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Foreign aid and economic development : A case study of the Sudan's experience of growth and development with foreign aid 1960-1980

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FOREIGN AID AND ECONOMIC DEVELOPMENT -

A CASE STUDY OF THE SUDAN's EXPERIENCE OF GROWTH AND DEVELOPMENT WITH FOREIGN AID 1960-1980

by

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(In the Name of Allah, the Beneficient, the Merciful)

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDIX TABLES

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SUMMARY

The problem addressed in this thesis is the role of external development aid in the growth process with special reference to Sudan's experience of growth and development with foreign aid resources over the past two decades (1960-1980). The study is taken in the light of the basic ideas on which foreign aid theories have been conceived and in view of the critics of aid argument.

Chapter 1 presents the aim of the study, the method of approach and the outline of the study.

In Chapters 2 and 3 we present a review of the basic approaches to the theory of foreign aid in economic growth, and examine the criticisms regarding the validity of their assumptions and operational usefulness as well as the modifications introduced to them.

In Chapters 4 and 5 we highlight the salient features of the structure of the Sudanese economy and analyze the development performance and constraints over the past two decades in the light of the growth constraints identified by aid growth models.

Chapter 6 consists of an account of the general characteristics of the flow of external development aid received by the Sudan during the period of study.

Chapters 7 and 8 deal explicitly with the impact of foreign resources on domestic savings, investment and growth with reference to Sudan's experience over the past two decades.

Chapter 9 considers the problems that hindered the effective use of foreign aid resources in the Sudan during the period of study and highlights the main areas in which reform measures are needed.

In Chapter 10 an estimate of the savings gap and the foreign exchange gap for the Sudan for the forthcoming Six Year Plan 1983/84-1988/89 is provided on the basis of the two gap approach.

CHAPTER 1

INTRODUCTION

1.1 AIM OF THE STUDY

The general problem addressed in this thesis is the role of external development aid in the growth process. The analytical and philosophical basis for foreign aid flows to the Less Developed Countries (LDCs) asserts that economic development in such countries is frequently constrained by lack of finance; foreign aid resources enables this constraint to be overcome thereby allowing them to 'take-off' into self sustained economic growth. The logic is simple; developing countries require a certain amount of investment in order to achieve a target rate of economic growth. If domestic saving is insufficient to finance the required investment, then the target rate of growth will not be achieved unless domestic saving is raised (which is unlikely to be possible) or alternatively by using an inflow of foreign finance. However, even in cases where a country is able to generate sufficient domestic saving, it may still be unable to reach its growth target because of the inability to earn enough foreign exchange to buy the imported goods that are needed for development. Hence in addition to the domestic savings deficiency, there may also be a foreign exchange constraint. Foreign aid resources may therefore be seen as playing a dual role in the development process as both a supplement to domestic saving and as a source of foreign exchange.

The forgoing logic would lead one to expect positive growth effects from foreign aid resources to developing countries.

However, the relevance of foreign aid resources to the growth process in LDCs has been questioned. It is argued that foreign aid inflows increase the capital output ratio (that is, reduce the productivity of capital) and discourage domestic saving; in addition a large part of it is consumed rather than invested. The net result may therefore, be no extra growth at all or that the growth rate is even retarded or reduced.

In order to clarify the debate over the effectiveness of foreign aid resources in the growth process of LDCs, it is essential to examine and analyse the experience of development with foreign aid for individual countries. Over the past two decades 1960-1980 the Sudan has been relying on foreign resources as a strategic factor for accelerating economic development. This study is an attempt to examine explicitly whether foreign aid resources have promoted or retarded growth and development over the past two decades. The analysis is taken in the light of the basic ideas on which foreign aid theories have been conceived and in view of the critics of aid argument.

1.2 METHOD OF APPROACH AND DATA PROBLEMS

At the outset of this study it is important to note that the studies investigating the impact of foreign aid resources on growth and development in LDCs are usually beset by several methodological, conceptual, definitional and data problems.

As the economic growth of a country is an aspect of numerous factors (economic, political, social and global) some of them do

not readily lend themselves to economic analysis, an isolated comparison of foreign aid resources and economic development is problematic. To establish a causal relationship among specified variables - such as foreign aid resources and economic growth - in a situation which is affected simultaneously by such numerous factors operating at various time lags, will make the analysis a partial one. Even for the quantifiable variables consistent series of reliable data is always a problem in LDCs. Hence, in analysing the impact of foreign aid resources on Sudan's growth and development, a qualitative approach and a rough quantitative analysis, using few variables, is used.

There are many forms of foreign resources inflows such as long term concessional loans and grants, medium and short term loans and private foreign capital which are not likely to have the same impact on domestic saving, consumption, investment and growth. The problem that arises for most of the studies on the impact of foreign aid resources on such variables is that whereas the focus of the analysis is on the impact of foreign aid resources, what is being analysed is all forms of foreign capital inflow. In order to study the effect of foreign aid resources on growth one needs to examine it separately. Again this exercise will be limited by the availability of data series on each type of flow. However, in this thesis, while we used net foreign capital inflow represented by the current account deficit in the published data on National Income Accounts, a separate series on external development loans and grants received by the public sector is also considered. This series, which is more likely to represent foreign aid flows than all other types of flows, includes published as well as unpublished data collected from the Foreign Aid and Technical

Assistance section in the Ministry of Finance and Economic Planning, Bank of Sudan and the Ministry of Industry on all public and publicly guaranteed long and medium term external development loans and grants received during the period of study.

The state of statistics in the Sudan - like many other LDCs - is poor. The National Income Accounts in the Sudan have been subjected to many alterations in methodologies and changes in the accounting year (fiscal and calendar year). Continuous series of production and income exist only for few economic activities and the gaps have to be filled by surveys which suffer from considerable margins of error. Needless to say, the national accounts aggregates in LDCs are weak due to the predominant importance of the traditional (subsistence) sector which is difficult to quantify. The other major drawback in Sudan's National Accounts is that, because there is no official GDP deflator and the GDP data are presented on current prices, there is no acceptably reliable national accounts for the growth of real output. However this has not prevented us from using - for the purposes of our study - the available price data to estimate real GDP growth rate.

Data series on actual withdrawals from public and publicly guaranteed medium and long term development loans also suffer from apparent shortcomings. The figures published by the Bank of Sudan for this series are known to be incomplete because the Bank of Sudan keeps records only for drawings made through letters of credit opened by it and also in the case of reimbursement (where the government pays to the supplier first in foreign currency and gives documents to the donor for reimbursement in the Bank of Sudan's account) which was not in much use as Sudan did not have enough foreign exchange to make initial payments out of its own funds. But, for the direct payment procedure - which is followed

in many cases (where the executing agency or the Foreign Aid Section in the Ministry of Finance and Economic Planning (Planning) issues direct orders to the donor to pay for the supplier), the Bank of Sudan is not involved. Most of the drawings under this procedure are not recorded by the Central Bank because of the lack of this information as the executing agencies or the Foreign Aid Section do not regularly provide the Central Bank with such information. Hence, for the purpose of our study, data regarding actual drawings from foreign development loans are collected from the records of the Foreign Loans and Technical Assistance Section in the Planning Ministry which also suffers from some problems such as the difficulty in obtaining information on a regular basis from the Bank of Sudan on loans received from some Socialist countries as the payment arrangements are undertaken by the Central Bank. The executing units also do not keep accounts of the external loans utilized and do not provide the Foreign Loans and Technical Assistance Section with regular loan accounts.

With the above brief account of problems and limitations we set out to outline the contents of the study.

1.3 OUTLINE OF STUDY

In Chapters 2 and 3 we present a review of the basic approaches to the theory of foreign aid in economic growth and examine the criticisms regarding the validity of their assumptions and operational usefulness, as well as the modifications introduced to them. Particular emphasis is given to the two gap approach to foreign aid theory, pioneered by Chenery and Bruno (1962), which is widely used in explaining the role of foreign aid resources in promoting growth and development in LDCs, and in forcasting future aid requirements.

In Chapters 4 and 5 we highlight the salient features of the structure of the Sudanese economy, and analyse the development, performance and constraints - over the past two decades - in the light of the growth constraints identified by the aid growth models, namely the saving constraint, the foreign exchange constraint, and the absorptive capacity constraint. The study of the external and internal structures and the development problems identified would also enable us to examine in subsequent chapters the impact of foreign aid in the growth and development of the country during the past two decades.

Chapter 6 consists of an account of the general characteristics of the flow of external development aid received by the Sudan during the period 1960-1980. It includes the magnitudes, sources, conditions, forms and areas of utilization. An estimate for the grant element in such flows is also provided. This chapter is an important prelude to the study of the effects of foreign aid in the growth process, as the expected growth effects of foreign aid flows are largely influenced by such characteristics.

Chapters 7 and 8 deal explicitly with the impact of foreign resources on domestic savings, investment and growth. The theoretical case and the empirical findings supporting the views that foreign aid discourages domestic savings and retards growth are critically analysed in view of Sudan's experience of growth with foreign aid during the past two decades. The favourable effects of foreign aid resources in raising public investment levels, contributing to the growth performance of the major sectors of the economy, and enhancing overall output growth in the Sudan are emphasized.

Most of the objections of the critics of foreign aid deal with the policies of aid programmes, such as the forms of aid,

repayment terms and aid allocation policies. However, such objections should not suggest that we bring it to a halt but rather indicate the need for reforming aid policies and programmes as well as aid machinery in both the donor and recipient countries so as to maximize the efficiency with which foreign aid resources are translated into income and growth. Chapter 9 considers these issues by examining the specific problems that hindered the effective use of foreign aid resources in the Sudan during the period of study and highlighting the main areas in which reform measures are needed.

In Chapter 10 an estimate of the savings gap and the foreign exchange gap for the Sudan for the forthcoming second Six Year Plan 1983/84-1988/89 is provided on the basis of the two-gap framework examined in previous chapters. Given the structure of Sudan's economy - the external sector's structure in particular - analysed in Chapters 4 and 5, it seems that the country will continue to depend on foreign aid resources if the past real output growth rate or the planned growth rates are to be maintained during the rest of the 1980s.

Finally, a summary of conclusions is provided.

CHAPTER 2

ROLE OF FOREIGN AID IN ECONOMIC DEVELOPMENT: THEORIES AND THEIR APPLICATION

2.1 INTRODUCTION

In general, foreign aid theories deal primarily with the question of how foreign capital inflows alter the aggregate performance of the economy in LDCs. Many models have been constructed to analyse in quantitative terms the process of development with external capital, and to determine the foreign aid requirements for either the LDCs as a group or for individual countries. In this chapter we shall briefly review these theories and examine the validity of their basic assumptions.

Most of the aid growth models are Keynesian in spirit and are broadly based on the following assumptions:-

1. The acceptance of a critical role for capital in the growth process, that is, increased income depends primarily upon the application of more capital either directly by increasing output when used in combination with local resources, or indirectly when the use of such capital will lead to more effective use of other resources.

2. The rate of development will increase if the ratio of investment to national income rises and the investment ratio will rise if capital imports increase.

3. The assumption of fixed or stable 'technical' relationships, such as fixed incremental capital output ratio (ICOR) and stable savings and import propensities.

4. The ultimate objective of the recipient country is to achieve self sustaining growth at some target rate of growth of income.

Self sustaining growth is defined as a stage where aid is not required any more while normal capital imports such as private foreign investment may continue (Rosenstein-Rodan, 1961, p. 115). This assumption, however, implies that such foreign capital inflow should be linked with development policies leading to structural changes in the economy, such as increased savings, import substitution and increased exports.

However these assumptions are not unanimously accepted, and many economists have questioned their validity. The assumption of a predominal role of capital in the growth process has been denied by some economists[1]. Increased investment as some economists maintained is neither necessary nor sufficient to achieve a high rate of growth in LDCs[2]. The assumption of constant coefficients such as the incremental capital output ratio and the marginal savings rate have also been criticized[3].

Following the theme of this chapter we shall review the basic approaches to the theories of foreign aid to developing countries, and examine the validity of their assumptions. In the next chapter we shall examine some further criticisms and modifications to the analytical framework of these theories.

2.2 BASIC APPROACHES TO THE THEORIES OF FOREIGN AID IN LDCs

2.2.1 Saving-Investment Gap Approach

According to the saving-investment gap approach, the growth of the economy of a developing country is limited by the

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[1] See Kindleberger, C.P., Economic Development, 2nd ed. McGraw Hill Book Co., 1965, Chapter 5; Meier, G. Leading Issues in Economic Development, Oxford University Press 1976., Chapter 3; and Cairncross, A.K. 'Factors in Economic Development' George Allen & Unwin 1962, pp. 111-114.

[2] See Griffen, K. Foreign Capital, Domestic Savings & Economic Development. Bulletin of the Oxford University Institute of Economics & Statistics, May 1970, p.100.

[3] See Durr, E. 'Problems of Method and of Policy in Calculating Development Assistance Requirements. German Economic Review, Vol. 6 1968, p.16.

availability of domestic savings for investment. The need for external capital is therefore derived from the difference between the investment requirements to sustain the target rate of growth and domestic savings. The role of foreign aid in the growth process according to this approach can be explained by using the Harrod growth equation:

$$r = {}^{s}/_{k}$$

where r is the rate of growth of national income, s is the ratio of income saved and invested, and k is the (ICOR).

If a developing country receives an amount of aid (f) expressed as a fraction of national income, then the growth rate rises to $r_1 = {}^{(s + f)}/_{k}$.

If $\bar{r}$ is the target rate of growth and if the ICOR (k) is assumed to be constant, then the rate of capital accumulation (I) necessary to achieve the target: $\bar{r}k = I$. The difference between I and s indicates the saving-investment gap or the amount of aid necessary to achieve the target rate of growth, $f = I - s$.

It is assumed that the marginal savings ratio is significantly above the average savings ratio. A given amount of foreign aid supplements domestic savings leading to a higher rate of capital accumulation and raises income per capita leading to an increase in the proportion of income saved, as a result of these effects foreign aid increases the recipients' capacity for growth leading eventually to a self-sustaining target rate of growth.

The early aid-growth models developed by Rosenstein-Rodan (1961) and Fei and Paauw (1965) have focussed on the saving limitation to the achievement of a reasonable rate of self-sustaining growth in LDCs. Rosenstein-Rodan developed a method for projecting foreign assistance requirements for 83 LDCs in which

domestic savings constituted the effective growth limit. The following equation was used for determining aid requirements for a 5-year period:

$$F = (Kr - b) \sum Y + 5Yo \left(b - \frac{So}{Yo}\right)$$

where K = COR, r = rate of growth of GNP assumed according to the absorptive capacity, Yo = GNP in the initial year, b = marginal saving rate, $\frac{So}{Yo}$ = average saving rate in the initial year, and F = foreign capital inflow.

The main objective of foreign aid in LDCs according to Rosenstein-Rodan is the achievement of a satisfactory rate of growth on a self-sustaining basis. The transformation of the country to self-sustaining growth occurs because additional resources and know-how provided by foreign aid produces an additional product; the proportion of this additional product that can be saved may be higher than the average savings at the pre-existing income level, or as he puts it "...a marginal rate which is higher than the average rate of saving is the main lever of a development programme and should be the principal condition of aid to underdeveloped countries" (1961, p. 108). Hence, he emphasized that foreign aid should be used in those fields where it will have the maximum catalytic effect of mobilizing additional effort.

Another key notion in Rosenstein-Rodan's model is that the capacity to absorb capital is considered as a limiting factor in the growth process of the LDCs[1]. It is determined according to him on the basis of the past investment record (5 years or more) the marginal savings record in the recent past, and a judgement

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[1] The capacity to absorb capital has been employed as a constraint for development in aid-growth models in combination with saving-investment gap approach (as in Rosenstein-Rodan's model) or with both the saving-investment and the foreign exchange gap approaches (see Chenery, H.B. and Strout, A. 'Foreign Assistance and Economic Development', The American Economic Review, September 1966, p. 686).

on the efficiency of the country's overall administrative and development organization[1] (p. 108).

Moreover, the work of Rosenstein-Rodan has raised some of the important analytical questions associated with the 'self help' notion. "The general aim of aid .... is to provide in each underdeveloped country a positive incentive for maximum national effort to increase its rate of growth" (p. 107). The notion of 'self help' eventually became a condition for the United States foreign aid.

Fei and Paauw (1965) have further analysed and developed the issues raised by Rosenstein-Rodan particularly the relationship between external assistance and the mobilization of domestic savings, which they considered to be the essence of self help problems. They argued that the appropriate recipient for economic aid is the country which is increasing its domestic savings rate fast enough over time to eventually sustain its target rate of growth without further need for foreign aid. Such a country - if given aid - would meet the criteria of showing self help by raising its domestic saving rate, assuring the donor that the need is only temporary and assuring that the target rate will in fact be achieved (p. 251).

The reliability of the Rosenstein-Rodan model has been questioned by Balassa (1964). He compared the calculations made by Rosenstein-Rodan with an attempt made by GATT in 1962 on the basis of the trade gap, and found that the trade gap estimated by GATT of LDCs for the year 1975 exceeded the estimates made by

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1 Rosenstein-Rodan admitted that the third index (i.e. administrative efficiency and development organization) cannot be objectively measured. See also Ranis, G., 'International Aid for Underdeveloped Countries: A Comment', The Review of Economics and Statistics, November 1962, p. 203, who criticized the use of the three indices in determining absorptive capacity.

Rosenstein-Rodan by about four times. This wide discrepancy led him to question the reliability of both models because under proper definitions of the equilibrium conditions of income determination in an open economy the two gaps should be identical[1].

$$M-X = E-Y = I-S = F$$

where:

M = imports, X = exports, E = aggregate expenditure, Y = income, I = investment, S = savings, and F = net capital inflow.

Balassa had also pointed out an important drawback on the method used by Rosenstein-Rodan concerning the error possibility of the model. Estimated capital requirements, according to him, are very sensitive to the changes in the values of parameters. To prove this sensitivity, he cited as an example an increase in ICOR from 3 to 3.15 which would raise the annual external capital requirement for the period 1961-1966 from $5.7 billion to $7.3 billion[2]. As a matter of fact Rosenstein-Rodan himself admitted an error possibility of 25%.

It is interesting to look, in retrospect, at some results and conclusions arrived at by Rosenstein-Rodan with regard to the dates for aid termination. According to the results, Colombia will reach the stage of self-sustained growth in 1965, Argentina and Mexico will approach it gradually in the decade 1965-1975, India will reach it at most in 1976, Pakistan may reach it three or five years later, that is in 1981. But a

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[1] Balassa, B. 'The Capital Needs of the Developing Countries' Kyklos Vol. xvii, 1964, p. 197.

[2] See also Durr, E. 1968, p. 17.

glance at the World Bank Annual Reports for the last three years including the 1981 Annual Report, would suggest that the countries mentioned above are still major recipients of foreign aid from the World Bank, indicating that they have not yet reached the stage of self-sustaining growth claimed by Rosenstein-Rodan.

However, the major criticism to the saving gap models advanced by Rosenstein-Rodan (1961) and Fei and Paauw (1965) is that they have focussed only on the savings limitation to achieve a reasonable rate of self sustaining growth in LDCs. The requirements for foreign capital to achieve a certain target rate of growth in LDCs - as many economists have argued - cannot be determined by domestic savings efforts alone. As many goods which are necessary for growth cannot be produced domestically and must therefore be imported, the availability of foreign exchange could be the dominant constraint to growth in LDCs[1]. Foreign aid in such a situation can be used to supplement foreign exchange earnings, and to act as leverage to underutilized domestic savings because the growth process would be constrained by the inability to import necessary imports.

2.2.2 Two Gap Approach

The recognition that foreign aid can be used to support either a domestic saving gap or a foreign exchange gap was first developed by Chenery and Bruno (1962) in examining development

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[1] See Chenery, H.B. and Bruno, M. 'Development Alternatives in an Open Economy: The Case of Israel'. The Economic Journal 1962. McKinnon, R.I. 'Foreign Exchange Constraints in Economic Development and Efficient Aid Allocation'. The Economic Journal, June 1964; and Chenery, H.B. and Strout, A. (1966). In Chapters 4 and 5 we explain how the foreign exchange constraint has developed in the Sudan - during the 1970s in particular - and represented the dominant constraint to the growth process of the country.

alternatives for Israel's economy. Their analysis focussed on the probable limits to accelerated growth and the extent to which they can be overcome through the use of external finance. A balance of payments limitation has been introduced for the first time to the analysis of the traditional limits to growth such as capital and labour. The authors believe that the growth of income often requires a change in the structure of income use so that the proportion going to consumption is reduced and hence savings increase, but the growth of income may also require a change in the structure of production in order to reduce the ratio of imports to total output. Which of these structural relations is more likely to limit growth cannot be determined precisely but "the parallelism between the two is completed by the fact that a foreign capital inflow plays a dual role in adding to both investment and foreign exchange resources" (p. 117).

Two aspects of Chenery and Bruno's views expressed in their model warrant emphasis. First, although foreign capital is assigned the task of easing either the foreign exchange constraint or the domestic saving constraint, Chenery and Bruno allow for the possibility that it goes for consumption. Foreign capital goes entirely for investment until the economy reaches full employment, because unemployed labour is absorbed through rising investment. But after full employment the increase in foreign capital goes only to increase consumption.

Secondly, Chenery and Bruno have provided in their study a measurement for the productivity of foreign assistance. According to them the marginal productivity of aid is the increase in GNP that is achievable from a unit increase in foreign aid. This measure follows from the basic assumptions of the two gap theory, that is, since foreign aid is expected to add both to domestic

savings and foreign exchange availabilities, and since in a two-gap disequilibrium situation only one of the two constraints is likely to be binding at any point in time, the productivity of foreign assistance depends basically on which constraint is in fact binding. For the Israeli economy, however, the authors found that the productivity of foreign aid is higher when foreign exchange is more of a binding constraint than the saving constraint.

McKinnon (1964) in a model similar to that of Chenery and Bruno illustrates the idea of separate saving and foreign exchange constraints and emphasizes the implications of both for the efficiency of foreign aid. He assumes that savings out of domestic output (S), exports (E) and 'maintenance' imports (M) all depend on the level of current net domestic output (P). Requirements of imported capital (I_f) and domestically produced capital goods (I_d) depend on the change in net domestic output ($P_t - P_o$). Starting from the initial level of net domestic output (P_o), the target level of net domestic output (P_t) determines the levels of savings, total investment ($I_f + I_d$) exports, and total imports ($I_f + M$). The required foreign aid (F) is then determined by the larger of (a) the difference between the total investment and savings (gap I) and (b) the difference between total imports and exports (gap II). Whereas McKinnon's model basically illustrates the dual role of foreign aid in promoting growth, primary emphasis is given to the trade limitation (gap II). He asserts that foreign aid can have a large favourable impact on the growth rate even where the absolute amount of aid is small. This occurs when foreign aid is used to remove bottlenecks by providing strategic goods and services not produced in the developing economy. He shared with Chenery and Bruno the view that foreign aid will have proportionately greater effect upon the growth rate when the foreign exchange

constraint is dominant than if the saving constraint holds.

McKinnon also discussed the time path of foreign aid transfers and the possibility for achieving self sustaining growth when savings is the only constraint to growth. In this respect he expressed views similar to those of his predecessors, Rosenstein-Rodan, Fei and Paauw, and Chenery and Bruno, namely, that a marginal saving rate which is higher than an average saving rate is a necessary condition for the eventual achievement of self sustaining growth. In the case of foreign exchange constraint, the possibility of self sustaining growth depends upon the existence of a net marginal propensity to export e' higher than the average propensity to export by a critical amount. The higher the amount that e' exceeds this critical ratio, the smaller the total amount of aid and the shorter the time required for achieving self sustaining growth. The policy implication for this view is that a developing country must take the necessary policies to increase exports beyond the critical rate; otherwise, the foreign aid requirement for eliminating the foreign exchange constraint cannot be terminated without a reduction in the growth rate below the target level, a situation which is not desirable in LDCs politically and economically.

The economic relevance of McKinnon's model has been questioned by Cohen (1966) who argued that for any target rate of growth the difference between the excess of ex ante investment over saving and the excess of total ex ante imports over exports is per se evidence of the misallocation of domestic resources. Foreign aid donors "rather than offering aid at the level indicated by the larger of the two projected gaps, might use the availability of aid to influence which policies the recipient

government selects to bring about the necessary equality of the two gaps"[1]. Cohen's suggestion is based on the fact that the actual difference between total investment and saving must equal the actual difference between total imports and exports - this is given by the usual national income identity. McKinnon brings out this equality by assuming that exports will be less than originally projected in the case of a saving gap originally exceeding the foreign exchange gap. If on the other hand the foreign exchange gap originally exceeds the saving gap then it is assumed that savings will be less than originally projected. These assumptions imply that governments in developing countries will adopt policies which will reduce either exports or savings below their maximum potential level.

In reply to Cohen's comment McKinnon (1966)[2] acknowledged that his analysis, which is basically dual-gap analysis, does imply significant rigidities and lack of substitution possibilities between the production for exports (or import substitution) and the production of goods that do not enter foreign trade, and between the complementary use of domestically produced capital goods and imported capital goods as well as other imported intermediate inputs in the aggregate production function. In developing countries this degree of rigidity seems to be relevant due to the fact that the economic policies of LDCs are non-optimal and because of the trade practices of the industrial developed countries. Although the developed countries have liberalized trade among themselves, quotas as well as inelastic foreign demand

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1 Cohen, B.I. 'Foreign Exchange Constraints in Economic Development and Efficient Aid Allocation: Comment'. The Economic Journal, March 1966 (p.169).

2 McKinnon, R.I. 'Foreign Exchange Constraints in Economic Development and Efficient Aid Allocation: Rejoinder'. The Economic Journal, March 1966 (pp. 170-171).

have prevented an expansion of exports of many primary producing developing countries. McKinnon also blamed the policies of the LDCs themselves for causing the foreign exchange gap to exceed the savings gap; these are, the maintaining of an overvalued currency coupled with severe import restrictions. This policy restricts new exports and forces import substitution as a means for foreign exchange. This explanation clearly suggests that McKinnon believed that export expansion was a preferable way through which the two gaps could be equated. He emphasized - as Cohen did - that aid donors should put great pressure on recipients to rationalize their price structure and exchange rates which are inhibiting the immediate development of manufactured exports. However, the success of exchange rate policies in promoting exports is debatable, because in many primary producing developing countries the supply of exportables is most likely to be rigid[1].

The question of whether the distinction between the two gaps is due to particular policies or due to some inherent characteristics of the development process gave rise to much of the controversy on the two-gap approach to aid and development. Chenery and Strout's (1966) paper which is perhaps the most popular work in the literature of the two-gap analysis, stressed the inherent inflexibilities in the LDCs in explaining the working of the two-gap model. Their major argument is based on what they call "a hypothesis of limited structural flexibility" (p.682); that is, an LDC can neither increase its exports nor

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[1] See Nashashibi, K. 'A Supply Framework for Exchange Reform in Developing Countries: The Experience of Sudan'. IMF Staff Papers, March 1980; also in Chapter 5 (section 5.3.4) we explain how in the Sudan the 1972 devaluation has been undermined by supply rigidities in the export sector.

reduce imports without causing underutilization in the economy. Export earnings are largely determined by foreign demand conditions and a "rapid increase in exports typically requires the development of new export products which is limited by productive capacity and institutional factors"(pp.689-90). Imports, on the other hand, are required by the nature and limited flexibility of the productive system and of the composition of consumers' demands.

A typical LDC according to Chenery and Strout often starts in a skill limited phase (phase 1) with apparent lack of skills required to undertake investment programmes. Deficiency in skills represents the development bottleneck in this initial phase, a situation which corresponds to the concept of absorptive capacity constraint found in the work of Rosenstein-Rodan (1961) and Fei and Paauw (1965). As time passes, growing skill levels lead to a continuous expansion of the rate of growth of GNP. A target rate of growth will be adopted by the government to curb the rate of expansion of the demand for foreign aid resulting from the continuous increase in the rate of growth. Simultaneously, domestic austerity measures are also adopted to ensure that the demand for foreign aid satisfies the criterion of self-help, which implies a decreasing reliance on foreign aid requirements leading to its termination (phase 2). But, despite the austerity measures the country is faced again with a pressing need for foreign aid arising from the inflexibility in the productive structure, that is, the inability to reduce imports through import substitution and/or to expand exports through export promotion. These rigidities become the effective limiting factor determining the requirements for foreign aid (phase 3). The trade gap resulting from this limited structural flexibility can only be

closed in the long run when export expansion and import substitution potentiality are larger than the growth rate. Ultimate aid termination date will then be achievable.

In analysing the specific time sequence of the three limits mentioned above - that is, the skill limit, the savings limit and the foreign exchange limit - Chenery and Strout designed a basic model to explain the function of aid and to evaluate the performance of LDCs. Using data for 50 developing countries, the basic model is employed to construct three distinct models which are viewed as three growth regimes (three phases) appearing in a specific sequential order. Their model is based on an aggregate national income accounting system formed from the eight planning variables - GNP (Y), investment (I), consumption (C), saving (S), capital stock (K), imports (M), exports (E) and foreign aid (F) bounded by the following equations:-

$Y + M = I + E + C$ (equality of the supply & demand for total resources...(1)

$Y = C + S$ (disposition of income between consumption & saving) ....(2)

$M = E + F$ (source of import financing) ....(3)

$I = S + F$ (source of investment financing) ....(4)

$I = \frac{\Delta K}{\Delta t}$ (investment as the increment of the capital stock) ....(5)

and the following parameters:

$\bar{r}$ target rate of growth of GNP (exogenously determined)

r_t rate of growth of GNP in year t

α' marginal saving rate $\alpha' = \frac{\Delta S}{\Delta Y}$

α average saving rate in year t $\alpha = \frac{S_t}{Y_t}$

B exogenously determined maximum constant rate of growth of investment (absorptive capacity)[1]

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[1] In the previous models (Rosenstein-Rodan 1961, Fei and Paauw 1964) absorptive capacity is reflected in the rate of growth rather than in investment.

K incremental gross capital output ratio $K = I/\Delta Y$

u' marginal import rate $u = \Delta M/\Delta Y$

u average import rate in year t $u = M_t/Y_t$

f rate of foreign capital inflow to GNP in year t, $f = \frac{F_t}{Y_t}$

e exogenously determined constant export growth rate

In phase (1) foreign aid fills the gap between investment and savings until the rate of investment is high enough to sustain the target rate of growth ($\bar{r}$). The required amount of aid in year t will be:

$$F_t = I_t - S_t + F_o + (BK - \alpha')(Y_t - Y_o) \qquad ....(6)$$

where $F_o = I_o - S_o$ in the initial year. Phase (1) ends in year n when investment reaches a level adequate to sustain the target rate of growth; that is

$$I = K\bar{r}\ Y_n \qquad ....(7)$$

Phase 2 normally begins at the end of phase 1, when investment reaches the level required to sustain the target rate of growth. The economy is characterized by a savings limitation. Here, foreign aid requirement is determined by the saving-limited growth model, which corresponds to Rosenstein-Rodan's model mentioned earlier - namely by the difference between $K\bar{r}$ and α'. The marginal savings rate α' must exceed the investment rate $K\bar{r}$ required by the growth target so that aid termination date will be achieved eventually. It is worth noting here that the role of foreign aid in both phase 1 and 2 is to fill the gap between investment and savings. As far as the adjustment process in imports and exports that makes the trade gap equal to the desired

gap between investment and saving is concerned, the authors assumed that this adjustment process whether achieved through market mechanism or through government controls does not affect the growth path or the aid requirements. But they maintained that in many countries in phase 2 this assumption may not hold as their empirical findings suggested that "many countries have been unable to bring about this required adjustment in their productive structure ... the resulting trade gap is often 'structural' in the sense that it can only be reduced over time without reducing the rate of growth by a redirection of investment and other resources" (p. 689). Hence it is clear that according to Chenery and Strout the trade limit is caused by the limited flexibility of the productive structure rather than by maintaining an over-valued exchange rate or other inefficient policies.

In phase 3 the balance of payments limit will be effective. The model for the determination of foreign aid requirements to fill the trade gap employs the marginal import ratio u', and the rate of growth of exports e. A minimum import requirement is assumed to sustain a given level of GNP. This minimum import requirement is due to the relatively inelastic demand for imported capital goods and intermediate goods which are not produced domestically and essential for production.

The required inflow of foreign aid must be at least large enough to cover the minimum gap F^m between import requirements and export earnings:

$$F \geqslant F_t^m = \bar{M}_t - E_t \qquad \ldots.(8)$$

For the elimination of the trade gap and progress towards a given rate of self sustained growth, either export growth rate e must exceed the target growth rate $\bar{r}$, or the marginal import

ratio u´must be substantially below the initial average import ratio u. Both u´ and e are regarded as policy variables affecting import substitution and export expansion respectively.

The total requirements for external capital to complete the transition to self sustained growth can be determined as the sum of the capital requirements for each phase that the economy goes through.

Chenery and Strout designed a second version of their basic model, in which coordinated development policies and a planned adjustment of the two gaps is introduced. An import substitution activity is assumed in order to relax the rigidities assumed in the basic model.

