exceeded 100 percent in 1994 (Bank of Sudan 1995).

Economic liberalization is one feature of the current undertaken reform program. It opens the door to the luxury goods and threatened the county's food security. Figure 1. shows the massive increase in the wheat importation during the first three years of the reform program. The wheat imported to Sudan increased by 119% from 204344 metric tons in the first year of the program (1992), to 448127 metric tons in 1994 (Bank of Sudan 1995). This illustrates more economic dependency as a result of the economic liberalization.

SECTION TWO

Sudan Economic Crisis and The IMF

2.1 The Breadbasket Plan and The IMF:

The government turned to the IMF in 1978 for financial support making the beginning of six years of IMF and World Bank Supported Economic Recovery Program (Ali 1985). The IMF placed much emphasis on the nature of the Sudan government interventions in the economy. Sudan was widely regarded as the future "breadbasket" of the Arab world, a vast, fertile land with abundant water from the Nile watershed. Accordingly, investment undertaken during the 70s was concentrated on the public sector, and it was supposed to finance the government owned agricultural project and relied heavily on finance borrowed from abroad (particularly from Arab Gulf states).[12]

It is argued that the growing internal and external imbalances that arose in the economy during the 70s were to a large extent a reflection of the evolving changes in the existing economic structure.

Some studies have shown that the internal and external imbalances resulting in the fiscal and foreign exchange crisis state that arose towards the latter part of the 70s, have their origins in the economic and political structure and processes, that evolved over the years since independence (Umbada and Shaaeldin 1985).

After the unsuccessful communist coup in 1971, the political and economic relations with Moscow and other East European countries eased, while ties with the West strengthened. In 1972 for the second time since independence, the IMF came to the assistance of Sudan in the form of a US$ 24 million Standby Loan Agreement (Ali, 1977)

In the wake of the 1973/74 oil price hike, Sudan's neighboring Arab-Gulf states were eager to find outlets for their surplus petro-dollars and to lessen their dependence on

[12] Major foreign investments in agriculture during the 1970s included the Kenana Sugar corporation, the Arab Sudanese Blue Nile Company, the Faisal Agricultural corporation, the US multinational; Tenneco Sahara Agricultural Venture, the Seleit Food Company, The Egyptian-Sudanese Integrated Company, Damazine Corporation along with the Suki, Junaid, and Haggar al-Salaya sugar projects.

the West, the US in particular, for food supplies, and Sudan by that time set a "Bread Basket plan" to produce food supplies to the Middle East region. Thus between 1973 and 1977, over US$ 3 billion in foreign loans was committed for investment in the "Bread Basket" project (Brown 1992). The project involved two major consequences: first the Sudan was supposed to be self-sufficient first and then became food exporter to Sudan's neighboring Arab-Gulf countries, which means Sudan was in a position to act as a new potential competitor to the West and the US in particular, in the region.

The second factor is from the structural changes it means a gradual shift in the composition of production pattern from those activities through which the state had been able to mobilize much of the surpluses needed to support its fiscal expenditures. As a consequence the area under the cotton decreased while the food crops increased the result was a shortage in the foreign exchange and a current account deficit. Also the shift of ownership to the "briefcase farmers" meant much more private control of the agricultural economy especially in the irrigated rainfed mechanized farms. The gestation periods of the new projects, under the bread basket plan, that had been initiated proved to be much longer than anticipated, and as local resources became increasingly scarce and additional funds could not be found, amounting backlog of unfinished and non-operational projects soon built up (Brown 1992).

As many of these new investments were joint venture with the government of Sudan, this meant that almost all available surplus and foreign exchange resources available to the government had been channeled into the new, highly capital-intensive projects. Whereas the country's traditional export revenue -particularly the cotton- generated from irrigation agricultural schemes in agricultural sector had been effectively starved of the domestic and foreign resources required to maintain their output capacities. The new investments failed to yield a positive return and the declining production levels of the existing schemes were a rapidly worsening fiscal situation. In these critical years of rapid expansion of both recurrent and development expenditures, the budgetary deficit was financed mainly from external sources (Brown 1992). The external source flows tapered off in the late 1970's just before the involvement of the

IMF in managing the Sudan economy, and the government was forced to resort increasingly to central bank lending to finance its growing budget deficit. This meant an increase in the money supply and a high rate of inflation.

When in the late 1970's, debt servicing obligations on the commercial loans contracted under the breadbasket program began falling due and the international terms of trade deteriorated sharply, there was neither the foreign exchange resources nor the domestic capacity to meet these external obligations (table 2.1). The investment programs failed and by 1978 the government had begun to encounter severe difficulties in servicing the debts that it had accumulated in the preceding years (Brown 1992). Despite the food security issue and the political consequences of the breadbasket project, it is argued that the economic crisis was due to the breadbasket programs. The breadbasket plan had to be halted before it had effectively got under way (Awad 1983).

At this conjunction, and in the mid- 1978, the Sudanese government and the IMF concluded a first tranche credit agreement, first in a series of agreements under the IMF-supported stabilization program which, together with a World Bank funded the so called Agricultural Rehabilitation Program that became the cornerstone of government economic policy. This also brought to an end the attempt to pursue the broader-based economic growth strategy under the "breadbasket" diversification drive, as the focus of policy was now shifted to economic recovery based on the rehabilitation of the "traditional" areas of agricultural production and the promotion of export crops, particularly cotton.

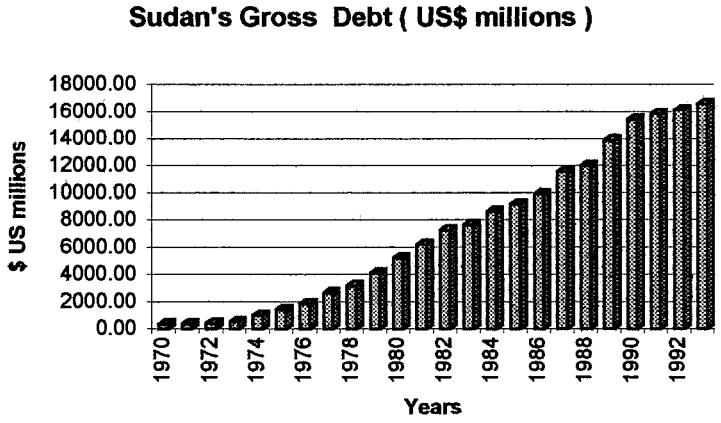
2.2 The Debt Crisis

The origins of Sudan debts lie in a complex interrelationship of domestic and external causes. We can argue that growing debt is partially a consequence of the character of politics and partially a by-product of imbalances and problem in global economy. The Sudan economic crisis has rapidly increased indebtedness, and has been caused by both short-term and long-term factors. Domestic food production has been declining and food imports increasing, due to the drought, famine and war in the south.

The recession in the early 80s led to a decline in the external demand for Sudan export volumes and value have decreased overall producing significant fiscal problems. The resulting foreign exchange shortages have meant a decline in gross domestic product.

Sudan's debt has become recognized as a critically serious problem for Sudan, lenders and a general international concern. Sudan's total debt was 7,601 million US dollars in 1983, and by 1995 it exceeded 16 billion US dollars. Sudan's debt, comparing to Sub Saharan Africa, consists about 10% of the Sub-Saharan Africa's debt. But the seriousness of the Sudan sovereign debt problem is due to the scale of the debt when compared with the size of the economy and its ability to repay. The IMF, World Bank, and UN uses three crude indicators to show the debt burden on debtor economy: ratio of debt to GDP and to exports measure the country indebtedness, ratio of debt repayment or service to exports: which show the immediate burden. The proportion of foreign exchange earned diverted to repay Sudan debt in relation to GDP is among the highest in the world, it was 217 % in the year 1993. Accordingly Sudan classified by the World Bank as a severely indebted low-income country.

Figure No.2. Sudan's Gross Debt



2.3 External capital flow and the build up of debt

The 1970s marked the beginning of a decade in which Sudan foreign debt was to grow from an officially estimated US$ 2 billion to 10 billion, and its debt -service rate to over 100 per cent of export earnings (Ali 1985).

2.3.1 Dimensions and characteristics of the build up of debt:

After independence Sudan relied on capital from abroad for some of its development expenditures, but this did not become the dominant source for invisible fund for the state until early 1970s.

At the beginning of the 1960s, Sudan total outstanding foreign debt was a mere US$ 74 million, and debt service payments amounted to only 4% of exports (Waterbury, 1979). In 1980 the World Bank estimated that the government of Sudan had borrowed US$ 2.5 billion between 1974 and 1977 alone (World Bank 1980).

One important reason why the country managed to accumulate such a heavy external debt on unfavorable terms in such a short period of time was clearly the fact that the authority to engage in foreign borrowing, as well as administration of loans and their servicing, was scattered over a large number of different government bodies in different ministries and agencies, with little or no coordination(World Bank, 1985). Access to these funds, and the lucrative contracts associated with them and the projects they financed, was thus enjoyed by a relatively wide group of well- placed senior civil servants, politicians and others. A system of patronage and widespread corruption flourished in the 1970s (Waterbury, 1979). It was perhaps not surprising that when a company of international accountant was later contracted to recalculate Sudan's external debt and its profile, actual borrowing during the 1970s which turned out to have been actually much higher than what was originally thought (Bank of Sudan and MFEP, 1983, 1985). As Khalid has pointed out:

> The government had to hire a special advisor, Morgan Grenfell to identify the size of the total indebtedness the country. There was no record in the Bank of Sudan of obligation undertaken by the (presidential) palace. Morgan Grenfell sent out telexes to all Sudan creditors asking for details. The many contracts concluded by the palace cabal encumbering the country with debt were not even vetted by our legal authorities, (Khalid, 1985)

However it should also be remembered that these loans had been raised to finance agricultural projects, but since it came in the form of cash loans, and used for general balance of payment support and to finance the growing deficit on the current budget, the World Bank found that:

> In particular in the years 1974-76, the high level of imports were supported by large amounts of public capital inflow. In these years development expenditure increased rapidly .... and it seem also clear from the available data that a large proportion of public capital was for general budget and balance of payment support, and has financed current imports and consumption (1980 p.7)

When most of projects failed to get off the ground as planned and there was insufficient foreign exchange available from the other, more traditional domestic sources of foreign exchange to cover the service payment that began falling due, the government fell into arrears. By 1976, Sudan has already begun to default on debt service payment due to its creditors and by September 1979 these arrears had already accumulated to over US$ 1.2 billion, 50 % of export earnings (World Bank, 1980) Sudan then was no longer considered creditworthy by commercial lenders (Brown, 1992).

With the backing of the IMF and World Bank - Supported Economic Recovery Program from 1978 Sudan entered a new era in its international economics relations, which also brought with it a number of significant changes in its economy.

Before moving on to the IMF role in Sudan from 1978 onwards, it should also be noted that political considerations play an important role in this matter. In 1976, the same year that Sudan first fell into arrears on its debt service payment, that the Ford administration came to perceive that it was in the USA's geopolitical interest to assist Sudan with substantial amount of both military and economic assistance. Accordingly a 1976 Washington Post report on the US Administration's intentions in Sudan suggested that:[13]

President Ford has taken another significant step to deepen US involvement in Africa by formally declaring that Sudan, the largest country in the continent, is eligible for the purchase of American military equipment. ..His declaration .. Is a major move in US efforts to encourage Sudan to play a role as a buffer state to the more radical Arab and African states adjoining (Saeed, 1984).

By the early 1980 Sudan became the second largest recipient of aid in the African contient after Egypt (Brown, 1992)

2.4 The Evolution of the IMF's Role in Sudan 1978-84

The chronological of IMF agreements in 1978:

Effective June, 1978 the IMF, for all intents and purposes, assumed the macro economic management of the economy and as such had the chance to experiment with its views on how the crisis should be managed. Ali (1985) cited the main circumstances and features of the 1978 agreement in the following points;

-Current account deficit stood at approximately US$ 494 million which account for 7 % of the GDP, and outstanding public debt US$ 2.3 billion.

- First credit tranche of SDR 21 million was granted by the IMF.

- Sudanese pound was devalued by 14 %.

- The government undertook to introduce tighter monetary and fiscal policies.

[13] Cited from the *Washington Post*, 17 November, 1976 in Saeed (1984).

In 1979, the IMF approved a request by Sudan for a three Extended Fund Facility (EFF) amounting to SDR 200 million. Increased to SDR 427 million by the end of 1980, due to a deterioration of the current account and further arrears on payments. It became clear that the government had failed to meet its obligation under the agreement, thus the credit allocated of SDR 176 million for financial year 1981/82 was suspended. (Brown, 1992)

The data in Table 2.1 shows by the end of 1981 the debt service ratio had risen to more than 100 per cent. In 1982 the country witnessed widespread civil unrest in the wake of a further devaluation and lifting of subsidies on certain basic goods. This point is very clear to all governments, this is why when they accepted the stabilization program they seek mainly the money but not seriously implementing the program, for its political consequence.

The IMF entered into another round of negotiations with Sudan for a new Standby Agreement for 1982/83 financial year, amounting to SDR 198 million. The current account deficit had risen to almost US$ 1.3 billion (about 17 per cent of GDP) by the end of 1981/82. By the end of 1982 the official estimate of Sudan external debt had been about US$ 7 billion which represent an increase of over 350 per cent of the original estimate when this round of IMF agreements began in 1978, debt service due by then risen to more than 150 per cent of total export earning .

Because the government failed to meet its payments on the debt it had rescheduled at the Paris Club, the IMF was obliged to declare the Standby Arrangement inoperative after the first purchases of only SDR 70 million, of the agreed SDR 198 million, had been made .

Despite the government's failure to adhere to the terms of the 1982/83 arrangment, the IMF engaged in another round of negotiations for a new Standby Arrangment with Sudan for 1983/84 amounting SDR 170 million. This time as a condition the international donors and credit community insisted that, from then onward a Joint

Monitoring Committee would operate in Khartoum to monitor the progress of the authorities and report back to creditors.

By 1984 the economic situation had become so critical that the government was unable to find sufficient foreign exchange to meet its financial obligations to the IMF itself, by this time the debt had risen to almost US$ 8.5 billion, and the debt service ratio still amounted to more than 100 percent of total exports.

Table 2.1 Sudan: Balance of Payments Data 1977/1978-1983/84 (in US$ millions)

	1977/8	1978/9	1979/80	1980/1	1981/2	1982/3	1983/4
Exports	696	699	810	748	667	821	942
Imports	1360	1321	1597	1799	2014	1804	1640
Trade Balance	-664	-622	-787	-1051	-1347	-983	-698
Current Acc. Balance	-494	-451	-648	-961	-1290	-885	-771
Net M & LT Loans	287	588	573	105	9	327	390
Grants	23	17	84	112	174	462	309
Others	107	-104	-83	958	1203	858	899
Change in Reserve	-76	50	-75	4	77	108	47
GNP	8449	9516	6899	7993	7611	7700	7154
GNP per capita (US$)	483	526	371	416	386	381	344
Total Debt	2314	3180	5008	6169	6885	7445	8466
Debt Service Ratio(%)	18	20	19	115	152	106	119

Source: World Bank (1987; 1989)

The brief account of IMF -Sudan credit agreement (upper tranche) evident that the stabilization program failed to restore external and internal equilibrium to the economy and failed to avoid the escalation of debt crisis.

This need to be explained not only in relation to the IMF diagnosis of the problem ,but also in terms of the performance of the Sudanese financial authorities with respect to their actual implementation of policy . The repeated breakdown and suspension of the credit amount must obviously raised doubts concerning the Sudan government adherence to the IMF policy conditions.

SECTION THREE

The IMF Diagnosis and Conditionality

The adjustment measures recommended by the IMF to resolve the economic crisis have provoked controversy and created sever political conflict and academic debate within the country, the government concerned about its politics on its population.

The primary prescribed policies in the Sudanese case were:

i) Devaluation and liberalization and unification of exchange regime

ii) Bank credit restrictions, interest increase and curtailing of the money supply growth;

iii) Reduction of the central government's budgetary deficit through expenditure cut and tax increases.

The rationale of such policy measures is the belief that balance of payments equilibrium can only be restored through a combination of external exchange liberalization (devaluation) and internal financial policies to stabilize the external equilibrium.

In order to avoid the need for further devaluation of the currency, inflation and excess demand for imports should be controlled by curtailing the growth of the money supply. In other words, domestic price stabilization and the anti inflationary monetary and fiscal policies so often identified in themself as the main objective of the IMF stabilization program are important from the IMF standpoint only in so far as they are expected to prevent further disequilibrium and instability of the country's balance of payment (Payer 1974).

In spite of the continuity of the policy measures prescribed by the IMF stabilization program and the apparent wide spread skepticism among other political opponents and academicians, about the effectiveness of IMF recipes (Umbada and Shaaeldin 1985), in the case of Sudan, relatively little in the way of concrete economic analysis has been under taken of the macroeconomic impacts of the program in its entirety. Most analysis has focus on one or two key policy areas of the program. By far the most continuos and

hotly debate issue among Sudanese academicians has been the IMF prescription on exchange reform and devaluation. There has been attendance by most critics to assume that, the Fund's enforcement of its performance criteria and conditionslity clauses have been affected by the IMF lack of flexibility and harshness in its treatment of the Third World members because of payment support (Awad 82; Umbaddaand Shaaeldin 85; Mustafa 82). None of these assessments attempts to undertake a comprehensive assessment of the role and effects of the IMF stabilization program in the broader context of its role, not only as a guardian of economic performance but also as a mediator in the whole debt rescheduling and aid mobilizing processes. No assessment had been done in regard of the performance of the Sudanese authorities with respect to the implementation of the agreed policy measures and their compliance with the conditionality clauses. An exception in this respect is Fanos (1989) who emphasizes that the government's failure to adhere consistently to IMF policies further exacerbated Sudan's economic crisis.

Also there was an explicit and early emphasis on the part of the IMF, World Bank and Consultative Group members that Sudan's process of adjustment and economic recovery would require a long period of time. For example, in its January 1983 meeting, the Consultative Group refer to a period of at least 10 years of concerted effort on the part of Sudan and donor community before economic recovery would be forthcoming (Consultative Group 1983).

3.1 Performance under the IMF Program:

3.1.1 The Exchange Regime Policies:

The stabilization of trade and the unification of the exchange rate on a free exchange market featured as one of the main policy objectives of both the IMF and the World Bank from the inception of the Economic Recovery Program (ERP). But the size of the gap between the unofficial and official free market rate became a major preoccupation of the IMF in negotiating the 1983-84 Standby Agreement, which committed the authorities to reissue licenses to exchange house dealers, after been closed by the authorities (Ali 1985). The next section will discuss the IMF's demands on the government to unify and liberalize the exchange regime.

3.1.2 Fiscal and Monetary Targets:

The main macroeconomic policy targets of the IMF program between 1978-84 were to raise the rate of growth of GDP to about 4 % per annum and reduce inflation rate to 10 % through a combination of measures designed to reduce the government budgetary deficit, domestic bank borrowing and growth of the money supply (Brown 1992).

3.2 The Outcome of the IMF Program:

If one look back to the first seven years after the IMF involvement in managing the Sudan economy (see table 2.1 and 2.2) the following points stand out:

3.2.1 In relation to the balance of payment:

a) The current account deficit increased from 6 % of GDP in 1977/78 to 11 % in 1983/84.

ii) Officially estimated total foreign debt increased from US$ 2.3 billion (1978) to 8.5 billion (1984), and the debt service ratio rose from 14% to over 100% in the same period despite four Paris Club rescheduling meetings.

iii) The Sudanese pound depreciated to 27% of its pre 1978 value.

3.2.2 In the domestic economy between 1977/78 and 1983/84:

- GDP declined in real terms and GDP per capita fell from US$ 483 to $ 344.

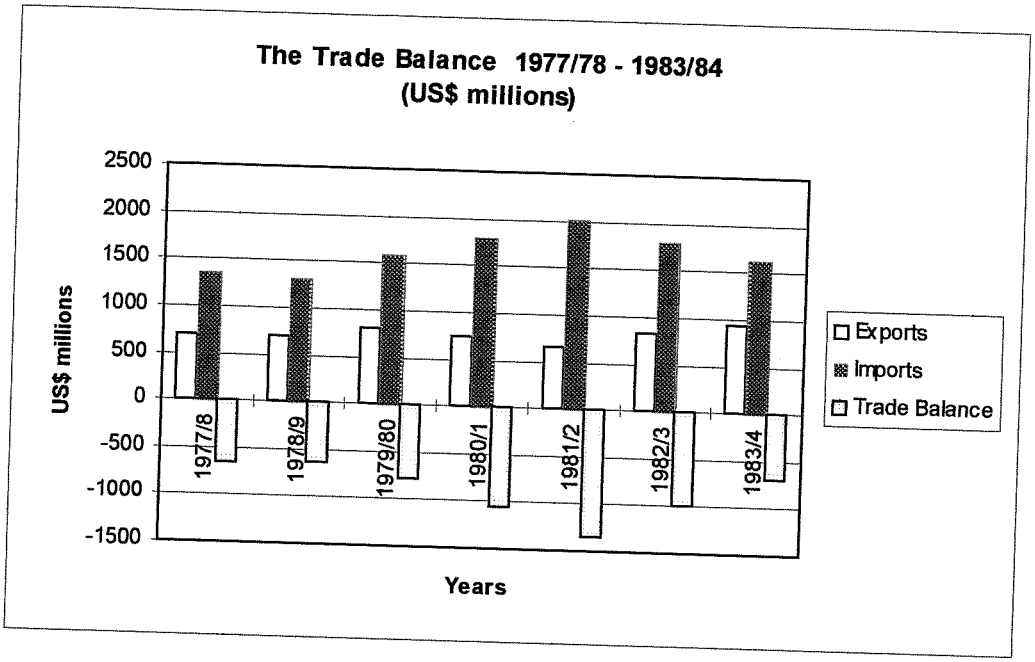
- Gross national saving fell from 2% of GNP to -0.3% in 1982/83.

- The government budget deficit rose from 5% of GDP to 8% having peaked at 12% in 1980/81.

- The annual rate of inflation rose from 20% to over 40% (the actual rate was much higher).

- Interest charges and number of important taxes had been abolished.

FIGURE NO. 3 SUDAN'S TRADE BALANCE 1977/78-1983/84



What needs to be explained however, is why a partially adopted program was allowed to exist for so many years, and especially, why at the time of its existence, the World Bank claimed to be quite satisfied with the government performance. This is brought out clearly by the following quotation from a World Bank's report on Sudan, published shortly before the breakdown of the program:

> The government (of Sudan) has long recognized the need to stimulate production, particularly of export products and to constrain consumption. Following an initial stabilization program in 1978, the government undertook a series of arrangements with the IMF . . . Each of the IMF arrangement has involved measures such as exchange rate adjustments and changes in domestic price designed to constrain consumption . . . In addition, the government has taken a wide variety of other measures as part of its effort to carry out the policy action program presented at the last Consultative Group . . These policy changes represent a major effort by the government and should help to assure the success of the economic recovery program (World Bank, 1985).

The main argument advanced in this regard is that the IMF`s apparent flexibility in its response in this situation can only be explained in relation to its other role, as a mediator in the whole debt rescheduling and aid mobilizing processes.

Table 3.1 Sudan Debt and Debt Indicators (in US$ millions)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
External Debt	7218	7601	8612	9128	9870	11562	11934	13844	15303	15834	16085	16560
Debt/exports	823.5	968.1	1105.4	1113.7	1792.7	2644.3	2025.1	1692.5	3064.5	4170.3	4359.4	4225.3
Debt/GNP	101.1	82.5	76.9	93	73.9	73.4	120.5	133.2	175.1	220.5	224.1	217.2
Interest / exports	43.5	24	41.2	48.9	76.3	137.9	92.9	166.9	153.9	113.9	97.3	89.2

Source: World Bank, World Debt Tables, various year, and Cline (1995)

3.2.3 Debt Management by Default

The sharp deterioration in Sudan's debt situation from 1984 onward illustrated clearly in table 2.1. Total debt increased from US$ 8.6 billion in 1985 to almost 13 billion by 1990. Arrears on payments due to the IMF increased from US$ 150 million in 1985 to more than US$ 1 billion (IMF 1990). Political considerations aside, Sudan`s creditors and the international donor community could no longer expect the IMF to intervene as it had in the past, in facilitating Paris Club and Consultative Group bailing-out procedures. Under its own statutes, formally, the IMF is prevented from entering into credit agreements with a member that is in arrears to it (Brown, 1992). Successive democratic governments (1986-1989) failed to come up with a meaningfull solution to the problem either of the IMF or the countinuing civil war .