Under the assumptions of the basic model, foreign aid required to fill the larger gap in a given year more than fills the smaller one. Hence there will be a surplus of imports $(M > \bar{M})$ in phase 2, or a loss of potential savings $(S < \bar{S})$ in phase 3. In the second model it is assumed that a better coordinated development policy would reduce the capital inflow by substituting investment for imports - or vice versa - in order to equate the two gaps ex-anti over the long run.

The operation of the basic model is applied to Pakistan, which, as the authors believe, started from a low level of income and accelerated its rate of growth through the use of external assistance. In estimating the foreign aid requirements, the values for the parameters of the model, that is, absorptive capacity, capital output ratio, marginal saving rate and export growth, are determined from historical performance. Other optimistic parameter values are derived from the Pakistan per-spective plan. The results for the two sets of projections of the model for the years 1962-75 are then presented. The second model

is also used to estimate the minimum capital inflow needed at various rates of growth of GNP for Pakistan and then extended to the other 50 developing countries.

Notable among their projection results is the fact that the productivity of foreign aid in the case of Pakistan is much higher in phase 3 when the balance of payments is the factor limiting growth. Also evidence from the 50 LDCs considered in their study is found to support the proposition that a typical LDC must move through three phases of growth characterized by a difference in the gap-filling function of aid, that is a skill limited phase, a saving limited phase, and a trade limited phase.

Chenery and Strout have suggested policies that will achieve increases in output and pointed out that the key elements in the process of growth with foreign aid are the responses of the recipient to the additional resources and its ability to replace these resources over time via policies that lead to changes in the structure of its production. For example, improvement in skills and organization, increased savings and the use of foreign exchange in the imports of raw material and spare parts to make effective use of existing capacity[1].

Clearly, the theoretical and empirical studies undertaken by Chenery and Bruno (1962), McKinnon (1966) and Chenery and Strout (1966) emphasize the possibility that goals for economic development (target rates of growth) and restrictions on foreign trade for LDCs might be such as to give rise to different needs, ex ante, for foreign capital with respect to requirements for

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[1]Such a policy would favour a 'programme' approach for granting aid as opposed to the project approach. In Chapter 6 we stress the importance of this policy in the effectiveness of aid resources in the Sudan.

savings and foreign exchange. The existence of the two gaps implied by this view rests mainly on structural rigidities assumed to be inherent in LDCs. However, the existence of two separate gaps due to structural rigidities has been criticized on the grounds that it is based on very extreme assumptions[1]. Also that "...the distinction between the two gaps as an empirical phenomenon is a rarity, and its explanation, where it does exist, as a structural phenomenon ... is most unlikely"[2]. A further examination of these views is provided in the next section.

2.3 SOME OBJECTIONS TO THE ANALYTICAL FRAMEWORK OF TWO GAP ANALYSIS

The main criticisms of the two gap approach may be divided into two headings: first a neoclassical critique which denies the validity of the trade limit concept. Secondly, scepticism that an increase in external resources is likely to lead to higher investment rather than a rise in consumption. In this section we stress our analysis on the former criticism as well as on other specific objections to the two gap model developed by Chenery and Strout (1966), leaving the latter scepticism for detailed analysis in the next chapter, as well as in Chapters 7 and 8, in view of Sudan's experience.

The validity of the two gap models has been examined by Lal (1972) who provided a model to demonstrate that a foreign exchange constraint which is independent from a savings constraint

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[1] Joshi, V. 'Savings and Foreign Exchange Constraints', in Meier, G.M. 'Leading Issues in Economic Development' (ed) Oxford University Press 1976, p. 343.

[2] Bruton, H.J. The Two Gap Approach to Aid and Development: Comment. The American Economic Review 1969, p. 443.

cannot exist in an economy unless three assumptions relating to the transformation possibilities open to that economy hold simultaneously[1]. These are, first technology does not permit any substitutability, after a point, of domestic for foreign inputs in the production of output. Second, the domestic rate of transformation of output into imports is zero (that is import substitution is impossible). Third, the foreign rate of transformation of domestic output into imports is zero. In other words, the economy is faced by "complete inelasticity of export earnings and hence, a fixed import capacity".

The following figure (Fig. 2.1) has been used by Lal to illustrate the operation of the three assumptions.

Assuming that the aggregate output of the economy is represented by good (X) which can be consumed, saved and invested, and exported) and the production of (X) requires input of itself, an imported input (M) and labour which is paid in (X). The aggregate production function can therefore be described by isoquants drawn in X-M space as shown in Figure 2.1. Isoquants X_1, X_2 and X_3 show the domestic output (X) which can be produced in different time periods, given different quantities of current inputs of (X) and (M). Their shape is derived from assumption 1. They become horizontal after a certain stage because of the non-substitutability of domestic for foreign input. They cut the vertical axis because foreign input can be substituted indefinitely for domestic inputs. It is also assumed that the rate of substitution of domestic for foreign inputs is constant for a certain part of the isoquants, and then this rate falls until it

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[1] Lal, D. "The Foreign Exchange Bottleneck Revisited: A Geometric Note". Economic Development and Cultural Change, July 1972, p.723. A fourth assumption has also been suggested by Lal which must hold before a strict foreign exchange constraint can arise 'given a social welfare function...the marginal utility of present consumption must fall to zero before the rate of transforming present into future consumption falls to zero' (p. 727).

becomes zero at the point where the isoquants become horizontal.

Since the quantity of the imported input (M) available to the economy can only be acquired through trade (according to assumption 2) then from S_1, S_2 and S_3 the foreign offer curve can be drawn. It shows the amounts of (M) the economy can obtain in exchange for (X) through foreign trade. The shape of the offer curve is determined by the assumption that the foreign rate of transformation of (X) into (M) is zero, after a certain stage, for movements along the offer curve (assumption 3). Hence at first (X) can be exchanged for (M) at constant terms of trade given by the slope of SP; after P the terms of trade steadily worsen, and after point C any further exports of X result in a lowering of total imports of (M).

As shown in Figure 2.1 there will be one isoquant which is tangential to any given S offer curve. This point gives the maximum output of (X) (highest isoquant) consistent with any given level of saving (and S offer curve). Thus, given savings OS_2, the economy would export S_2T of (X) in exchange for OM_1 of (M) which would be combined with OT of (X) to give output X_2 in the next period. C is the point of optimum trade and production given the amount of domestic savings, the foreign offer curve, and technology.

If, however, the economy is willing to save OS_3 in order to achieve a higher output target at X_3 in the next period, it will not be able to raise output beyond that of X_2. Here the economy is in a strict foreign exchange bottleneck, as the foreign exchange imposes an independent constraint to domestic savings to achieving any target output higher than X_2 even if potential savings are greater than OS_2.

For this independent foreign exchange constraint to output growth to prevail it is necessary that all three assumptions must hold simultaneously. Because relaxing assumption 1 implies that the isoquants no longer become horizontal, hence output can be increased with increased saving, there will no longer be a fixed import capacity as long as the marginal rate of transformation along the offer curve remains positive. And if assumption 2 is relaxed and import substitution is possible then as long as domestic rate of transformation does not fall to zero there will not be an independent foreign exchange constraint.

Moreover, Lal distinguished between a strict foreign exchange bottleneck case, a partial foreign exchange bottleneck case and the pure savings constraint. Whereas in the 'strict' case the economy can get no increase in future output from increasing current savings, in the partial case the economy can get an increase in future output, but given the planners utility function, the marginal utility of the increase in future output made possible by the transformation possibilities is less than the marginal utility of present consumption which has to be foregone to obtain this increase. In the pure saving constraint the economy will have transformation possibilities open to it which provide the means for achieving a higher level of output and a social welfare, but the only limitation will be the inability to mobilize the required amount of savings.

In view of these minimal assumptions suggested by Lal, the neoclassical case can be presented. Bruton (1969) argues that the trade limit is unlikely to occur in a well managed economy. The distinction between the two gaps according to him is not due to some inherent productive structure in the economy

but due to particular policies that are themselves growth impeding, and basing aid policy on the two-gap hypothesis provides the wrong incentives to LDCs[1]. Bruton cited a set of circumstances - on the basis of assumptions about the elasticity of foreign demand curve for domestically produced goods and the elasticity of domestic supply - in which savings can be transformed into capacity creating activities, and that the ability to save can be matched by the ability to improve foreign exchange earnings, so that no trade gap distinct from the saving gap will emerge.

If foreign demand for domestically produced consumer goods is perfectly elastic, then, when saving rate is increased domestic consumption is reduced and exports and imported capital formation will increase by the same amount. In this case there can be no trade gap distinct from the savings gap. If, however, the elasticity of foreign demand exceeds unity and less than infinity and prices fall as domestic demand falls with an increase in the saving rate, the rate of capital formation will increase up to a certain maximum point beyond which a given increase in the rate of capital formation requires more savings than at the original price. If the target rate of growth requires a higher growth rate of capital formation than this maximum then a trade gap emerges which cannot be closed by increased saving rate.

On the supply side, domestic suppliers may be unwilling to export at all at the set price even if the foreign demand is elastic. In such a situation an increase in savings will decrease the domestic demand, but exports will not increase.

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[1] Bruton, H.J. The Two Gap Approach to Aid and Development: Comment. The American Economic Review 1969 p. 446.

Devaluation may help in this case. Because in terms of domestic currency a sufficient devaluation will raise the foreign demand curve leading to increases in exports and savings rates which will necessarily raise the rate of capital formation so that the possibility of two gaps disappears. But devaluation raises the foreign exchange earnings only for the newly established export sector which is small compared to the traditional export sector for which foreign demand is quite inelastic and devaluation may reduce the rate of foreign exchange earnings. Hence, with a very large traditional export sector and a small new export sector, Bruton suggested devaluation plus a duty on traditional exports (or dual exchange rates) which would lead to an increase in foreign exchange earnings and the elimination of the distinction between the two gaps "...without devaluation and the export duty there can indeed be two gaps, but they exist not for structural reasons, but because of the inability or unwillingness to pursue a policy that would eliminate the distinction between the gaps" (p.442).

Bruton's other main objection to the two gap approach is that a shift to less import-intensive forms of investment - such as education, health, technical research and a variety of factors other than physical capital that do not require imported capital goods - can eliminate the 'gap between the gaps'.

In replying to the criticisms raised by Bruton, Chenery (1969) has first emphasized that the two gap analysis is a manifestation of structural disequilibrium which he believed is a characteristic of LDCs attempting to accelerate growth and that there is no automatic way in which the two gaps become equated in the manner of neoclassical equilibrium. However, Bruton's suggestion of the possibility of a wider range of alternative capital formations to absorb excess savings is acknowledged by

Chenery[1], but in Chenery's view, using all the potential saving for less productive investment does not mean that there will be no trade limit because "... the effect of the trade limit will be reflected in the difference between the lower growth resulting from this constraint on the composition of investment and the higher growth produced with an optimal composition" (1969, p.447).

Clearly Bruton's argument does not reduce the possibility that a dominant trade limit will occur with some frequency as a result of either an unanticipated change in the external markets or ineffective national policies or both. As a matter of fact, the importance of the trade limit - distinct from the saving limit - appeared in many non-oil producing developing countries after 1973 as a result of the rise in the price of oil and the slow down in world growth.

A study undertaken by Wynn (1980) on Sudan's economy over the period 1955-71 concluded that ex-ante difference between gaps can occur at a point in time, and this is a real possibility in a country like the Sudan because of "the limited opportunities available over what must be regarded as early stages of the development process, the heavy reliance on the export of a single primary commodity (cotton), and the fact that avoidance of this phenomenon was not considered a subject for policy during this period"[1].

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[1] As a matter of fact several of the two gap models demonstrate that a trade gap in excess of the savings gap will not appear if resources are optimally allocated over time. See Chenery, H.B. and MacEwan, A. 'Optimal Patterns of Growth and Aid: The Case of Pakistan'. The Pakistan Development Review, 1966, 6(2); Adelman, I and Chenery, H.B. 'Foreign Aid and Economic Development - The Case of Greece'. The Review of Economics and Statistics, Feb. 1966; and Chenery, H.B. and Strout, A. 'Foreign Assistance and Economic Development'. The American Economic Review, Sept. 1966.

[2] Wynn, R.F.'Foreign Capital, Trade and Savings: The Sudan 1955-71'. Malayan Economic Review, 25(2), 1980, p.16.

In Chapter 5 we shall explain how in the Sudan a foreign exchange limit caused by structural rigidities, ineffective domestic policies, as well as external shocks following the 1973 oil price rises and the global inflation has developed and represented a separate limit to growth and development in the country.

In the next chapter we shall examine some further objections to the validity and operational usefulness of aid growth models, highlight the respective modifications to them, and assess their usefulness in explaining the growth process with foreign aid and in estimating foreign aid requirements.

CHAPTER 3

FURTHER CRITICISM AND MODIFICATIONS TO AID GROWTH MODELS

In this chapter we shall examine some further criticisms and objections raised against the aid growth models - two gap models in particular - with regard to the inter-relationship between the internal and external variables of the models and the derivation of the values of the basic parameters, namely, the saving function, the ICOR, the propensity to import and export growth rate, as well as the refinements introduced to them. Particular attention is focussed on the criticisms and modifications made to the models specifications with respect to the saving function and to the assumption that foreign resources are exactly additive to domestic savings and domestically financed imports.

3.1 THE SAVING FUNCTION

The key parameter used in the aid growth models is the marginal propensity to save (MPS). The MPS is assumed to be stable and is determined by gross national income or in some models by per capita income. Objections have frequently been made to these assumptions on the grounds that the MPS may vary over time, and that aggregate saving is a function of a number of inter-dependent variables such as exports, taxation, investment opportunities, institutional factors and foreign capital inflow, which together with income determine the saving function.

Although the Keynesian explanation of saving behaviour is widely accepted, empirically tested - with a wide variety of

formulations[1] - and has played an important role in the analysis of the development possibilities in LDCs, doubt is cast by some economists on this saving income relationship. In a study of the behaviour of the aggregate savings co-efficient in the course of the Brazilian development (1939-1960) Leff (1968) found that the Brazilian savings coefficient showed no tendency to rise in the course of rapid development. Unit income elasticity of savings persisted despite the undertaking of several important policy measures thought to be on *a priori* grounds as conducive to raising marginal savings rates.

In searching for an explanation for the failure of the Brazilian saving rate to rise with rising income, Leff (1968) also examined the relationship between saving and net capital inflow. He ran regression models for two periods 1940-1960 and 1947-1960, in which annual domestic savings was taken as the dependent variable determined by the level of national income in the previous year and the current volume of net foreign capital inflow. Interestingly enough he obtained different results. For the period 1940-60 he found an inverse relationship between net foreign capital inflow and domestic saving, but for the period 1947-60 regression results showed a positive association.

However, the relationship between domestic savings and the inflow of foreign capital has given rise to a debate which has become a central issue in the discussion of the role of foreign aid in the growth process. A number of essays[2] have concluded that aid and other foreign inflows reduce domestic savings and

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[1] See Mikesell and Zuiser for a summary of these formulations:savings functions in developing countries. Journal of Economic Literature, March 1973.

[2] They include Griffen,K.B. & Enos, J. 'Foreign Assistance, Objectives & Consequences', Economic Development & Cultural Change, April 1970; Griffin, K.B. 'Foreign Capital Domestic Savings & Economic Development', Bulletin of the Oxford University Institute of Economics & Statistics May 1970; Rahman, A.'Foreign Capital & Domestic Savings: A Test of Haavelmo's Hypothesis with Cross-Country Data', Review of Economics & Stats. Feb.1968; Weisskopf, T. 'The Impact of Foreign Capital Inflow on Domestic Savings in Underdeveloped Countries' Journal of International Economics, Feb. 1972.

are used in part for consumption.

Rahman (1968) suggests a 'psychological' (behaviouristic) hypothesis to explain the negative effect of capital imports on domestic savings. Governments in LDCs may "voluntarily relax domestic saving efforts when more foreign aid is available than otherwise" (p. 137). In order to test this hypothesis Rahman ran least-squares regression of saving ratio $\frac{S}{Y}$ on the ratio of capital inflow to GNP $\frac{F}{Y}$ as estimated by Chenery and Strout's study (1966) for 31 LDCs for the year 1962. The following results were obtained:

$$\frac{S}{Y} = 0.1427 - \underset{(2.568)}{0.2473}\ \frac{F}{Y}$$

where 2.568 is the student's T.

On the basis of this result he concluded that it is likely that foreign capital is used not only for augmenting investment but also is a substitute for domestic savings in LDCs. However, it is interesting to note that Gupta (1970) criticized Rahman's selection of only 31 countries out of the 50 countries included in Chenery-Strout's study (1966). Using the same source of data, i.e. Chenery-Strout study and the same equation, he ran a regression for all the 50 countries instead of the 31 selected by Rahman. He found that the coefficient on $\frac{F}{Y}$ was positive (0.03) but not significantly different from zero. The result of his regression was:

$$\frac{S}{Y} = \underset{(0.0088)}{0.11083} + \underset{(0.0804)}{0.0310}\ \frac{F}{Y}$$

(The standard errors of the regression coefficient are given in the parentheses).

On the basis of this result he pointed out that foreign capital inflow has virtually no effect on domestic savings in LDCs. Gupta has further carried out another experiment based on the same set of data. He classified the 50 countries into three groups according to the level of income per capita. He found that the effect of foreign capital inflow on domestic savings is positive for countries in the lowest and the highest per capita income groups. Only in the middle income category are Rahman's results obtained, but with insignificant negative coefficient. Gupta left this insignificant negative coefficient to be explained, perhaps by non-economic factors. But, on the whole he found that inflows of foreign capital are likely to intensify domestic saving efforts instead of slackening them.

A further empirical test of Rahman's psychological thesis has been provided by Landau (1971). He regressed the average tax rate against per capita GNP and the ratio of foreign capital inflow to GNP for 10 Latin American countries. He found that only two countries behaved in a manner that may be consistent with the psychological explanation, whereas the other 8 countries gave no evidence of the applicability of the hypothesis.

Griffin (1970) argues that capital imports do not enable investment to rise by the full amount of the extra resources, but increase consumption with a resultant fall in domestic savings which partly offsets the increase in foreign savings. In particular he argues that foreign capital represents a transfer of resources or purchasing power from one nation to another. It is therefore reasonable to assume that consumption will be a positive function of total available resources, that is, national income plus net capital imports. He also emphasized three

channels through which an increase in foreign capital leads to a reduction in domestic savings.[1] First, public savings may decline because governments finding abundant resources from abroad expand their consumption and refrain from raising taxes to the extent that aid becomes a substitute for tax reform. Secondly, private savings may decline because the availability of debt finance on soft terms may reduce the incentive of local investors to save. Thirdly, capital imports may reduce domestic savings by stimulating the consumption of importables and exportables.

However, the main support for Griffin's argument comes from the various statistical studies that show a negative correlation between capital imports and domestic saving. A cross-country study of 32 LDCs using United Nations' data gave Griffin the following inverse relationship:

$$\frac{S}{Y} = 11.2 - \underset{(0.11)}{0.73}\ \frac{F}{Y} \qquad R^2 = 0.54$$

where:

$\frac{S}{Y}$ = gross domestic saving as a per cent of GDP (1962-1964)

$\frac{F}{Y}$ = foreign capital inflow as a per cent of GDP (1962-1964) (foreign capital inflow defined as the net deficit in the current account of the balance of payment)

A similar regression for 13 countries from Asia and the Middle East taken from the above sample produced similar results:

$$\frac{S}{Y} = 16.1 - \underset{(0.52)}{0.82}\ \frac{F}{Y} \qquad R^2 = 0.71$$

Another study for a single country Colombia over a period

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1. Griffin, K., 'Foreign Capital, Domestic Savings and Economic Development'. Bulletin of the Oxford University Institute of Economics and Statistics, May 1970, p. 106.

of thirteen years (1950-1963) also yielded a negative relationship between domestic savings and foreign capital:

$$\frac{S}{Y} = \underset{(0.29)}{21.5 - 0.84\ \frac{F}{Y}} \qquad R^2 = 0.43$$

Weisskopf (1972) carried out a pooled regression to estimate the ex-ante savings function. He obtained the following result:

$$S = a + \underset{(t=65.9)}{0.183Y} - \underset{(t=-5.3)}{0.227F} + \underset{(t=4.6)}{0.176E}$$

where S = ex-ante gross domestic savings, Y = GDP, F = net foreign capital inflow, and E = export earnings.

According to this result, approximately 23% of net foreign capital inflow substitutes for domestic savings. Weisskopf's theoretical explanation for this finding follows the same reasons put forward by Rahman and Griffin. Foreign capital inflow - according to them - represents an addition to the total supply of resources available to a country which will increase the possible magnitude of domestic expenditures ..."to the extent that the government or the private sector wish to use the additional available resources to increase public as well as private consumption, there will be a decline in intended domestic savings"[1]. However, the validity of this explanation depends on whether the use of the additional resources from abroad is free or not.

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[1] Weisskopf, T. 'The Impact of Foreign Capital Inflow on Domestic Savings in Underdeveloped Countries', Journal of International Economics 1972, p. 26.

It is important to note that Weisskopf points out that the negative impact of foreign capital inflow on domestic savings applies to ex-ante savings but not necessarily to ex-post savings. When the trade gap is the binding constraint the impact of foreign capital inflow on ex-post savings is more likely to be positive because foreign capital in such a case will help to relieve the independent limitation on investment imposed by a shortage of specific imports - a view which (as we have seen in Chapter 2) is emphasized by the foreign exchange gap model.

A further empirical evidence for a negative relationship between foreign capital inflow and domestic savings has been reported by Singh (1975). He investigated the relationship between an increase in the ratio of foreign capital inflow to GNP ($^{F}/_{Y}$) and the average propensity to save. Unlike other investigators he also studied the relationship between an increase in the ratio of foreign capital inflow to national savings $^{F}/_{S}$ and the average propensity to save. He found both correlations to be significantly negative.

However, Singh has also found that the degree of substitution varies inversely with the level of average saving behaviour; for an APS $>$ 0.15 an increase in foreign capital inflow will lead to increased saving[1]. This finding gives support to the 'self-help' criterion mentioned earlier that the stronger the country in its self-help efforts the more it can be helped by foreign capital inflow.

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1 Singh, S.K. 'Development Economics: Some Findings'. D.C. Heath and Company, Lexington Books, Toronto, London 1975, p. 145.

Hazari (1975/76) suggested a mechanism for expecting the inverse relationship between domestic savings and foreign capital inflow which operates through the impact of the latter on taxation effort, income inequalities and conspicuous consumption. "Insofar as foreign aid goes to perpetuate income inequalities and differences in living standards it provides strong incentive to consume"[1]. But Hazari was careful to acknowledge that not all aid goes to perpetuate income inequalities. In his view the US PL480 scheme which provides food grains to LDCs reduces income inequalities. No empirical evidence regarding his hypothesis has been offered.

Chenery and Eckstein's (1970) study on Latin American countries also revealed a negative association between foreign capital inflow and domestic savings. But their interpretation of the saving experience in these countries follows the implications of the two-gap model which assumes explicitly that when the foreign exchange gap is dominant and foreign capital available is more than enough to fill the ex-ante savings gap, a possible adjustment mechanism for equalizing the two gaps ex-post would be for consumption to increase in step with the amount of foreign capital in excess of ex-ante savings gap.

Chenery and Eckstein tested the relationship between savings income, exports, and foreign capital inflow by fitting a regression equation in which gross domestic savings (S) was assumed to be a function of GNP (Y), the inflow of foreign capital (F) and the share of exports in GNP $^{E}/_{Y}$.

$$S = a + b_1 Y + b_2 {}^{E}/_{Y} + b_3 F$$

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1 Hazari, B.R. 'Foreign Aid, Conspicuous Consumption and Domestic Savings: Some Theoretical Observations. Journal of Development Studies, Vol.12, 1975-76. P.200

The results showed that in 12 out of 16 countries the impact of (F) on (S) was negative. But, according to Chenery and Eckstein, the reduction in the level of savings in relation to income over the period covered by their study (1950-1965; 15 years), has not been due to the observed increase in foreign capital inflow alone, but also due to the observed decrease in the export share over the years. They were also careful to foot-note that their interpretation does not imply that the total impact of foreign capital inflow reduces domestic saving. The relationship $\Delta S / \Delta F$ is partial and assumes that income is held constant. But, external capital increases income and domestic saving increases with income; hence, if $\Delta S / \Delta F$ were negative in the short run, in the long run the total impact on saving would be positive, especially when the cumulative effects on income are taken into consideration[1].

The studies reviewed above which gave empirical evidence of the possibility of the existence of a negative association between domestic savings and foreign capital inflow suggest the modification of the saving function is needed to allow for this possibility. But, the statistical findings of this negative relationship have been questioned on the grounds that they may represent an ex-post accounting convention rather than a behaviour-istic relationship, and it may also be due to exogenous shocks causing a simultaneous increase in foreign capital inflow and a decrease in domestic savings[2].

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[1] Chenery, H.B. and Eckstein, P. 'Development Alternatives for Latin America'. Journal of Political Economy, 1970, p. 975.

[2] Papanek, G. 'The Effect of Aid and Other Resource Transfers on Savings and Growth in Less Developed Countries'. Economic Journal, September 1972.
In Chapter 7 an evaluation of the hypothesis of negative relationship between foreign capital inflow and domestic savings is provided in the light of the Sudan's experience during the past two decades, as well as in the light of the saving experience of 50 developing countries in a more recent period 1977-1979.

Nevertheless, Chenery (1979) in a postscript to his earlier paper with Strout (Chenery and Strout 1966) introduced a modification to the saving function used in the original study to allow for the belief that inflows of external resources have several origins and will normally lead to increases in both investment and consumption.[1] The following saving function is introduced:

$$S_t = \leqslant \bar{S} = S_o + \alpha'(V_t - V_o) - \alpha'' F_t$$

where α'' is the proportion of capital inflow that is used for consumption. Hence, the saving function in the original form (that is in Chenery and Strout's paper 1966) becomes the extreme case in which all external capital is invested, that is $\alpha'' = 0$. However in Chenery's view α'' should be treated as a policy variable in analysing the role of capital in development policy from the point of view of either the borrower or the lender. "An effective development policy will be that which channels a high proportion of external resources into investment when savings constitute the binding constraint" (1979, p. 446).

Domestic savings have also been thought of as a function of exports. Several studies have shown a positive relationship between exports and savings[2]. The positive association between exports and savings seems to be plausible because conventional savings theory could lead one to expect a high propensity to save out of the highly concentrated incomes produced by primary exports. Such incomes are also administratively and politically

[1] Chenery, H.B. 'Structural Change & Development Policy'. Oxford University Press, 1979, p. 445.

[2] See Maizels, A. 'Exports & Economic Growth of Developing Countries' Cambridge Univ. Press 1968; Chenery, H.B. & Eckstein 'Development Alternatives for Latin American Countries', Journal of Political Economy 1970, p.976; Lee, J. 'Exports & the Propensity to Save'. Economic Journal, June 1971; and Papanek, G. 'Aid Foreign Private Investment, Savings & Growth in Less Developed Countries' Journal of Political Economy, Vol. 81, 1973, p. 126.

easier to tax and therefore facilitate higher rates of government savings. Moreover, countries with higher rates of exports tend to face less of a foreign exchange constraint on investment and therefore tend to provide more of an incentive to saving.

However, the positive association between exports and savings gives rise to two possible shortcomings of the two gap analysis. First, the association between exports and savings indicates that the balance of payments of an economy cannot be treated in isolation from its investment-saving problem, that is, the ex-ante export-import gap is not - as the two gap approach assumes - independent from the ex-ante saving-investment gap. Improved export growth would reduce both ex-ante gaps. Secondly, gap analysis is liable to overstate the ex-ante saving gap for countries having a significant saving response to export changes.

Institutional factors such as the business structure, saving institutions, capital markets as well as the environmental factors favouring savings were also emphasized as important determinants of savings ratios in LDCs. Support for this view has come from a study by U Tun Wai (1972)[1] that has shown savings to be responsive to the number, availability and efficiency of financial markets. However, empirical studies of the saving ratios related to such institutional and environmental factors are difficult for statistical investigation.

3.2 THE ICOR

As we noted in the previous chapter the ICOR is used to predict the level of investment required to achieve a given growth

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[1] U Tun Wai 'Financial Intermediaries and National Savings in Developing Countries'. Praeger, New York, 1972. See also Hitiris, T. & Wiseman, J. 'Aspects of the Mobilization of Savings in LDCs'. Institute of Social and Economic Research, University of York, Discussion Paper 54, 1981.

rate in income. The correct prediction of variation in the ICOR is of particular importance for the reliability of the calculation of aid requirements[1]. In aid-growth models this ratio is regarded as constant. However, it is argued by some economists that the ICOR is not a stable parameter, and it may itself be the result of the operations of other factors in the economy such as the rate of growth, availability of human skills, natural resources endowments. A study by Leibenstein (1966) revealed that the capital output ratio is always lower at higher rates of growth[2]. This inverse relationship held true in 129 out of the 134 countries considered by him , which indicates that the ICOR is determined by the rate of growth and not independent from it.

In a revised formulation of the Chenery-Strout model, Chenery and Eckstein (1970) admitted that the capital output ratio may not remain constant and it should be expected to be lower at higher rates of growth[3], because first, during periods of rapid growth improvements in capacity utilization are likely to occur. Secondly, the increases in factors other than capital, such as skilled labour, technology, and available resources, play a large part in determining the growth of output. Thirdly, when higher growth rates are based on greater investment, the part of gross investment used to replace old equipment and to construct social overhead facilities, usually represent a smaller share of the total.

Surely, the determination of the correct behaviour of the ICOR is problematic, because it is determined - as we noted - by

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[1] See Chapter 2, Section 2.2.1.

[2] Leibenstein, H. 'Incremental Capital Output Ratios and Growth Rates in the Short Run'. The Review of Economics and Statistics, February 1966, p. 24.

[3] In their model Chenery & Eckstein used an investment function dependent on the rate of growth in order to reflect the inter-dependence between COR and the rate of growth.

a number of factors which may not be objectively quantified. Moreover, estimating the ICOR from historical time series may not produce a reliable estimate in case of wide fluctuations in the ICOR over time, which may not follow any uniform trend.

Turning to the foreign exchange gap models used in calculating foreign aid requirements, we find that doubt is also case on the stability and correct estimation of the two trade behaviouristic parameters, namely the propensity to import and export.

3.3 THE IMPORT FUNCTION AND EXPORT GROWTH

Most aid requirement models consider imports to be a stable function of the rate of growth of income. This is considered by some economists as too simple, for it neither takes into consideration the variation in the capital output ratio nor the other factors affecting the volume and composition of imports, such as changes in the prices of domestically produced substitutes, changes in taste, terms of trade, changes in the level of reserves, and government policies concerning foreign trade, i.e. quotas, duties, foreign exchange control[1].

In order to obtain a more reliable import junction Maizels (1968), for example, introduced a disaggregated import function. Different functions have been suggested for imports of capital goods, intermediate products and consumer goods. According to him imports fall into two sub-groups: capital goods, including intermediate products for the capital goods industries, and consumer goods, including intermediate products for the consumer

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[1] In LDCs where most of the imports are capital goods, improvements in the COR imply less capital investment and hence less imports.

goods industries. While the former is assumed to depend essentially on the capacity to import which is influenced by the free foreign exchange availability provided by exports, and by net foreign capital inflow, the latter is determined as a residual. Hence the capital goods import function suggested by Maizels takes the following form:

$$M_t^c = a + b_1 Z_t + b_2 Z_{t-1} + cR_{t-1}$$

where M_t^c is imports of capital goods, including raw materials for capital goods; Z is the capacity to import, and R is the level of monetary reserves reflecting the influence of short-term capital and monetary movements on import changes.

Chenery and Eckstein (1970) realizing - though not explicitly - the shortcomings of the Chenery-Strout's model which treats imports as a linear function of income, have introduced two additional variables which considerably improve the estimation of the import function. First, because of the greater dependence of Latin American countries on imported capital goods than imported consumer goods, income is disaggregated into investment and consumption in order to measure separate import propensities for increases in investment and consumption. Secondly, usually government policies tend to make foreign exchange more expensive and less plentiful to potential importers when foreign exchange is scarce. In order to reflect these price and availability effects on imports, Chenery and Eckstein used two direct measures of the availability of foreign exchange to the economy, reserves of gold and foreign exchange at the beginning of the year (R) and export earnings from goods and services (X). The equation used was:

$$M_t = (M)_{t-1} + u\,\Delta\,Y + X\,\Delta\,C + \emptyset\,\Delta\,I + W\,\Delta\,(^{E}/_{Y}) + \pi\,\Delta\,(^{R}/_{Y})$$

where Δ refers to changes between the previous period and the current one; M = imports, Y = income; C = consumption; I = investment; $^{E}/_{Y}$ and $^{R}/_{Y}$ represent current exports and reserves expressed as shares of current GNP to reduce problems of multi-collinearity.

For all but one of the sixteen countries studied imports over the period 1950-65 responded positively with both E and R (slightly more to R).

The possibility that the propensity to import fluctuates with changes in the terms of trade has also been suggested. It is asserted that the terms of trade of primary producing LDCs have generally worsened over the past decades, and to this extent their capacity to import has been depressed. But it is difficult to measure the net effect of a deterioration in a country's terms of trade on its overall balance of payments position because - as it is claimed - LDCs usually offset this deterioration in terms of trade by increased borrowing from industrial countries and from international financial agencies. However, an attempt has been made by Maizels (1968) to calculate the effect of changes in terms of trade on the capacity to import and on the rate of growth of GDP on the basis of a hypothetical assumption that the terms of trade remained unchanged over the period considered, while net capital inflow has increased. The approximate effect of assuming no change in the terms of trade is found to be an increase in rate of growth in the capacity to import from 4.5% to 5.2% per annum for the countries studied over the period from 1952/4 to 1962/3.

Import substitution policies have also been acknowledged as having an influence on imports function. It is generally accepted that developing import saving industries leads to a reduction in the demand for imports. But in the short run import substitution is likely to increase imports since the establishment of new imports saving sector requires investment with a high import content. Chenery and Eckstein (1970) thought that the inclusion of a measure of a long run import substitution through changes in the structure of production enhances the descriptive power of the import function. In their view the best single index of the ability to replace imports with domestic production in the Latin American countries considered in their study is the rising share of GNP devoted to manufacturing. But at the time of the study they were unable to incorporate this measure. However they reported in a footnote that "...when such a variable is included in the disaggregated estimating equation, it assumes the hypothesized negative sign for all the countries but Argentina, Peru, and Ecuador" (p. 978).

As far as export growth is concerned, aid growth models - as we noted in Chapter 2 - take export growth rate as exogenously determined. However, this exogenous postulation of export growth seems to be appropriate in view of the fact that the exports of many LDCs depend heavily on exogenous factors such as the international demand for primary products, the development of synthetic substitutes, fluctuations in prices, trade barriers imposed by developed countries and weather conditions.

3.4 THE SUPPLY LIMITS

Most of the aid-growth models ignore the supply side by assuming - implicitly - that the donors are sufficiently generous

to fill the maximum gap. In practice, however, donors may be willing to give less than the maximum gap, thereby forcing the recipient to make adjustments by lower imports and higher exports and savings. Hence, the weakness in the models which do not incorporate supply limits of foreign resources is that they do not consider this more realistic type of adjustment to disequilibrium. Surely, the supply of foreign resources has always been less than the demand. The recommendation of the latest report on international cooperation (Brandt, 1980) calling for a substantial increase in the magnitudes of aid resources is a clear indication of supply shortages.[1] It is important that aid growth models which aim at providing a framework for macroeconomic planning with foreign resources should take into consideration such limits which will affect the adjustment policies needed during the process of growth with foreign aid.

However, a study by Chenery and MacEwan (1966) exploring the optimal patterns of growth and aid for Pakistan, have incorporated variations in the supply and the cost of borrowing to aid requirements model[2]. Their model relates the features of optimal growth patterns to the objectives and development policies of the recipient country as well as the assistance policies of the donors (that is the supply limits). Clearly, any attempt to consider the supply limits in forecasting the demand for foreign aid (or aid requirements) will be complicated by the fact that there is now a large number of donors whose objectives range through a spectrum of humanitarium (moral), economic,

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[1] Brandt, W. 'North-South: A Programme for Survival'. Report of the Independent Commission on International Development Issues. Pan Books Ltd. 1980, pp. 237-256.

[2] Chenery, H.B. and MacEwan, A. 'Optimal Patterns of Growth and Aid: The Case of Pakistan'. The Pakistan Development Review, 1966 6(2), pp. 227-231.

strategic and historical (colonial) grounds and their policies regarding the forms and allocation of aid resources vary considerably.

3.5 SUMMARY

In Chapters 2 and 3 we examined the basic models used in explaining the role of aid in the growth process in LDCs, and in estimating foreign aid requirements, and the major criticisms with regard to the validity and the operational usefulness of their assumptions.

The general thrust of aid growth models is clear, foreign aid flows can be used by LDCs as a basis for significant acceleration of investment and growth as it performs a critical role in both resource mobilization and structural transformation. Once these structural changes are under way the demand for aid declines leading to eventual independence from foreign aid. The examples of Greece, Taiwan, Israel and the Philippines have been frequently cited as countries in which substantial amounts of foreign aid resources led to accelerated growth of national income and steadily reduced their dependence on external assistance for continued growth.

The contribution of two gap analysis to development theory is that if foreign exchange is the dominant constraint it suggests the additional role of foreign aid in supplementing foreign exchange, without which a fraction of domestic savings might go unutilised because actual growth would be constrained by the inability to import necessary inputs.

However, the relevance of the framework of two gap approach to LDCs has been questioned. On the one hand, there is a neoclassical critique which asserts that the distinction between

the two gaps is based on very extreme assumptions and that the structural rigidities assumed in LDCs are rarely so great as to prevent a timely adjustment of the imbalance between the two gaps. Moreover, when the two gaps are not equal and foreign aid is used to fill the larger of the two, a less than full potential performance of the smaller gap will occur due to resource waste. On the other hand there is scepticism about the assumption that foreign resources are exactly additive to domestic savings.

Nevertheless, in theory the two gaps can exist given the assumptions about the transformation possibilities emphasized by Lal (1972). As long as the substitution between foreign and domestic resources is slow and a long drawn process in LDCs, the possibility for the existence of the two gaps at a particular point in time or over time cannot be ruled out. To prevent resource 'waste' implied by the two gap analysis a coordinated development policy must attempt to speed up the process of substitution to equate the two gaps ex ante. When foreign exchange is the dominant constraint 'excess' savings could be used either for promoting exports or import competing activities, or - as Bruton (1969) suggests - to be used for types of productive investment which do not require imported capital goods such as investment in human resources.

There are also objections to the methods used in calculating foreign aid requirements and in analysing the growth process with foreign aid. The limitation of these models is precisely that they operate at a highly aggregative level. The nature of the econometric approach in aid growth models raises methodological questions particularly with regard to the constancy of the structural relationships in the process of structural change. The postulation of constant parameters such as the ICOR, the MSR

and the export and import propensities holds only when the past circumstances - economic, social as well as political - remain unchanged; a situation which is inconceivable in view of the political instability in LDCs and the rapid economic and social change accompanying the development process. However, the enhancement of the descriptive power of the parameter values in terms of the factors determining them and in terms of their variation over time is not an impossible exercise if the necessary and reliable data are available. Needless to say considerable degrees of disaggregation have been introduced in the studies by Chenery and Bruno for Israel (1962), Adelman and Chenery for Greece (1966), and Chenery and Eckstein for Latin America (1970) which improved the estimation of the parameter values in question.

Finally, on the basis of some observed negative relationships between foreign capital inflow and domestic savings, it is claimed that foreign aid supplants rather than supplements domestic savings and the effect of aid on growth is often offset by increased consumption. Moreover, it is claimed that foreign aid resources permit countries to defer difficult policy measures that would otherwise have been taken, that aid resources are often wasted and misused, and that the donors' objectives are mainly political. Taking all these factors together it is claimed that foreign aid, rather than accelerate growth, is likely to retard it. Subsequent chapters deal primarily with this controversy in view of Sudan's experience of growth and development with foreign aid resources during the past two decades (1960-1980).

CHAPTER 4

THE SUDANESE ECONOMY : FEATURES, DEVELOPMENT PERFORMANCE, AND CONSTRAINTS

4.1 GENERAL

What distinguishes the Sudan from many of the other LDCs is its vastness and freedom from population pressures. Otherwise it shares with such countries most of their characteristics, namely, low income per capita, low growth rates, dualism in the structure of the economy, the majority of the people are poor and have little access to the basic amenities, including nutrition, health care, education and safe drinking water[1].

In terms of area, the Sudan with 2.5 million square kilometers is the largest country in Africa and the Arab World. Its area is 64% larger than the combined area of the EEC member countries (excluding Greece). The problems of over-population, feudal systems and shortages of land that plague many of the LDCs do not exist in the Sudan. The vastness of the country offers an enormous potential for development. The range of climate from tropical forests in the south, an extensive savannah in the west, to semi-desert and desert in the north, is favourable for the expansion of agricultural activities of various forms. The Nile River and its tributaries provide a resource of the greatest importance for irrigation, transportation, and hydro-electricity generation.

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[1] For a comprehensive list of characteristics of LDCs see P. Streeten "How Poor are the Poor Countries" in Development in A Divided World (ed) D. Seers & L. Joy, Penguin Books 1970.

It is estimated that about 200 million feddans (1 feddan = 1.038 acre) are suitable for cultivation, out of which only 17 million feddans are currently under cultivation. In addition there are 218 million feddans suitable for forestry, and 57 million feddans as pastures. The country is also rich in livestock with some 40 million head[1]. Other natural resources are the potential fishing grounds in the Nile and the Red Sea. Mineral resources are gradually emerging as an important sector, but historically they were not important and their contribution to the GNP remained negligible. Oil deposits have been discovered in the south-western part of the country in 1979. Enough oil has been found so far to warrant the building of a pipeline from the oil fields to the port for exporting oil[2].

Unlike many of the LDCs the Sudan does not suffer from demographic pressures. With a population currently about 18 million and increasing at a rate of 2.5% per annum, it has about 7 people per square kilometer; in comparison, Tanzania has over 16, Etheopia more than 24, and Bangaladesh 586 people per square kilometer. However, the population is not evenly distributed throughout the country with over 50% of the people concentrated in 15% of the total area. The main concentrations of the population are along the Nile and its tributaries, and in a few dense patches in the west, the south and the south east, with almost totally deserted regions in the north west and the north east.

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[1] Information Memorandum: December 1980, Ministry of Finance and National Economy, Bank of Sudan.

[2] Plans to build a refinery for using oil for domestic consumption were abandoned recently.

Although the vastness of the country offers tremendous potential for rapid economic development it has also been a constraint in realizing that potential. Given the size of the country and its low and dispersed population, transport and communication have been a major problem in the development process.

Another important general feature of the Sudanese economy is the predominant role of the government in the control and management of the economy. Historically, the government owns and operates all the public utilities including railways, river steamers, electricity and water supply. It owns and manages all the modern agricultural schemes in the irrigated areas, owns the bulk of industrial enterprise, and monopolizes internal and external trade in certain basic commodities such as sugar, wheat, cotton, oil seeds and petrolium products. The public sector has grown substantially after the military takeover in May 1969, which was followed by nationalization and confiscation of a large number of private sector enterprises[1]. Now, most of the non-traditional activities are dominated by the public sector.

4.2 ECONOMIC STRUCTURE, DEVELOPMENT PERFORMANCE, AND CONSTRAINTS

4.2.1. General

The Sudanese economic structure is essentially agricultural both in terms of value added and in terms of employment. Officially agricultural share in GDP is about 40%, but this is a clear underestimation, since economic activities of the other sectors of the economy especially industry, transport and trade, depend primarily on the activities of the agricultural sector. The

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[1] After 1972 most of these enterprises - with the exception of commercial banks - were denationalized and returned to their owners.

agricultural sector produces raw materials for industry which is comprised mostly of agricultural processing activities. It also provides food for local population and surplus food and industrial crops for export. Nearly 95% of export earning comes from agricultural crops. Hence agricultural production and output is the single most important determinant of the overall economic growth, exports and the balance of payments position. In terms of employment, agriculture provides employment for 80% of the population. The industrial sector's contribution to the economy is still modest. During the 1970s, industry and mining has contributed a nearly constant 8-9% share of GDP.

4.2.2 Overall GDP Growth Performance

Data regarding Sudan's national income, like most other African countries, should be treated with prudence. Because continuous series for production and income exist only for some few economic activities, the gaps have to be filled by surveys which suffer from considerable margins of error. Changes in methods of estimating national income also make the estimated figures uncomparable. As a World Bank report[1] reveals, for example, the following average increases in nominal GDP were estimated for the Sudan for the period 1976-78:

IMF	(April 1979)	27%
IBRD	(October 1979)	22%
IMF	(Tax Survey 1980)	15%
Bank of Sudan		13%

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[1] Accelerated Development in Sub-Saharan Africa. The World Bank 1981 (p.187).

However, the published data on National Income Accounts[1] show that GDP growth rates, in nominal terms, averaged during the decade of the 1960s, 5.1% per annum, and 21.8% during the period 1970-1978[2]. Clearly the high average GDP growth rates during the 1970s reflect to a large extent price increases rather than real growth rates. Estimating growth rates in real terms is problematic because official estimates of Sudan's GDP and National Income are produced at current rather than at constant prices and there is no official GDP deflator.

This deficiency, however, did not prevent us from using the available price data for deflating the official National Income data. In Chapter 8 we use consumer's price index and imports price index to estimate real GDP growth rates for the purpose of examining the association between foreign capital inflow and real GDP growth rates. In this chapter we shall use data regarding the physical growth performance in the major sectors of the economy, which are likely to give a more meaningful indication about the growth trends and the development performance of the economy over the past two decades. Trends in sectoral growth performance would also enable us to detect in subsequent chapters the impact of external development assistance on this performance.

4.2.3 Agricultural Sector Performance and Constraints

The structure of the agricultural sector in the Sudan is represented on the one hand by the irrigated areas, mostly in publicly owned and administered schemes along the banks of the

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[1] National Income Account Series, Department of Statistics, Ministry of Finance and Economic Planning.

[2] The latest published data on National Income are for the year 1977/78.

River Nile and its tributaries and the mechanized rainfed farms, and on the other hand by traditional rainfed farming and livestock activities. The irrigated agricultural schemes comprise large consolidated areas such as the Gezera Scheme, which alone covers two million feddans, the Rahad project, New Halfa project and a number of smaller schemes along the Blue and the White Nile relying on gravity, flood and pump irrigation.

The economic growth of the Sudan is influenced by the increases in the agricultural output of these schemes. Cotton which is the principal crop has been the mainstay of the economy for many years. On the average 52% of the country's export earnings still depend on cotton[1]. But, since 1974, realizing all the hazards of developing a one crop economy, such as vulnerability to price fluctuations, adverse demand conditions and weather changes, emphasis has been gradually placed on the production of oil seeds, wheat and sugar cane. Large scale rainfed mechanized farming supported mainly by external development loans - as we shall see in Chapter 6 - gave important contributions to the growth of the agricultural sector and the national economy.

As a result of the government policy to diversify the productive structure of the economy, the composition of agricultural production has changed in favour of groundnuts, wheat and millet. The share of cotton in total value of crops produced was reduced from 30.2% in the year 1972/73 to 20.4% in 1977/78[2]. This policy, however, adversely affected the export performance of the economy - as we shall see in the next chapter when we analyse the export performance of the economy. This is mainly because the increase

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[1]Calculated for the period 1960-1979 (Bank of Sudan data on Balance of Payments).

[2]Ministry of National Planning: Recent Performance of the Agricultural Sector (unpublished report).

in the production of other crops in the irrigated areas was achieved at the expense of a decline in cotton production arising from the reduction in the cotton acreage as well as from declining yields caused by the relative neglect and the incentive framework which favoured the production of other crops. For example, over the decade 1969-1979, cotton acreage dropped from 1.26 to 1.03 million feddans (about 18%). Average yields of cotton dropped from 537 to 392 kilograms per feddan (about 27%) (see also Table 4.1 and Figure 4.5). As a result seed cotton production fell from 675 to 407 thousand tons (about 39.7%), consequently, the volume of cotton exported fell from 1.47 million bales in 1971 to 0.78 million bales in 1978 (about 47%)[1]. The government, however, has been forced towards the end of the 1970s to concentrate its attention on cotton again, as the expansion in the production of other crops did not compensate for the lost cotton export earnings. In a way this situation is a manifestation of some sort of short-run structural rigidity stressed by Professor Chenery and Strout (1966). A situation which requires not only a policy change, but also external development assistance to enable horizontal expansion in cotton acreage as well as other crops; and a vertical expansion to improve the yields per feddan in the existing schemes.

Figures 4.1, 4.2, 4.3, 4.4, 4.5 and Appendix Table 4.1 reflect the trends which evolved over the two decades 1960-1980 with regard to the production of the major agricultural export and food crops. The salient features of the trends in agricultural production are as follows:

1. Total agricultural production for the major food and export crops - cotton, oil seeds, wheat, dura, dukhun and gum arabic -

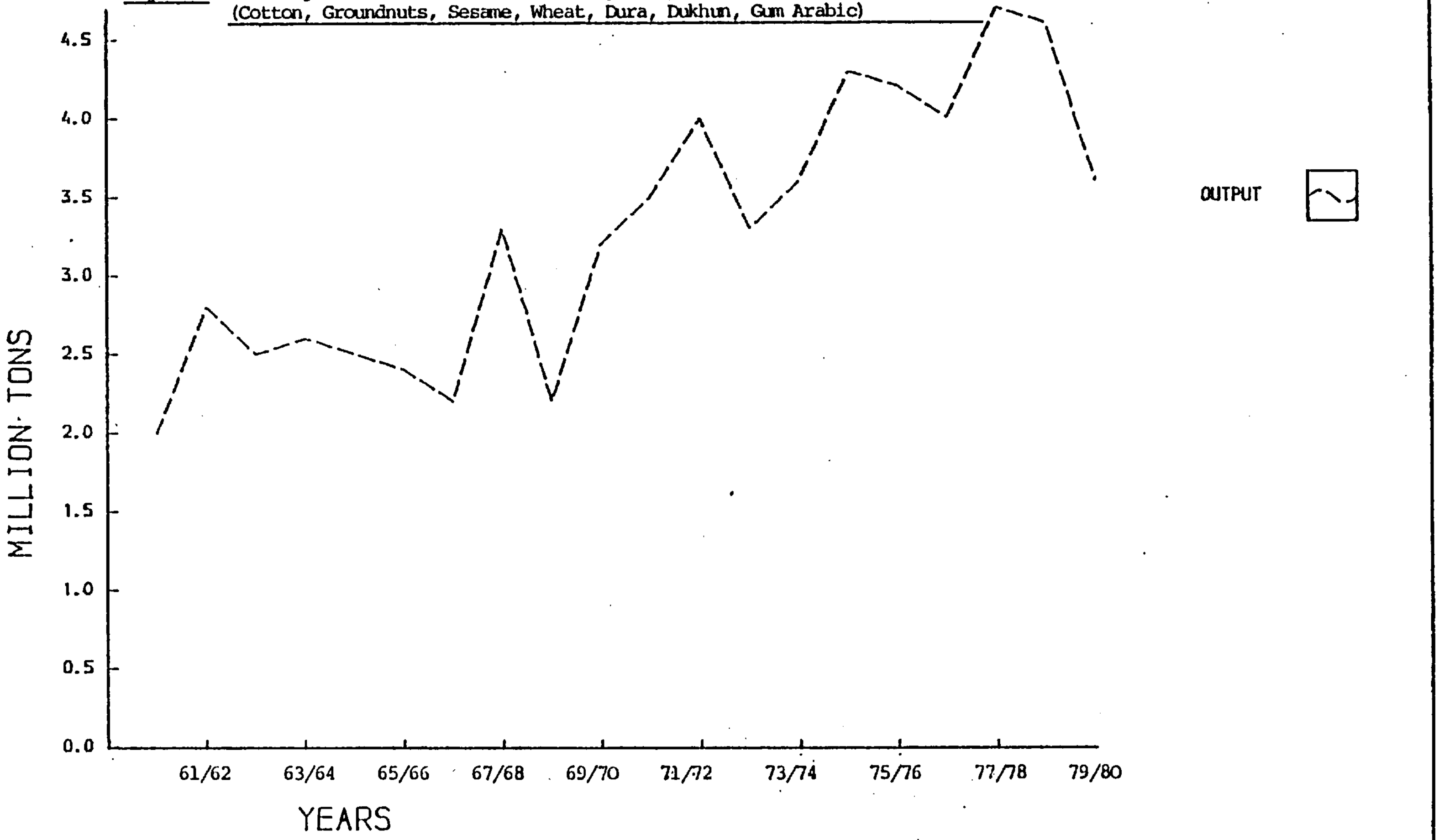
[1] Ministry of National Planning. Recent Performance of the Agricultural Sector Unpublished Report.

Table 4.1 Cotton Yield per Feddan in the Gezera Scheme (in Kantars of 315 lb)

Year	Cropped Area in OOOs Feddan	Output in Kantars	Yield per Feddan
1960/61	429	1158.3	2.7
61/62	468	2808.0	6.0
62/63	485	1891.5	3.9
63/64	509	1170.7	2.3
64/65	508	1778.0	3.5
65/66	510	1887.0	3.7
66/67	542	2493.2	4.6
67/68	553	2322.6	4.2
68/69	574	2984.8	5.2
69/70	578	2890.0	5.0
70/71	588	3175.2	5.4
71/72	589	2709.4	4.6
72/73	589	2414.9	4.1
73/74	589	2945.0	5.0
74/75	588	2646.0	4.5
75/76	380	1026.0	2.7
76/77	485	1746.0	3.6
77/78	474	1896.0	4.0
78/79	409	1186.1	2.9
79/80	446	1115.0	2.5

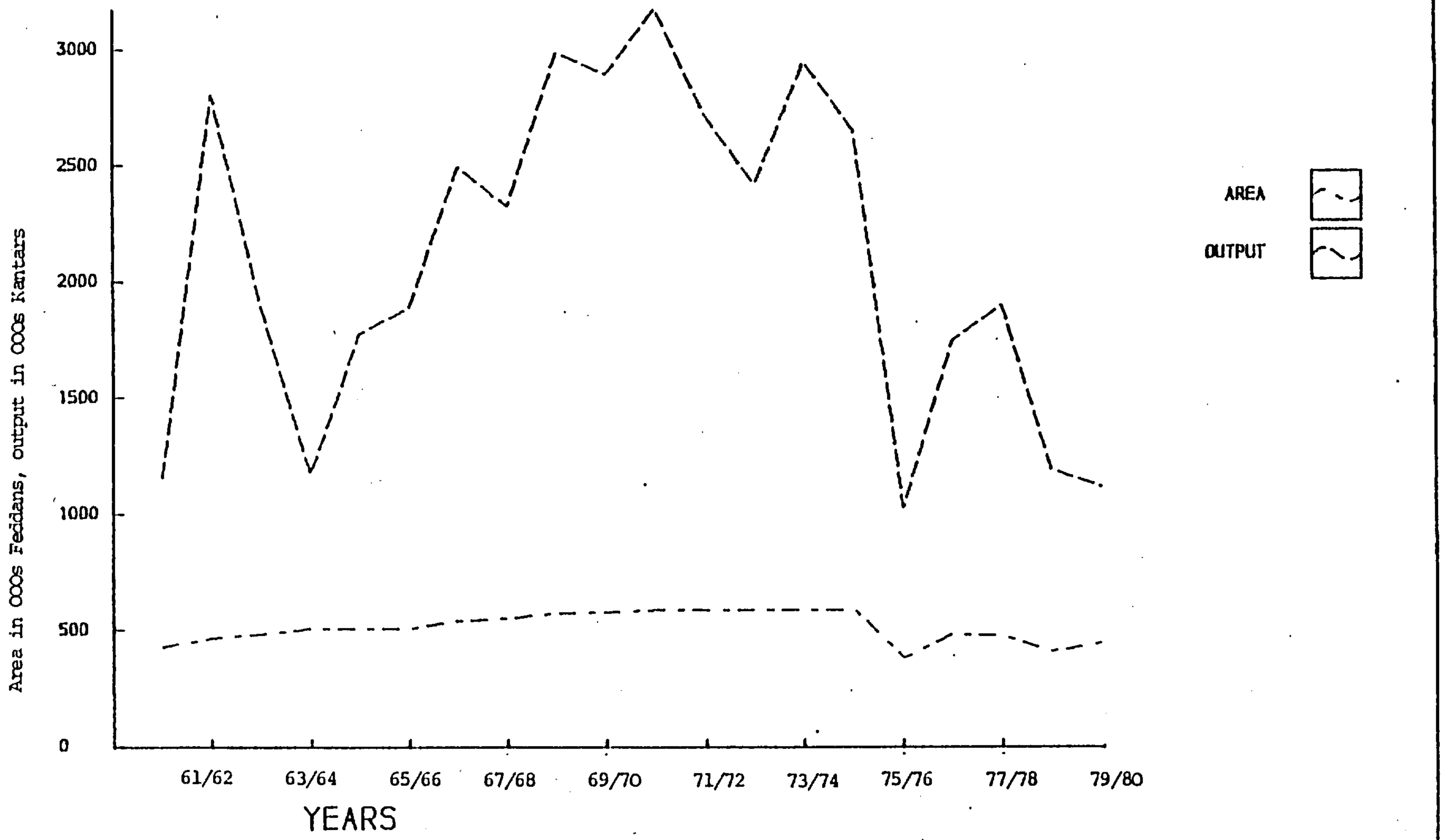
Source: Bank of Sudan, Annual Reports (various issues).

Fig. 4.1 Total Agricultural Production for Major Export and Food Crops (1960/1980)
(Cotton, Groundnuts, Sesame, Wheat, Dura, Dukhun, Gum Arabic)



Source: Constructed from Appendix Table 4.1

Fig.4.2 Trends in Cotton Production and Acreage in Gezera Scheme



Source: Table 4.1

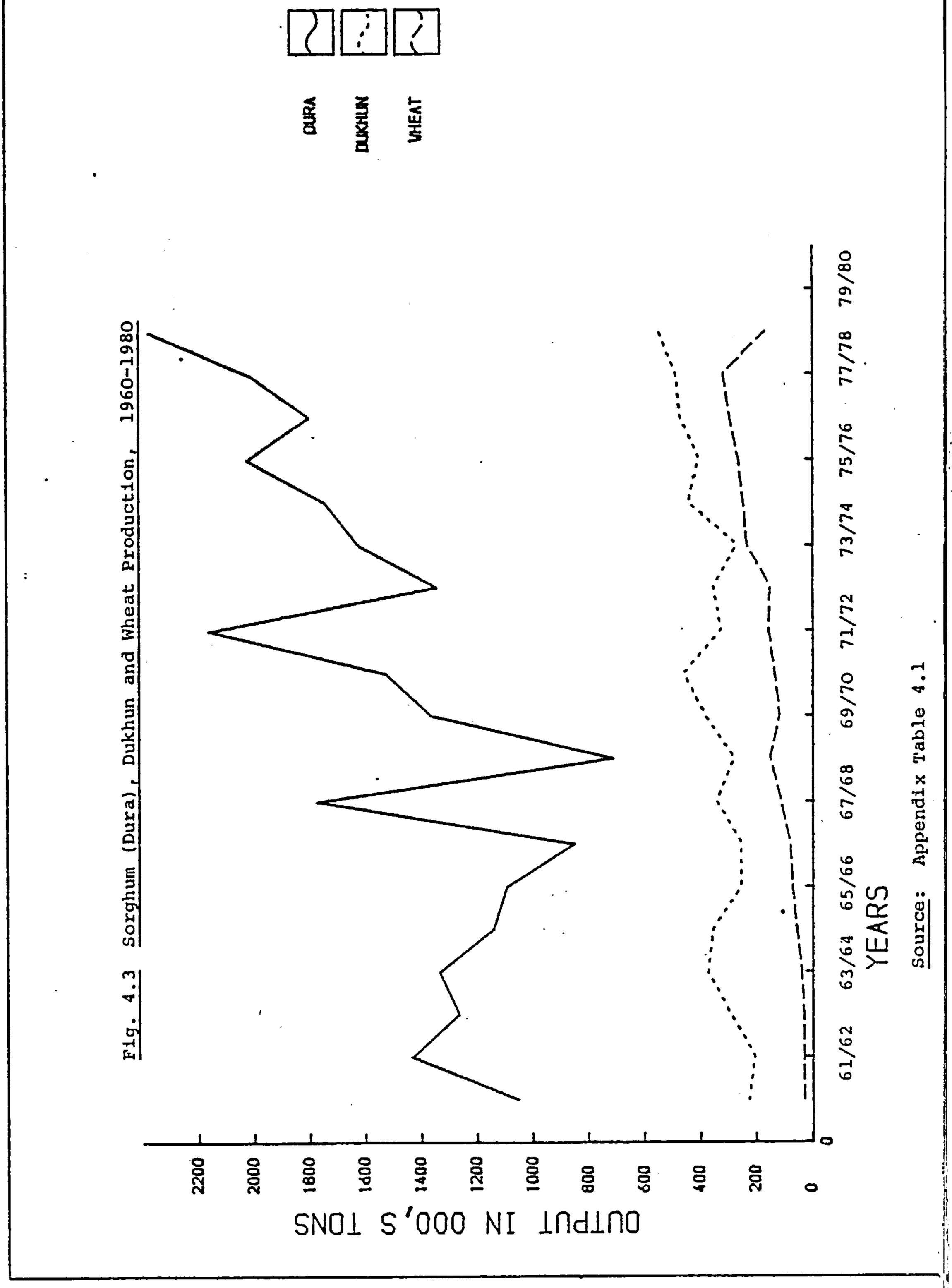


Fig. 4.3 Sorghum (Dura), Dukhun and Wheat Production, 1960-1980

Source: Appendix Table 4.1

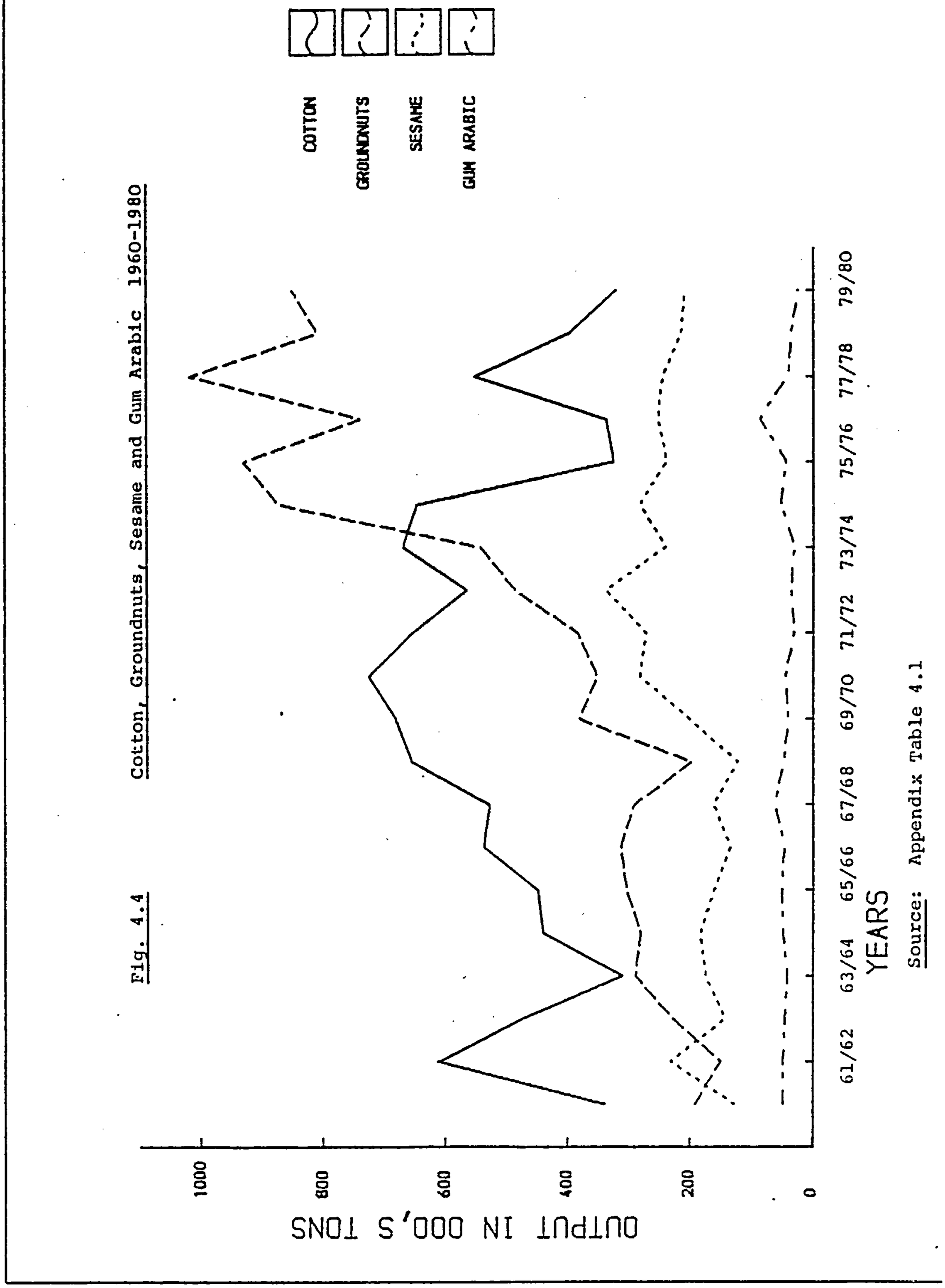
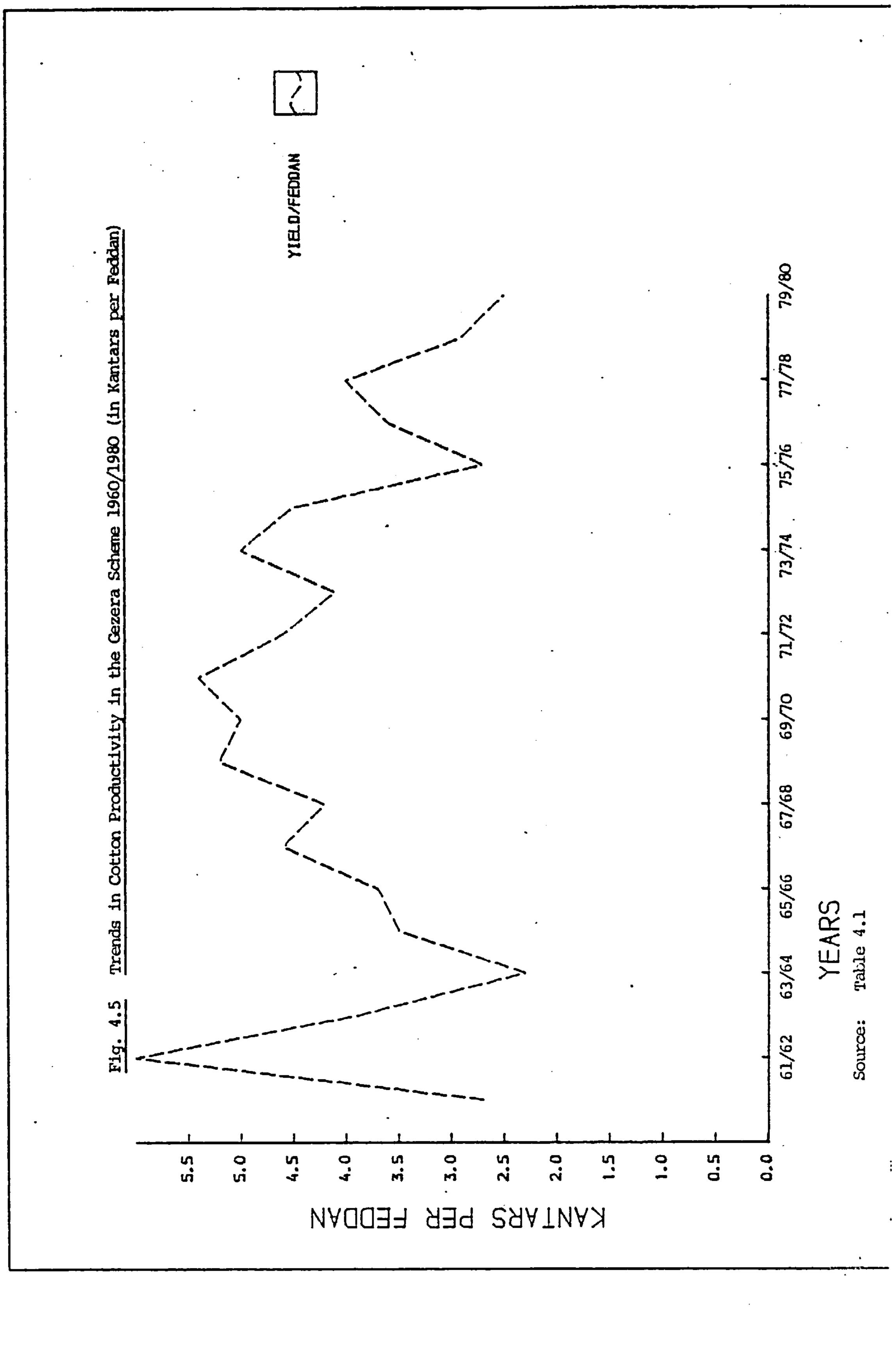


Fig. 4.4 Cotton, Groundnuts, Sesame and Gum Arabic 1960-1980

Source: Appendix Table 4.1

Fig. 4.5 Trends in Cotton Productivity in the Gezera Scheme 1960/1980 (In Kantars per Feddan)



Source: Table 4.1

more than doubled over the two decades 1960-1980. The volume of output increased from about 2 million tons in 1960/61 to about 4 million tons in 1979/80, with an annual average rate of growth of 5.1%. However, as shown in Fig. 4.1 total agricultural output had been more or less stagnant during the 1960s whereas the decade of the 1970s witnessed an increasing - though fluctuating - trend. But, it is interesting to note that the increasing trend in agricultural output has been mainly due to increases in food crops rather than in export crops. (See Figs. 4.2,4.3,4.4). Figures 4.2 and 4.5 show clearly the deteriorating trends in production and productivity for cotton, the major export crop over the decade 1970/71 - 1979/80 with an average decline of 3.3% per annum.