The very rapid increase in Sudan's total debt after 1984 is therefore, to a large extend attributed to the accumulation of arrears on debt service obligation. By 1988 Sudan's accumulated debt servicing arrears, including principle payments in arrears, had risen to more than US$ 4.5 billion while arrears to the IMF itself were of order of US$ 800 million (Ali 1985).

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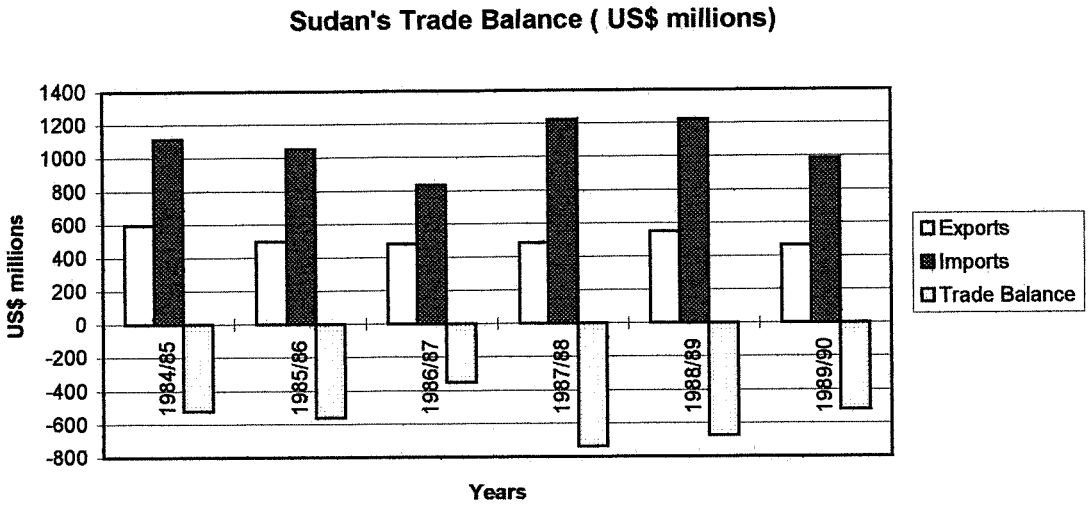
Table 3.2 Sudan: Balance of Payment Data 1984/85-1989/90 (in US$ millons)

	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90
Exports	595	497	482	486	550	465
Imports	1114	1055	832	1223	1224	984
Trade Balance	-519	-558	-350	-737	-674	-519
CA Balance	-642	-842	-702	-998	-1219	-1142
Net M&LT Loans	322	477	232	231	328	342
Grant	288	412	280	369	299	208
Others	609	963	478	637	1161	1213
Change in Reserves	67	-56	176	223	87	63
GDP Growth (%)	-5.8	3.6	4.3	-2.5	12.3	-6.6
GNP/capita(US$)	347	346	na	340	na	na
Debt	8612	9127	9870	11563	11961	12965
Debt Service Ratio(%)	131	193	158	201	205	236

Source: World Bank (1992)

Although the IMF declared Sudan ineligible for further IMF borrowing it would be incorrect to assume that the resulting absence of a formal upper tranche agreement with the Fund meant either that there was a significant cut back by the international donor community in disbursments of official development assistance to Sudan. Without the Paris Club agreements the accumulation of arrears substituted debt relief as the main methods of sustaining and positive inflow of capital to cover the widening current account deficit on the balance of payments. In addition it should be noted that some of the Sudan's debt are owed to countries outside the Paris Club, this enable a certain amount of rescheduling to take place in a bilateral basis. For example some of the Gulf Arab countries put together a package of bridging loans that allowed for a *de facto* rescheduling of the multilateral loans on which Sudan had defaulted and thereby resumption of disbursements of the Arab funds that had been frozen in 1984 (AED, 1985).

Figure No.4 Sudan Trade Balance 1984/85-1989/90



The data in table 3.1 appear to support the hypothesis that creditor retaliation to default led to a rather rapid reduction in the net flow of external funds. It can be seen that the combination of increasing debt service obligations and declining inflows of new capital resulted in a reversal of the direction of capital flows from 1984 onwards. The net accrued flows derived from these show an increasing outflow on funds to Sudan's creditors through the period, rising significantly from around US$ 600 million in 1984 to over US$ 1 billion by 1990.(Brown 1992, p.183)

It would seem as if Sudan was managing its debt crisis mainly by default. The accumulation of arrears came to be the single most important source of foreign exchange. Conventional wisdom on uncollateralized debt management would suggest that this was a particularly short-sighted strategy for a state, as dependent as Sudan on foreign capital inflows to support its balance of payment and saving gap, to follow. Surely, it would seem, that persistent default of this order of magnitude would drive the Sudan of future access to foreign capital flows.

Figure No. 5 Sudan: Debt Indicators 1982-1993

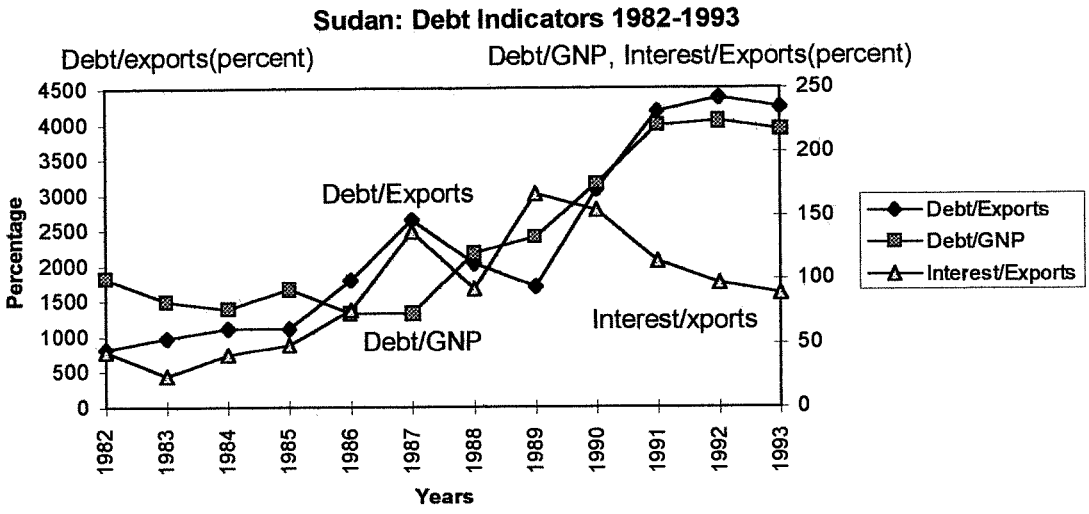


Figure 5 shows the trends for the principal measures of debt burden for Sudan in the 1980's and early 1990's. The figure has shown the most dramatic increase in the ratio of net external debt to exports of goods and services, from nearly 800 percent in 1982 to slightly below 4500 percent in 1992 (table 3.1). Tables 2.1 and 3.2 show that by 1987 exports were about 68 percent below their 1979 level. The extreme series of devaluations, followed the 1978 IMF prescription, associated with hyperinflation led by exchange rate collapse meant that the debt/GNP ratio reached a high of more than 200 percent in the early 1990's. That is, domestic GNP evaluated in dollars was shrinking rapidly as the exchange rate depreciated.

Concerning the role of the IMF, it had become clear by the mid 1987 that despite the decision in early 1986 to declare the country ineligible for further IMF lending , the Fund was still intent upon playing an active role in mediating between the donor community and the government of Sudan on the economic policy front.

As it transpired, the government was unable to adhere to the IMF-supported program for long enough to enable the Consultative Group and Paris Club meeting to go ahead. Without these Sudan arrears to its creditors and the IMF continued to grow. By mid-1989 Sudan's arrears to the IMF alone were approaching US$ 1 billion (IMF 1989). With there now being no likelihood of the government finding any plausible solution to

the country's economic crisis and continuing civil war, the US and other donor cut back their aid disbursements once again. This was followed by a military coup on June 1989, bringing to power pro-Islamic fundamentalist regime, which has proved to be more anti-West than any other regime since Sudan independence (Africa Watch, 1990). By early 1990, almost all, with the exception of the Dutch, had closed down their aid program in Sudan. Despite the continued buildup of arrears on obligations due to the IMF, the IMF continued its dialogue with the government. However, in early 1991 it declared Sudan a 'non-cooperating member, followed by a suspension of Sudan's voting rights in 1993 (see appendix 1). Despite the government's recent reform program, the threat of a compulsory withdrawal of Sudan from the IMF membership is currently in effect.

SECTION FOUR

Agriculture and Structural Adjustment

4.1 The Role of Agriculture

Agriculture is one of the most important occupations all over the world. The Food as Agriculture Organization (FAO) indicates that in 1992, 46% of the world population depend on agriculture for their livelihood. The dependency on agriculture is even greater in the developing countries. For example, 62% of the population depends on agriculture for their livelihood in Africa (FAO, 1992).

The direction and magnitude of agricultural supply response and composition of output are determined by economic policies in many ways. Specific policies directed towards agriculture have a direct impact on its performance. On the other hand, several other non-agricultural policies and macro-economic adjustment regimes affect agricultural production directly as well as indirectly.

The Sudan economy is highly dependent on agriculture. The agricultural sector in the Sudan contributed nearly 43.6% of the Sudanese Gross Domestic Product in 1994 (Bank of Sudan, 1995), provided a livelihood for over 80% of the country's population, and contributed nearly 90% of the country's foreign earnings (Abdelrahman and Smith 1996). The agricultural sector, however, receives only 30% of national budget allocations. Further it uses less than 1% of the nation's credit (Abdelrahman, 1990). The major cash crop in Sudan is cotton. However, the dominance of cotton in export revenue has declined in recent years due to crop diversification, which resulted in reducing its contribution by half from 65 percent in 1979, to an estimated 22 percent in 1995 (Bank of Sudan, 1995). Although agriculture remains vital to the economy, the total value of production in any year is highly influenced by fluctuations in rainfall and commodity prices.

The variety of agricultural zones in Sudan, make it suitable for a wide range of crops, which depend principally on rainfall and irrigation from major rivers, the Nile and

Atbara. In eastern parts of the country, however, crops are also cultivated under flood irrigation schemes fed by seasonal rivers.

Current agricultural policy focuses on diverting irrigated land from cotton to the main cereals, sorghum and wheat, and to groundnuts in an effort to attain greater food self-sufficiency. Although this will inevitably reduce export revenue, in the long run if food production rises appreciably it will provide the country greater scope to mitigate the increasing effects of drought and food shortage.

This section deals with the types of agricultural production systems and the variety of instruments that affect the determination of the agricultural producer prices and overall incentive framework of the Sudan which affects the resource allocation. The various policy instruments that affect this framework will be discussed.

4.2 Types of Agricultural Production in Sudan

Agriculture in Sudan consists of both traditional and modern sectors. The heart of the modern sector is at the junction of the White and Blue Nile rivers, where state development programs are concentrated (Map No. 2). Broadly speaking, the agricultural sector is made up of four components; large scale irrigated schemes, mechanized rain fed farming, traditional rain fed farming and livestock.[14] Most of agriculture's contribution to GDP comes from the irrigated sector. In this paper we will concentrate on the first three main categories

4.2.1 Large Scale Irrigated Schemes:

The largest of these schemes is the Gezira scheme where cotton is produced. Irrigated cropping on just over 4 million feddans (1.68 million hectares) is dominated by large gravity schemes that are mainly managed by the government though cultivated by thousands of tenant farmers who grow almost all the country's cotton, most of its wheat, 35 percent of its groundnuts and around 10 percent of its sorghum. Of these types of scheme, the Gezira is by far the most important producing roughly 50 percent of the wheat crop. It covers an area of over 2.1 million feddans (880 000 ha) between the Blue Nile and White Nile south of the capital Khartoum. Some 100,000 tenant households

operate the scheme in conjunction with the Government and the Gezira Board, which provides administration, credit and marketing services. The Rahad irrigation scheme dates back to 1977 and is sourced from the Roseires Dam on the Blue Nile. The overall area of the scheme covers some 300 000 feddans (126 000 ha). Completion of plans to raise the height of the Roseires he country with most of the area, currently estimated at 11.2 million feddans (4.7 million ha), under this system concentrated in the east. Most mechanized farming is undertaken in the Kassala and Blue Nile Provinces.

4.2.2 Traditional Rainfed Farming:

It is estimated that some 55-60 percent of the population are still engaged in subsistence agriculture, with approximately a quarter of these in the south. Central and Western parts of the country also house a large number of subsistence farmers (Abdelrahman and Smith 1996). The climate in these areas has resulted in a system of farming that is based on shifting cultivation and the use of traditional low yielding varieties and no fertilizers. In these areas, increasing animal and human population have put considerable pressure on land, water and vegetation. As a consequence, the period of fallow has fallen, leading to problems of soil infertility and degradation. The principal crops grown under this system of agriculture include millets in areas with lighter soils and sorghum on heavier soils. Given poor resource and rainfall conditions, productivity is extremely low and it is estimated that only about 6 percent of the country's sorghum production comes from the traditional sector (FAO 1997).

4.2.3. Rainfed Mechanized Agriculture and Dependency:

Mechanized farming was introduced to Sudan in 1944 for the production of oil seeds to reduce the shortages arising after World War II, and for the production of grains for the British Troops stationed in the Sudan (Kontos 1990). Since then and with the encouragement of the Sudan government and the World Bank the cultivated area grew from 5000 feddans (feddan =0.42 hectare) in 1955 to more than 6 million feddans in 1982, and currently area under mechanized farming was estimated to be between 11.2 million feddans (4.7 million hectares), concentrated mainly on the central clay plain

[14] The term "mechanized" is somewhat misleading in the sense that it refers mainly to the methods of land preparation, a one-off activity using large tractors, disc ploughs and planters. Most other activities including harvesting of sorghum are performed largely by hand.

particularly in the Southern part of Butana area (map No. 1). And the area is expanding at an annual rate of 147,000 hectares (Mustafa, 1991). Since the rain fed mechanized agriculture is considered to be an export oriented agriculture, commercial banks and big farmers and traders involve in a wide spectrum (credit, storage, agricultural services, etc..) in this type of agriculture. Due to the high profit from the mechanized farming, illicit and unsurveyed schemes (schemes not under the mechanized farm corporation) have expanded at the same rate as the legal schemes (Bloom, 1985). On the other hand, the rain fed mechanized farming represents a high risk investment

4.3 Traditional Agriculture: A Priority for Integrated Development:

The agriculture sector in the Sudan exposes clearly the characteristics of dualistic development. But a main issue is the extent and character of the linkages of traditional agriculture with the modern sector. One such link takes the form of migration to the modern sector, another is production in the traditional sector for sale in the modern sectors, including exporting. The wages of the migrants are at times set so low as to lead to temporary and localized labor shortage in the modern sector. Prices paid to traditional farmers producing for cash are too low to bring forth much supply and more often low enough - well below any set minimum price - to allow traders to earn more profits and urban commerce to obtain food at subsidized prices; all of this is at the cost of workers in traditional agriculture.

The small scale farmer and their rural community an the traditional sub-sector face many problems. Examples are, no modern inputs reliance on land tools and human labour, and no credit system. These farmers are much more likely to suffer from an in ability to get credit or from delays that result in credit too late for its optimal use in purchase of inputs. These combine to result in the small farmers and their rural communities facing a low standard of living and a lack of political power.

4.3.1 The role of the gum arabic:

World demand for gum Arabic, used widely as a stabilizing agent in the pharmaceutical, soft drink, food and cosmetics industries, varies between 30,000 and

40,000 tons per year. The bulk of that demand, some 80 percent, is supplied by Sudan.[15] Gum production is a convenient source of seasonal employment and income in the traditional sub-sector. The gum is collected in November at the start of the dry season and in March-April before the onset of the rainy season (Pearce, Barbire and Markandya 1990). This seasonality is particularly important in locations where off-farm income opportunity are limited. Gum harvested by nomads from untended trees can also be a useful supplementary income source.

A great deal of attention has been focused on the pricing of gum arabic from the producer's point of view. Bateson and El Tohami (1986) report suggested a high elasticity i.e. the response of suppliers to a change in price. Further the supply elasticies reported effectively relate to the existing stock of trees because the main supply response so far has been to tap existing stocks that have remain untapped. By not planting new trees, the poorer farm communities contribute further to the environmental degradation and hence to longer-term poverty. It is evident that price is a potentially powerful weapon in securing increased supplies of gum arabic from existing stock. By raising producer incomes such a measure will have beneficial effects by helping to break the environment-poverty cycle.[16] Other policies, such as improved handling, transport and storage to raise quality, will also assist.

4.4 The Role of Cotton:

Cotton is the major cash crop in Sudan. The "Breadbasket" required major structural changes in agriculture. These structural changes meant a gradual shift in the compositiuon of production pattern from cotton, through which the state had been able to moblize much of the surpluses needed to support its fiscal expenditures. As a consequences the area under the cotton decreased while the food crops increased, which lead to a shortage in the foregin exchange and a current account defecit.

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[15] The United States in November 1997, imposed economic sanctions on Sudan for alleged sponsorship of terrorism and human rights abuses, but said it would allow gum Arabic imports after lobbying from business interests.

[16] The Acacia Senegal trees yield gum only after a gestation period of 5 years or so.

Under the World Bank"s Agricultural Rehabilitation Program (which brought to an end the attempt to pursue the broader-based economic growth strategy under the "breadbasket" diversification drive) the focus of policy was shifted to economic recovery based on the rehabilitation of the "traditional" areas of agricultural production and the promotion of export crops, particularly cotton.

However, the implicit tax in the exchange parity, during the period of the recovery program, indicated a significant bias against cotton, on the other hand, the series of devaluations resulted in the hike of the price of agricultural inputs, and did not encourage cotton exports.

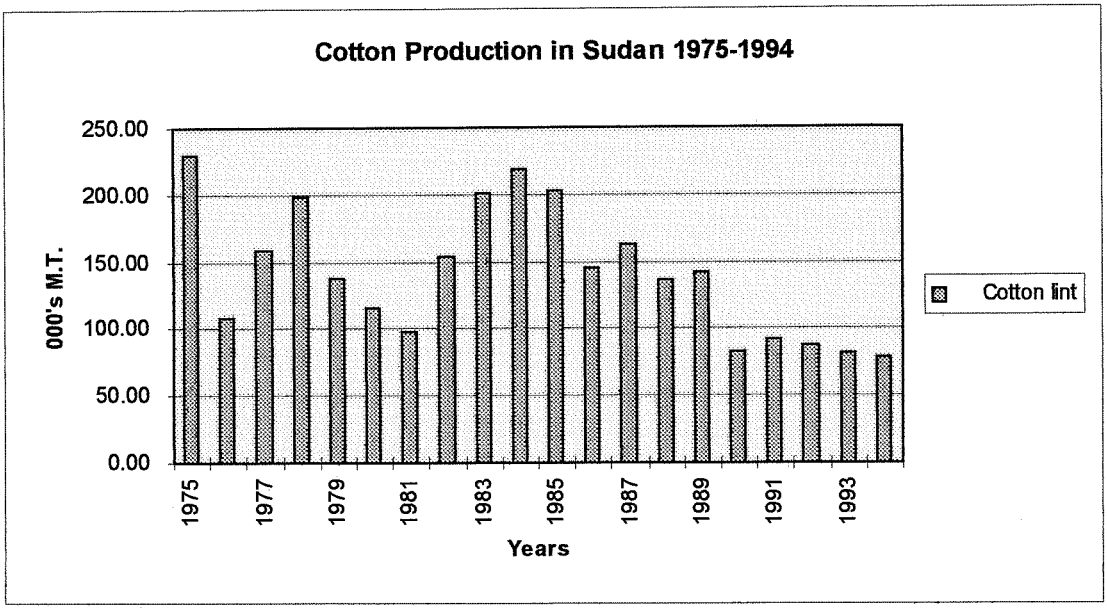
As a result of the recovery program, real crop incomes declined for cotton, leading to a corresponding shift in the composition of production. As a result the area reduction of cotton during the last two decades (figure 9) may be similarly explained. Prices are therefore, clearly important; but they are not all that counts. In particular, measures to improve yields and productivity levels are important in maintaining comparative advantage.

The changes in the structure of exports over time reflect the dynamics of the agricultural sub-sectors. The changing share of cotton in total exports reflects underlying production trends. However, the dominance of cotton in export revenue has declined in recent years due to crop diversification, which resulted in reducing its contribution by half from 65 percent in 1979, to an estimated 22 percent in 1995 (Bank of Sudan, 1995).

The producer price of cotton is determined by international prices and the exchange rate. Sudan is one of many competitors in the international cotton market and does not have a significant impact on the determination of the international prices. Sudan's cotton supply to the international market in 1993 was about 1% of the world supply of cotton (UNCAD, 1995). However, before the recovery program, the Gezira Scheme maintained a joint account system where the proceeds from cotton exports in terms of Sudanese pound (after the exchange rate effect) is maintained in one account and is divided according certain percentages agreed upon by the farmers and the Gezira board).

The Gezira scheme (where cotton is produced) has suffered from lack of confidence among its tenants. Tenants have little say in what they grow or how they grow it. As market prices for cotton have declined in the last years, they have lost the incentive to do any thing but grow crops for subsistence. More often tenants have quit the scheme entirely, leaving their tenancies to be farmed by sharecroppers or hired laborers.

Figure No.6 Cotton Production in Sudan 1975-1994 (thousand metric tons)



4.5 The Allocation of Land, Labor and Capital in Irrigated Agricultural Schemes

The large scale-state managed schemes are partnership arrangements between tenants, who are responsible for supplying labor, the government, which provides land and irrigation, and the management board which supervises all the aspects of the scheme. Cotton (before the IMF intervention) was a "joint account" crop (the revenue of the crop are allocated among the various parties). Inputs provided jointly for the scheme under the managing board supervision included land preparation, spraying of pesticides, ginning, bailing and transportation of cotton. All the joint costs are charged against the " joint account" and profits are distributed among partners in accordance to agreed

propositions. The board decrees the cropping pattern, within each tenancy, for each crop, and in each year. It also insures the delivery of machine services.

The IMF staff paper (1979) outlined the impact of this system on allocation efficiency is concerned, this system poses two problems: first, the managing board has no incentive to respond to changes in the international prices of crops other than cotton since cotton is the only crop in the joint account in which the board shares. Second, the "joint account discourages the tenant from allocating their labor cotton vis-à-vis other crops to whose proceeds the tenant is fully entitled.

Accordingly, and based on the IMF recommendation, the "individual account" system replaced the "joint account " system. In the "individual account' system the tenant is individually responsible for all the inputs and the rest of the operation system and all the cost are charged against the individual account. In the absence of an efficient agricultural credit system, the tenant turned to the local merchants for finance through what is called the "Shail System". In this "Shail system" the tenant has to sells his crops forward (for cheaper price) to the local merchant, during the cultivation season, to finance his personal and agricultural expenses.

Section Five

Agricultural Price Policy Instruments

It should be noted that agricultural price policy instruments slightly changed during the period of study. The year 1979 is chosen, as starting year in our study, for two reasons: a) there are figures available for this year in particular obtainable from an IMF study conducted in this year; and b) the year 1979 represents a turning point in Sudan economic policy. In 1978, the Nimeri regime (1969-1985) abandoned its strive to restructure the economy of the Sudan along socialist lines as stated in the Five Year Plan (1974-1979) and pursued what was termed the Open Door Policy. However among all the policy instruments to be discussed, the exchange rate is the most important element. The discussion below gives a detailed description of the devaluation of the Sudanese pound and the exchange rate system adopted throughout the period under study.

5.1 The Implicit Taxes in the Exchange Parity[17] :

Heavy direct taxation of agriculture through various trade and foreign exchange policies was viewed as one major cause of the sluggish growth or decline in agriculture production in sub-Saharan Africa over the past two decades (Ballassa 1990). Industrialization strategies that used agriculture as the tax base for surplus extraction, were based on the belief that agricultural supply is inelastic and thus is not affected by high taxation (Hassan and Hallam 1996). On the other hand, several studies have shown that aggregate agricultural supply is fairly elastic and quite responsive to price signals (Ballassa,1990; Chhibber, 1989).

Some of the direct effect of the foreign exchange and trade regimes on agriculture include:

(i) the high import tariffs used to protect the domestic infant manufacturing sector will lead to higher cost of imported inputs. This is in turn resulted in lower access and use of modern inputs by farmers, leading to stagnant or declining agricultural productivity.

[17] This sub section draws heavily on Ali, 1985, and International Financial Statistics, IMF, various series.