2. The production of groundnuts and sesame, the second and third largest export items - which are partially used to produce cooking oil domestically - have shown a rising but fluctuating trend over the two decades, particularly in the case of sesame. In terms of area groundnuts acreage rose from 470 thousand feddans in 1960/61 to 2.35 million feddans in 1979/80, an increase of fourfold. Sesame acreage rose from .694 to 2.0 million feddans during the same period - an increase of 186% (see appendix Table 4.1). In terms of production, groundnuts output increased significantly over the period particularly after the adoption of the government diversification policy in 1974. During the 1960s and the 1970s groundnut output grew at an average rate of 13.4% and 10.9% per annum respectively, whereas for sesame production there has been a marked decline in the average output growth rate from 11.5% during the 1960s to 2.2% during the 1970s.

3. The fourth major export crop, gum-arabic, for which Sudan is

the major world producer (Sudan's share ranges from 70-85% of total world trade) has shown an almost stagnant trend over the two decades. The production of gum-arabic has suffered from drought and locust as well as from replacement of gum trees by groundnut and sesame cultivation under intensified agricultural schemes.

4. Food grain production (sorghum-dura-wheat and millet-dukhun) have increased remarkably over the two decades 1960-1980, with an average output growth rate of 9.2% per annum. This high growth rate is mainly due to the development of large scale rainfed mechanized farming production of sorghum (dura), which was supported mainly by external development loans from the World Bank and the Kuwait Fund for Economic Development[1]; and to the introduction of wheat production in the Gezera Scheme as part of the policy of diversification of agricultural output.

A comparison between the annual average output growth rates for the major export and food crops during the 1960s and the 1970s - shown in Table 4.2 below - reveals that agricultural production growth rates have declined during the 1970s. Cotton production - the major export crop - declined by an annual average rate of 3.3% during the 1970s, whereas during the 1960s cotton output growth rates showed a marked average increase of 12.6% per annum.

The causes and the major constraints that limited the growth performance in the agricultural sector during the 1970s in general, and in the major export crop (cotton) in particular, can be summarized in the following:-

1. Structural rigidity. As we mentioned earlier, the government's

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1 See Chapters 6 and 8

Table 4.2 Annual Average Output Growth Rates of Major Export & Food Crops 1960/61-1979/80

Crop	Period 1960/61-1969/70	1970/71-1979/80
Cotton	12.6%	-3.3%
Groundnuts	13.4	10.9
Sesame	11.5	2.2
Dura	8.1	4.9
Wheat	20.0	11.0
Dukhun	9.0	2.1
Gum-arabic	-2.6	0.8

Constructed from Appendix Table 4.1

decision to diversify the productive structure of the economy in 1974 has been made possible only at the expense of reduced cotton acreage, a factor which is partially responsible for the decline in cotton production and exports. This phenomenon manifests a kind of structural rigidity in the irrigated sub-sector of agriculture. As the development of new irrigated land is not possible in the short run the expansion in the production of groundnuts, wheat and sorghum (dura) adversely affected the cotton acreage.

2. The decline in cotton production cannot only be explained by reduced acreage but can also be explained by the declining yields in the irrigated schemes. For example, in the Gezira Scheme cotton yield per feddan dropped from 5.4 kantars per feddan in 1970/71 to 2.5 kantars per feddan in 1979/80 (see Fig. 4.5). Declining yields have been mainly due to the failure to increase the

existing productive capacity in the irrigated schemes caused by logistical problems such as the provision of infrastructure and communications, shortages of foreign exchange to buy spare parts and essential inputs and the consequent neglect of maintenance, replacement needs, and inadequate farm machinery availability.

3. Following the global inflation in the early 1970s there have been sharp increases in the prices of vital imported inputs such as fuel, fertilizers and pesticides which affected seriously the productivity in the agricultural sector in general and in particular the import intensive crops like cotton. For example it is estimated that about 20% of gross earnings from cotton exports goes to meet spraying costs alone which is necessary to control pests to which cotton is vulnerable[1].

4. Another constraint has been the shortage of both skilled and unskilled manpower for agricultural operations. The skilled manpower has been attracted by better earning opportunities in neighbouring oil-producing countries (Saudi Arabia and the Gulf Emirates). The unskilled labour on the other hand, did not find earning opportunities in cotton picking and in agricultural jobs sufficiently attractive.

5. The Government policies have also contributed to the decreasing trends in cotton production and agricultural productivity in two ways: First, the adoption of an incentive policy that discouraged cotton production, such as heavy taxation on cotton

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[1]Ministry of National Planning, February 1981. Unpublished report, "Memorandum on the Sudanese Economy".

production through export levies and unfavourable exchange rates[1]. Secondly, the adoption of plans and policies that concentrates on the creation of new capacities rather than the rehabilitation of existing schemes. This is clearly reflected through the allocation of external development loans - as we shall see later - to new projects. However, this policy has been changed towards the end of the 1970s, when the government introduced in 1978 a programme for economic stabilization with the main objective of raising capacity utilization in the existing schemes and providing the necessary facilities to ensure export expansion. It is only after this policy change that the government started to pay attention to the existing agricultural schemes in the irrigated areas. In 1980 a programme loan - rather than a project loan - has been secured for the first time from the World Bank and other foreign aid agencies for the rehabilitation of the existing agricultural schemes.

4.2.4 Industrial Sector Performance and Constraints

The industrial sector's contribution to Sudan's economy has been modest during the two decades 1960-1980. Industry and mining have represented a nearly constant 8 to 9% share of the GDP. The sector is dominated by two subsectors which are typical for most of the LDCs in their early stages of industrialization, these are, food, beverages and tobacco industries, and textiles, clothing and leather industries. Heavy industry is confined to two cement plants and petrolium processing in the single refinery in the country in which imported oil is processed and

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[1] For details see: K. Nashashibi, A Supply Framework for Exchange Reform in Developing Countries: The Experience of Sudan. IMF Staff Papers, March 1980.

partially re-exported. Also, like many LDCs industrialization in the Sudan has been promoted either with the processing of agricultural commodities which are otherwise exported in their crude form, or with manufacturing of import substitution goods for the expanding home market.

Industrialization in the Sudan started with the ginning of cotton early this century. But the processing of cotton had not gone beyond ginning until the early 1960s when two cotton textile firms in Khartoum North were established by foreign enterprises. The 1970s, however, witnessed a growing textile industry supported mainly by official as well as private foreign capital. Other import substitution industries which expanded rapidly during the 1970s were sugar, cooking oil, flour mills and footwear. The sugar industry has received special attention during the 1970s when a major investment programme to build four sugar factories has been completed in order to transform the country from an importer to a net exporter of sugar. But, this investment programme has suffered serious setbacks in its implementation on account of managerial, financial, technical and infrastructural problems.

Appendix Table 4.2 and Figures 4.6, 4.7, 4.8 and 4.9 show trends in industrial production of selected public sector industries, namely sugar, cement and food processing (fruits, dates and onion dehydration). With the exception of cement production, all other industries have been established with the support of external development loans.

Cement production showed a declining trend during the 1970s causing severe shortages in this vital input for building and construction/ (See Fig.4.7). The severe shortages in cement have been aggravated by the implementation of an over-extended public sector building

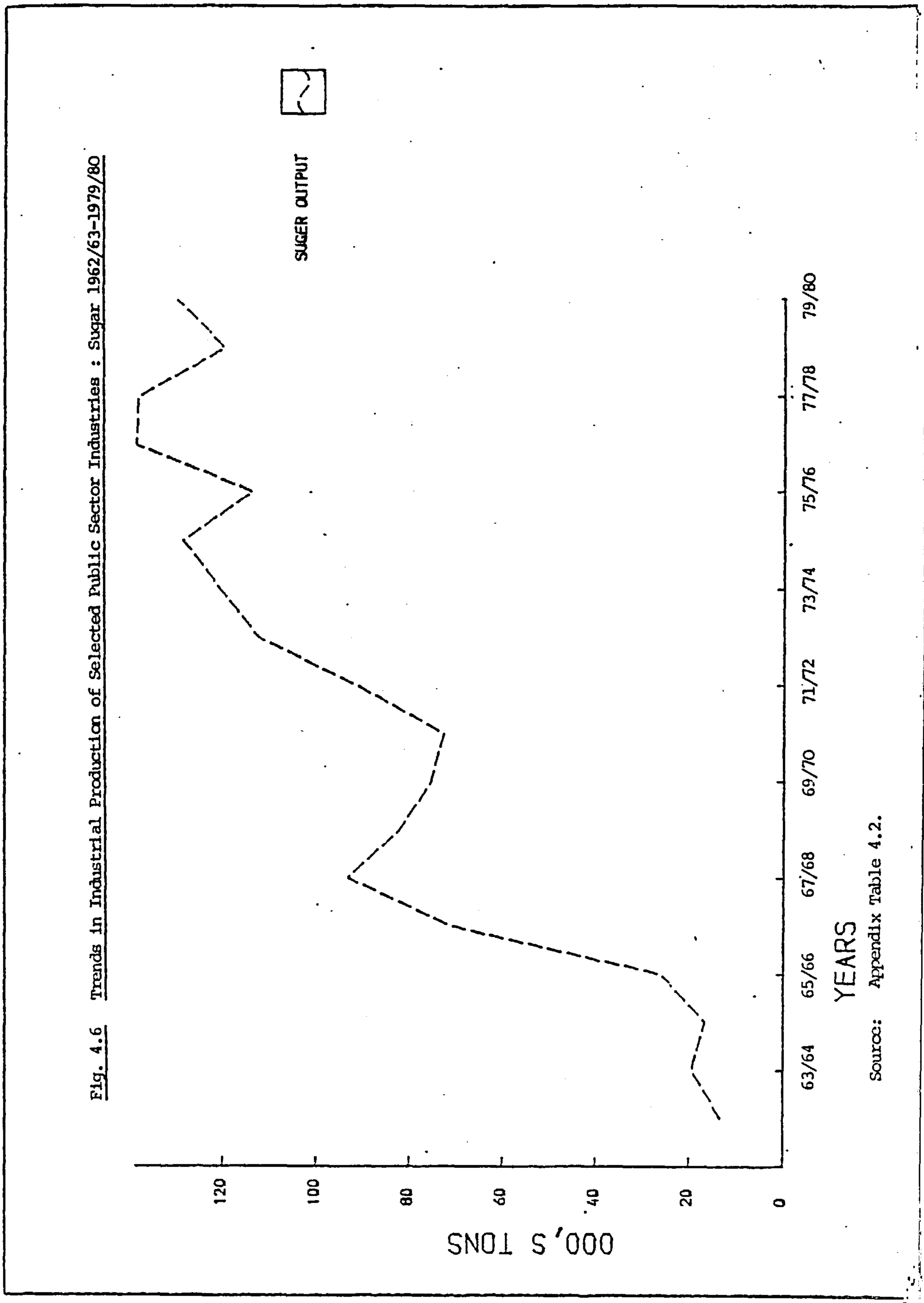


Fig. 4.6 Trends in Industrial Production of Selected Public Sector Industries : Sugar 1962/63-1979/80

Source: Appendix Table 4.2.

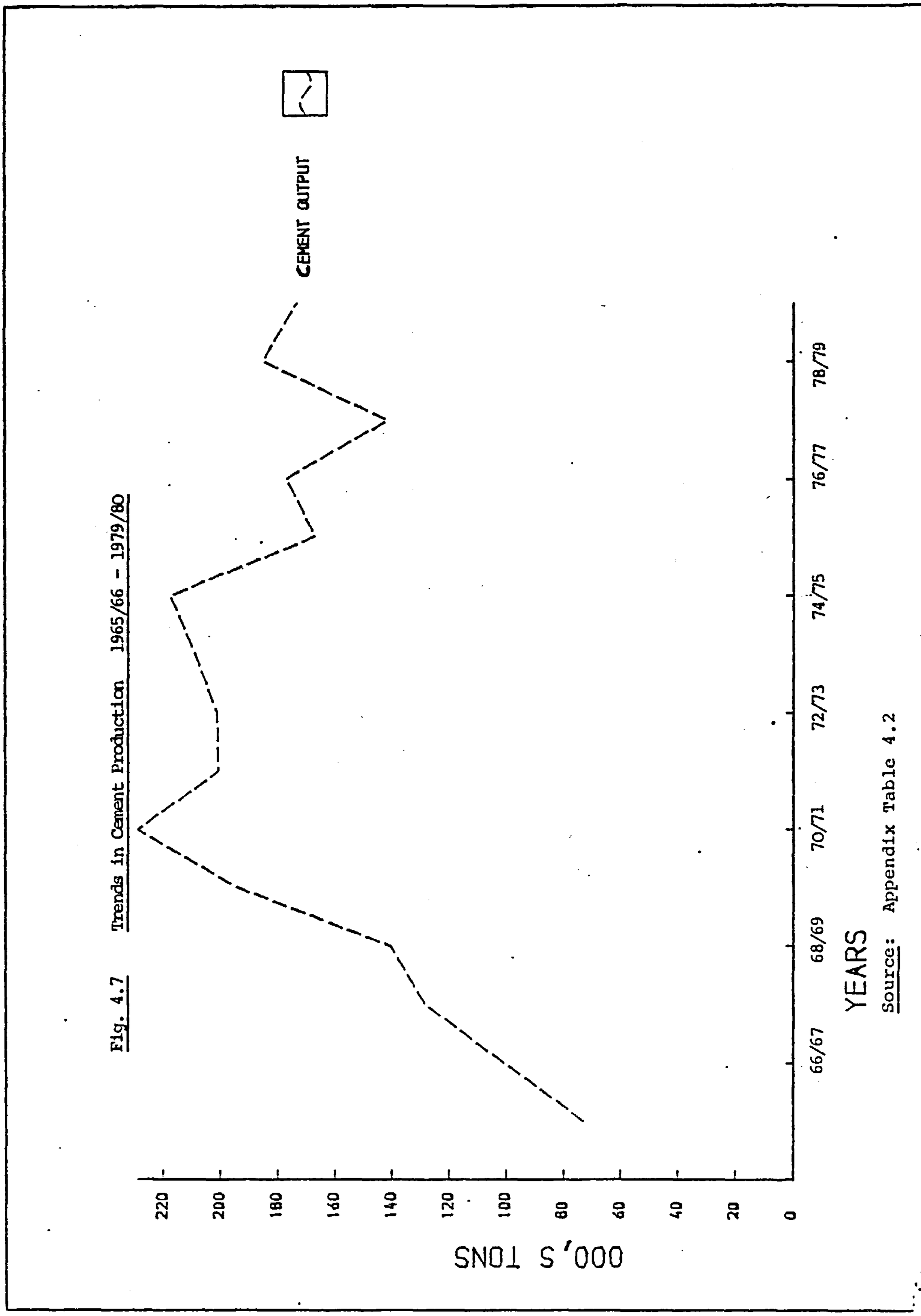


Fig. 4.7 Trends in Cement Production 1965/66 - 1979/80

Source: Appendix Table 4.2

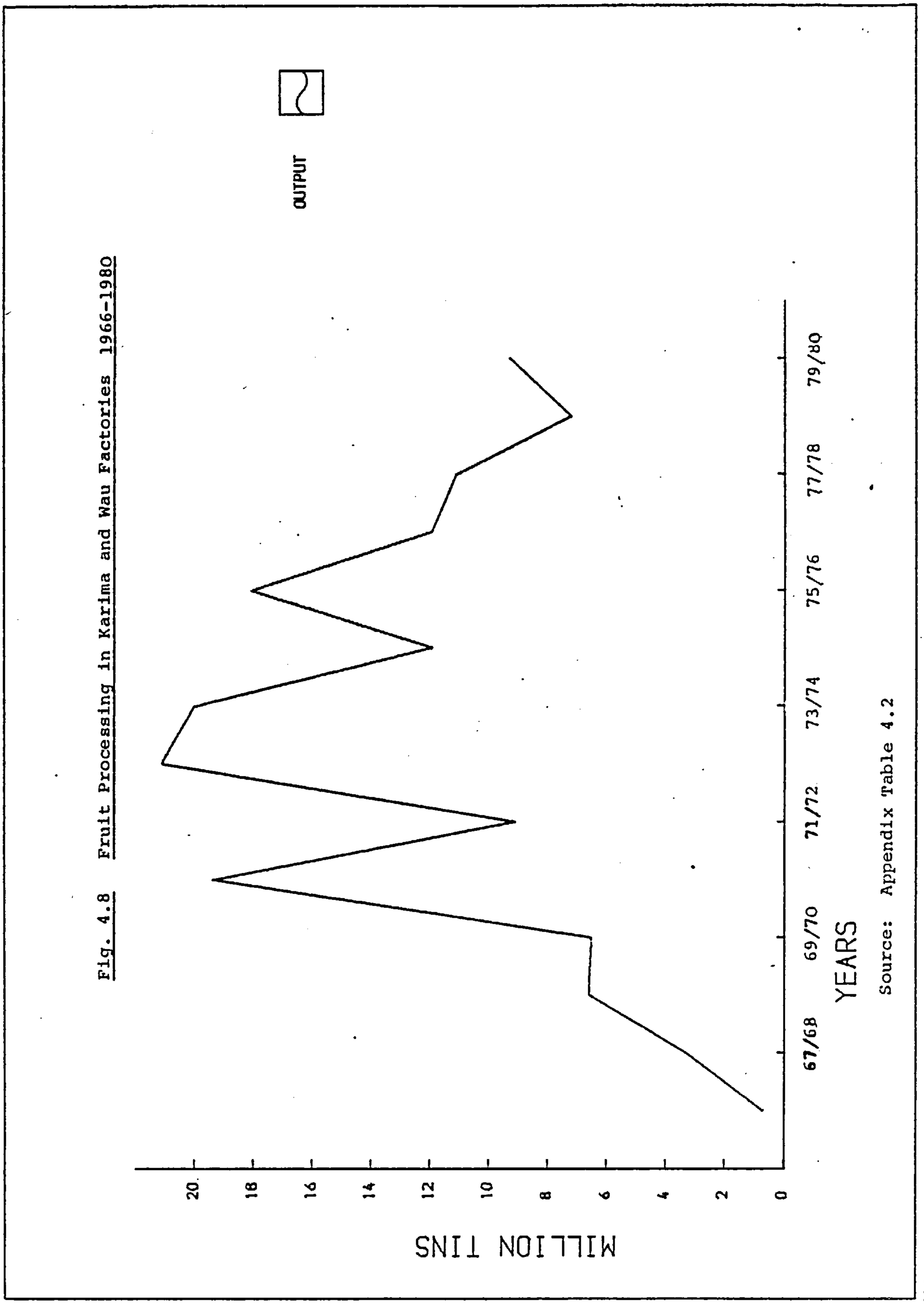
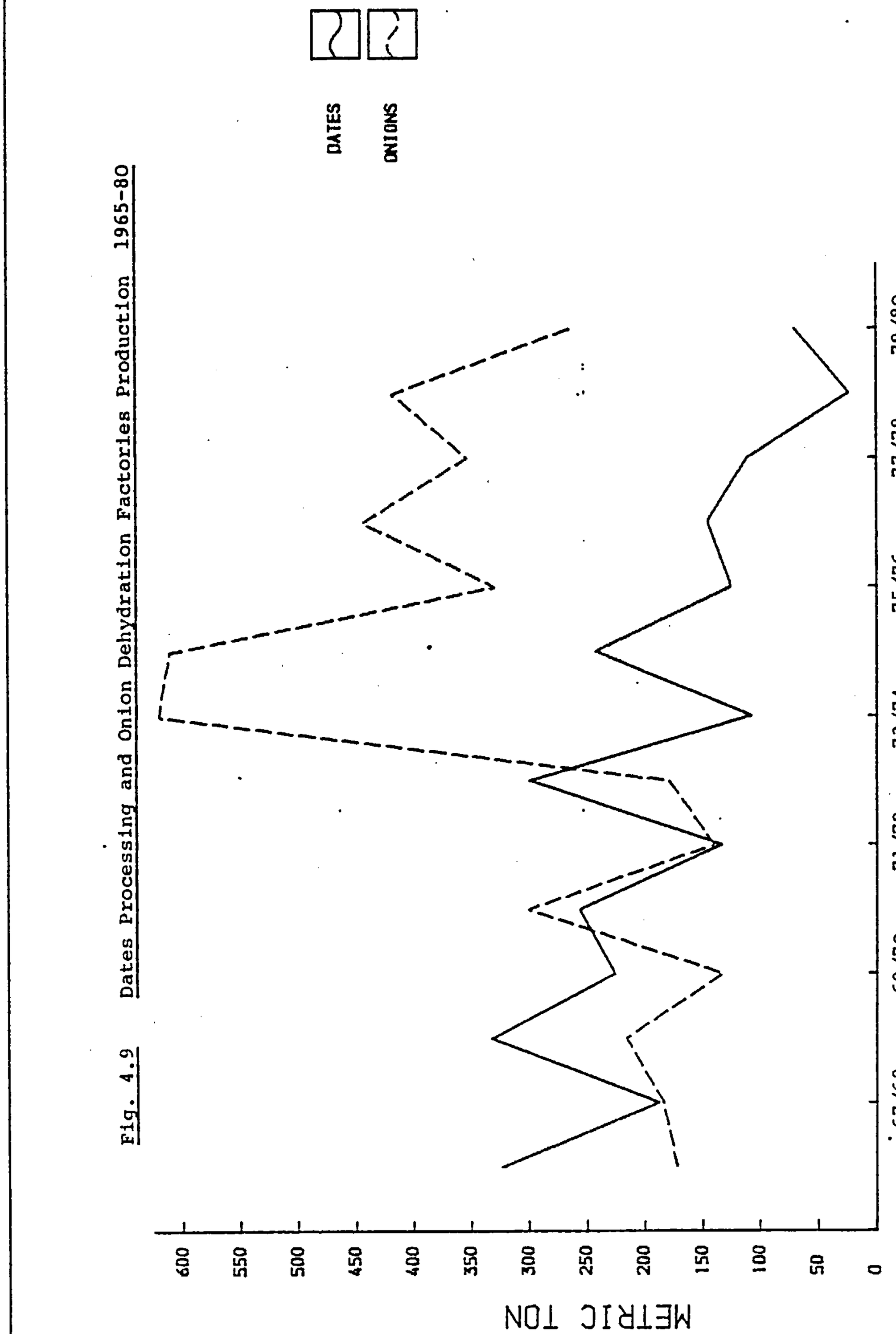


Fig. 4.8 Fruit Processing in Karima and Wau Factories 1966-1980

Source: Appendix Table 4.2

Fig. 4.9 Dates Processing and Onion Dehydration Factories Production 1965-80



Source: Appendix Table 4.2

and construction programme during the 1970s, leading to prolonged delays in projects' implementation in both the public and the private sector.

Sugar production, which is mainly supported by external development loans, has been growing over the two decades 1960-1980 as shown in Fig. 4.6. But the increased sugar production has not been due to increasing capacity utilization but rather due to the creation of new capacities in the newly built sugar factories. As for other food processing activities there has been a fluctuating but declining trend in date and fruit processing, and in onion dehydration particularly during the 1970s, (See Figs 4.8 & 4.9). The deterioration in food processing activities is mainly explained by underutilization of capacity caused by the unstable supply of agricultural raw materials on the one hand, and due to lack of spare parts and maintenance equipment on the other.

Textile production has been confined until 1976/77 to two private sector plants in Khartoum North for which data are not available. The public sector textile production started in 1976/77 with the operation of the Friendship Textile Factory at Al Hassahisa funded by a foreign loan from the Peoples Republic of China. During the subsequent four years, six other weaving factories started production. The combined output of the public sector textile industry has increased from 5.8 million meters in 1976/77 to 17.0 million metres in 1979/80, with an average annual increase of 43% over the four years. However, these factories still operate below capacity mainly due to shortages of yarn caused by the fact that the government has implemented six regionally dispersed weaving factories before the central spinning plant to supply them with their yarn, a situation which manifests an apparent weakness in planning and coordination in the industrial sector.

The most striking feature in the industrial sector has been the high degree of underutilization of existing capacity and the prolonged delays in the implementation of new industrial projects. A study of the capacity utilization in 27 plants in the public sector in 1977 had shown that 22 plants were operating below 65% of their capacity and 10 plants below 35%[1]. From the various issues of the Economic Survey of the Ministry of Finance and Economic Planning, several factors that caused the underutilization of capacity, thereby affecting the overall performance of the industrial sector, can be highlighted:

1. Transportation bottlenecks of industrial raw materials and spare parts. Delays in deliveries by the railway system can be realized by the fact that during the period 1969/70 to 1973/74 freight train delays as a percentage of total trains run were as much as 99.3% on average[2].

2. Foreign exchange scarcity has been a key factor accounting for the low capacity utilization and plant operating efficiency. Shortages in foreign exchange caused irregular and insufficient supply of imported raw materials and spare parts. In 1976/77, for example, private industry requested LS 120 million for industrial import needs. The government foreign exchange budget contained LS 86 million for this purpose, and in fact only LS 42 million was obtained of which half went to service import credit facilities obtained in previous years[3].

3. Shortages of skilled labour, management, and highly trained personnel have led to poor maintenance and equipment breakdown. This problem had been aggravated further by emigration to oil-rich countries in the Gulf region.

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1 & 3 Ministry of National Planning - Unpublished reports 1979 and 1977.

2 Transport Statistical Bulletin 1974, Ministry of National Planning.

4. Frequent power cuts during peak demand periods have always caused major disruptions in production. For example, in June 1977 unannounced interruptions in electricity supply to Khartoum North industrial area (the largest industrial area in the country) numbered 20 and totalled 115 hours causing a major disruption of production in the factories there[1].

4.2.5 Transport and Power Sector Performance and Constraints

Transport and communication in the Sudan has always been a serious impediment to economic development. The country's physical size, the wide geographical dispersion of both population and economic activities as well as the importance of its export crops create special transport needs and problems. Although it is not a landlocked country, many places are more than 1,000 kilometers from the single port of the country by the shortest route.

Historically the railways have occupied a predominant place in Sudan's transport system. The railway system includes 5,493 kilometers of single track route. Estimates show that about two-thirds of long distance freight transport is carried by railways. It handles about 75% of freight traffic and 70% of passenger traffic on the vital Port Sudan - Khartoum route. This route is of vital importance to the national economy because the economy depends on substantial imports of fuel, food, fertilizers and other consumer and capital goods as well as exports (cotton, oil seeds and gum-arabic), all of which pass through Port Sudan.

The operational performance of the railways has generally been poor, creating the most severe constraint to the expansion of the national economy. Table 4.3 and Fig. 4.10 show that the railway traffic does not exhibit any regular pattern of traffic growth. It shows a considerable increase up to the year 1969/70, and a declining performance thereafter.

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[1] Public Corporations in Sudan. Study by a government task force assisted by World Bank staff members and consultants - February 1978.

Table 4.3 Rail and River Freight and Passenger Traffic Volumes 1960/61-1979/80

Year	Railways		River	
	Freight (in million tons)	Passengers (in million)	Freight (in thousand tons)	Passengers (in thousand)
1960/61	2.1	2.9	-	-
61/62	2.5	3.1	-	-
62/63	2.8	3.2	-	-
63/64	3.1	3.1	150	186
64/65	2.6	3.1	127	208
65/66	2.6	3.4	127	187
66/67	2.6	3.5	122	219
67/68	2.5	3.4	124	237
68/69	2.9	3.2	145	256
69/70	3.0	3.9	122	302
70/71	3.0	3.4	129	262
71/72	2.9	3.2	134	267
72/73	2.8	3.4	111	296
73/74	2.6	2.8	91	182
74/75	2.5	3.0	108	232
75/76	2.8	3.1	98	307
76/77	2.6	3.9	100	233
77/78	2.2	3.0	102	255
78/79	2.0	2.4	106	279
79/80	2.1	2.6	91	66

Source: (1) The Economic Survey - Ministry of Finance and National Economy

(2) Transport Statistical Bulletin 1974 Ministry of National Planning

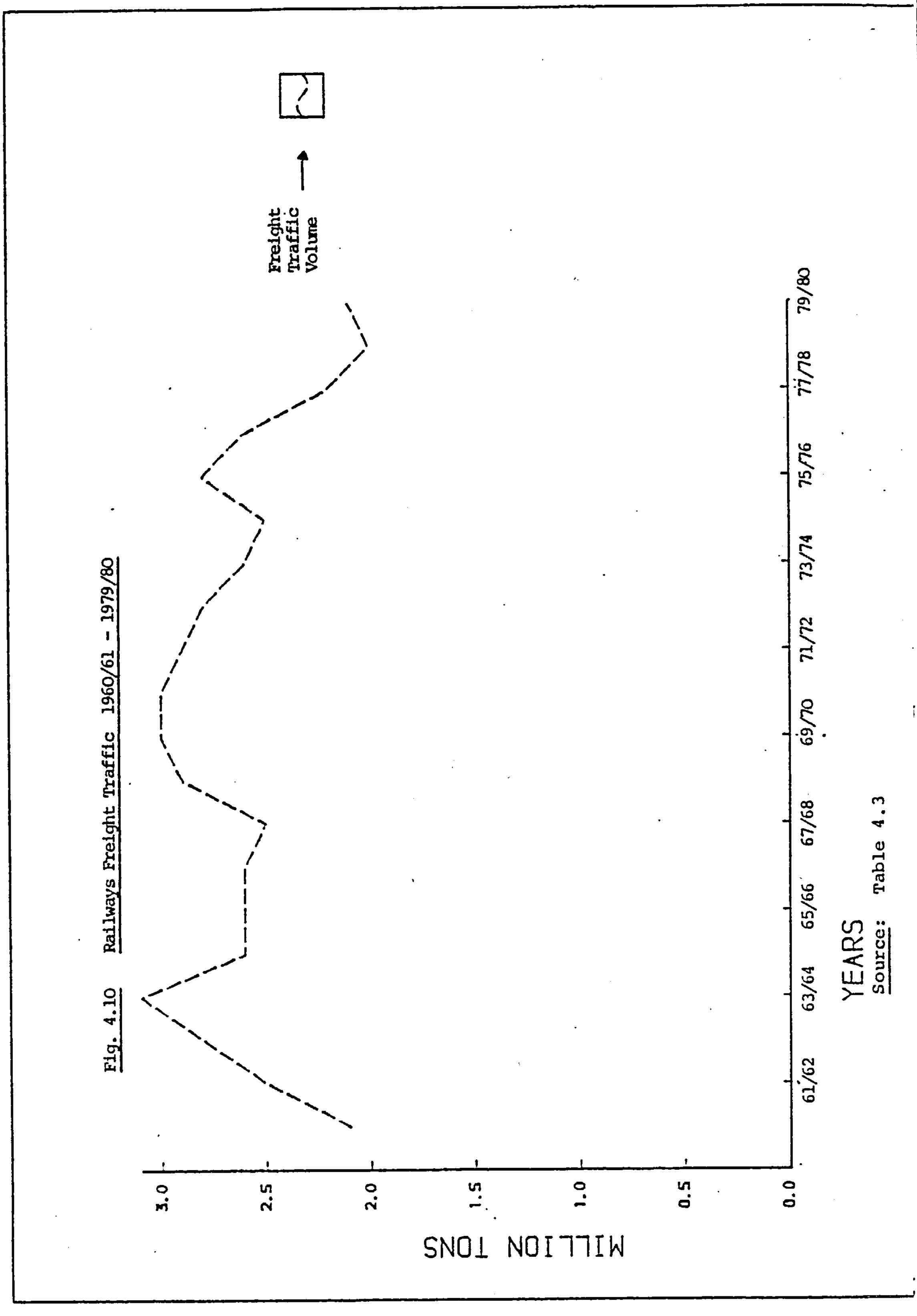

Fig. 4.10 Railways Freight Traffic 1960/61 - 1979/80

Source: Table 4.3

This declining trend is explained on the one hand by the partial traffic diversion to road transport and on the other hand by the inability of the railways to handle the freight available sufficiently quickly because of[1]:

1. Insufficient locomotives and rolling stock
2. Lack of spare parts
3. Physical damage to the track caused by washouts, sand dunes and excessive heat.

These factors, combined with administrative problems, have caused delays, low operating speed and locomotive breakdown.

Road transport in the Sudan received very little attention during the 1960s. By 1970 the total inter-city asphalt road length was only 375 kilometers (see Table 4.4). In view of the poor performance of the railways, it became increasingly apparent that transportation facilities were inadequate to cope with the increasing economic activity, and that transport bottlenecks hampered the expansion of agriculture, industry and commerce in the urban sector as well as the implementation of the development projects. In 1973 the government introduced the Phased Action Programme[2] which laid heavy emphasis on the provision of a primary road network connecting key markets and towns. By 1979/80 the cumulative asphalted road length in the Sudan reached a level of 1592 kilometer (an increase of 325% over the pre-1970 length). A further 762 kilometers of asphalt roads are currently under construction.

The fast growth in road construction during the 1970s, which as we shall explain is associated directly with foreign aid resources (see Ch.8) have caused a remarkable shift in the share of road

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1 It has been reported earlier that during the period 1969-74, on the average train delays - as a percentage of total trains run - are 99%.

2 A modified extended version of the Five Year Plan (1970/71-1974/75) introduced by the Government to revise some of the policies, priorities and investment allocations included in the Five Years Plan.

Table 4.4 Asphalt Road Length Completed Before and After 1970/71

(1) Before 1970/71

Road Section	Length
Khartoum-Wadmedani Road[1]	187 km
Khartoum North - Geili Rd.	42
Khartoum Jebel Aulia Rd.	35
Omdurman-Wadi Sedina Rd.	22
Summit-Erkoint Rd.	34
Other[2]	55
Total	375

(2) During 1970/71 - 1979/80

(a) Completed:

(1) Wadmedani - El Gedarif Rd.	228 km
(2) El Gedarif - Kassala Rd.	220
(3) Kassala - Haya Rd.	348
(4) Haya - Suakin - Port Sudan Rd.	204
(5) Wadmedani - Sennar - Kosti Rd.	217
Total	1217

(b) Under construction:

(1) Sennar - Damazin Rd.	285 km
(2) Nayala - Kas-Zalingi Rd.	210
(3) Jebel Aulia - Dueim Rd.	158
(4) Dueim Rabak Rd.	109
Total	762

Source: Ministry of National Planning.

1. Work was initiated in 1963 under US aid but in 1967 work on the project was stopped due to political differences between the US and Sudan government following the Middle East War in 1976.

2. Includes Tokar/Sallalet Rd. 17 km, Gedarfe-Hillalat Rd. 17 km, Kalakola-White Nile 6 km, and Wadmedani-Barakat Rd. 15 km.

transport *via-a-vis* other transport modes. In terms of ton-kilometer the share of road transport has increased from 25% in 1970/71 to 60% in 1979/80. This is shown in Table 4.5 below.

Table 4.5 Share of Road Transport in Ton/Km Carried by All Modes of Transport

Ton-km in billion

Period	Total ton-km (all modes)		ton-km carried by road	
	Total	%	Total	%
1970-71	3.70	100	0.92	25
1976-77	5.50	100	2.97	54
1979-80	6.00	100	3.57	59

Source: Ministry of Finance and Economic Planning - Planning.

One of the major constraints experienced in carrying out the roads construction programme during the 1970s has been cost overruns caused by price increases of labour, fuel and materials. The following examples given in Table 4.6 indicate the extent of cost escalation in some of the road projects.

Table 4.6 Extent of Cost Overruns in Some Road Projects

In Ls million

Project	Original cost estimate	Cost at the completion of project	Size of cost overrun	% of cost over-run to original cost
Haya-Suakin-Port Sudan Rd.	28.1	34.7	6.6	24%
El Gadarif-Kassala Rd.	22.7	29.2	6.5	29
Kassala-Haya Rd	35.7	61.5	25.8	72
Kosti Bridge	11.8	19.5	7.7	65
Total	98.3	144.9	46.6	47.4

Source: Ministry of Finance & Economic Planning - Planning

This relatively high rate of cost overruns reflects on the one hand the adverse effects of the external factors regarding price rises in fuel and imported materials, and on the other hand, it points to other internal factors such as the inadequate project appraisal and the lack of proper evaluation of terms of contract with contracting agencies. Cost escalations have also been due to delays in project implementation caused mainly by delays in supplying materials to the contracting agencies by the government such as cement whose distribution is controlled by the Ministry of Commerce and Supply, and petrol whose distribution is controlled by the Ministry of Industry. Delays have also been caused by the non-availability of adequate local funds which are supposed to be supplied by the government. A problem known as 'the liquidity problem'.

Besides the fast growth of road building, the government has also planned and implemented the petroleum products pipeline between Khartoum and Port Sudan during the 1970s. It is a major transport project with the aim of relieving congestion on railway traffic between the single port of the country, Port Sudan, and Khartoum, the capital.

River transport, in general, plays a minor role in the movement of freight and passenger traffic. But it provides an important means of communication between the southern and central regions of the country as alternative modes of transport are completely absent (namely railways and roads). The river transport system consists of Kosti-Juba (the capital city of the Southern region) 1,436 kilometers and Karima-Dongola reach in the Northern province 28 kilometers. The river services, however, have suffered from deteriorating operational efficiency particularly over the decade of the 1970s on account of lack of spare parts,

maintenance equipment, the number and age of the fleet, and the poor management of the service. Table 4.3 and Fig. 4.11 show the deteriorating performance of the river transport.

Table 4.7 Electricity Generation

Year	GWH (in million)	Annual Growth Rate %
1966/67	269	-
67/68	288	7
68/69	332	15
69/70	372	12
70/71	N.A.	-
71/72	452	-
72/73	515	14
73/74	544	6
74/75	588	8
75/76	628	6
76/77	683	9
77/78	738	8
78/79	863	17
79/80	935	8

Source: The Economic Survey - various issues
Ministry of Finance and Economic Planning

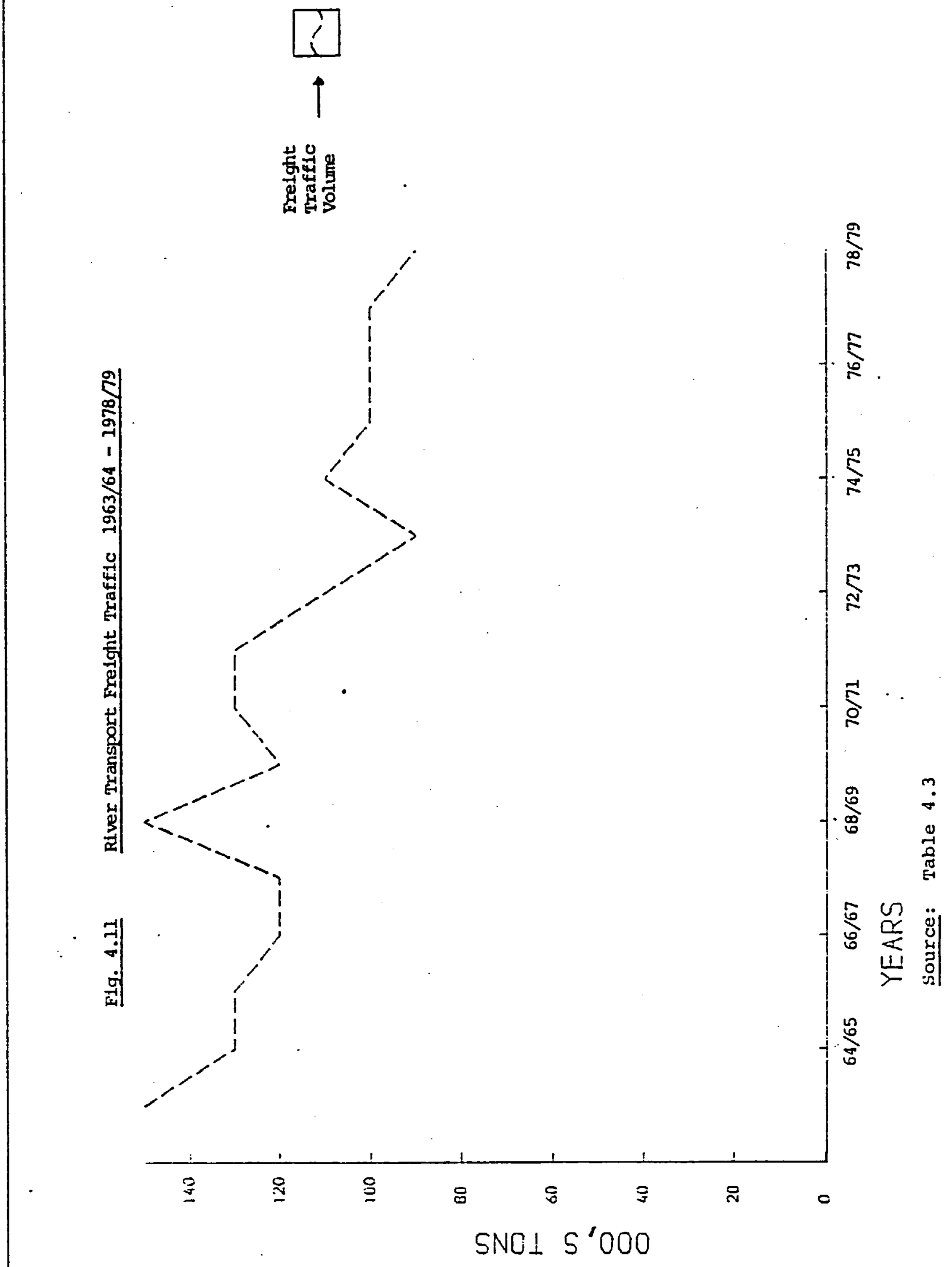
Note: N.A. = not available

in GWH (generated watt/hour)

Electric power generation, like transport activities, is an essential infrastructure for the growth and development of agriculture and industry. In the Sudan the total generating capacity at present is about 230 megawatts (MW), 70% of which is hydro generated (the hydro potential capacity is estimated about 1600 MW).

Electric power generation has been steadily growing since

Fig. 4.11 River Transport Freight Traffic 1963/64 - 1978/79



Source: Table 4.3

the year 1966/67 (see Fig. 4.12). The average annual increase in electric power generation has been about 10% over the period 1966/67 -1979/80. But, despite this steady growth in electricity supply the years of the past decade have witnessed frequent periods of uncertain and inadequate supply of electricity which have impeded the execution of development projects in many regions and, as we mentioned earlier, caused a major bottleneck in the production of industries relying on electric energy. The inadequate and uncertain electricity supply has been mainly due to the increased needs of irrigation schemes and many manufacturing industries established during the 1970s; as well as the increasing needs of domestic and commercial sectors in the urban areas which have grown considerably over the past two decades. For example, the share of urban population in the total population of Khartoum Province has gone up from 50.2% in 1956 to 71.9% in 1973/74[1]. Electricity supply deficiency can be seen by the fact that while the demand for electricity in Greater Khartoum has been fluctuating between 140 MW and 210 MW during the cold and the hot seasons respectively, actual supply has never exceeded 160 MW[2]. However the shortages in electricity supply have not only been due to increased demand but also due to reductions in the effective capacity of El Roseries Dam hydro turbines during the rainy seasons (especially in August) as the silt and debris borne by the Blue Nile from the Etheopian highlands blocks the turbines.

Source: Table 4.7

4.2.6 Human Resources Constraint

As we mentioned earlier, the majority of the people of the Sudan are poor and have little access to the basic amenities.

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[1] ILO 'Growth, Employment and Equity': a comprehensive strategy for the Sudan, p. 351.

[2] Sudanow. A monthly magazine published by the Sudan Government, p. 25, March 1982.

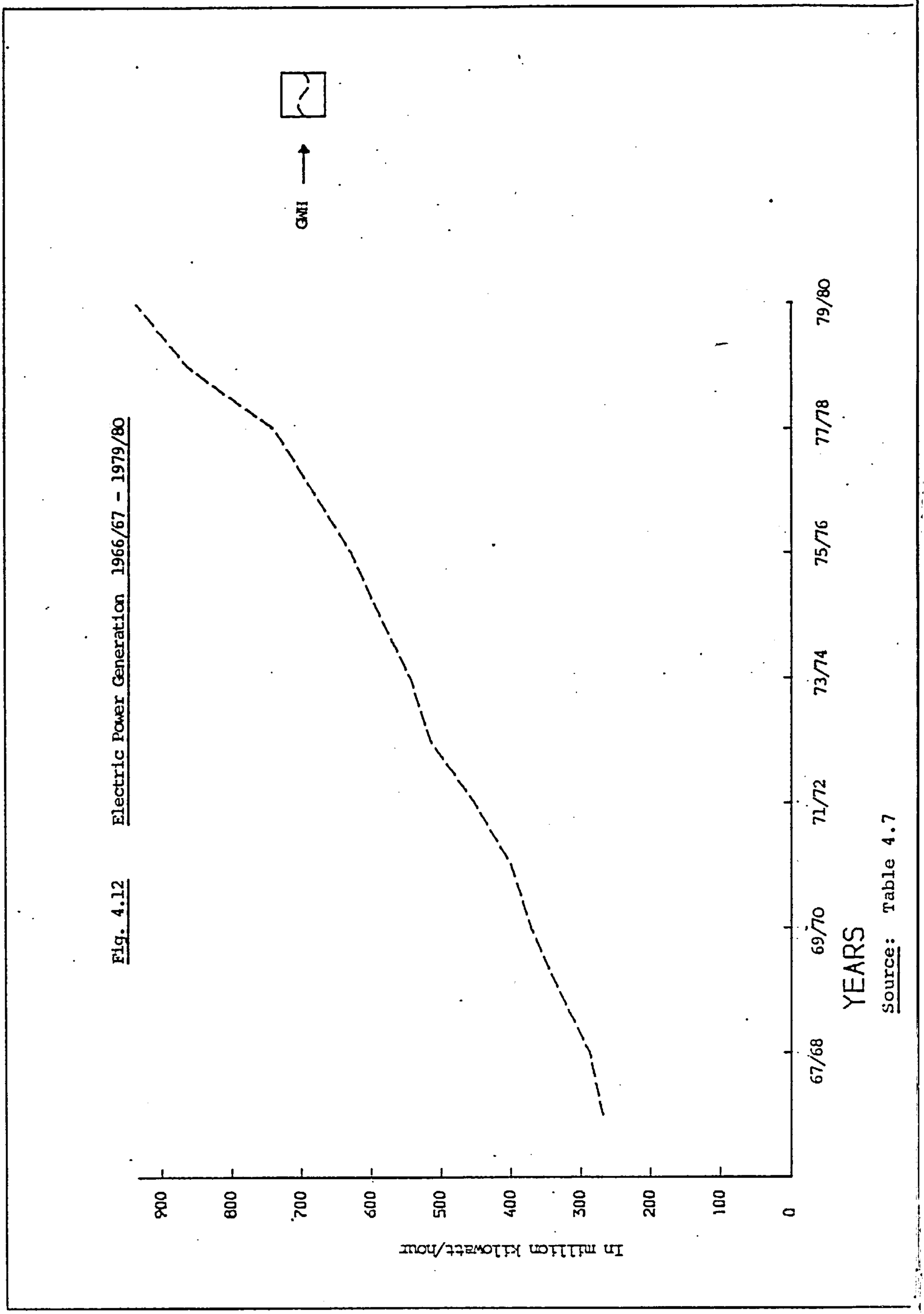

Fig. 4.12 Electric Power Generation 1966/67 - 1979/80

Source: Table 4.7

Life expectancy at birth still remains at 47 years[1]. Nearly 80% of the adult population is illiterate, and about one-half of school age children do not enter primary school. Unlike most of the LDCs population growth in the Sudan - at about 2.5% per annum - is not a problem. Unemployment is negligible; in 1975 the percentage of the labour force which is unemployed is estimated to be 1.7% or 1.2% of the total population[2]. As a matter of fact the problem has always been one of shortage of labour in agriculture - particularly in the cultivation of cotton which is most labour intensive - and in industrial and services sectors activities. Added to this problem of shortage in unskilled labour is the more usual problem of shortages of skilled manpower which has been a major bottleneck in the country's development effort.

In the Sudan manpower problems have been aggravated further during the 1970s by a sudden and a severe drain of manpower at all skill levels to the nearby Arabic-speaking countries - Saudi Arabia, Libya, and the Gulf States - whose oil income has permitted them to undertake vast development projects and allowed them to pay salaries which by far exceed what can be earned in the Sudan. This so called 'brain drain' has left major staffing gaps in virtually every government ministry and department. Hence, many parts of key ministries and productive organizations are left to rely on relatively inexperienced personnel. Detailed data on the number and type of migrant workers are not available as many migrants go to the neighbouring Arab oil producing countries as tourists or for pilgrimage in the case of Saudi Arabia, but they

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[1] World Development Report 1981, p. 134.
[2] Growth, Employment and Equity: A Comprehensive Strategy for the Sudan. ILO Report 1975.

never come back to their jobs. However, the number of migrant workers registered by the Department of Labour is for those who complete their job contracts through that department. During the period April 1978 to March 1980, according to the Department of Labour records, 13,000 workers migrated through their offices[1]. This figure represents about 55% of the jobs secured by the department itself during the same period for skilled, unskilled, semi-skilled and university graduates inside the Sudan.

4.3 SUMMARY

The analysis of the physical growth performance in the major sectors of the economy during the period 1960-1980 clearly indicates that the external constraint - emphasized by the two-gap models reviewed in Chapter 2 - has been a major factor limiting the production process in agriculture, industry and transport (railways). It is manifested on the one hand by the heavy reliance on imported capital goods such as agricultural machinery and implements and transport equipment, spare parts, maintenance equipment, as well as other vital inputs such as fuel, fertilizers, insecticides, and industrial raw materials. And on the other hand by the heavy dependence on a single export crop (cotton) whose production has been deteriorating particularly after the year 1974 when structural rigidities in the irrigated sub-sector have not allowed for increases in the production of other export crops (such as groundnuts) and import substitution crops (such as wheat) without marked reductions in cotton production. Further analysis of this external constraint shall be presented in Chapter 5 (section 5.3) when we examine the structure, features and developments in the external sector of the economy.

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[1] The Economic Survey - Ministry of Finance and Economic Planning - 1978/79-1979/80.

It is important to note, however, that sectoral physical growth performance over the period 1960-1980 indicates that there has been a large increase in the acreage of rainfed and irrigated agricultural lands as well as an increasing trend in the production of some agricultural crops such as sorghum (dura), wheat and groundnuts. There has also been a remarkable growth in road construction during the 1970s. In the industrial sector sugar and textile industries as well as electric power generation have shown an increasing trend. These achievements in agriculture, road building and industry are mainly due - as we shall see in Chapters 6 and 8 - to the availability of foreign development loans and grants which financed the foreign exchange costs of these activities.

However, self-sufficiency in sugar, wheat and textiles had not been achieved as planned by 1978/79 as the country still imports these basic food and clothing items. Failure to achieve this goal is largely explained by the prolonged delays in the implementation of the new projects, on the one hand, due to shortages in the supply of basic imported materials such as cement (partially imported) and fuel; transport bottlenecks, lack of sufficient domestic funds, cost overruns, and - as we shall see in Chapter 9 - the lengthy procedures involved in the acquisition of foreign development loans. And, on the other hand, by capacity underutilization in the existing productive schemes caused mainly by the widespread shortage of foreign exchange needed to purchase spare parts, maintenance equipment and basic imported inputs, as well as the shortages in skills which have been aggrevated by the sudden widespread migration to the nearby Arabic speaking oil rich countries during the 1970s.

In the forthcoming chapter particular emphasis will be

given to the main causes that underly the lack of funds, domestic as well as foreign, which have been a major impediment to the growth performance of the economy, namely the public sector's savings performance and the external sector's performance.

CHAPTER 5

PUBLIC SECTOR SAVINGS AND FOREIGN EXCHANGE CONSTRAINTS

In the previous chapter we have shown that the availability of foreign exchange and insufficient local funds have constituted major obstacles to the growth performance in the productive sectors of the economy, as well as to the implementation of the planned investment programmes. The aim of this chapter is to analyse the major features of the public sector's financial performance as well as the external sector's performance, that is exports and imports, and the overall balance of payments developments. This analysis would enable us in the subsequent chapters to clarify the effects - positive or otherwise - of foreign aid loans received by the Sudan in relieving these constraints. The impact of foreign aid loans on foreign exchange availability, domestic savings effort and the overall as well as the sectoral growth performance of the economy shall be examined in Chapters 6, 7 and 8 respectively.

5.1 PUBLIC SECTOR'S DOMESTIC FINANCIAL PERFORMANCE: AN OVERVIEW

At the outset of this section it is important to define the public sector savings and investment in the Sudan in view of the budgetary procedures. The public sector savings consists of the central government savings - that is, central government revenue minus central government current (non-development) expenditure - plus the savings of public enterprises in the various sectors of the economy. Public sectors savings are used together with external and internal borrowing to finance the public sector investment programmes (that is development expenditure)[1]. The

1 Because of the difficulty in defining the concept of development expenditure different countries have different procedures for budgeting development expenditure. In the Sudan development expenditure is defined to include all expenditure on a development project till its completion (such as capital expenditure on ....

three sources of finance in the public sector are clearly shown in the first Ten Year Plan, the Five Year Plan, and the current Six Year Plan. Table 5.1 shows the share assumed by the planners of each source of finance in supporting investment in the three development plans. It shows the increasing planned reliance on foreign aid and the decreasing planned reliance on domestic savings in financing planned investment.

Table 5.1 Sources of Finance for Development Plans

	The Ten Year Plan 1961/62 - 1970/71		The Five Year Plan 1970/71 - 1974/75		The Six Year plan 1977/78 - 1982/83	
Total Investment:	337.0	100%	215.0	100%	1570	100%
Sources of Finance:						
Domestic Savings	219.7	65.2	105.0	48.8	450	28.7
Foreign Aid	117.3	34.8	110.0	51.2	835	53.2
Internal Borrowing	-	-	-	-	285	18.1

Source: The Ministry of Finance and Economic Planning (Planning)

Turning to what has actually happened in practice we should note that all the three plans have either been suspended or changed drastically over the years of the implementation mainly because of political instability and some external economic shocks following

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....buildings and construction, equipment, vehicles, salaries and wages for those implementing the project, fuel and custom duties. Once the project is completed, all the current expenditure for operation and maintenance will be included in the Central Government's ordinary budget (current expenditure) or in the operating budgets in the case of public enterprises. Any expansion or modernization or consolidation of these projects is treated as development expenditure (see Azhar, B.A. Development Budgeting in the Sudan (1977).

the mid 1970's sharp rises in oil prices and the consequent global inflation. The Ten Year Plan 1961/62 - 1970/71, which was the first comprehensive development plan, was suspended in 1964 following a civilian popular revolution which ended the military rule of General Aboud. The Five Year Plan 1970/71-1974/75, which was formulated by a team of Russian experts, has also been suspended after two years of operation - following the failure of a communist coup in 1971. Instead an interim Action Programme has been launched. The magnitude of investment was increased, new projects were introduced, and the period of the Plan was extended for a further two years. The current Six Year Plan has also not been free from amendments caused mainly by the severe financial constraints just at the time when the government was about to embark on its implementation. As a result the investment programme had to be cut down in size to bring it in line with the expected domestic and external financial resources. This has been done through the first Three Year Investment Programme 1977/78-1979/80 and the current Second Three Year Investment Programme 1980/81-1982/83. Both programmes were supported by strict economic stabilization and financial reform policies of the IMF/IBRD type[1]. Because of the suspension, changes and amendments of the successive development plans, our analysis of public sector's financial performance is undertaken in view of time trends and annual budgetary appropriations rather than to compare performance with initial plans targets.

In general, the financial performance of the public sector over the two decades 1960-1980, as shown in Table 5.2 and Fig.5.1, could be summarized in the following:

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1. To satisfy the IMF "conditionality" for securing loans for balance of payments support from the IMF as well as from other creditors like the World Bank & the other development aid institutions it is necessary to undertake some policies which are thought to be effective in bringing about the external & internal balance of the economy. Common examples of such policies are gov't expenditure cuts, exchange rate changes, revenue raising, abolition of subsidies, export promotion, etc.

Table 5.2 Public Sector Financial Performance
(in Ls million)

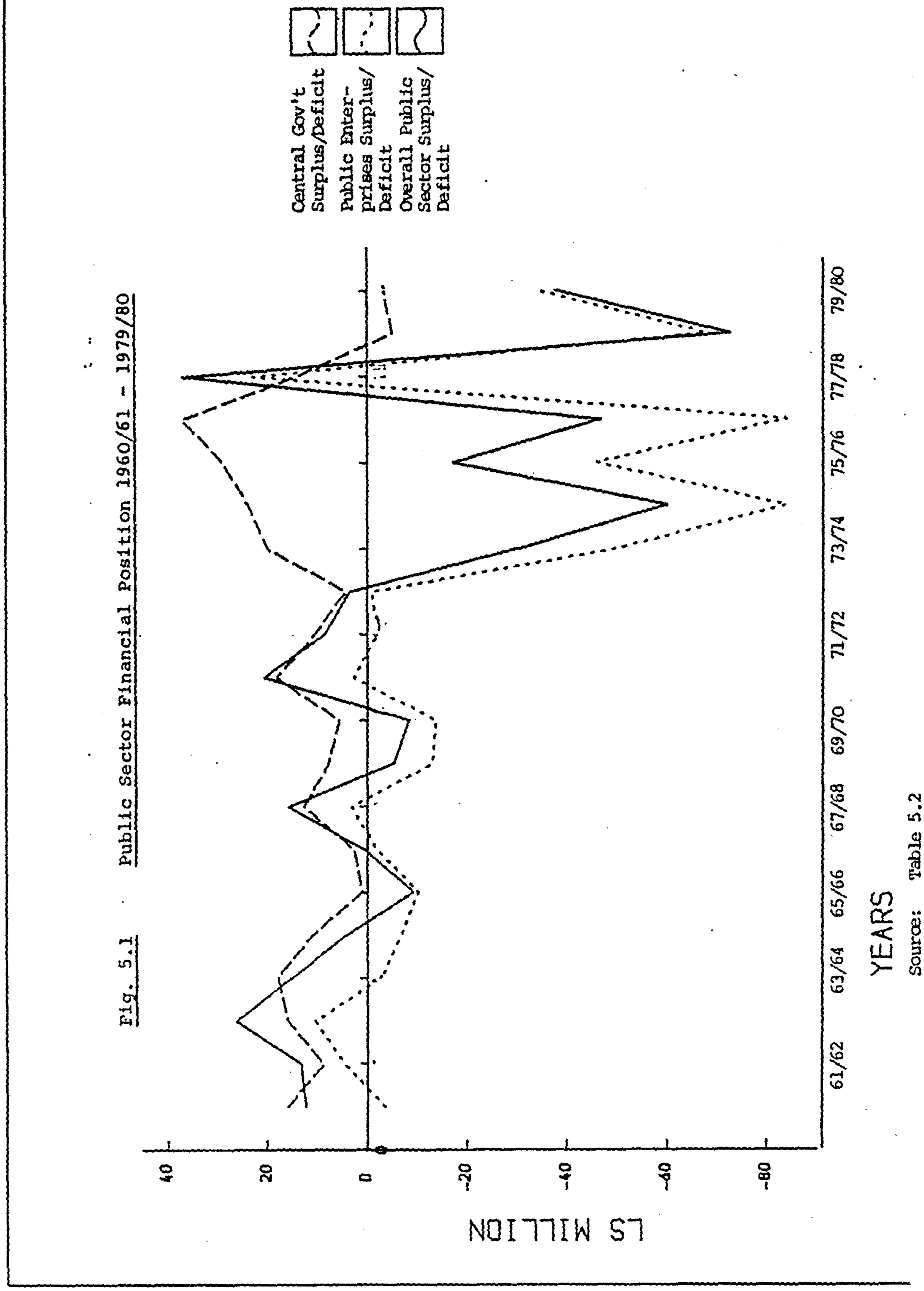
Year	Central Gov't Revenue	Central Gov't Expenditure	Gov't Surplus/ Deficit	Public Enterprises Surplus/Deficit	Overall Public Sector Surplus/ Deficit
1960/61	64.1	48.2	15.9	(3.6)	12.3
61/62	60.3	51.6	8.7	4.5	13.2
62/63	74.4	58.5	15.9	10.4	26.3
63/64	78.6	60.8	17.8	(2.8)	15.0
64/65	73.9	62.9	11.0	(6.9)	4.1
65/66	75.2	74.3	0.9	(10.3)	(9.4)
66/67	85.8	83.2	2.6	(2.0)	0.6
67/68	99.0	86.4	12.6	3.1	15.7
68/69	114.6	107.0	7.6	(13.2)	(5.6)
69/70	149.4	144.0	5.4	(13.9)	(8.5)
70/71	164.5	146.4	18.1	2.6	20.7
71/72	163.7	153.3	10.4	(2.1)	8.3
72/73	176.2	171.9	4.3	(1.0)	3.3
73/74	209.5	189.6	19.9	(50.3)	(30.4)
74/75	287.8	264.0	23.8	(84.0)	(60.2)
75/76	332.0	303.2	28.8	(46.0)	(17.3)
76/77	388.4	351.2	37.2	(84.1)	(46.9)
77/78	465.3	451.2	14.1	22.4	37.0
78/79	580.7	585.6	(5.1)	(67.8)	(72.9)
79/80	717.1	720.4	(3.3)	(34.1)	(37.5)

Source: 1. The Economic Survey - various issues - Ministry of Finance & Economic Planning.

2. Bank of Sudan Annual Reports.

Note: Brackets indicate a minus sign.