(ii) differential foreign exchange taxes and subsidies on selected exports and imports discriminated against agricultural products especially exports and import-competing substitutes (Jaegar, 1991; Elbadawi, 1992)

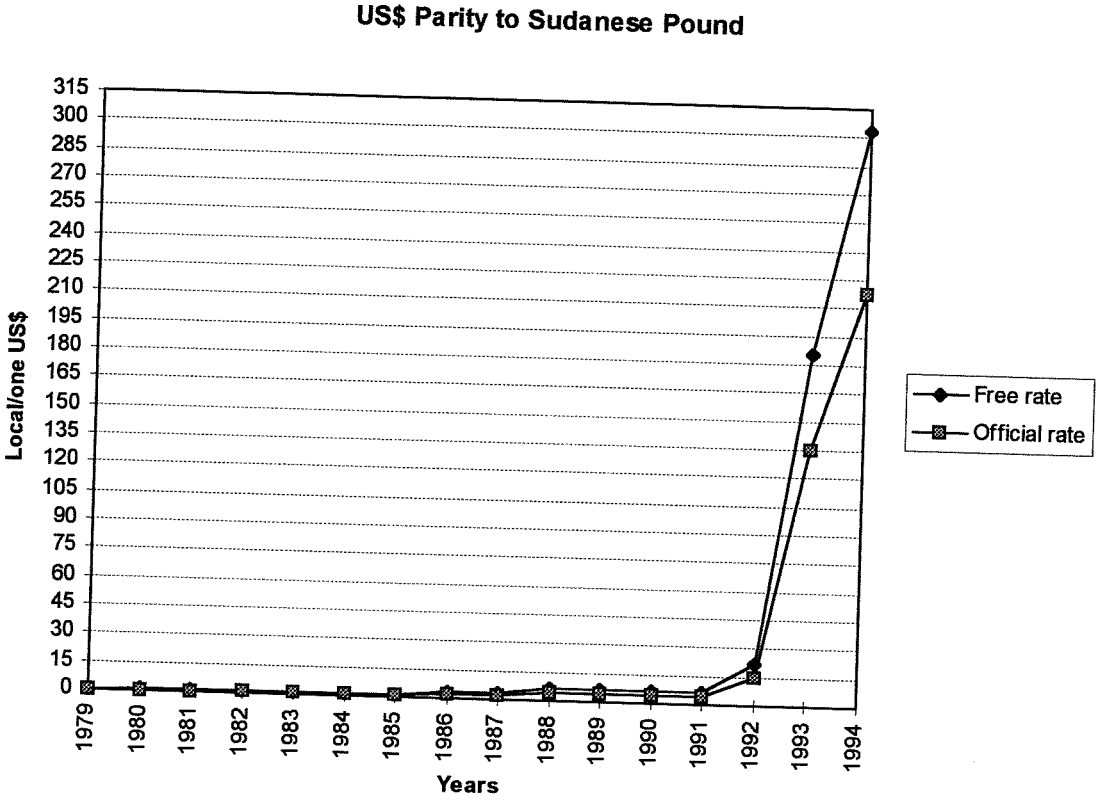
The Sudanese pound parity to the US dollar (figure 6) has undergone significant changes during the period of study. From 1978 the Sudanese pound was fixed, in parity of US dollar for 0.35 Sudanese pound. The first devaluation of the Sudanese pound was announced in 1978 (the first contact between the Sudan and the IMF when the Open Door Policy was announced) to result in parity of one US dollar for 0.4 Sudanese pound. From that period successive devaluations were undertaken in accordance to the IMF conditionality. In 1979, the Sudanese pound was devaluated three times, where the last of these three devaluation was a system of multiple exchange rate in which the official rate was a parity of one US$ for 0.67 Sudanese pound, and the rate for remittances from the Sudanese Working Abroad (SWA) was of 0.80 Sudanese pound.

During the same period, the system in which different parity for different agricultural products was introduced under what was named Exports Incentive Policy. In 1980, a unification of multiple exchange rate system was introduced by shifting the parity for most exports and imports to be of one US$ parity for 0.80 Sudanese pound, however the parity for cotton and some imports like wheat, sugar and powdered milk was left at 0.67 Sudanese pound, which indicates a bias against cotton and in favor certain food stuffs.

In 1980, another attempt to the exchange rate system was made and the Sudanese pound was devalued, to result in parity of US dollar for 1.11 Sudanese pound, (the first time when the Sudanese pound was set at a level less than the US dollar). The agricultural exports in this year were treated equally with other sectors with respect to the exchange rate. In 1982, the multiple exchange rate system were launched again with another devaluation where the official rate (mainly for exports) was fixed at a US dollar for 1.3 Sudanese pound and a free rate were the US dollar was set to sell for 1.8 Sudanese pound. The free rate is set to attract remittances from (SWA). In 1982 both rates were devaluated where the official parity of the US dollar is set at 1.3 Sudanese

pound and the free rate at 1.8 Sudanese pounds. In 1984, the free rate was further devaluated to 2.1 Sudanese pounds.

FIGURE NO.7 THE US DOLLAR PARITY TO SUDANESE POUND (1979-1994)



In 1985, a new system was introduced where the official rate was devalued to 2.5 Sudanese pounds for US dollar, while the free rate was allowed to float and it is then domestic transactions in foreign currency are legalized and commercial banks are allowed to determine that free parity in accordance to supply and demand. However, by the end of the year free exchange of foreign currency was delegalized and the official parity was maintained at 2.5 Sudanese pound for US dollar, where the free rate was devaluated to 4.25 per US dollar.

According to the export policy that announced in 1987, export revenues are accounted for in certain percentage based on the official rate and a percentage based on

the free rate. For instance, all exports except cotton and gum Arabic are calculated on the basis of 70% of the official rate and 30% of the free rate. This simply means that for exports other than cotton and gum Arabic the exchange rate is 3.025 Sudanese pound per US dollar. However the exchange rate for cotton and gum Arabic remained at 2.5 per US dollar. During the same year the exchange rate for exports (other than cotton and gum Arabic) was revised to be 50% based on the official rate and 50% of the free rate, i.e. for these exports the exchange rate is set at 3.750 Sudanese pound per US dollar. The exchange rate for cotton and gum Arabic remained as it was. The exchange rate for sesame and peanuts however was set at the free rate at i.e. at 4.25 Sudanese pound per one US dollar.

In 1987 the exchange rate was reunified with a devaluation which made the US$ exchanges for 4.5 Sudanese pounds. In November 1988, foreign transactions were realized and the commercial banks were allowed to determine the " free rate" provided that commercial banks agree to finance 70% of imports. The free rate jumped immediately to 11.3 Sudanese pounds per US$. In May 1989 a new export policy was announced and in their basis of which, exchange rate for exports other than cotton and gum Arabic were accounted for on the basis of an exchange rate of 11.3 Sudanese pounds per US$ except for exports to Egypt which are usually based on a parity determined according to the out lines of the Economic Integration Policy between Sudan and Egypt (The Economic Review, 1990).

In 1992, another devaluation was announced (see figure 6) in accordance to the so called National Comprehensive Strategy of the current regime. On the basis of this devaluation the exchange rate was 21.5 Sudanese Pounds for the US$ but the partial liberalization of foreign exchange and economic isolation of the regime, the exchange rate immediately jumped to a triple figure. It is worth to note that currently the US dollars sells at Khartoum foreign for more than 1700 Sudanese pounds.

In addition to the implicit tax in the exchange rate parity, export duties and loyalties on agricultural products are important sources of divergence between international and domestic producer prices because they affect the price of agriculture inputs.

5.2 Producer Price Policy and Marketing Arrangements:

The determination of agricultural pricing policies suffers from a structural weakness because various government departments make uncoordinated decisions that eventually affect the producer prices. The Department of Supply determined the into-mill price of wheat. The producer price of cotton is determined by international prices and the exchange rate. However the Gezira Scheme (Where cotton is produced) maintains a joint account system where the proceeds from cotton exports in terms of Sudanese pound (after the exchange rate effect) is maintained in one account and is divided according certain percentages agreed upon by the farmers and the Gezira board (a public entity that is responsible for providing irrigation water for the scheme beside other responsibilities). The producer prices for sesame, groundnuts and gum Arabic are set by a semi public Oilseeds and Gum Arabic Corporations, however the price are effectively set by the department of Foreign Trade. The Department of Foreign Trade, in conjunction with marketing corporation announces the minimum price in wholesale markets. The prices differ by region to allow for transportation costs. If the price offered by the private traders to farmers falls below the announced price, the marketing corporation is obliged to purchase directly at these minimum prices. Ironically, the private traders who can buy above the announced price are obliged to sell to the marketing monopoly. A maximum price is also announced with respect to the private traders sales to the marketing monopoly. Hence the maximum price for private traders is usually set too low in relation to the external prices; a fact that encouraged the smuggling of Gum Arabic to neighboring countries.

SECTION SIX

The Political Dynamic of Agricultural Policy

Bates (1990) work provides an interesting framework for the analysis of the political dynamics of agricultural producer price determination in Africa. This section will apply this framework to the case of the Sudan. The analytical framework suggested by Bates (1990) can be decomposed in the following points:

i. It is important for the survival of African regimes to ensure cheap food for urban dwellers in order to curtail urban upheavals. African governments therefore tend to levy heavy taxes on agricultural crops, which are mostly produced in rural areas, to bring about peaceful relations with urban dwellers as agricultural producers are largely scattered and less organized to constitute a significant political constituency or influential interest group to enable them to receive fair prices for their labor.

ii. Within the agricultural producers there exist a differential power structure. Even though the differential power attributes of agricultural producers are of secondary importance or inferior than those of urban dwellers, the effective producer price received by each group of agricultural producers is positively correlated to the power of that group. Hence more organized or more influential agricultural producers receive here prices in terms of domestic currency for their producer when compared to less influential producers.

iii. Producers of export crops are exploited more than producers of others crops because of the easiness and invisibility of export taxes built implicitly in the exchange rate especially when the country of concern lacks other revenue resources to finance the significant subsidies provided for urban dwellers.

iv. The less obvious the tax and the more complex the structure of distribution channels and marketing arrangements, the more is the level of exploitation of agricultural producer since such complexity and ambiguity reduces the political cost of agricultural revenues extraction even within the agricultural producers groups.

The above outlines of Bates micro-aspects of agricultural producer price determination will be discussed with regard to the Sudanese case under the three sub-headings: the bias against agriculture, the urban bias of agricultural policy, and the intra-agricultural bias.

6.1 The Bias Against Agriculture

This section seeks to answer the question: does the policy framework outlined earlier harbor any overall incentive bias against agriculture *vis-à-vis* other sectors? Abdelsalam (1986) classified the problems of agricultural policy in the Sudan in two categories: structural problems represented by the friction between agriculture and irrigation, and incentive problems evidenced by the anti agricultural policies represented by explicit taxes and exchange rate taxes. Babiker (1986) examined the policy problems and concluded that the problem of agricultural policy is rooted, to a great extent, on the poor infra-structure and price distortions. Elbadawi (1987) in his study concluded that the aggregate effect of agriculture specific policies, such as administered prices of output and inputs, taxes and subsidies, and investment constitute a net tax on agriculture.

The IMF study (1979) sought to answer this question on the basis of quantitative analysis by comparing the effective protection rates of agriculture and industry. The computations of the effective protection rates for the five main Sudanese cash crops (cotton, Gum Arabic, peanuts, sesame, and wheat) was found to be -27% which means that the overall incentive framework of the policy yielded a net tax margin of 27% on agricultural crops. This is a substantial extraction by any standards and is not justified by strategic considerations or industrial orientation if we note that out of the 27% tax only 2% presumably goes to development projects (the development tax revenues). The effective protection rate of a sample of industrial products, on the other hand, was found to be 170% indicating a significant subsidy to the industrial sector. The IMF paper, however proceeded to argue that the structure of incentive policies in the Sudanese economy provides a considerably greater inducement for allocation of resources to industry than to agriculture. It added, these policies work against the efficient exploitation of Sudan's long-term comparative advantage in agriculture (IMF, 1979).

6.2 The Urban Bias And Agricultural Policy

The FAO (1990) conducted a series of studies about the Sudanese agricultural problems and confirmed the conclusions reached in earlier studies by stating that the exchange rate policies in the Sudan have a depressive effect on the Sudanese agricultural sector. The FAO studies classified the agricultural policies of the Sudan in four main types. The third and fourth types deal with prices of vegetables and live stocks and are beyond the scope of this paper. However, it is worth discussing the first two types of policies, in the FAO outline, at some length here.

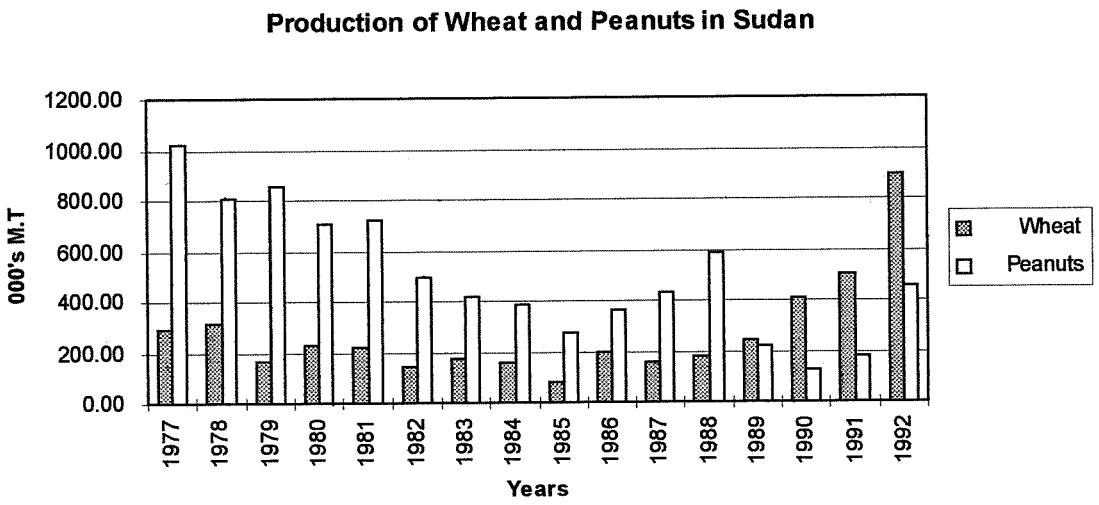
The first type of agricultural policies emphasizes government revenue objectives and maintains heavy taxes on agricultural exports through the exchange rate overvaluation. The second group of policies aims at giving priority to consumer welfare through a policy that ensures low consumer product prices. It can be easily seen from the proceeding discussion that these consumer products that the FAO studies are discussing are mostly urban consumer products. For instance, the devaluation of the Sudanese pound in 1980 for all exports and imports except cotton, sugar, wheat and powdered milk goes in line with Bates argument and Lipton's thesis of urban bias. It is important to note that while the bias against agriculture is clear in the difference of the parity for cotton (Sudan's main Export crop which accounts for almost 80% of exports foreign exchange earnings), the implicitly subsidized food stuffs are used exclusively in urban areas. Sudan is rich in terms of cattle but the lack of milk refrigeration facilities, lack of infrastructure, and the nomadic nature of the Sudanese tribes makes it impossible to maintain the supply of milk from rural areas of the Sudan to urban areas. The subsidy for imported powdered milk is clearly a subsidy to urban dwellers and a disincentive for cattle owners in rural areas. The same applies to wheat which is used for bread production in urban areas, Rural Sudan depend entirely on sorghum and millet and wheat is hardly ever consumed in rural Sudan. Sugar is consumed both in rural and urban Sudan. This analysis fits perfectly well in Bates arguments and is very clear. The politics of cheap food for urban dwellers is easily seen in the Sudanese case since most of the regimes in independent Sudan were overthrown by urban upheavals. This is true for October 1964 popular upraise that ousted Abud's regime (1958-1964), and for April 1985 upraise that

overthrew Nimairi's regime (1969-85). For different political reasons, any devaluation or announcement of lifting the subsidies - and accordingly an increase in the prices of gas, bread, or sugar - used to take place after the closure of schools in the Sudan. In fact, once schools are ordered to close their doors in the face of students, people would expect a rise in prices of gas or sugar.

6.3 The Intra-Agricultural Bias

Section 6.1 dealt with the question of whether or not the overall policy framework imposes a burden on agriculture. Section 6.2 aimed at explaining the urban bias of the agricultural policy. In this part, the questions addressed are: is there differential bias within the agricultural sector itself, and what political factors can explain this bias if any? The answer to these questions applies Bates proposition that more influential agricultural producers are less exploited than other less powerful groups. For the Sudanese case, two variables can be taken as proxies for the power of agricultural producers groups. The first variable is the type of agricultural production of the crop.

Figure No.8 Production of Wheat and Peanuts in Sudan (1977-1992)



It might be reasonable to assume that agricultural producers of large scale irrigated and semi-urban areas are more powerful than producers in large mechanized farming, who in turn, are more powerful than the traditional and scattered producers of

western and southern Sudan. This argument is supported by the fact than there are farmers associations (an interest group) in all large scale irrigated schemes while there are no political bodies which represent the traditional farmers in western and southern Sudan. The second variable is the region of production. Data about Sudan shows that both income and education levels in central and northern regions are significantly higher than those of western and southern regions. For instance, an ILO (1987) study has shown that while the enrollment of primary school students is more than 90% in the northern region, it is more than 80% in the central region, about 37% in the western regions, and only 13% in the war troubled equatorial region in southern Sudan.

The following table summarizes these variables:

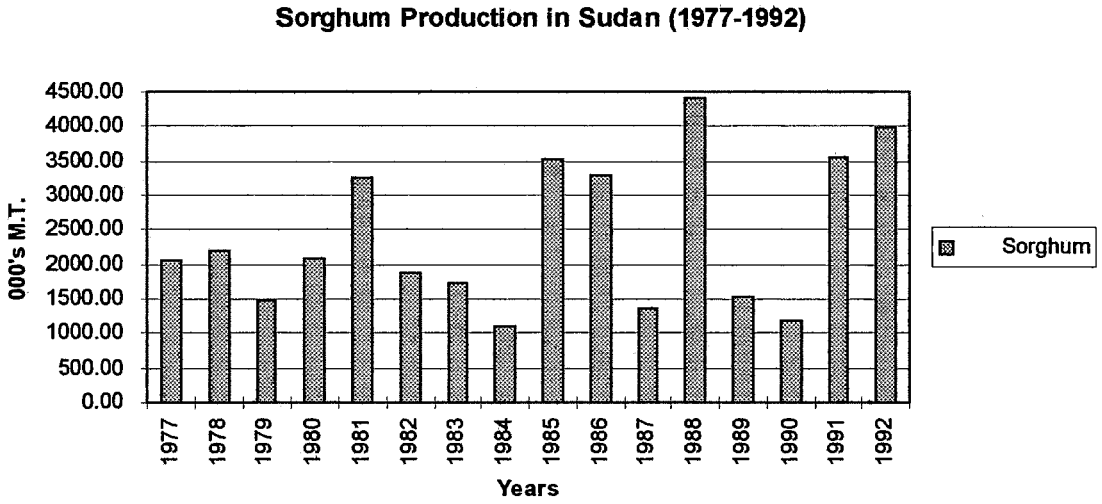
Table 6.1 Effective Tax Rate on Producer Per Sudanese Pound Earned (1978-1979)

Name of the Crop	Effective Producer Tax	Type of Production	Region(s) of Production
Wheat	31%-49%	Mechanized	Central
Sugar	23%-40%	Mechanized	Central
Gum Arabic	29%-34%	Traditional	Western
Cotton	19%-26%	Mechanized	Central
Sesame and Peanuts	14%-17%	Mechanized & Trad.	Eastern & Western
Sorghum	12%-N.A.	Traditional	Western & Southern

source: IMF Staff Paper 1979

The above table seems to support Bates framework. First of all it shows the heavy tax rates levied on agricultural crops at large. While the tax rate imposed on producers. It is subsidy to consumers in case of wheat and sugar but a direct tax in case of other crops since these other crops are not consumed in Sudan but exported. The urban bias and politics of cheap food for urban dwellers could be seen in the high tax rates on wheat and sugar. While sugar is consumed by both urban and rural dwellers alike, wheat is used exclusively in urban areas and the rural population in Sudan depends for its diet on sorghum or millet. The urban bias seems to be the overriding constraint over the other political considerations as outlined by Bates.

Figure No. 9 Sorghum Production in Sudan 1977-1992



Because the urban bias is an overriding constraint, once exclude wheat and sugar for purposes of assessing intra-agricultural bias as opposed to bias between agriculture and other sectors, it could be seen that Gum Arabic which is produced in the traditional sector in the western regions is taxed much more higher than cotton which is produced in irrigated mechanized schemes in eastern and western Sudan is taxed less than Cotton which is produced in irrigated schemes of central Sudan simply because these are partially consumer products and governments had to keep cooking oil prices down (sesame and peanuts are used in the production of cooking oil and are exported only when there is surplus over and above domestic needs).

Figures 8, and 9 above, show the production of the main food crops in Sudan from the 1977/78 season to 1992/93 season. Sorghum however is not an export product and therefore is not taxed as much even though it is produced in the traditional sector in western and southern Sudan. This follows directly from Bates argument that taxes on producer prices are largely determined by the easiness of extraction of export crops revenues.

SECTION SEVEN

An Evaluation of The Explanatory Power in the Economy

In the above section we have concluded that the political dynamics of agricultural producer prices determination seems to support Bates framework in terms of bias against the agricultural sector, the urban bias an the politics of cheap urban food, and the differential bias within the agricultural sector itself. In this section however the question is not whether agricultural producer prices constitute a just policy. Rather, the question here is whether or not one can conclude that the above framework can explain the agricultural and economic crisis of the Sudan.

A brief answer to this question can be reached by evaluating the significance of other variable that are left our yet played some role in shaping the agricultural and economic crisis of the Sudan. Unfortunately, these factors, unlike the ones outlined above do not easily lend themselves to "rigorous" quantifiable evaluation. As Bienefeld (1990) points out once these factors are to be included, the easiness and manageability of Bates framework becomes a cumbersome task and obvious contradictions in the theoretical assumptions upon which these considerations are drawn are to be confronted. It is not our purpose in this section to attempt to comment on the contradictions between the theoretical foundations of the dimensions of agricultural policy that are rooted in the dependency and perspective as opposed of the emphasis on efficiency impeded in Bates arguments. Nor is it our task to take a comprehensive account of the dependency interpretation of the Sudanese agricultural and economic crisis. However, we shall comment on a variety of aspects rooted in dependency analysis to note the simplistic interpretation Bates work as a comprehensive problem definition of agricultural problem in Africa continuing to relate the discussion to the case of the Sudan.

It is also worth to note that while the arguments which are raised in this section attempt to emphasize the colonial of the Sudan on post-independence Sudanese political economy, it should not be interpreted as a disclaimer of the responsibility of the post-independence Sudanese regimes in contributing to the current problems of the Sudan. On the contrary, it is an established belief that while the impact of the colonial legacy of the Sudan is to be acknowledged, the crises of the Sudanese society is mostly the

responsibility of Sudanese society particularly those who happen to be in power in post-independence Sudan.

7.1 The Dependency Structures of the Sudanese Economy

The post-independence Sudanese regimes inherited the crop economy from the colonial Anglo-Egyptian rule where the entire economy depended on cotton. The Gezira scheme was established during the Anglo-Egyptian rule to secure a supply of cotton to the deteriorating Lankshire textile industry. However, the post-independence Sudanese regimes, having had to deal with a war that started on year prior to independence and having not anticipated the deterioration of terms of trade against agriculture, have not been successful in diversifying agricultural production.

This in effect has put the Sudan under the mercy of the fluctuations of cotton prices in the international markets and the vulnerability of cotton to natural disasters. A third reason which stood on the way of agricultural expansion was the water treaties that govern the allocation of the Nile river waters between Sudan and Egypt. The treaty dates back to the time of the Anglo-Egyptian rule while Egypt was a co-colonizer of the Sudan.

7.2 Vanguard of Development, the War Economy, and Colonial Legacy

Mahmoud (1984) adopting the dependency theory, concluded that the colonial factors in the political development of the Sudan interacted with the worst aspects of the Sudanese religious and political life to produce a pathetic case of the history of colonialism and neocolonialism. She added, the colonial power lent itself perfectly to the politics of Sudanese sectarianism. This left the independence of the Sudan only a superficial change from old regime.

The sectarian parties established themselves during the colonial period and the colonial charity to these parties was so generous as to enable the 28 years Sadiq El Mahadi to be the Prime Minister of the Sudan in June 1966. The problem of the Sudanese society is three fold a) the significance of the politics of religion, b) two well established sectarian parties that prize power, and thus c) the political maneuvering of the conflict in southern Sudan.