Fig. 5.1 Public Sector Financial Position 1960/61 - 1979/80



Source: Table 5.2

1. There has been a steady growth - in nominal terms - with respect to revenue raising (see Table 5.3). During the 1960s government revenue grew at an annual average rate of growth of 9.4%, compared to an almost double rate of 17.4% during the 1970s. The high growth rate of revenue during the 1970s is inflationary rather than real. When central government revenue is deflated by the consumer price index, it showed a real average growth rate of 6.5% per annum during the 1960s and a much lower average real rate of growth of 2.3% per annum during the 1970s. Current expenditures - in both nominal and real terms - were allowed to increase at a faster rate than the growth rates of revenue. During the 1960s average annual rate of growth of expenditure was 12% and 9.1% in nominal and real terms respectively, whereas during the 1970s the rate was 18% and 2.5% in nominal and real terms respectively. The result was that there was very little or no government savings to help finance development expenditure.

2. The second major feature of the public sector financial performance is that the budgetary problems of the central government have been compounded by the deteriorating performance of public enterprises. Their financial losses led to excessive borrowing from the domestic banks which in turn inflicted inflationary pressures on the economy[1].

3. A third important feature is that despite the mounting difficulties experienced by the public sector during the 1970s, there has been an exceptionally fast rise in public sectors investment expenditure. As domestic resources were not sufficient to cover the increase in investment, the overall public sector deficit has increased. External development loans from multilateral, bilateral, suppliers' credits and

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1 For a detailed study of the Parastatal Sector See Public Corporations in the Sudan - a study by a government task force assisted by World Bank staff members and consultants, Feb. 1978.

Table 5.3 Central Government Revenue and Expenditure
Nominal and Real Growth Rates 1960/61-1979/80

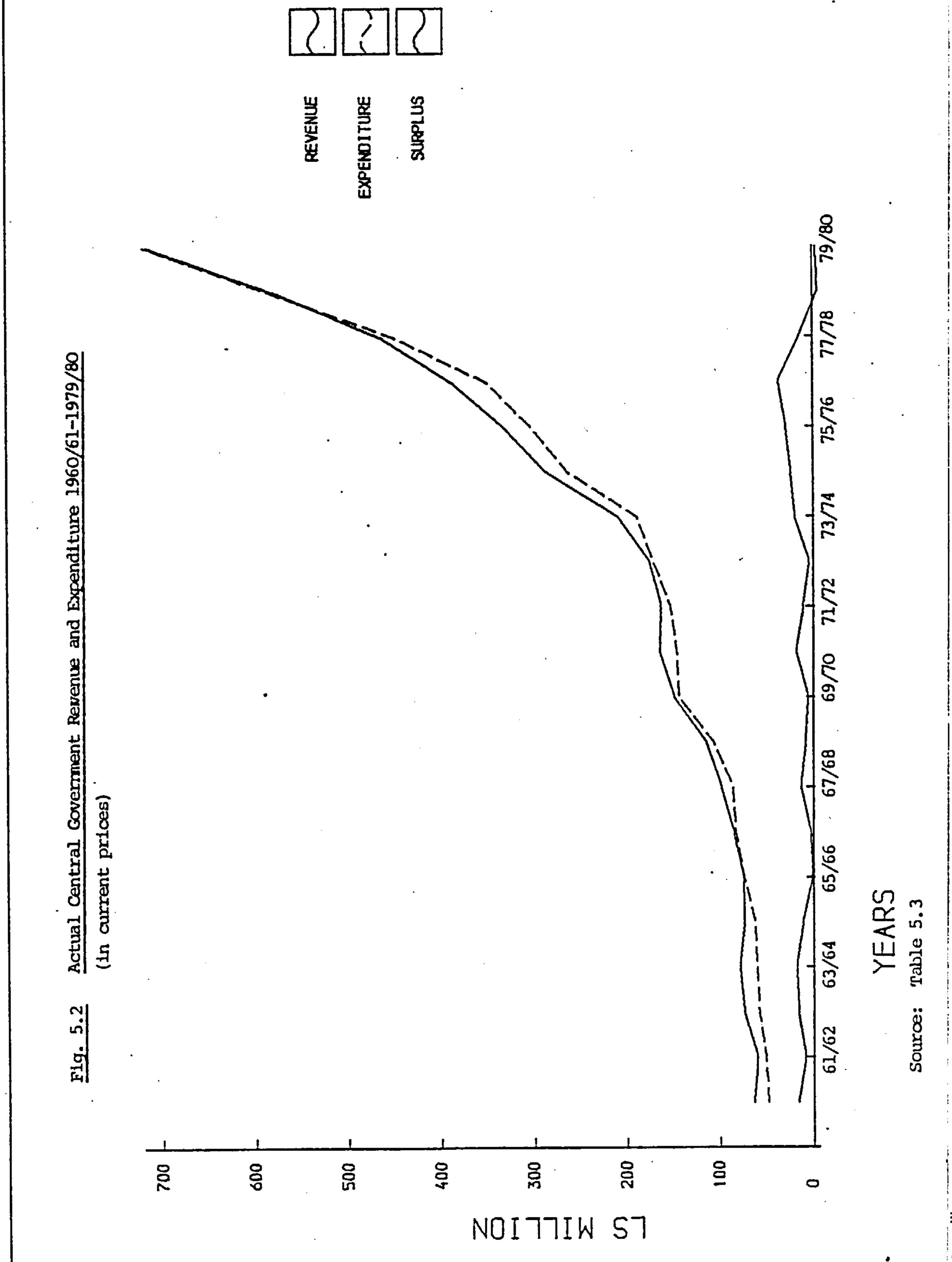
1975 = 100

Year	Revenue				Expenditure			
	Revenue at Current Prices	Rate of Growth	Revenue at Constant 1975 Prices	Rate of Growth	Expenditure at Current Prices	Rate of Growth	Expenditure at Current Prices	Rate of Growth
1960/61	64.1	-	185.3	-	48.2	-	139.3	-
61/62	60.3	(6)	160.4	(13)	51.6	7	137.2	(2)
62/63	74.4	23	194.8	21	58.5	13	153.0	12
63/64	78.6	6	196.5	1	60.8	4	152.0	(1)
64/65	73.9	(6)	177.6	(10)	62.9	3	151.2	(1)
65/66	75.2	2	185.7	15	74.3	18	183.5	21
66/67	85.8	14	211.9	14	83.2	12	201.9	10
67/68	99.0	15	216.2	2	86.4	4	188.6	(7)
68/69	114.6	16	278.2	29	107.0	24	259.7	38
69/70	149.4	30	322.0	16	144.0	35	310.5	20
70/71	164.5	10	341.3	6	146.4	2	303.7	(2)
71/72	163.7	0.0	334.7	(2)	153.3	5	313.5	3
72/73	176.2	8	317.4	(5)	171.9	12	309.7	(1)
73/74	209.5	19	327.3	3	189.6	10	296.3	(4)
74/75	287.8	37	356.6	9	264.0	39	327.1	10
75/76	332.0	15	332.0	(7)	303.2	15	303.2	(7)
76/77	388.4	17	381.9	15	351.2	16	345.3	14
77/78	465.3	20	392.0	3	451.2	28	380.1	10
78/79	580.7	25	408.1	4	585.6	30	411.5	8
79/80	717.1	23	385.3	(6)	720.4	23	387.1	(6)

Source: The Economic Survey - various issues - Ministry of Finance and Economic Planning.

Note: Brackets indicate a negative growth rate.

Fig. 5.2 Actual Central Government Revenue and Expenditure 1960/61-1979/80
(In current prices)



Source: Table 5.3

commercial sources, as well as internal loans were used to cover the overall public sector deficits. Highlights of the public sector's domestic financial performance is given below.

5.1.1 Government's Fiscal Effort

Sudan's fiscal effort as measured by revenue/GDP ratio[1] has steadily increased during the 1960s. But showed a declining trend during the 1970s (see Table 5.4). Tax ratios - tax revenue/GDP ratio - has followed more or less the same pattern over the past two decades. This is mainly because taxation - direct and indirect - represents the major source of revenue (on the average over 70% of total revenue comes from taxation).

A comparison of tax ratios with four African countries - which are at the same stage of development - showed that Sudan's tax ratios compare favourably with those countries during the periods 1966-68 and 1969-71 ranking second and first respectively. However during the period 1972-76 Sudan's taxation effort has been less vigorous, ranking third (Table 5.5).

5.1.2 Government Expenditure

As we noted earlier, central government expenditure was allowed to grow - in nominal and real terms - at a faster rate than revenue leaving very little or no savings for financing development expenditure. The rising trends in government expenditure could be explained by the following factors:-

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[1] Revenue/GDP ratio is only a crude measure of fiscal effort made by a country. Relating revenue to the taxable capacity of the country may give a better measure of the fiscal effort. The difficulty in applying this measure is that taxable capacity cannot be measured easily as it depends among other factors on the psychology of the tax payers, income and wealth distribution, etc.

Table 5.4 Trends in Fiscal and Taxation Efforts 1960/61-1979/80

(In Ls million - current prices)

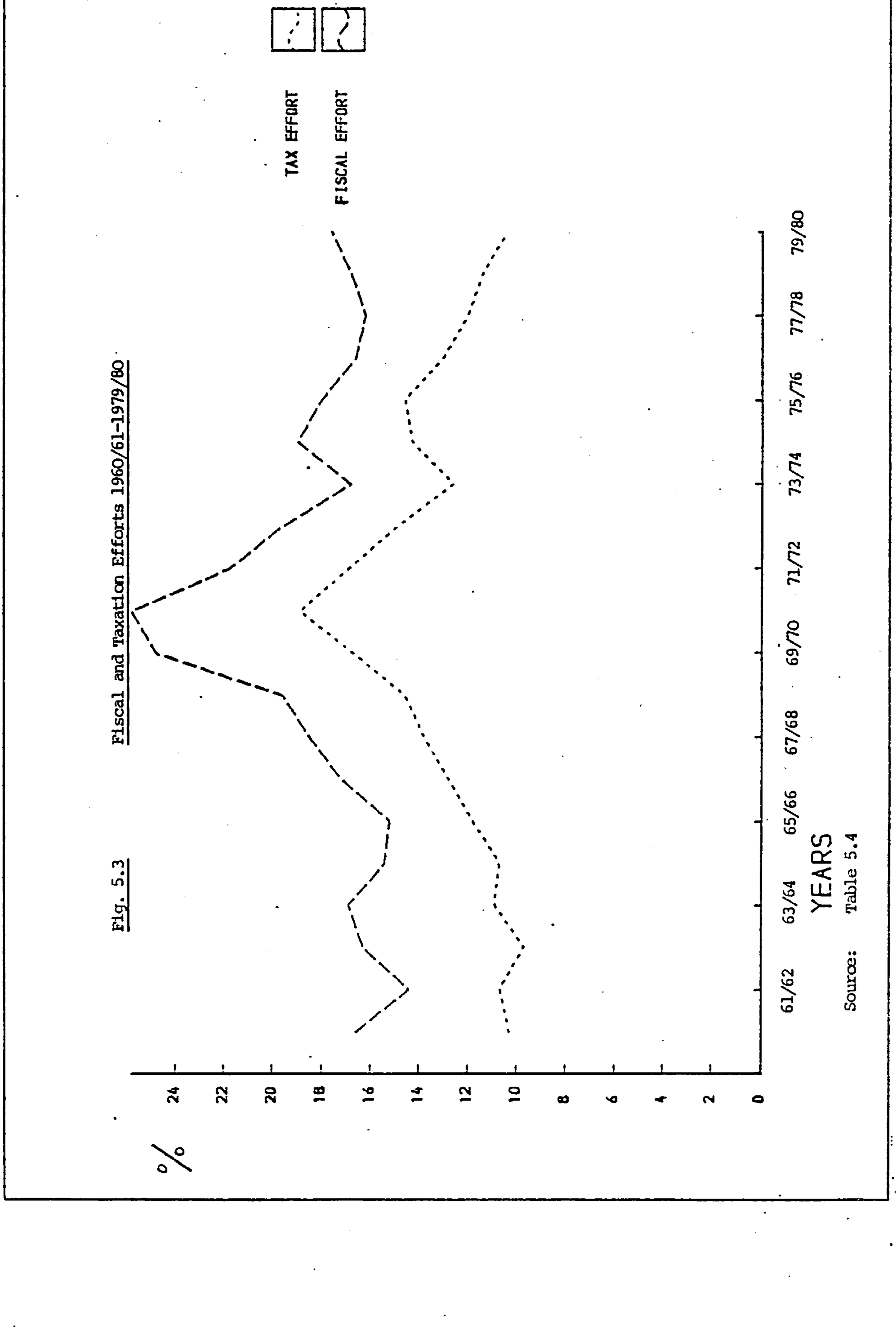
Year	GDP	Tax Revenue	Total Revenue	Taxation Effort %	Fiscal Effort %
1960/61	386.8	40.0	64.1	10.3	16.6
61/62	420.0	44.8	60.3	10.7	14.4
62/63	456.2	44.1	74.4	9.7	16.3
63/64	463.8	50.4	78.6	10.9	16.9
64/65	476.8	51.1	73.9	10.7	15.4
65/66	492.0	58.2	75.2	11.8	15.2
66/67	497.6	63.6	85.8	12.8	17.2
67/68	536.3	73.9	99.0	13.8	18.5
68/69	583.3	84.9	114.6	14.6	19.6
69/70	602.6	100.6	149.4	16.7	24.8
70/71	637.6	120.8	164.5	18.9	25.8
71/72	752.1	127.1	163.7	16.9	21.8
72/73	896.8	133.2	176.2	14.9	19.6
73/74	1246.2	157.1	209.5	12.6	16.8
74/75	1510.8	216.5	287.8	14.3	19.0
75/76	1848.0	270.3	332.0	14.6	18.0
76/77	2339.7	303.8	388.4	13.0	16.6
77/78	2878.4	345.7	465.6	12.0	16.2
78/79	3462.0	397.1	580.7	11.4	16.8
79/80	4072.1	424.3	717.1	10.4	17.6

Source: (1) The Economic Survey - Ministry of Finance and Economic Planning.

(2) Department of Statistics.

Note: GDP figures for the years 1978/79, 1979/80 are provisional estimates.

Fig. 5.3 Fiscal and Taxation Efforts 1960/61-1979/80



Source: Table 5.4

Table 5.5 Tax Ratios: Sudan and Other Four African Countries
(Taxes as a percentage of GNP)

Country	1966-1968	1969-1971	1972-1976
Sudan	13.2	17.5	14.4
Kenya	12.2	14.4	19.2
Ghana	13.4	15.8	14.2
Tanzania	11.1	13.9	18.9
Ethiopia	8.6	8.6	10.1

Source:
1. R. Chelliah, H. Baas, and M. Kelley "Tax Ratios and Fiscal Effort in Developing Countries 1969-1971." IMF Staff Papers March, 1975.
2. A Tait, W. Gratz and B. Eichengreen "International Comparison of Taxation for Developing Countries 1972-1976" IMF Staff Papers, March 1979.
3. Sudan's tax ratios are estimated from Table 5.4.

1. Following independence in 1956, the early 1960s witnessed considerable increases in expenditure in social services, and expenditure to meet the expansion on the public establishment both civil and military.

2. The Southern Sudan civil war which lasted for 17 years (1955-1972) caused heavy expenditure on defence and security. The settlement of the problem in 1972 according to the Addis Ababa Accord has also caused heavy expenditure on the southern region to meet the costs of establishing the new regional government and rehabilitation of the refugees who fled to neighbouring countries during the conflict.

3. The continuous expansion of the public sector employment led to an increasing wage bill. The wage bill has increased fast because successive governments have followed liberal employment policies on political grounds rather than on need criteria. For example, the 'Unemployment Fund' establish-ed in 1967/68 to absorb university graduates irrespective of the need for their services. The implementation of a Job Reclassification Scheme in 1977/78 for the civil servants,

the army and the parastatals with the aim of applying the principle of'equal pay for equal work' has brought about substantial increases in the wage bill.

4. Expenditure on local governments rose sharply since the implementation of the Local Government Act in 1971 which gave greater autonomy for local governments. As local authorities have a highly regressive system of revenue raising and are not allowed to borrow, most of their expenditures were financed from the central government.

5. There has been a fast growth in expenditure on defence and security during the 1970s. The present regime which took power in 1969 by a military take-over, believed that previous governments neglected the expansion and modernization of the armed forces. Moreover, the regional political problems in neighbouring Ethiopia, Chad, Zaire, Uganda and the Central African Republic have necessitated the maintenance of a high level expenditure on security.

5.1.3 Public Enterprises' Financial Performance

Public enterprises dominate all non-traditional activities in the Sudan, and contribute more than half of GDP[1]. The government is engaged in the provision of physical infrastructure such as irrigation works, land development, transport and communications and power, as well as in direct production and trading of basic commodities such as cotton, sugar, groundnuts, wheat, dura, textiles and petrolium products. Public enterprises have an obligation to pay to the Ministry of Finance and National Economy a share of their profits as well as business profit tax.

The financial performance of public enterprises has been poor particularly from 1971 onwards. Instead of yielding surpluses they have relied on the central government and domestic bank borrowing to cover their deficits. Up to date data on the

1 Public Corporation in the Sudan 1978. A study by a Government task force assisted by World Bank staff members and consultants.

financial performance for public enterprises are not available due to the poor state of accounts of many of the public corporations. However Table 5.6 gives an indication of the extent of the financial losses of the public corporations in the agricultural, industrial and transport sectors.

Table 5.6 Net Profits (Losses) Before Tax For Some Public Corporations

(in Ls million)

Sector \ Year	1972/73	1973/74	1974/75	1975/76
Agriculture	(4.1)	(2.1)	(5.9)	(8.1)
Industry	1.3	(2.2)	0.5	(0.2)
Transport	0.4	(2.1)	(0.5)	4.1
Total	(2.4)	(6.4)	(5.9)	(4.2)

Source: Public Corporations in the Sudan Feb. 1978, Ministry of Finance and National Economy. (Figures in brackets indicate losses).

The main reasons for the poor financial performance of the public enterprises - as we noted in our analysis of the physical performance in the various sectors of the economy in the previous chapter - have been the very low capacity utilization caused, on the one hand, by shortages in foreign exchange and necessary funds needed for spare parts, maintenance equipment, basic inputs as well as expansion and modernization; and on the other hand, by poor management, inadequate organization and control, contradicting and unclear objectives and changing relations with Ministeries and departments. However, it is worth noting that measures to

[1] Public Corporations in the Sudan 1978.

rationalize the operations of public enterprises came too late, when in 1979 the scope of the public sector was narrowed. For example, enterprises like perfumeries, sweets, plastic sacks and paper packs have been divested. Organizational measures were adopted to enable quicker and more efficient operations - for example, redundant supervisory levels of sectoral and branch corporations like the Public Agricultural Corporation and the Public Industrial Corporation were eliminated.

5.2 PUBLIC SECTOR SAVINGS AND INVESTMENT

The central government's financial operations with the resulting small surpluses together with the poor performance of the public enterprises has not allowed for sufficient savings to finance the planned investment programmes, thereby leading to a continuous reliance on domestic bank borrowing and foreign aid inflow to finance the gap between public savings and public investment.

As shown in Table 5.7 and Fig. 5.4, the proportion of government development expenditure financed from the government's savings has been declining over time. The average annual share of government savings in financing development expenditure declined from 34% during the 1960s to about 25% during the 1970s. However during the last half of the past decade, that is 1974/75-1979/80, this proportion has declined further to only 13.4%.

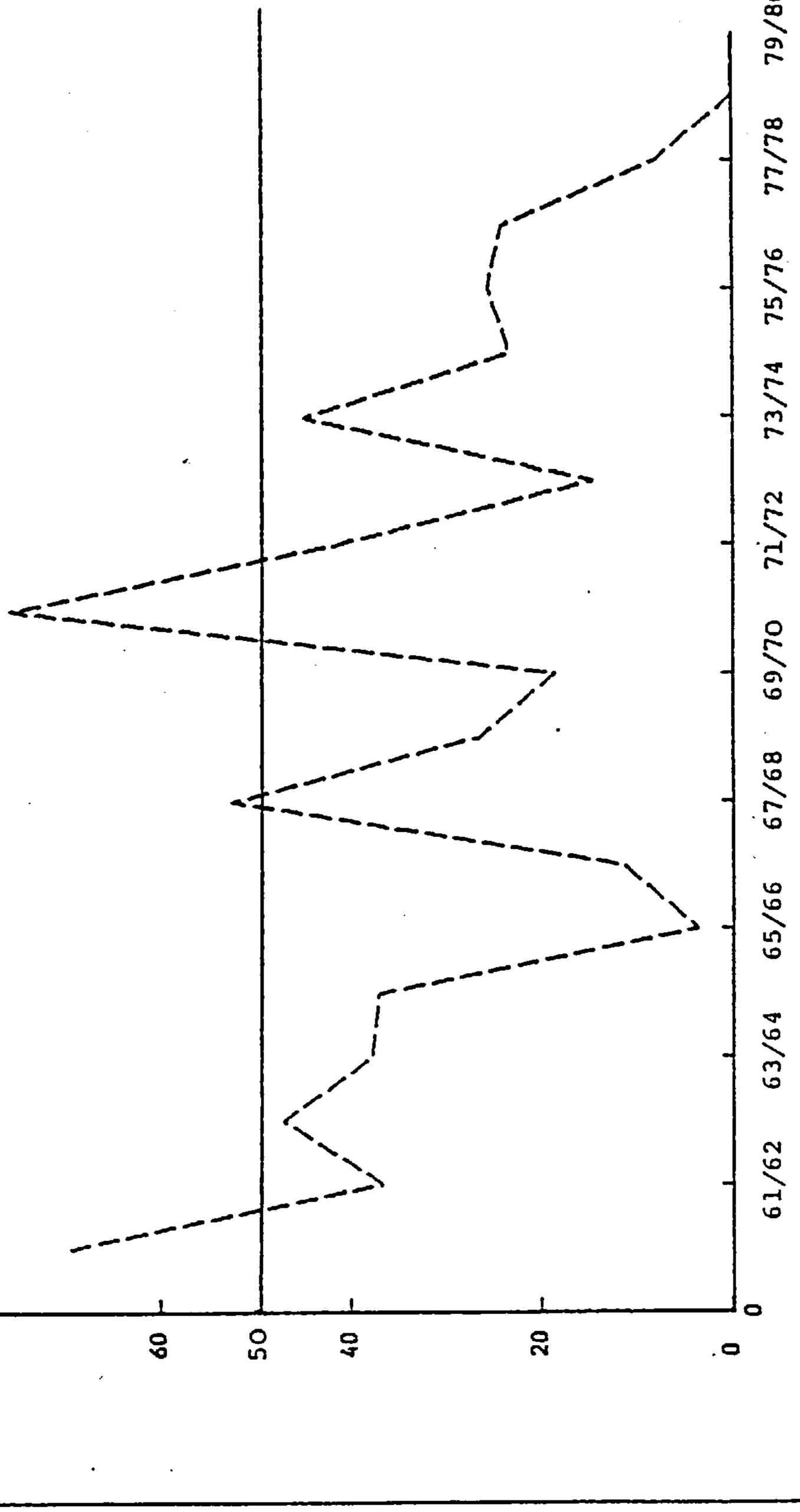
The public sector's reliance on domestic bank borrowing since 1965/66 is shown by Table 5.8. It is worth noting that only after the year 1965 did temporary advances to the government under Section 57 of the Bank of Sudan Act become a regular phenomenon. Over the period 1965/66-1979/80 net banking claims on the public sector grew at a fast average annual rate of growth of 29%.

Table 5.7 Government Savings as a Percentage of Government Investment Expenditure (in Ls million)

Year	Government Investment Expenditure	Central Government Savings	Percentage Share of Savings in Investment
1960/61	22.9	15.9	69.4%
61/62	23.8	8.7	36.6
62/63	33.8	15.9	47.0
63/64	47.4	17.8	37.6
64/65	29.8	11.0	36.9
65/66	26.0	0.9	3.5
66/67	21.8	2.6	11.4
67/68	24.1	12.6	52.3
68/69	28.2	7.6	26.4
69/70	29.4	5.4	18.4
70/71	23.4	18.1	75.7
71/72	24.9	10.4	41.8
72/73	29.9	4.3	14.5
73/74	44.4	19.9	44.8
74/75	102.4	23.8	23.2
75/76	113.1	28.8	25.5
76/77	155.0	37.2	24.0
77/78	185.9	14.8	8.0
78/79	164.3	0.0	0.0
79/80	175.7	0.0	0.0

Source: Constructed from the Economic Survey - Ministry of Finance and Economic Planning, and data collected from the Ministry of Finance and Economic Planning (Planning) 1981.

Fig. 5.4 Share of Central Government Savings in Financing Central Government Investment on Development 1960 - 1980



Source: Table 5.7.

Table 5.8 Net Banking Claims on the Public Sector 1965/66 - 1979/80

(Ls million current prices)

Year	Net Banking Claims	Annual Rate of Growth
1965/66	26	-
66/67	37	42%
67/68	40	8
68/69	61	52
69/70	79	30
70/71	59	20
71/72	126	33
72/73	419	18
73/74	191	28
74/75	250	31
75/76	358	43
76/77	518	45
77/78	658	27
78/79	849	29
79/80	962	13

Source: Bank of Sudan Annual Reports, various issues.

The extent of the reliance on foreign aid loans will be considered in detail in the next chapter.

However, despite the domestic financial difficulties - explained above - particularly during the past decade, there has been an exceptionally fast rise in the overall public sector investment expenditure (see Table 5.9). Public sector investment expenditure increased - in nominal terms - over the decade 1970/71 - 1979/80 at an average annual rate of growth of 23.6%. The lack of an appropriate price deflator makes it difficult to give an accurate estimate of the growth rate in real terms, but a

Table 5.9 Actual Public Sector Development Expenditure Growth Rates and Funds Absorption Ratio 1960/61 - 1979/80

(in Ls million)

Year	Budget Allocation (1)	Actual Expenditure (2)	Rate of Growth of Development Expend. (3)	Funds Absorption Ratio 2 / 1 x 100
1960/61	24.3	22.9	-	94.2%
61/62	39.8	27.5	20.0%	69.1
62/63	74.3	37.5	36.0	50.5
63/64	53.5	48.2	28.5	90.0
64/65	32.4	32.2	(33.2)	99.4
65/66	41.4	28.9	(10.2)	69.8
66/67	36.6	28.0	(3.1)	76.5
67/68	46.7	25.2	(10.0)	53.9
68/69	49.7	29.6	17.5	59.6
69/70	35.0	30.8	4.1	88.0
70/71	37.4	26.6	(13.6)	71.1
71/72	67.8	29.8	12.0	44.0
72/73	65.5	34.3	15.1	52.4
73/74	114.8	53.7	56.5	46.8
74/75	194.3	117.4	118.6	60.4
75/76	146.0	137.0	17.0	93.8
76/77	254.2	166.0	21.2	65.3
77/78	306.9	192.0	15.7	62.6
78/79	202.9	169.4	(11.8)	83.5
79/80	284.9	175.7	3.7	61.6

Source: (1) Constructed from data collected from Ministry of National Planning.

(2) Banking and Currency Section, Ministry of Finance and National Economy.

World Bank report on Sudan's economy concluded that "...it would appear that government development expenditure increased in real terms by well over 15% a year over the period 1973-1977[1]." The years before 1972/73 development expenditure was at a low and stagnating level. The average rate of growth of development expenditure - in nominal terms - during the decade of the 1960s was only 3.6% per annum.

The fast rise in development expenditure during the 1970s could be explained by the following factors:

1. The very ambitious development programme that the government has pursued following the signing of the Addis Ababa Accord in 1972 which ended the civil war in the south and brought with it a relatively greater political stability in the country as a whole. An Interim Action Programme was adopted instead of the Five Years Plan. Many projects aiming at achieving self sufficiency in basic commodities like sugar, wheat, textiles, together with a large programme of infrastructure and roads construction were committed.

2. The relatively high inflow of foreign aid flows over the past decade which provided the foreign exchange costs of the adopted development programmes. The association between the external development loans received by the country and the public sector investment expenditure will be investigated in Chapter 8.

However, the implementation of the development programme during the 1970s has been constrained by the usual skill limitation combined with a severe drain of skilled personnel to the oil rich Arab countries. This problem is compounded by shortages of domestic

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[1]Report on the Economy of Sudan - World Bank October 1979 (p.14).

counterpart funds, scarcities of vital inputs such as cement and fuel, inadequacies of supporting infrastructure such as roads, railways and power; as well as deficiencies in the local civil construction industry. Another constraint has been the rapid increase in the size of the development programme itself, as many project commitments were made within a short period of time leading to an overburdening of the limited administration as well as the limited physical capacities. Projects at the various implementation stages faced competition with each other for managers, staff, funds, railways, power, fuel and cement, causing long delays in implementation and serious cost overruns.

In general, the ratio of the actual annual development expenditure to the annual planned or allocated funds (i.e. the funds absorptive capacity) could be used as an indicator to the implementation capacity in the public sector. Table 5.9, which gives trends in the funds absorptive capacity for the past two decades, shows that on the average only two-thirds or 66.1% of the allocated funds had actually been utilized annually. Clearly, this ratio is a reflection of the concept of the absorptive capacity limit emphasized by Rosenstein-Rodan (1961) and Chenery and Strout (1966) as we noted earlier. But it is clear from the above analysis that the absorptive capacity limit has not only been due to the lack of skills which is aggravated by the severe manpower drain to oil rich Arab countries, but it has also been due to delays in project implementation caused mainly by transportation and infrastructural bottlenecks, the lack of and delay in obtaining the building materials, the internal liquidity position etc.

It is also worth noting that the high level of public sector investment after the year 1972/73 was reflected in substantial

growth performance in some sectors of the economy. The expansion in the overall agricultural output has been a sustained feature of development particularly for crops like oil seeds (groundnuts and sesame) wheat and millet. In the transport sector there was a major expansion in the roads network. There has been growth in power generation though it lagged behind the needs of the economy.

The conclusion we derive so far from the forgoing brief analysis of the public sector domestic savings effort is that, though the public sector saving effort had been deteriorating during the 1970s, public sector investment expenditure (development expenditure) had been rising. Reliance on external and internal borrowing had been the major factor explaining rising public development expenditure at a time when public sector saving had been declining.

5.3 THE EXTERNAL SECTORS PERFORMANCE AND THE FOREIGN EXCHANGE CONSTRAINT

The main features of the external financial performance of the economy over the past two decades were reflected in the balance of payments developments shown by Figures 5.5 and 5.6. The balance of payments developments over this period particularly after the year 1973 had been unfavourable and reflected a number of structural rigidities and difficulties in the overall economic performance and policies.