7.3 The Environmental Factors and the Sudanese Agriculture:

7.3.1 The Environmental aspect in the Irrigated Farming:

It is hardly disputable that the environmental factors have played some role in the agricultural crisis of the Sudan. While Sudan was declared the breadbasket of the Arab World in 1973, a severe drought hit the Sudan in the mid 1980's and lives were lost due to famine. The desertification in the western part of the country and the was in the rich land in south have continued to make a forced a significant part of the Sudanese society to depend on foreign aid and the United Nations Life Line Operations continued to date. Another man made environmental disaster is the extensive use of the international banned pesticides in most of the irrigated schemes. Beside its dangerous effects on man, animals and soil, it has negative effects on the Sudanese agricultural exports. The price of exported groundnuts deteriorated sharply in the 1980s because it contained a high rate of pesticides chemicals, and the demand for groundnuts decreased accordingly (Hassan, 1986). The following years witnessed a sharp decrease in the production of groundnuts as it is shown in figure 9 .

In the Gezira scheme, the catastrophic consequences of over-reliance on intensive chemical control of cotton pests became obvious during the 1970s,[18] resulting in recommendations that Integrated Pest Management (IPM) should be adopted. This was further backed up by the FAO/Government of Sudan cooperative project on IPM (financed by the Government of the Netherlands) which demonstrated that pesticide spraying did not provide sustainable protection of crops. (Dabrowski, 1997)

7.3.2 The Environmental aspect in the Mechanized Farming:

In rain fed mechanized farming the government allocates a farm plot of 1000 feddans out of which 750 feddans are cropped and the remaining 250 feddans are under fallow on a rotation basis. Latter the farm size was increased to 1500 feddans with the view of keeping 1000 feddans under cropping while the remaining to be left as fallow. The government also requires that at least 15% of the farm area to be left as shelter belt.

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[18] See D'Silva and Hassan, *Institutional Change,* (1987) pp.9-10. D 'Silva mentions that the management of the state-owned Rahad scheme mixed herbicides into the fertilizer to keep farmers from using it on sorghum. One can only guess the results of this misguided policy. Apart from wasting foreign exchange, any mistakes in labeling or storing the fertilized could have led to the destruction of legitimate crops.

However neither the fallow rotation nor the shelter belts policy were implemented by the farmers nor enforced by the government (Seif Eldin, 1986).

Due to the high variability in the semi-arid region, and the close link between primary productivity and rainfall, there is a positive correlation between crop yield and rainfall (Simon and Khalifa, 1976). To counteract the effect of the variability of rainfall on yield and their income, the farmers keep their cost at a minimum with no fertilization or intensive weeding (Seif El Din, 1986). Also the farmers become sensitive to the decline in yield due to loss of soil fertility. Simon and Khalifa (1976) reported that there is a decline in crop yield as the period of cultivation increases due to the loss of soil fertility. The yield in the fifth year of cultivation in the mechanized farm is generally half of the yield in the first year of cultivation. They also suggested that with the increase in costs of transports and other inputs farms are abandoned even sooner. Sometimes farms under mechanized agriculture are abandoned as early as 3-4 years after cultivation, and it is expected that between 4 to 5 million hectare recently under mechanized farming will be abandoned (Mustafa 1992). It was hypothesized that due to soil losses and lack of seed availability, natural regeneration is incapable of rehabilitating these areas and it will be decertified.

The regeneration of woody vegetation on abandoned mechanized farms is important for reclaiming the soil for future cultivation and for providing fuel wood and livestock forage. The absence of adequate vegetation cover exposes the soil to wind erosion, soil crusting, soil compression and increased water erosion. These factors lead to permanent loss of soil fertility and desertification (Seif Eldin 1986)

Fuel wood in Sudan is a major source of energy. It provides more than 75% of the total domestic energy consumption and a significant part of industrial timber needs (Mustafa 1992). Mechanized farming was blamed for depleting fuel wood resources to the extent that charcoal is now being transported over 500 kilometer or more to the main towns in northern Sudan, and the problem is getting worse as one of the main charcoal production areas, the eastern region, has been depleted by mechanized farming to the extent that it is no longer capable of producing charcoal for areas outside the region (Vink, 1986).

7.3.3 Irrelevant Foreign Advice

Mechanized farming was blamed for reducing forage availability for 27 millions animal unit in the country and for increasing grazing pressure on the remaining forests (Suliman, 1986). Due to the high variability of rain fall in semiarid region, tree forage production is more reliable than grass production. Also grass production under trees in semiarid region is higher than in the open (Mustafa 1992). Therefore the regeneration of trees on abandoned farms is expected to increase total forage production.

Vink, (1986) and the World Bank, (1986) claim that natural regeneration in the abandoned mechanized farms is in adequate due to the absence of seed source and the loss of soil. As a result all abandoned farms will remain unproductive for future agriculture, fuel wood and forage production, and whole area will be desertified. To solve the problem the World Bank (1986) suggested among other recommendations the reseeding of these areas by fast growing leguminous trees such as Prosopis species and Leucaena.

On one side neither the practical feasibility of implementing this recommendation is known nor have the ecological consequences of introducing these species been studied (Mustafa, 1992). Experience from the south western region of the United States indicates that Prosopis are invasive plant species which reduce forage production lead to the formation of sand dunes and accelerate soil loss (Seif Eldin 1986). Also Prosopis species change plant community composition and its control is costly and difficult (Mustafa 1992).

On the other side the ecology of Acacia Seyal, the dominant tree species in mechanized farms area is unknown, and the basic assumption behind the lack of its regeneration (seed availability and loss of soil) were not tested. Acacia seyal seeds like many other acacias has a hard seed test and is edible, which permit long viability of seeds, and long distance dispersal of seeds by animals. Mustafa (1992) reported that animal dispersal of Acacia albida seeds occurs along aradius of 160 miles from the seed source. Also Simon and Khalifa (1976), findings may suggest that farmers due to several economic reasons abandon their farms before depleting soil nutrients to the level of suppressing tree regeneration. Further the lack of, Acacia seyal regeneration in the early

1980's at the time when Vink (1986) and the World Bank mission made their observations might be due to observed intermittent regeneration of plants, especially in the semiarid region, or to the severe drought conditions in the area at that time.

The evaluation of the foreign technical advice is so crucial. The socio-economic and environmental effects of any technical assistant must be considered first, to avoid any ecological destruction. One could argue that adopting the World Bank recommendation is costly and ecologically risky.

7.4 Cooperatives and Agricultural Development:

Agricultural cooperatives are a widespread phenomenon in both developed and developing countries (Csaki and Kislev, 1993). Cooperatives could play a significant role, in Sudan, as a cultural/economic institution that can allow some farmers to help themselves and thus their communities towards production improvement and income enhancement. By organizing into a cooperative, farmers receive the advantages of group activities. They capture economies of scale in purchasing of marketing products. By forming credit cooperatives, farmers take advantage of joint credit opportunities that would otherwise unavailable to a single farmer. Abdelrahman and Smith,[19] argued that the farmers who were the members of the agricultural cooperative have higher groundnut income tan nonmember. In their study they qualified the effect of cooperatives on farmer's net income due to their membership in established agricultural cooperatives, Specifically, they focused on groundnut production within the Sudan. Their study has shown an encouraging example, which demonstrate that cooperatives can and do function effectively. On the other hand some agricultural cooperatives in the Sudan have not been successful. An example of the failure is the Sahara Agricultural Venture (SAV), established in 1979 by U.S. multinational, Tennaco, to work with local cooperative societies in Northern Sudan (Kontos, 1990). The original objective of Tenneco was develop pilot farms and ultimately to use it for the export of fruit and vegetables to Saudi Arabia. But instead, Tenneco attempted to establish a contract farming venture with

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[19] See . Abdelrahman and Smith (1996) *Cooperatives and agricultural development: A Case Study of Groundnut Farmer in Western Sudan.* Community Development Journal v.31 (1) pp.13-19.

hundreds of local farmers who had organized their own cooperatives. The failure is attributed to a lack of understanding of farmers motivation.[20]

7.5 The Small Country Assumption and the Sudanese Case

As far as the Sudanese case is concerned, the efficiency argument in Bates framework seems to suffer from the incorrect assumption. The argument that by providing agricultural producers the full price of their produce provides an incentive for them to produce more and hence the country could earn more foreign exchange by exporting more is based on two assumptions. The first assumption is that the agricultural production is price sensitive in the internal market. This assumption is reasonable and it could be maintained that people are inclined to produce more if they earn a reasonable rate of return given their other alternatives.

This assumption does not hold true for the case of the Sudan with respect to cotton and gum arabic because Sudan is a major producer of these two products in the international markets and increases of supply are likely to increase reduce the international prices against the Sudan. Theoretically speaking, given the nature of the supply curve, the Sudan should ideally produce the specific amount of cotton supply dedicated by the point unitary elasticity of the supply curve. Ironically even though the IMF staff paper makes this point rather clearly, it proceeds to argue that the implicit tax structure in the exchange rate have as much of a depressing effect on cotton production as it has on other agricultural crops. To emphasize this point, Ali (1985) in a study about the impact of devaluation of the agricultural production concluded that there is no significant correlation between devaluation and agricultural production in the Sudan. Hussain (1985) ran an empirical investigation on the impact of devaluation on the export sector and the balance of payments and concluded stated that "after six years of the IMF devaluation in the Sudan, neither the export sector nor the balance of payments has shown any recovery".

[20] Tenneco insisted to change the farmer distribution ratio from 1:1 to 7:1, that is, rather than half for the farmers, Tenneco would receive seven-eight and the farmers one-eight.

Section Eight

Concluding Remarks

The critique of the IMF/World Bank policy prescriptions in the Sudanese context has centered mainly around the issues of devaluation and liberalization of the foreign exchange regime. The details of the IMF's position and ensuing debate on these issues have been well documented elsewhere (Abdel Gadir Ali 1985). It will be recalled from the earlier discussion on the policy content of the IMF-supported Economic Recovery Program that a real devaluation and unification of the exchange regime were central policy prescriptions. It was the overvalued currency and implicit discriminatory export taxes and import subsidies inherent in the existing regime that, in the view of the IMF and the World Bank, contributed significantly to the bias against the cultivation of Sudan's main export crops, especially cotton, in favor of other import-substitute crops, such as wheat, which where considered less profitable from a national, economic efficiency perspective.

Therefore, the IMF-supported economic recovery program which, together with the World Bank funded the so called Agricultural Rehabilitation Program that brought an end to the attempt to pursue the broader-based economic strategy under the breadbasket diversification drive. The focus of the government economic policy was then, shifted to economic recovery based on the rehabilitation of "traditional" areas of agricultural production and the promotion of export crops, particularly cotton.

The failure of the Sudanese economy to provide either adequate food or income for its growing population has been variously attributed to the uneven development of Sudanese agriculture. The first perspective attributes to the deterioration of the food system to the declining performance of the modernized agricultural sector and disarticulated development of the traditional sector. Declining term of trade for export crop and reliance on international lending agencies created a fiscal crisis in the last two decades that reduced the Sudanese government's ability to sustain investment and growth of productivity of the modern irrigation and mechanized farming sectors. Meanwhile, governmental neglect of peasant production -in the traditional sector- resulted in its increasing marginalization as well as increased peasant reliance on wage labor to survive.

When inflation reduced real-wage income and drought reduced the production of both cash and food crops, the peasantry was not able to satisfy its survival needs. The principal actors in this scenario are the state, the international lending agencies and their misguided policies, and the economic interests of various capitalist class fractions.

While Bates work provides an interesting framework for the analysis of the political dynamics of agricultural producer price determination in Africa as indicated by the application of this framework to the case of the Sudan, the legitimacy of the problem definition in this framework can only be established within certain parameters. This is to say if Bates work is to be viewed as asking the question of whether or not agricultural producer price determination in Africa represents a fair and just public policy, the framework seems a promising tool for that purpose. However to go beyond that and conclude that this framework is a comprehensive account on the basis of which the agricultural crisis could be defined seems excessive reductionism.

It goes without saying that the overall future of the Sudan will continue to depend on the possibility of reaching a peaceful solution to the conflict in the south. In fact most of the physical characteristics of the Sudanese land which ranks Sudan highly in terms of its potential agricultural production are based on the possibility of utilizing the land in the southern regions for agricultural production. However a solution to the conflict in the south is not likely given the current structure of the major Sudanese political parties both in the south and the north. The binding constraints of the political development and the political economy of the Sudan are those factors identified by Mahmoud and summarized in the previous section. Without addressing these fundamental constraints, partial reforms or sectoral policies are of little value. Such issues though vague and fluid are important to be incorporated in any analytical framework if such a framework is to address the real problems.