There has been persistent deficits in the current account over the past two decades and in particular during the 1970s. With disbursements from external loans and other capital inflows being insufficient to compensate for these deficits, there was a severe drain on the foreign exchange reserves of the country. Table 5.10 shows that during the second half of the 1970s international

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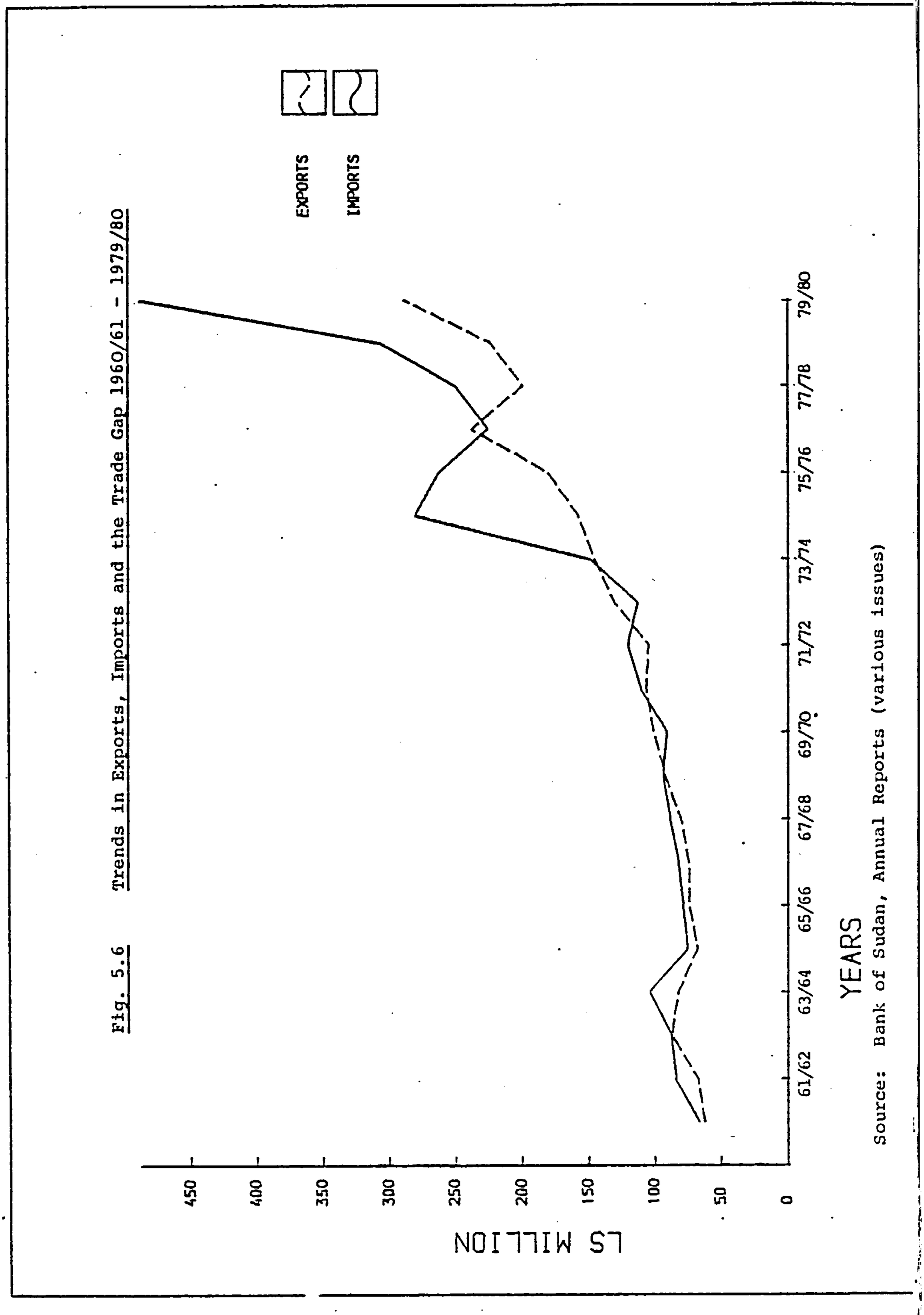

Fig. 5.6 Trends in Exports, Imports and the Trade Gap 1960/61 - 1979/80

Source: Bank of Sudan, Annual Reports (various issues)

Table 5.10 Foreign Exchange Reserves and Imports Cover in Weeks 1960-1980 (in Ls million)

Year	M Imports (visible & invisible payments)	R total reserves	R/M ratio %	Imports cover in weeks (1)
1960	76.3	58.0	76	39.5
61	94.2	53.2	56	29.4
62	111.7	50.2	45	23.4
63	124.4	34.8	28	14.5
64	114.8	24.8	22	11.2
65	100.1	20.9	21	10.9
66	104.0	19.9	19	10.0
67	108.2	18.4	17	8.8
68	120.2	16.6	14	7.2
69	114.5	12.7	11	5.8
70	132.0	7.6	6	3.0
71	141.5	9.7	7	3.6
72	154.9	12.4	8	4.2
73	167.7	21.3	13	6.6
74	264.8	37.2	14	7.3
75	347.3	12.0	3	1.8
76	310.0	-0.4	-	-
77	322.1	9.6	3	1.5
78	382.4	12.6	3	1.7
79	618.7	39.9	6	3.3
80	909.4	32.5	4	1.8

Source: Constructed from Bank of Sudan Annual Reports 1960-1980

(1) Imports cover in weeks = $\frac{R \times 52}{M}$; it shows the number of weeks of visible and invisible imports at the average annual rate that could be covered by reserves.

reserves were on the average enough for only 1.6 weeks (or 11 days) of imports.

As foreign reserves ran out, arrears in external payments were accumulated. In September 1979 the total arrears amounted to about US$1.2 billion[1], a situation which forced the undertaking of rescheduling arrangements in 1980. This situation led to severe lack of foreign exchange, causing widespread scarcities of spare parts and other vital inputs needed desperately for raising productivity in the existing production units; as well as causing delays in the implementation of the new import substitution and export promotion projects under construction.

The main causes for the unfavourable balance of payments developments can be summarized in the following:

1. The weak export performance
2. Import growth and the external shocks
3. The sharp increase in the external public debt service burden
4. The exchange rates policy.

5.3.1 The Export Performance

The export sector performance in volume terms constituted the primary cause of the balance of payments deterioration during the 1970s. Table 5.11 and Fig. 5.7 show a fluctuating but declining trend in the combined export volume during the 1970s for the four major export crops (cotton, groundnuts, sesame and gum-arabic). Since 1974 the annual average decline in the export volume of these crops has been 5.9%. Cotton export volumes declined from 236.0 thousand metric tons in 1971 to 128.4 thousand metric tons in 1980. A volume index for cotton exports shows an annual

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[1] Unpublished report - Ministry of Finance and Economic Planning.

Table 5.11 Trends in Export Volumes for the Four Major Export Crops 1964-1980 (in 000s tons)

Year	Cotton	Ground-nuts	Sesame	Gum Arabic	Total	% Growth Rates
1964	117.9	155.0	101.0	54.0	427.9	
65	104.2	159.0	70.0	58.0	391.2	(8.6)
66	133.5	108.0	74.0	56.0	371.5	(5.0)
67	164.0	109.0	64.0	52.0	389.0	4.7
68	201.5	89.0	85.1	51.1	426.6	9.7
69	177.1	82.9	113.0	47.0	420.0	(1.5)
70	228.0	69.9	83.7	48.3	429.9	2.4
71	236.0	115.0	84.4	43.0	478.4	11.3
72	245.1	116.8	83.1	39.2	484.2	1.2
73	229.1	138.4	101.9	33.9	503.3	3.9
74	94.9	99.1	83.5	20.7	298.2	(40.8)
75	145.1	205.0	56.6	15.6	422.3	41.6
76	180.0	282.8	88.8	26.2	577.8	36.8
77	164.6	143.3	93.0	33.3	416.2	(28.0)
78	169.5	97.2	76.0	43.8	386.5	(7.1)
79	184.0	37.4	16.0	44.1	281.5	(27.2)
80	128.4	22.1	57.2	26.2	233.9	(16.9)

Source: Bank of Sudan Annual Reports (various issues).

Note: Brackets indicate a negative rate of growth.

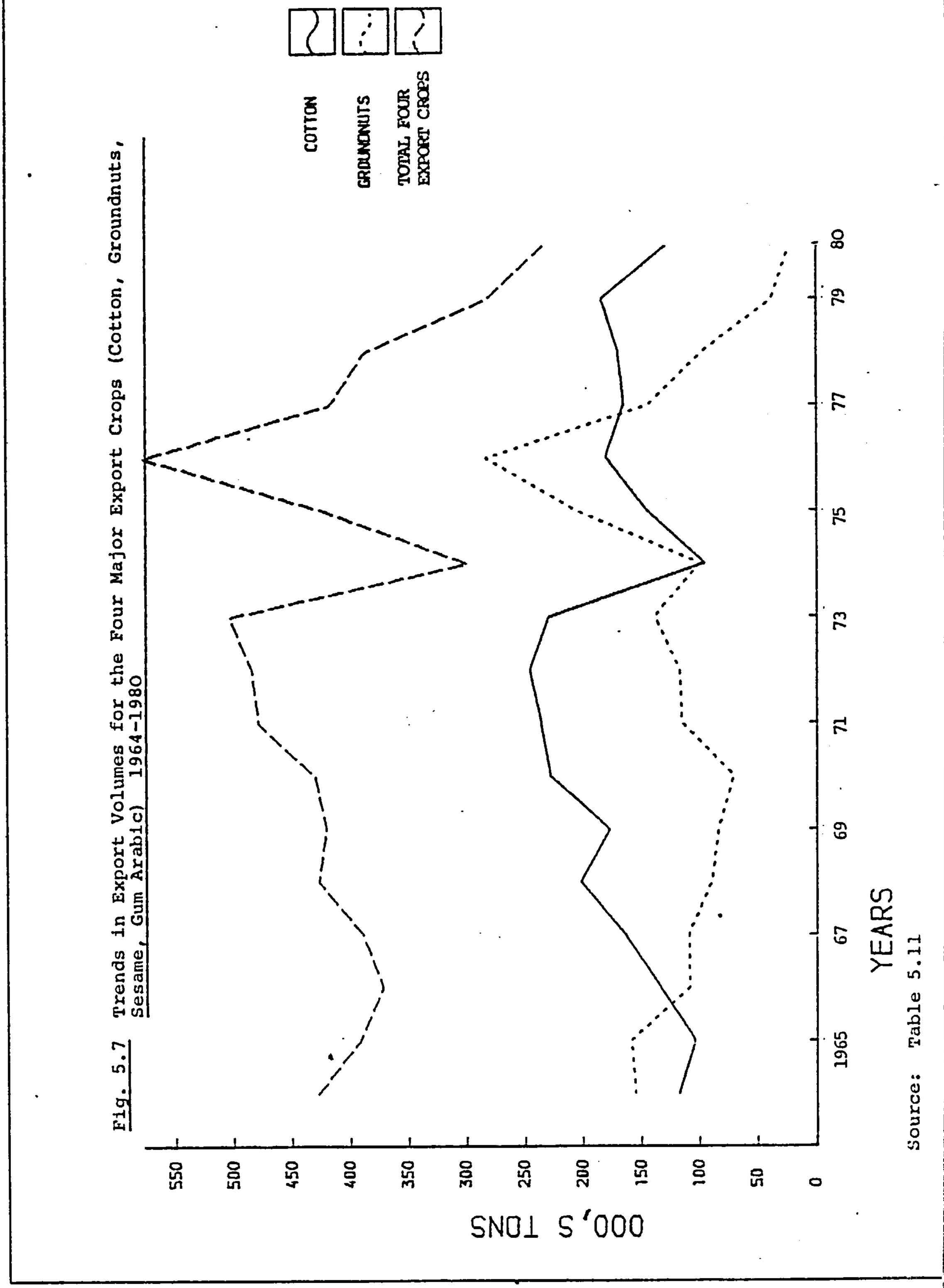

Fig. 5.7 Trends in Export Volumes for the Four Major Export Crops (Cotton, Groundnuts, Sesame, Gum Arabic) 1964-1980

Source: Table 5.11

average fall of 21.5% in the volume of cotton exports during the 1970s (see Table 5.12).

Table 5.12 Volume Index for Cotton Exports 1970/1980

1970 = 100

Years	Export Volumes in 000s Bales	Volume Index
1970	1,197	100
1	1,239	103.5
2	1,287	107.5
3	1,203	100.1
4	498	42.0
5	762	63.7
6	954	78.9
7	864	72.2
8	890	74.4
9	966	86.7
1980	674	56.0

Source: Constructed from Bank of Sudan Annual Reports
Note: 1 Bale = 420 lb

The marked decline in cotton exports came as a result of the government policy to diversify the productive structure of the economy in 1974 by adopting the following policies:-

1. The introduction of groundnuts, wheat and sorghum in the irrigated schemes leading to a reduction in cotton acreage as we noted earlier.

2. The reduction in cotton acreage is accompanied by an explicit and implicit disincentives to cotton growing such as, first: the production relations which governed the distribution of costs has been unfavourable to cotton

growing. Cotton continued to carry all the costs of land preparation and irrigation even though only one-third of the cropped area was allocated to cotton. Secondly, the application of a relatively appreciated exchange rate for the conversion of cotton export receipts *vis a vis* other export crops. In 1972 for example the official exchange rate of Ls 1 = US$2.87 was depreciated to an effective rate of exchange of Ls 1 = US$2.50 through an exchange tax/subsidy scheme of 15% on all external transactions except for the proceeds from the exports of cotton lint and gum-arabic. In 1978 the official exchange rate was set at Ls 1 = US$2.50 while the effective exchange rate was depreciated to Ls 1 = US$2.00 through taxes and subsidies for all external transactions except for the proceeds from the export of cotton lint. As a result cotton growers, compared to the growers of other crops, continued to receive less for their output than they should. Thirdly, the application of an additional cotton export tax.

3. Another factor which contributed to the decline in cotton exports has been the physical deterioration of the major irrigated schemes such as the Gezera and New Halfa in which agricultural export production is concentrated, leading to falling yields per feddan of cotton. A primary cause of this physical deterioration (as we noted in Chapter 4) has been the policy of the government in the early 1970s to concentrate attention on establishing new projects rather than the existing ones. Top priority has also been assigned to infrastructural projects rather than directly productive projects. As a result of this policy the major schemes suffered an increasing lack of machinery and equipment which is exacerbated by the lack of spare parts and other vital inputs. However this policy has been reversed in 1977/78 when it was discovered that there were insufficient funds internal or external to enable the implementation of the projects under construction, let alone more new projects. An agricultural rehabilitation programme, which came too late, has been adopted in 1980 supported by a programme loan from The World Bank. In the area of cost recovery, land and water

charges were introduced to non-cotton crops in the Gezera Scheme in 1979, with the aim of encouraging cotton production.

As far as the other export crops are concerned, there has been a noticeable expansion in the production of oil seeds (groundnuts and sesame) as we have seen in the previous chapter. But the insufficient capacity of the railways to transport groundnuts especially from the western part of the country has prevented the full export potential from being achieved. Moreover, the increased needs of domestic crushing mills caused by the rise in the local sale prices of edible oil has contributed to the fall in the export volume of the groundnuts and sesame. Hence the expansion in non-cotton export crops did not significantly offset the decline in cotton exports. Consequently, Sudan's overall export performance in volume terms had declined.

As far as the export values are concerned, the rate of growth of export earnings (as shown in Table 5.13) has increased from an annual average rate of growth of 6% during the 1960s to 11.2% during the 1970s. But this is rather a reflection of the increases in the average export unit prices rather than in export volumes. As shown in Table 5.14 the export unit price of cotton has shown a rising trend over the years, but this has not benefitted the economy due to the severe drop in exported quantities of cotton. Hence the annual growth rates of export earnings could have been much faster than the above rates had the quantities of exports increased.

5.3.2 Imports Growth and the External Shocks

Like all other non-oil producing developing countries Sudan's trade and payments position has suffered during the 1970s from

Table 5.13 Balance of Trade Developments

Ls million (current prices)

Year	Exports		Imports		Balance of trade	Coverage of imports by exports
	Value	Annual rate of growth	Value	Annual rate of growth		
1961	61.3	-	77.8	-	(16.5)	79%
2	79.4	30	90.8	17	(11.4)	87
3	78.8	(8)	99.2	9	(20.4)	79
4	68.6	(13)	95.5	(4)	(26.9)	72
5	67.9	(1)	72.3	(24)	(4.4)	94
6	70.7	4	77.5	7	(6.8)	91
7	74.7	6	74.3	(4)	0.4	101
8	81.1	9	89.7	21	(8.6)	90
9	86.2	6	92.5	3	(6.3)	93
70	103.9	21	100.1	8	3.8	104
1	114.4	10	115.4	15	(1.0)	99
2	124.4	9	117.9	2	6.5	106
3	152.2	22	151.8	29	0.4	100
4	122.0	(20)	247.5	63	(125.5)	49
5	152.5	25	359.9	45	(207.4)	42
6	193.0	27	341.4	(5)	(148.4)	57
7	230.2	19	376.5	10	(146.3)	61
8	202.3	(12)	449.5	19	(247.2)	45
9	232.7	15	477.3	6	(244.6)	49
80	271.3	17	788.2	65	(516.9)	34

Source: 1) Bank of Sudan Annual Reports

2) Department of Statistics - Foreign Trade and Research Section

Note: Brackets indicate a minus sign.

Table 5.14 Trends in Cotton Prices 1961-1980

Year	Cotton 000 Bales*	Value in Ls Million	Price per bale
1961	559	31.1	55.6
2	872	44.7	51.3
3	938	45.4	48.4
4	619	33.1	53.5
5	547	30.3	55.4
6	701	34.2	48.9
7	861	39.6	46.0
8	1058	52.2	49.3
9	930	51.5	55.4
70	1197	62.9	52.5
1	1239	67.0	54.1
2	1287	72.6	56.4
3	1203	82.6	68.7
4	498	53.7	107.8
5	762	68.4	89.8
6	945	94.1	99.6
7	864	112.2	129.7
8	890	116.7	131.1
9	966	151.7	157.0
80	674	128.0	189.9

Source: Bank of Sudan Annual Reports 1960-1980

1 bale = 420 lb

three kinds of external shocks at the same time: first, the four-fold increase in the price of oil in 1973-74 and the successive increases afterwards has a direct effect on imports growth arising from higher imports bill for oil and an indirect effect through the cost of imported industrial goods whose prices increased faster as a result of higher energy costs. Secondly, the implementation of stabilization policies in the industrial countries and the consequent slow down in economic activity has led to a reduction in the demand for imports from developing countries. As for all the developing countries - Sudan is no exception - the principal export markets are found in the industrial world and the volume and prices for most types of exports are sensitive to demand conditions and rates of inflation in those trading partners. Thirdly, the implementation of stabilization policies in the industrial countries during the 1970s caused a sharp rise in nominal and real interest rates in the world financial markets leading to higher costs of borrowing for the LDCs.

The timing of the start of Sudan's balance of payments problems indicates that the sharp increase in oil prices and the steep rate of international inflation 1974-75, and the subsequent recession in the industrial countries, has been a major factor causing the balance of payments deterioration.

During the period 1961-1973, the value of imports grew at an average annual rate of 6.3% whereas between 1974 and 1980 imports grew at an annual average rate of 29% (see Table 5.13). Sudan's oil bill - crude and products - shot up from Ls 9.9 million in 1973 to Ls 169.7 million in 1980. Table 5.15 shows that oil imports in 1970 absorbed 8.7% of export earnings, by 1980 oil imports absorbed 62.6% of export earnings - almost the entire cotton export receipts.

Table 5.15 Oil Imports as a Percentage of Export Earnings

in Ls million

	1970	1974	1978	1979	1980
Oil imports	9.0	33.1	50	71.9	169.7
Export earnings	103.9	122.0	202.3	232.7	271.3
Oil imports as a per cent of export earnings	8.7	27.1	24.7	30.9	62.6

Source: Constructed from Bank of Sudan Annual Reports 1970-1980.

Moreover, as the production techniques used in the cultivation of Sudan's major exports are import intensive, the oil price increases have also affected the cost of essential input materials like fertilizers, pesticides and gasoline which are used in pump irrigation schemes. Cotton, for example, which is the major export crop, is also import intensive. It is estimated that 20% of gross earnings from cotton exports goes to meet the spraying costs for pest control[1]. A study by Nashashibi (1980) showed that the cost of fertilizers per feddan for long staple cotton rose from Ls 2.5 in 1972/73 to Ls 9.4 in 1976/77, that is, an increase of 280%; and for pesticides the cost per feddan of long staple cotton rose from Ls 4.2 to Ls 11.7 over the same period, that is, an increase of 179%.

Sudan's terms of trade developments also suggest that the rapid increase in import value after 1974 is partially attributed

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1 Ministry of National Planning Unpublished Report February 1981.

to higher import prices. Between 1964 and 1973 Sudan's terms of trade have been, on an annual average basis, favourable by about 1.3%[1] whereas between the years 1973-78 it is estimated that there has been an average deterioration of about 3% per year[2]. Table 5.16 shows how Sudan's terms of trade compares - less favourably - with four of its East African neighbours.

Table 5.16 Average Annual Growth Rates Income Terms of Trade

Country \ Years	1961-1970	1970-1979
Sudan	2.1	-2.8
Kenya	4.8	0.9
Ethiopia	3.3	-0.7
Tanzania	3.8	-4.4
Uganda	5.5	-0.8

Source: World Bank Report on Accelerated Development in Sub-Saharan Africa 1981 p.149.

The high levels of imports after the year 1974 have not only been due to the effects of oil price rises, but also partially affected by the embarking on an extensive development programme by the government since 1973 (the Phased Action Programme) with the objective of achieving self sufficiency in major import items

[1] The Economic Survey 1974, p.129. Ministry of Finance and National Economy.

[2] A Memorandum on Sudan Economy - 1980 - Ministry of National Planning (unpublished).

such as sugar, textiles and wheat; as well as breaking the major infrastructural bottlenecks particularly the transport bottleneck. This policy has led to a rapid increase in development expenditure - as we noted earlier - with the consequent expansion in the volume of imports of capital goods.

It is important to note, however, that not all the effects of higher oil prices have been adverse. There has been favourable impacts on Sudan's balance of payments from the oil boom in the neighbouring oil rich Arab countries, arising mainly from more exports to those countries, an increasing amount of remittances of Sudanese migrant workers in those countries, and - as we shall see in the next chapter - the higher level of foreign aid from the Arab oil producing countries after the year 1974.

Since the early 1970s remittances from Sudanese workers abroad (mainly in the Arab oil producing countries) are becoming an increasingly important source of foreign exchange. The remittances are encouraged by the government by special incentives such as exemption from import duties conditional to specific transfers, favourable exchange rates and sale of land. Table 5.17 clearly shows the rising trend in the magnitude of the remittances in absolute terms and relative to export earnings (good exports). Remittances share in relation to export of goods rose from 0.8% in 1973/74 to 10.9% in 1978/79. However frequent policy changes with regard to governments incentive framework has adversely affected the confidence of the migrant workers on government policy. Speculations for further changes led to the holding of such transfers by some migrant workers. Nevertheless, the large (and increasing) number of Sudanese migrant workers in the Arab oil rich countries points clearly to the vital need to adopt appropriate policies to attract maximum remittances from migrant workers and to ensure that these

Table 5.17 Sudanese Workers' Remittances and Their Share in Relation to Total Exports of Goods 1973/74-1978/79

Year	Remittances (in Ls million)	As a percentage of exports
1973/74	1.1	0.8%
74/75	1.7	1.1
75/76	3.6	2.0
76/77	6.9	2.9
77/78	19.2	9.6
78/79	24.4	10.9

Source: Unpublished data collected from the Revenue Department Ministry of Finance and Economic Planning, February 1981.

remittances make the optimal contribution to the growth and development of the country.

5.3.3 The External Public Debt Service

A third factor responsible for the unfavourable balance of payments developments during the 1970s has been the increasing trend in the external public debt service obligations. Table 5.18 shows the developments in the public sector external debt service, the debt service ratio and the outstanding debts over the past two decades. During the 1960s the average debt service burden as a proportion of export earnings was 5.3% per annum, whereas during the 1970s this ratio was about 20.7% per annum. However, for the post 1974 period - that is 1974-1980 - the annual average debt service ratio has been as much as 25%. In comparison

Table 5.18 Trends in Public Sector Outstanding Debts and Debt Service Ratio 1960/61 - 1979/80

Ls million

Year	Annual Debt Service	Annual Exports	Debt Service Ratio	Outstanding Debts[1]
1960/61	-	62.4	0.0	26.1
61/62	4.5	67.9	6.6	26.9
62/63	5.2	87.5	5.9	30.5
63/64	2.9	82.2	3.5	37.3
64/65	2.3	67.9	3.4	44.8
65/66	3.8	74.2	5.1	54.6
66/67	4.1	74.7	5.5	69.2
67/68	5.3	80.7	6.6	73.6
68/69	5.8	92.5	6.3	93.3
69/70	10.4	101.0	10.3	109.3
70/71	12.5	106.6	11.7	110.5
71/72	14.4	104.5	13.8	101.1
72/73	20.5	130.8	15.7	119.2
73/74	25.8	145.7	17.7	371.7
74/75	47.2	157.8	29.9	254.3
75/76	62.0	180.4	34.4	329.1
76/77	37.9	237.6	16.0	394.9
77/78	41.2	199.3	20.7	403.6
78/79	50.9	223.5	22.8	598.8
79/80	71.0	288.9	24.6	789.1

Source: Bank of Sudan Annual Reports 1960-1980

[1] Outstanding debts as at end of calendar year.

to the debt service ratios of four of its neighbouring East African countries Sudan's debt service ratio (as shown in Table 5.18) has increased tremendously during the 1970s.

Table 5.19 Sudan's Debt Service Ratio: A Comparison with Four East African Countries 1970 and 1979

Country	Debt Service Ratio 1970	Debt Service Ratio 1979
Sudan	10.7	33.0
Kenya	7.9	7.5
Etheopia	11.4	4.9
Tanzania	8.2	7.4
Uganda	3.4	7.4

Source: World Bank Report on Accelerated Development in Sub-Saharan Africa 1981 (p. 159)

The accumulated outstanding external debt has also increased sharply over the past two decades. Total debts outstanding as a per cent of GDP rose from 6.6% in 1960/61 to about 19% in 1979/80.

The sharp increases in the debt service ratio and the accumulated outstanding debts during the 1970s could be explained on the one hand by the large number and magnitudes of external loans concluded during the 1970s relative to those concluded in the 1960s. Also external borrowing - as we shall see in the next chapter - during the period 1974-77 has been characterized by relatively hard terms, i.e. a high interest rate and a short amortization and grace periods.

Another reason which contributed to the increased debt servicing was that at times a number of ministries - particularly the Ministry of Industry - were engaged in foreign borrowing and the administration of loans without getting prior authority from the Central Ministry of Finance. Also the division of the external loans administration between the Ministry of Finance and National Economy (which is responsible for repayments of debts) and the Ministry of National Planning (which is responsible for administration and drawings from the external loans) made it difficult to find a central unit which had a complete picture of the total debt situation so that it can provide an effective debt management as well as an appropriate judgement on the borrowing terms.

5.3.4 The Exchange Rate Policies

In theory, currency devaluation is designed to restrict imports because their prices rise and to encourage exports because their prices on the world market go down (leading to an increase in the demand for exports). Domestic producers of export goods and import substitutes would experience increased supply incentives. Hence the economic resources would be directed to the external sector, leading to improvement in the balance of payments. The underlying assumption of these price effects on imports and exports is the existence of an economic structure that would direct resources to the traded goods sector while restrining demand for imports. It is important that supporting fiscal and monetary policies be adopted to ensure that incomes would rise less than the overall output, so that real resources can be directed to exports.

However, in LDCs the favourable export-import responses to devaluation are likely to be limited. Under conditions of prolonged

exchange control and quantitative restrictions on trade, the structure of imports ceases to be responsive to price changes. Moreover, the demand for the bulk of imports such as capital goods, intermediate goods and spare parts would be price inelastic as they are needed for the growth of output and export expansion in particular. Because of the low level of industrialization in LDCs import substitution is also limited in the short run. Supply rigidities in the export sector - as we explained earlier in the case of the Sudan - are also likely to hamper the production of exportables. And the foreign demand for exports may not be responsive to price changes.

In the Sudan, exchange rate changes have been adopted for the first time as a policy measure for the external adjustment problem in March 1972. A devaluation of 15% was undertaken in conjunction with stabilization measures. But the price effects of this devaluation were undermined by the decline in the production and exports of cotton - the major export crop (see Table 5.12).

As we noted in section 5.3.1 the decline in cotton production is explained by the distortions in incentives as well as by the physical deterioration of the major irrigated schemes, the lack of research and development of higher yielding varieties, labour shortages for cotton picking, and shortages in imported inputs. Raising yields and expanding production of exports depends to a large extent on the timely provision of imported inputs such as fertilizers, pesticides and packing materials (sacks). As the prices of such vital inputs rise as a result of devaluation, the cost of production of export crops rises thereby reducing the margin of the benefits to the producers. Moreover, the assumed increase in production of exportables in response to better incentives (higher

prices) and the reallocation of resources would not be transformed into foreign exchange unless these exports are processed and transported to Port Sudan for shipment abroad. In the Sudan, the lack of adequate transport - noted earlier - and other export servicing facilities such as ginning plants, oil seed crushing mills, storage and grading facilities - has acted as an active constraint on export trade.

Moreover, domestic inflation as well as high prices of imported inputs (which in turn fuelled domestic inflation) since the early 1970s led to much faster increases in domestic resources costs than in export prices.

Despite the 1972 devaluation of 15%, there has been a steady deterioration in the balance of trade (Table 5.13). Clearly, the above account suggests that to improve the balance of payments position it is necessary to invest more in structural changes in the agricultural and transportation sectors of the economy, rather than to devalue the currency as the export-import responses to such devaluation are likely to be limited by these structural rigidities. However, since 1978 the government adopted four successive devaluations - in 1978, 1979, 1981 and 1982 (Table 5.20) - under the famous IMF stabilization package: (devaluation of the currency, liberalization of foreign exchange, import controls, credit squeeze, reduction in current expenditure, abolition of consumer subsidies and higher taxes. And from the IMF side, credit tranches for balance of payments support, and debt rescheduling arrangements under the World Bank Paris-Club). Accordingly, the government has supported the exchange rate changes by a Programme for Economic Stabilization and Financial Reform in 1978 aiming at the rehabilitation of the

Table 5.20 Exchange Rate Changes 1960-1982

Year	Official Exchange Rate	Effective Exchange Rate
1960-1972	Ls 1 = US$ 2.87	US$ 2.87
1972	" " 2.87	" 2.50 (exchange tax/ subsidy scheme)
1978	" " 2.50	" 2.00 "
1979	" " 2.00	" 1.25 (parallel rate)
1981	" " 1.10	" Floating
1982	" " 0.77	" "

Source: 1. Bank of Sudan.
2. Ministry of Finance and Economic Planning.

irrigation schemes and breaking transport bottlenecks. And in 1979 an Export Action Programme with the sole objective of increasing the volume of Sudan's two major export crops (cotton and groundnuts) was launched.

Although the long term effects of these devaluations on the balance of payments are yet to be investigated in the light of future developments in the external sector, the short term effects are likely to be undermined by the heavy dependence on imports, the limited scope for import substitution, sluggish export demand, various supply rigidities, and the inflationary pressures created by these devaluations.

5.4 CONCLUDING REMARKS

1. In general Sudan's development performance over the period 1960-1980 - and in particular during the 1970s - has been constrained by the three limits identified by the various foreign

aid theories explained in Chapter 2, that is domestic savings, foreign exchange and skill or (absorptive capacity) constraints.

The public sector domestic savings performance has been poor. The average share of government savings in financing investment expenditure has been 34% per annum during the 1960s and declined to 25% during the 1970s. The poor savings performance is explained by the fact that central government expenditures were allowed to increase faster than revenues. This is compounded by the poor financial performance of the public enterprises leading to very little or no overall public savings for financing public investment programmes. A situation which in turn led to continuous reliance on domestic bank borrowing and foreign aid inflow.

The balance of payments deterioration caused mainly by structural problems in the agricultural export production, as well as by external global factors, has led to a widespread scarcity in foreign exchange. During the 1970s, current account deficits rose from Ls 23 million in 1970/71 to Ls 133 million in 1979/80 (an increase of 478%). External indebtedness climbed from Ls 109.3 million to Ls 789.1 million between 1970 and 1980 (an increase of 621%), debt service ratio increased over the same period from 10.3% to 24.6%, and foreign exchange reserves fell sharply. In 1980 Sudan's foreign exchange reserves covered only 1.8 weeks (or 13 days) of imports. The resulting foreign exchange scarcity caused wide-ranging shortages in equipment, spare parts and vital imported inputs which severely hampered both production and new investment.

The skill limit common to many LDCs has been exacerbated in the Sudan - in particular - by a widespread drain of manpower at all skill levels attracted by uncomparably high wages and salaries in the oil rich Arabic speaking countries. The funds absorption

ratio (the ratio of actual investment expenditure to budgetary investment allocations) has been on the average 66% per annum. This ratio gives an indication to the absorptive capacity limit which is caused mainly by shortages in skills as well as the severe transportation and other infrastructural bottlenecks.

2. It is important to note that all three constraints have simultaneously limited the growth process during the 1970s. The time sequence implied by Chenery and Strout (1966) does not manifest itself properly in the case of Sudan. It is also important to note that, of the three limits, the foreign exchange limit as well as the absorptive capacity limit (the skill limit and the infrastructural bottlenecks) have apparently been more effective in limiting development performance than the domestic savings constraint which has been partially relieved by continuous resort to domestic bank borrowing.

3. The three constraints - which are caused by internal structural factors as well as external shocks - that impeded Sudan's overall growth have been compounded by domestic policy inadequacies such as the adoption in 1972 of an over-ambitious development programme through the "Phased Action Programme" regardless of the availabilities of funds and physical capacities.

4. Despite the domestic financial difficulties during the 1970s, there has been a fast rise in the overall public sector investment which is supported mainly by external development loans. A further investigation of this high level of investment will be considered in subsequent chapters, when we relate the

growth of public investment in the 1970s - which is supported by foreign aid loans - to the growth and development performance in the agricultural, industrial and infrastructural sectors of the economy.

CHAPTER 6

EXTERNAL DEVELOPMENT AID TO SUDAN 1960-1980

This chapter examines the general characteristics of the flow of external development aid received by the Sudan during the past two decades, that is 1960-1980. External development aid includes all public and publicly guaranteed short, medium and long term loans, as well as outright grants extended by foreign governments, international and regional organizations, commercial banks, as well as private sources for the purpose of financing development projects and programmes. Particular attention will be given to how much external development aid was given, on what conditions, from which sources, and to which economic sectors it was channelled. This exercise is important because the characteristics of such flows as well as their allocation have important repercussions on the overall effectiveness of foreign aid in promoting growth and development in the recipient country[1].

6.1 MAGNITUDES AND SOURCES

It is clear from Table 6.1 that the three national development plans adopted since 1960 have increasingly assigned to foreign resources the role of supplementing domestic savings to maintain the required level of investment and the planned rates of growth of GDP. The planned share of external development aid in planned investment increased from 34.8% in the Ten Year Plan to 51.2% in the Five Year Plan and to 53.2% in the current Six Year Plan

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1 Qayum, A: "Long term economic criteria for foreign loans" The Economic Journal, June 1966, argued that repayment terms and conditions of development loans affect the long term economic advantages that accrue to the borrowing country.