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Appendix 1

International Monetary Fund

Press Release No. 97/9

February 13, 1997

IMF Executive Board Adopts Decision on Sudan

The Executive Board of the International Monetary Fund (IMF) unanimously adopted the following decision on Sudan:

1. In accordance with Decision No. 11319-(96/75), adopted August 2,1996, the Executive Board has considered further the Managing Director's complaint under Article XXVI, Section 2(c) dated April 8,1994, which was communicated to the authorities of Sudan on May 17, 1994, setting out the facts on the basis of which it appeared to him that Sudan had persisted in its failure to fulfill its obligations under the Articles of Agreement after the expiration of a reasonable period following the decision on the suspension of Sudan's voting rights under Article XXVI, Section 2(b) on August 6, 1993.

2. The Executive Board, unanimously committed to the Third Amendment of the Articles, finds that Sudan has persisted in not fulfilling its obligations under the Articles of Agreement after the expiration of a reasonable period following the decision on suspension of Sudan's voting rights under Article XXVI, Section 2(b), and, therefore, it has been determined that there is a basis to recommend that, pursuant to Article XXVI, Section 2 of the Articles of Agreement, the Board of Governors require Sudan to withdraw from membership.

3. Nevertheless, given the recent payments made by Sudan, and the strong assurances given by the Sudanese authorities at Executive Board Meeting 97/8 on payments to the Fund and policy reinforcement, the Executive Board will not recommend compulsory withdrawal of Sudan if:

(i) Sudan makes all the [scheduled] payments.

(ii) by March 3, 1997, Sudan has agreed on a letter of intent embodying a program of economic and financial adjustment* which the Executive Board decides by March 31, 1997 is of a quality that warrants monthly monitoring by the staff, and

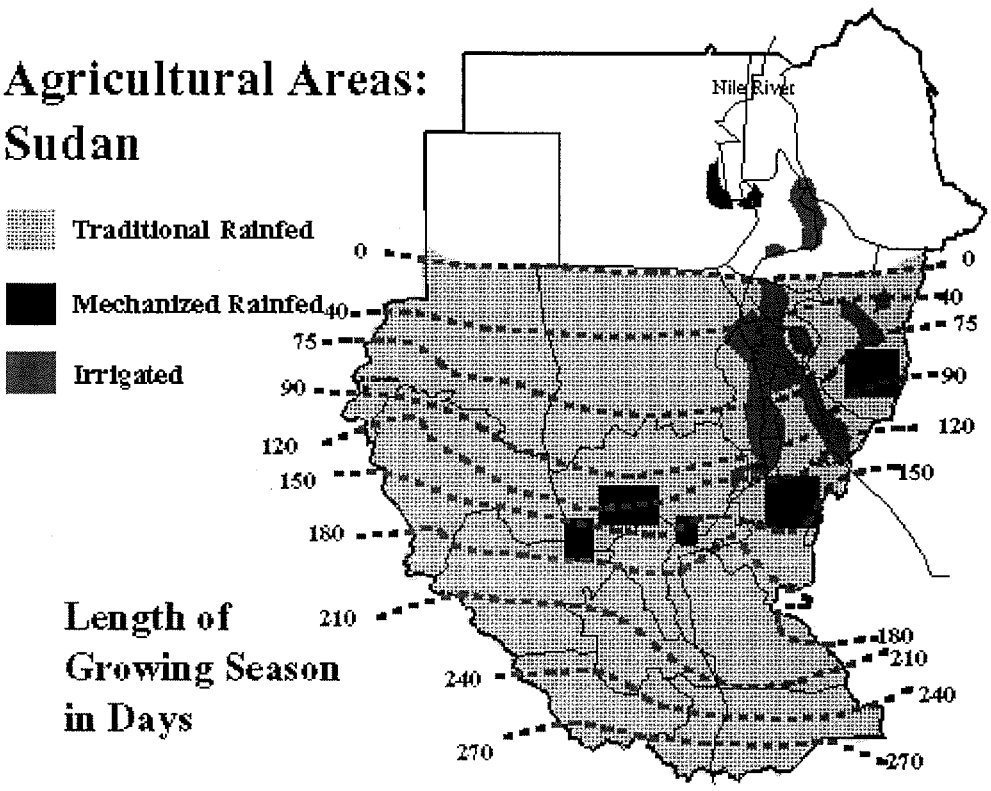
(iii), after adopting a program in accordance with (ii) above, Sudan implements the program satisfactorily in the judgment of the Executive Board.

4. If Sudan fails to meet any of these conditions, the Board will meet promptly, to review the situation and recommend compulsory withdrawal to the Board of Governors.

5. The decision will be reviewed not later than August 31, 1997, it being understood that the Board will review performance by Sudan on a monthly basis."

* The program referred to in this paragraph would be a set of policies negotiated between the Sudanese authorities and the IMF staff. Sudan is ineligible to use IMF financial resources, and the program would not involve any use of those resources.

Agricultural Areas: Sudan



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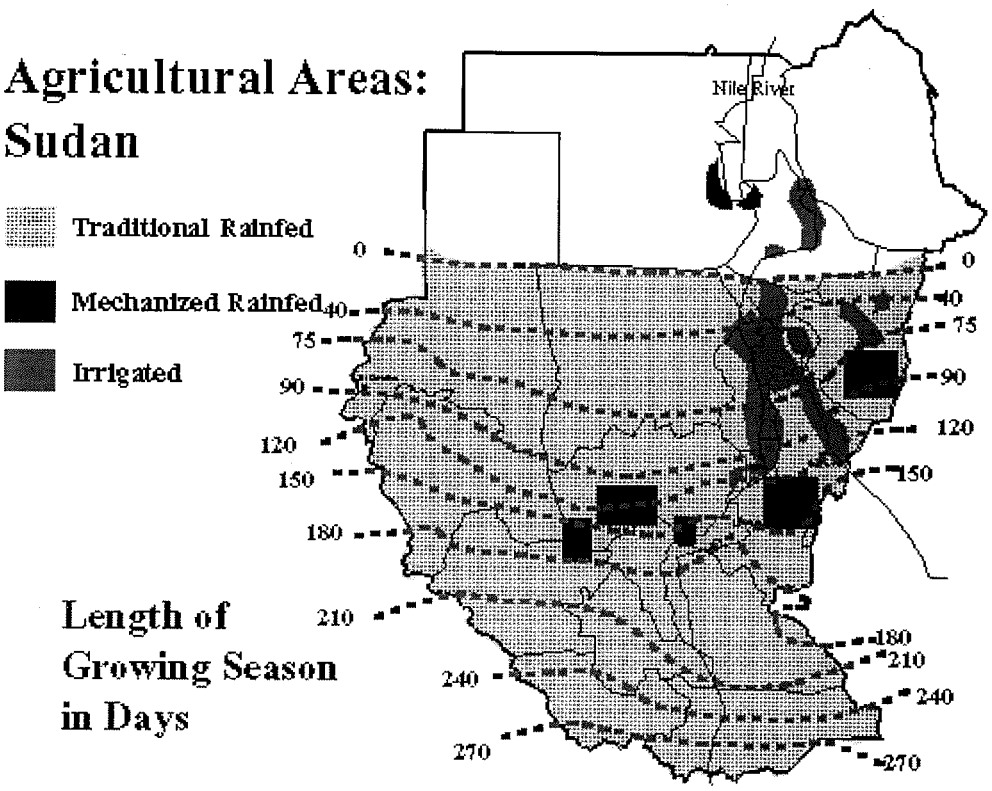

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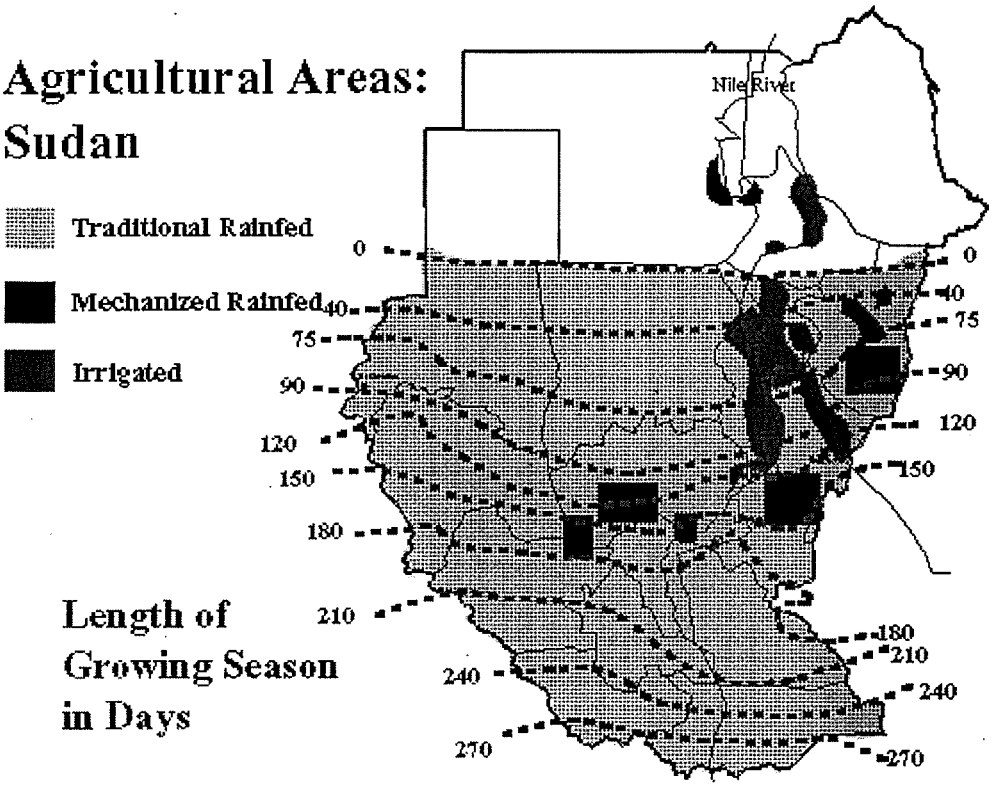

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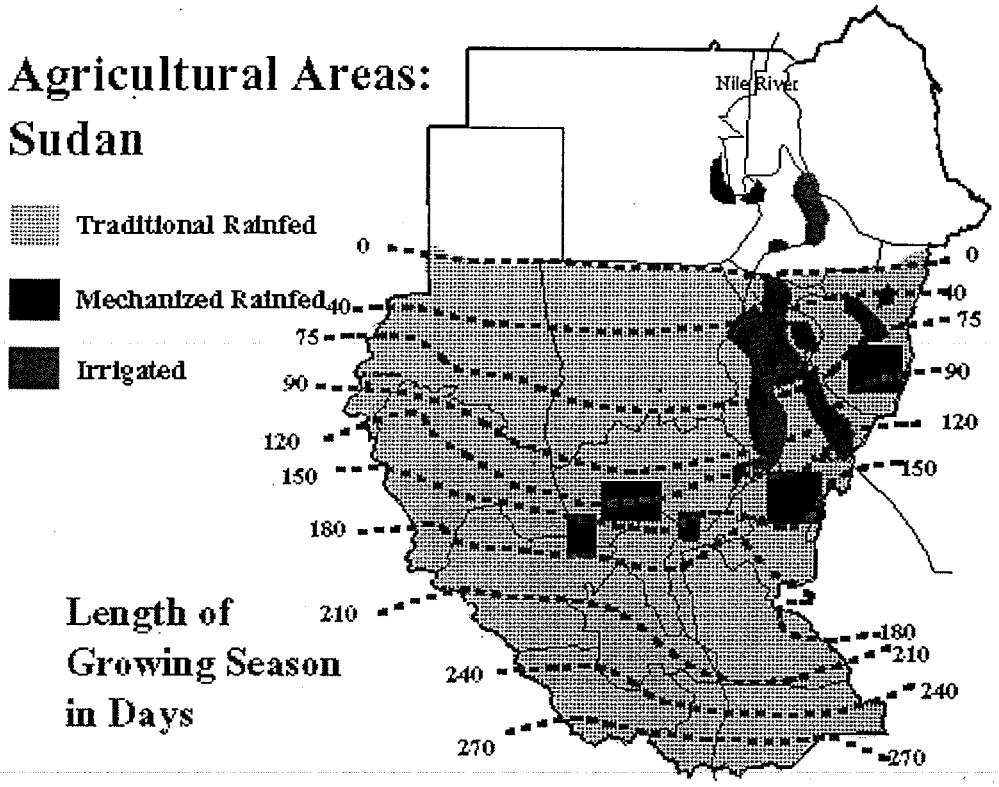

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