Table 6.1 Planned Share of External Development Aid in Planned Investment

(in Ls million)

Plan	Investment I	Savings S	External Dev't Aid F	% Share of F on I
1. The Ten Year Plan 1961/62-1970/71	337.0	219.7	117.3	34.8%
2. The Five Year Plan 1970/71-1974/75	215.0	105.0	110.0	51.2%
3. The Six Year Plan 1977/78-1982/83	1570.0	450.0	835.0	53.2%

Source: Ministry of Finance and Economic Planning (Planning)

Note: The Six Year Plan assumes that Ls 285m will be secured from domestic bank borrowing

The increasing reliance on external development aid was not affected by the suspension and the amendments of the plans - which we noted earlier - that took place during the course of their implementation.

The total amount of authorized public and publicly guaranteed external development loans from all sources - multilateral, regional, bilateral and commercial - during the period 1960-1980 amounted to Ls 1.3 billion. Appendix Table 6.1 presents detailed statistics collected from published and unpublished data about the dates, magnitude, sources, repayment terms and allocation of those authorized funds. The amounts of authorized external development loans - as shown in Table 6.2 - have been rising over the past two decades in absolute terms and relative to GDP. Measured against GDP authorized aid resources have been a small fraction amounting only to 2.3% on the average during the 1960s. However this ratio has more than doubled during the 1970s reaching, on the average, 5.6%.

Table 6.2 Annual Authorized External Development Loans For Sudan 1960-1980 as a Per Cent of GDP

(in Ls million)

Year	Amounts Authorized	As % of GDP
1959/60	10.8	3.1
60/61	15.2	3.9
61/62	27.3	6.5
62/63	8.8	1.9
63/64	2.4	0.5
64/65	4.5	0.9
65/66	15.8	3.2
66/67	-	0.0
67/68	25.9	4.8
68/69	3.5	0.6
69/70	15.7	2.6
70/71	21.1	3.3
71/72	48.1	6.4
72/73	29.9	3.3
73/74	96.3	7.7
74/75	131.6	8.7
75/76	52.5	2.8
76/77	126.2	5.4
77/78	124.6	4.3
78/79	172.8	5.0
79/80	348.4	8.6

Source: Constructed from Appendix Table 6.1

As shown in Table 6.3, 89% of the total authorized funds have been secured during the decade of the 1970s, whereas only 11% of the total authorized funds were secured during the period 1960-1970. However, the authorized funds during the last six years of the decade of the 1970s - that is, from 1974/75-1979/80 constituted 72% of the total authorized funds. A comparison of this time profile of authorized funds with the time profile of public sector investment shown in Chapter 5 would indicate that the period which is characterized by an almost stagnant public sector investment - that 1961/62-1972/73 is also characterized by low levels of authorized external development loans, and the period which is characterized by a relatively sharp increase in public sector investment, that is post 1974 period, is also characterized by high levels of authorized external development loans or 72% of the total authorized funds over the past two decades.

Table 6.3 Time Profile of Authorized External Development Aid Concluded during the Period 1959/60-1979/80

Period	In Ls million	In US$ million	% of Total
1. Total amount 1959/60-1979/80: of which	1,281.4	3,311.0	100%
2. 1959/60-1969/70	129.9	373.0	11.3
3. 1970/71-1979/80	1,151.5	2,938.0	88.7
4. 1974/75-1979/80	956.1	2,377.0	71.8

Source: Constructed from Appendix Table 6.1

The major sources of external development aid have been the OECD countries, the World Bank and the Regional Arab Development Funds. Table 6.4 shows the percentage share of each source out of

Table 6.4 Sources of External Development Aid to Sudan

Source	Authorized amounts in Ls m.	% of total
1. OECD countries[1]	572.8	44.7
2. The World Bank[2]	311.8	24.3
3. Arab Development Funds[3]	249.1	19.4
4. Comecon Countries	81.2	6.3
5. Other[4]	66.5	5.2
Total	1,281.4	100%

Source: Appendix Table 6.1

Note:
1. Includes authorized grants from the EEC European Development Fund.
2. Includes the IBRD and the IDA
3. Represents authorized Loans from The Kuwait Fund for Economic Development, the Arab Fund for Economic & Social Development, the Saudi Fund for Development, Abu Dahabi Fund for Arab Economic Development, the OPEC Special Fund and the Islamic Development Bank.
4. Represents loans from the African Development Bank, the International Fund for Agricultural Development, and Peoples Republic of China and North Korea.

the total amount of authorized funds. 69% of the total authorized funds were secured from the OECD countries and the World Bank. Arab sources became an important source of development aid following the oil boom of the 1970s. Arab sources provided 19% of the total authorized development aid to Sudan - over 90% of this share has been secured during the post-1974 period, suggesting that Sudan - being an Arab country - has benefited from the oil price rises during the 1970s by receiving more development aid from oil producing Arab countries. The low level of development aid received from the Comecon countries (the USSR and the East European Socialist countries), that is 6%, has been mainly due to political

reasons, arising from the government's anti-communist campaign following an abortive communist coup in July 1971. Since that date, and with the exception of two development loans from Romania and Czechoslovakia, no development aid was received from this group. However, it is not only the low authorized level that characterized development aid from this group, but also - as we shall explain later - the exceptionally low levels of actual utilization of funds.

6.2 THE QUALITY OF EXTERNAL DEVELOPMENT AID

6.2.1 Source Tying

Another important feature of the external development aid received by the Sudan was that 54% of the total amounts of authorized funds came from bilateral sources, whereas 46% came from multilateral and regional sources. In view of the fact that external development aid extended on bilateral bases is always 'source-tied' - though the extent of tying varies from one country to another - we could say that 54% of the total development aid commitments to Sudan have been tied directly or indirectly to purchases from the donors[1]. Undoubtedly source-tying is advantageous to donors with spare productive capacity as it promotes the donor's exports and domestic employment[2], but, at the same time, it is likely to have adverse implications on the effectiveness of development aid in promoting growth and development. As the borrower is not permitted to search for the cheapest equipment or material, and is forced to accept those which the lending country provides, the real value of source-tied aid will decrease if the donor country

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1 For detailed methods of source tying see J. Bagwati 'The tying of Aid' in Foreign Aid ed Bagwati & Eckaus, Penguin Books, 1970.

2 See Abbott, G.C.'Economic Aid as a Unilateral Transfer of Resources' Journal of Political Economy November/Dec. 1970, Also Hopkin, B. & Associates 'Aid and the Balance of Payments'. The Economic Journal, March 1970.

is not the cheapest world source of supply of the goods in question. In addition, tying of shipment and insurance - as in the case of United States' aid - at rates which are appreciably above world rates, adds further unnecessary costs to the borrower. Moreover, the borrower will also have to purchase spare parts, maintenance equipment at relatively high prices from the donor for the whole life of the project concerned. Empirical studies on the losses incurred by the Sudan from source tying has not been undertaken yet. Some economists[1], however, suggested that, in general, tied aid may be worth about 20% or so less to the recipient than untied. aid. Ul Haq (1967) examining twenty development projects financed by tied credits to Pakistan in 1960-63, found that the lowest prices from tied sources were just over 50% higher than the lowest international prices. Other research findings (Bhagwati 1970) seem to confirm that tying tends to reduce significantly the benefits of aid to recipients.

However, the effective burden of source tying can be reduced - as Bhagwati (1970) has argued - by the possibilities of substitution available for the recipient country. These possibilities of substitution would arise in so far as the recipient country would like to spend - anyway - on purchases from the tied source, from its total pool of foreign exchange earned from aid as well as from exports, an amount that equals, exceeds, or is less than the amount that is explicitly tied. In practice, however, it is doubtful whether these possibilities of substitution would exist.

6.2.2 Project-tying

Most of the external development aid received by the Sudan

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[1] Singer, H. and Ansari, J. 'Rich and Poor Countries' George Allen & Unwin 1977, p. 171.

over the period of study has been tied to specific projects, that is project rather than programme loans. If we look for example at the World Bank loans to Sudan, we will find that out of the total amount of Ls311.8 million received, only an amount of Ls32.5 million or 10% is allocated for imports of necessary spare parts and equipment for the rehabilitation of the existing irrigation schemes.

However, there are convincing arguments justifying the end use or project tying. The main arguments include: Firstly, by project tying the donor makes certain that the recipient is forced to develop proper projects, well prepared, studied, programmed and executed, whereas in the absence of such a restriction, the loan might not be spent for development purposes or would be wasted on hastily-prepared projects. Secondly, project aid makes it easier for the donor to combine financial aid with the proper technical assistance required by the project, such as skilled consultants for feasibility studies, pilot schemes and training of staff for running the project. Such essential services ensure that the physical equipment financed will make its full contribution to the country's development.

Project aid is beneficial as far as it is used as a safety valve against the misuse of scarce foreign resources which is likely to occur in some LDCs where economic decision making is monopolized by dictatorial or semi-dictatorial ruling groups or army officers. Also, it is not harmful so long as the project in question is embodied in the recipient's development plan or programme. But project tying may not enhance the overall productive structure of the economy in situations like those in the Sudan during the 1970s, where serious underutilization of capacity caused mainly by foreign exchange bottlenecks, have impeded

production. The foreign exchange bottleneck has not been due to the lack of foreign resources, but rather because there have been too many project loans and not enough programme loans which can be used to purchase essential imports desperately needed to make fuller utilization of existing capacity in the agricultural and the industrial sectors of the economy. In this case, it would have been more appropriate for the Sudan to receive a balanced combination of project and programme loans which would be more effective in enhancing both new investment as well as the full utilization of existing capacities.

6.3 SECTORAL ALLOCATION

As shown in Table 6.5, 50% of the total authorized external development aid to Sudan during the period of study has been earmarked to infrastructural activities including transport and communication, electric power and large-scale irrigation. 25% went to agriculture, 14% to industry - that is, 39% to the directly productive sectors of the economy and only 4% has been earmarked to social services activities such as education, health and sewage disposal.

Table 6.5 Sectoral Allocation of External Development Aid to Sudan 1959/60 - 1979/80

Sector	Total amount earmarked in Ls million	% of total
1. Infrastructure	645.4	50.4
2. Agriculture	319.8	25.0
3. Industry	177.2	13.8
4. Social Services	53.6	4.2
5. Other (unclassified)	85.4	6.6
Total	1281.4	100

Source: Constructed from Appendix Table 6.1

In view of the serious infrastructural problems in the Sudan which, as we have explained earlier, impeded production as well as the execution of development projects, the allocation of half of the external development aid to infrastructural activities seems to be justifiable. Although such activities are not directly productive and tend to lower the aggregate output-capital ratio, they deserve highest priority in a country like the Sudan where there are special transport problems caused by its sheer size and the distribution of its population, as well as the river water resources and the vast cultivable lands which require large irrigation works such as dams and canals to provide permanent and regular irrigation and electric power supplies.

As infrastructural activities cannot produce directly goods which can earn or save foreign exchange, thereby enabling the servicing of the debts due on the foreign loans that financed them, it is important that only grants and long-term concessional credits should be allocated to such activities. In general this policy has been followed in the Sudan, but in some cases there has been an apparent misallocation of external resources as shown by the sourcewise sectoral allocation of authorized external development loans in Table 6.6. In both multilateral and bilateral sources, which generally provide concessional aid and grants, infrastructural activities were given top priority (over 50% of their development aid). Table 6.6 also shows that 53% of the non-concessional external development aid, obtained from all sources, was allocated to the industrial sector. This is explained by the fact that the relatively hard repayment terms and conditions of such loans are more suitable for industrial activities which can directly earn or save foreign exchange, than for other sectors of the economy whose returns are indirect or longterm. But the allocation of 30% of the non-

Table 6.6 Sectoral Allocation of Authorized External Development Aid: By Source (in percentage)

Source \ Sector	Agric-ulture	Infra-structure	Industry	Social Services	Other un-classified	Total
1. Concessional sources						
a. Multilateral & Regional	37.0	52.5	8.2	2.3	-	100
b. Bilateral	14.7	55.4	7.5	7.1	15.3	100
2. Non-concessional	15.5	30.3	53.6	0.6	-	100

Source: Constructed from Appendix Table 6.1.

concessional loans to infrastructural activities, whereas only 15% of them were allocated to the much more directly productive agricultural sector, represents a misallocation of foreign resources. In the next section we shall further explain the appropriatness of the repayment terms of the external development loans received by the Sudan in relation to their sectoral allocations.

6.4 THE GRANT ELEMENT IN AUTHORIZED EXTERNAL DEVELOPMENT LOANS

External development aid is transferred to developing countries through a number of arrangements which differ from one donor to another. The repayment terms of external development loans also vary substantially from hard loans with short maturity periods and at rates of interest reflecting the cost of borrowing in private international money markets, to soft loans at no interest rate other than 0.0075 per annum service charge with 50 years maturity. When loans are made on concessionary terms, that is terms which normal market incentives do not provide, they comprise an aid-component or a grant element. The grant element which measures the degree of

concession on the loan reflects the alternative cost that the borrower would have to pay if it did not have access to financing on concessional terms. Hence, it is conventionally calculated as the difference between the face value of the loan and the present value of all future repayments (amortization and interest payments) discounted at a proper rate of discount.

In this section an attempt is made to estimate the grant element in 186 external development loans received by the public sector during the period 1960-1980. This estimate will give an indication to the alternative cost that the Sudan would have to pay if it did not have access to financing on concessional terms. It will also show the relationship between the loan terms and the economic sector to which it is allocated allowing for a judgement about the appropriateness of the aid allocation policy. Moreover it will give an indication to the degree of concession of the loans received from the various sources of external aid, thereby showing which source of finance to rely on in the future, if the country is to receive concessional rather than non-concessional types of development loans.

6.4.1 The Method Used

The basic ingredients that are common to all repayment conditions of the external development loans are the rate of interest, the grace period and the repayment period. Given the values of these variables as well as the face value of the loan, then the value of the instalments repayable on the loan can be calculated. To measure the grant element, it is necessary to discount the future charges on the loan by using an appropriate discount rate. However, the choice of the appropriate discount rate is problematic. A discount rate which should reflect the real opportunity cost of capital in the Sudan is difficult to obtain because of the non-

existence of capital markets.

The following equation is used for the estimation of the grant element in the external development loans received by the Sudan over the period 1960-1980[1]. Assuming that the debt servicing of a loan - that is the repayment of the principal instalment plus the interest - remains constant over time then,

$$Q\,(1 + r^{o})^{g}\;\;(1 + r^{1})^{t} \;+\; \frac{A}{r^{1}}\;\left[1 - (1 + r_{1})^{t}\right] \;=\; 0$$

where:

Q is the face value of the loan

r^{o} is the rate of interest during the grace period

g is the grace period in years

r^{1} is the rate of interest on the loan

A is the equal annual instalments of debt servicing on the loan

t is the repayment period of the loan

Given the values of Q, r^{o}, g, r^{1} and t, the equal annual instalments of debt servicing A can be calculated. Then using an appropriate discount rate, the present value (PV) of A can be obtained by:

$$\frac{A}{i\;(1 + i)^{g}}\;\left[1 - \frac{1}{(1 + i)^{t}}\right] \;=\; PV$$

where i is the discount rate.

The grant element which is usually expressed as a percentage of the face value of the loan is then derived by:

$$GE = \frac{Q - PV}{Q} \times 100$$

where Q is the face value of the loan and PV is its present value. The higher the percentage, the greater is the degree of concession of a given loan.

However, a number of problems that this procedure raises

1 The formula used is devised by M.A.Mahmoud 'An Estimation of the Grant Element in Foreign Aid'. The Pakistan Dev't Review Spring 1977.

warrant emphasis: In the first place, this method takes into account only the financing conditions, that is the interest rate, the repayment period and the grace period. This assumption leads to an overestimation of the grant element for source-tied loans. Because the cost of tying associated with such type of loan is overlooked. Source-tying - as we noted earlier - means increasing the cost of imports relative to what would have been paid in alternative sources. It implies a reduction in the nominal amounts of financing. In other words, it hardens the financial conditions through a higher effective interest rate. Any increase in the effective interest rate reduces the grant element of the loan. On the other hand it will be difficult to compare the grant element of the loans extended by multilateral and regional sources which do not impose source-tying with loans from bilateral sources which are source-tied. Ignoring the cost of tying in our analysis is dictated by the apparent difficulty in calculating such additional cost for each of the 186 loans in view of the identification problems arising in determining alternative prices and the unavailability of the necessary data.

Secondly, the method used assumes that debt servicing - that is principal instalments plus interest - remains constant over time. This may not be the case for all loans as in some cases the repayment schedule is arranged in such a way that debt servicing will be decreasing over time as interest is paid on the decreasing outstanding debts.

Thirdly, the method used assumes that the entire amount of the loan is disbursed on the date of authorization, and that interest charged during the grace period is paid when the grace period ends. In practice, however, actual disbursements from the loan on which interest is charged are spread over time according to

the progress in the implementation of the project financed by the loan in question. Also in many cases interest is charged and paid during the grace period, that is, interest payments are not postponed to the end of the grace period.

In our attempt to estimate the grant element in the external development loans received by the Sudan, the rates of discount used are arbitrarly assumed. It is assumed that the rates chosen reflect a reasonable approximation of the opportunity cost involved if the Sudan is to borrow at commercial rates in international capital markets. The 20 year period is divided into four five-year periods, as it is unrealistic to assume a fixed discount rate for longer periods when interest rates in international capital markets have been rising over the period. The following discount rates were assumed for the four periods with a margin of ($\pm$0.01).

1960 - 1965	0.075
1966 - 1970	0.095
1971 - 1975	0.10
1976 - 1980	0.12

6.4.2 The Results

Table 6.7 shows the estimate of the grant element for each of the 186 external development loans received by the Sudan during the past two decades, given the values of Q, r, g, t for each loan and the annual rate of discount - with a $\pm$ 0.01 margin - for each period. The following general findings deserve highlighting:-

1. According to the estimates of the grant element shown in Table 6.7 and assuming discount rates of 0.075, 0.095, 0.10 and 0.12 for the first, second, third and fourth periods respectively, the

Table 6.7 Grant Element Estimates for External Development Loans Concluded During the Period 1960-1980

Source	Q	$r^o=r^1$	g	t	Grant Element in Percentage i=0.065	i=0.075	i=0.085
FIRST PERIOD 1960/65							
1. World Bank (IBRD)	5.4	0.060	3	17	4.9	13.7	21.5
2. " " "	6.8	0.0575	7	18	7.1	21.6	31.4
3. " " (IDA)	4.5	0.0075	10	40	76.4	80.5	84.3
4. " " (IBRD)	10.8	0.055	5	20	12.0	22.3	31.2
5. Kuwait Fund	6.8	0.040	4	6	16.0	21.6	26.7
6. "	1.7	0.035	3	11	21.6	27.5	32.8
7. United Kingdom	2.7	0.055	2	8	5.7	10.9	15.8
8. " "	4.9	0.055	5	10	9.0	17.1	24.3
9. West Germany	3.9	0.050	1	4	4.7	7.7	10.6
10. " "	6.4	0.0475	8	12	20.5	30.1	38.3
11. " "	1.9	0.060	1	12	3.1	9.0	14.4
12. Netherlands	1.3	0.0575	0.0	5	2.0	4.6	7.1
13. " "	1.0	0.0575	7	19	10.2	22.0	31.9
14. U.S.A.	0.7	0.0075	5	25	59.3	64.5	68.9
15. Italy	2.5	0.055	2	8	5.7	10.9	15.8
16. "	0.9	0.055	2	8	5.7	10.9	15.8
17. U.S.S.R.	8.0	0.025	0.0	12	20.5	24.6	28.4
18. Yugoslavia	7.8	0.030	0.0	8	13.3	16.6	19.7
19. Czechoslovakia	3.5	0.030	0.0	8	13.3	16.6	19.7
20. Netherlands	0.9	0.065	0.0	10	-8.3	4.5	8.7

SECOND PERIOD 1966/70

Source	Q	$r^o=r1$	g	t	Grant Element in Percentage i=0.085	i=0.095	i=0.105
21. World Bank (IBRD)	1.9	0.0625	5	20	24.2	32.6	39.8
22. " " (IDA)	2.9	0.0075	10	40	84.3	87.1	89.2
23. " " (IBRD)	8.3	0.0625	5	20	24.2	32.6	39.8
24. Kuwait Fund	4.9	0.025	3	17	45.7	50.5	54.7
25. United Kingdom	0.2	0.0075	2	23	59.2	62.9	66.2
26. " "	0.4	0.0075	2	23	59.2	62.9	66.2
27. U.S.A.	2.5	0.03	5	25	54.7	60.1	64.7

28. Italy	4.0	0.045	2	10	23.1	27.7	32.0
29. Sweden	2.4	0.02	5	20	57.5	62.2	66.3
30. "	1.0	0.02	10	15	65.2	70.0	74.2
31. U.S.S.R.	2.0	0.025	5	10	43.6	48.4	52.8
32. Bulgaria	5.0	0.025	0.0	8	21.3	24.2	26.9
33. East Germany	3.3	0.025	3	12	39.6	44.2	48.3
34. Hungary	3.5	0.025	3	10	36.8	41.2	45.1
35. Peoples R. of China	14.1	0.0075	15	10	77.5	81.2	84.3
36. North Korea	1.3	0.0075	1	10	36.5	39.8	42.9
37. Netherlands	0.04	0.065	0.0	10	8.7	12.7	16.3
39. "	0.03	0.0775	0.0	10	3.3	7.5	11.4
39. "	0.02	0.0675	0.0	10	7.6	11.6	15.3
40. "	0.81	0.07	0.0	10	6.6	10.6	14.4
41. "	0.66	0.0775	0.0	10	3.3	7.5	11.4
42. Italy	0.4	0.065	2	5	8.6	12.6	16.3
43. "	1.0	0.05	3	4	16.3	20.3	24.1
44. United Kingdom	0.14	0.0625	0.0	5	5.8	8.2	10.5
45. Austria	0.5	0.055	2	7	14.8	19.2	23.2
46. Denmark	0.5	0.0075	2	7	35.0	38.3	41.4
47. Yugoslavia	3.9	0.03	1	7	22.0	25.3	28.3

THIRD PERIOD 1971/75

Source	Q	$r^o=r^1$	g	t	Grant Element in Percentages i=0.09	i=0.10	i=11.0
48. World Bank (IDA)	3.9	0.0075	10	40	85.8	88.2	90.1
49. " "	2.4	0.0075	10	40	85.8	88.2	90.1
50. " "	14.6	0.0075	10	40	85.8	88.2	90.1
51. " "	1.4	0.0075	10	40	85.8	88.2	90.1
52. " "	8.4	0.0075	10	40	85.8	88.2	90.1
53. " "	3.7	0.0075	10	40	85.8	88.2	90.1
54. " "	3.5	0.0075	10	40	85.8	88.2	90.1
55. " "	7.0	0.0075	10	40	85.8	88.2	90.1
56. " "	8.0	0.0075	10	40	85.8	88.2	90.1
57. " "	2.4	0.0075	10	40	85.8	88.2	90.1

58. Arab Fund	9.6	0.04	5	15	42.7	48.3	53.3
59. " "	5.7	0.04	5	15	42.7	48.3	53.3
60. " "	6.4	0.04	5	15	42.7	48.3	53.3
61. Kuwait Fund	1.6	0.025	5	20	56.9	61.6	65.7
62. " "	4.4	0.04	5	10	37.4	42.8	47.6
63. " "	3.2	0.03	5	25	57.5	62.5	66.7
64. " "	14.2	0.03	5	25	57.5	62.5	66.7
65. " "	1.9	0.04	5	10	37.4	42.8	47.6
66. Saudi Fund	9.7	0.03	5	15	49.1	54.1	58.6
67. African Dev. Bank	0.3	0.06	2	8	15.7	20.2	24.4
68. " " "	1.0	0.06	3	10	19.8	25.3	30.3
69. " " "	1.1	0.06	3	10	19.8	25.3	30.3
70. " " "	1.5	0.06	5	10	24.2	30.6	36.5
71. " " "	1.5	0.0075	10	40	85.8	88.2	90.1
72. United Kingdom	0.3	0.0075	2	23	59.3	64.6	69.8
73. " "	1.1	0.0075	2	23	59.3	64.6	69.8
74. " "	8.6	0.0075	5	10	54.9	58.7	62.2
75. " "	8.3	0.06	2	8	15.7	20.2	24.4
76. West Germany	5.5	0.0075	10	40	85.8	88.2	90.1
77. " "	6.0	0.0075	10	40	85.8	88.2	90.1
78. " "	5.9	0.0075	10	40	85.8	88.2	90.1
79. " "	11.1	0.0075	10	40	85.8	88.2	90.1
80. Netherlands	1.5	0.025	8	30	70.0	74.4	78.0
81. U.S.A.	3.8	0.03	10	40	73.6	80.1	81.7

Source	Q	$r^o=r^1$	g	t	Grant Element in Percentages i=0.09	i=0.10	i=0.11
82. Italy	0.4	0.065	2	8	13.2	17.9	22.2
83. "	0.07	0.065	1	5	8.5	11.7	14.7
84. "	1.5	0.065	1	5	8.5	11.7	14.7
85. "	5.5	0.065	3	10	16.7	22.4	27.6
86. Denmark	0.7	0.0075	8	17	71.4	75.0	78.1
87. "	1.1	0.0075	10	25	80.3	83.4	85.9
88. Czechoslovakia	7.0	0.03	0.0	8	21.2	24.0	26.7
89. Romania	25.0	0.025	2	8	31.7	35.4	38.8
90. Peoples R.of China	14.1	0.0075	15	10	79.5	82.9	85.7
91. " "	8.5	0.0075	15	10	79.5	82.9	85.7
92. Netherlands	0.02	0.0775	0.0	10	5.4	9.5	13.2
93. Italy	1.6	0.06	4	8	20.3	25.9	31.1
94. "	2.9	0.085	3	5	2.6	7.7	12.4
95. "	2.4	0.065	4	8	17.2	23.0	28.4
96. "	4.1	0.085	2	5	2.2	6.4	10.4
97. "	13.7	0.08	3	7	6.0	11.5	16.6
98. United Kingdom	8.3	0.06	2	7	14.7	19.0	23.0
99. " "	9.9	0.09	2	4	1.2	3.9	7.7
100. U.S.A.	3.6	0.08	2	5	4.4	8.5	12.4
101. "	3.6	0.06	7	5	24.0	30.6	36.5
102. "	1.4	0.085	2	7	2.6	7.5	12.0
103. "	1.2	0.07	3	7	11.7	16.9	21.7
104. Belgium	12.6	0.085	3	7	3.0	8.7	14.0
105. "	8.5	0.09	1	6	0.0	3.8	7.4
106. "	1.3	0.065	1	5	8.4	11.7	14.7
107. "	0.8	0.095	3	4	-2.5	2.4	7.1
108. France	1.7	0.079	3	7	6.5	11.8	17.1
109. "	1.5	0.072	3	5	9.2	11.7	18.4
110. West Germany	2.8	0.0895	3	5	0.3	5.4	10.3
111. "	5.1	0.08	3	5	5.2	10.1	14.7
112. "	1.4	0.075	3	5	7.8	12.5	17.0
113. Austria	0.4	0.065	1	5	8.5	11.7	14.7
114. "	2.7	0.08	1	8	4.6	8.9	12.9
115. Denmark	2.3	0.09	2	8	1.3	5.4	10.3
116. Yugoslavia	1.0	0.06	1	7	12.3	16.0	19.4
117. "	1.3	0.03	2	8	29.6	33.4	36.9
118. East Germany	1.5	0.025	2	8	31.7	35.4	38.8

119. Kuwait Trading Co.	8.3	0.085	3	7	3.0	8.7	14.0
120. " "	12.5	0.085	3	7	3.0	8.7	14.0
121. Sudan Dev.Corp.	0.6	0.09	1	2	-3.7	2.2	4.4
122. " "	7.3	0.095	4	2	-2.5	2.5	7.2

D. FOURTH PERIOD 1976/80

Source	Q	$r^o=r^1$	g	t	Grant Element in Percentages i=0.11	i=0.12	i=0.13
123. World Bank (IDA)	3.1	0.0075	10	40	90.1	91.7	93.0
124. " " (IBRD)	7.0	0.0475	5	20	53.2	58.0	62.2
125. " " (IDA)	1.4	0.0075	10	40	90.1	91.7	93.0
126. " " "	6.8	0.0075	10	40	90.1	91.7	93.0
127. " " "	3.2	0.0075	10	40	90.1	91.7	93.0
128. " " (IBRD)	4.8	0.0475	5	20	53.2	58.0	62.2
129. " " (IDA)	8.8	0.0075	10	40	90.1	91.7	93.0
130. " " "	10.0	0.0075	10	40	90.1	91.7	93.0
131. " " - "	6.4	0.0075	10	40	90.1	91.7	93.0
132. " " "	6.0	0.0075	10	40	90.1	91.7	93.0
133. " " "	16.4	0.0075	10	40	90.1	91.7	93.0
134. " " "	6.0	0.0075	10	40	90.1	91.7	93.0
135. " " "	52.0	0.0075	10	40	90.1	91.7	93.0
136. " " "	52.0	0.0075	10	40	90.1	91.7	93.0
137. " " "	32.0	0.0075	10	40	90.1	91.7	93.0
138. Arab Fund	15.9	0.04	5	15	53.3	57.7	61.6
139. " "	6.3	0.04	5	15	53.3	57.7	61.6
140. " "	14.9	0.04	2	12	39.3	43.1	46.6
141. Kuwait Fund	1.1	0.01	10	20	82.8	85.3	87.3
142. " "	10.8	0.03	5	15	58.6	62.5	65.9
143. " "	6.0	0.035	5	15	56.0	60.1	63.8
144. " "	10.7	0.035	5	15	56.0	60.1	63.9
145. Saudi Fund	3.5	0.02	5	15	63.3	66.8	69.9
146. " "	9.2	0.02	5	15	63.3	66.8	69.9
147. " "	3.9	0.02	5	15	63.3	66.8	69.9
148. " "	3.5	0.02	5	15	63.3	66.8	69.9
149. " "	2.4	0.02	5	15	63.3	66.8	69.9
150. " "	1.2	0.02	5	15	63.3	66.8	69.9
151. " "	14.0	0.02	5	15	63.3	66.8	69.9
152. " "	17.8	0.02	5	15	63.3	66.8	69.9

153.	Abudahbi Fund	6.4	0.05	3	10	35.4	39.7	43.6
154.	" "	1.3	0.03	5	15	58.6	62.5	65.9
155.	" "	3.8	0.03	5	15	58.6	62.5	65.9
156.	" "	0.4	0.03	5	15	58.6	62.5	65.9
157.	Islamic Dev.Bank	1.3	0.025	2	16	51.8	55.3	58.4
158.	" "	1.9	0.025	2	28	63.3	66.5	69.3
159.	OPEC Special Fund	1.7	0.0075	5	15	68.7	71.6	74.2
160.	" "	3.8	0.0075	5	15	68.7	71.6	74.2
161.	" "	3.9	0.0075	5	10	62.2	65.3	68.2
162.	IFAD	7.6	0.0075	10	40	90.1	91.7	93.0
163.	"	7.5	0.0075	10	40	90.1	91.7	93.0
164.	African Dev.Bank	2.0	0.0075	10	40	90.1	91.7	93.0
165.	" "	1.9	0.07	5	15	34.3	40.5	46.0
166.	" "	4.2	0.0075	10	40	90.1	91.7	93.0
167.	West Germany	22.0	0.0075	10	40	90.1	91.7	93.0
168.	Netherlands	1.7	0.0075	10	40	90.1	91.7	93.0
169.	"	0.6	0.0475	3	13	40.5	44.9	48.9
170.	"	0.6	0.0475	3	13	40.5	44.9	48.9
171.	Italy	6.9	0.065	3	10	27.6	32.4	36.8
172.	Denmark	2.4	0.0075	10	25	85.9	88.0	89.8
173.	Norway	13.9	0.0565	10	15	55.8	61.8	66.8
174.	Japan	3.4	0.03	10	26	74.7	78.3	81.3
175.	"	6.8	0.02	10	20	74.7	78.3	81.3
176.	France	1.7	0.03	5	20	63.2	67.0	70.3
177.	"	3.9	0.085	2	6	11.2	15.3	19.1
178.	"	5.9	0.03	5	20	63.2	67.0	70.3
179.	"	13.7	0.085	2	6	11.2	15.3	19.1
180.	United Kingdom	4.2	0.10	2	8	5.3	10.2	14.8
181.	Belgium	1.8	0.07	2	3	13.5	16.5	19.3
182.	France	6.2	0.075	3	7	19.2	23.8	28.1
183.	Austria	4.8	0.075	3	8	20.2	25.0	29.5
184.	"	2.0	0.065	2	8	22.2	26.2	30.0
185.	Poland	8.4	0.06	2	8	24.4	28.3	32.0
186.	Arab Investment Co.	2.4	0.05	4	6	12.3	17.8	22.9

total value of the grant element amounted to Ls 562.7 million or 56.3% of the total face value of the 186 authorized loans amounting to Ls 998.7 million. In other words, the alternative cost that the Sudan would have incurred, if it did not have access to external development assistance, is about Ls 562.7 million. If, however, one adds to this figure the outright grants that the Sudan received for development purposes over the period of study, the overall grant component will increase to 66% (that is Ls 845.4 million) of the total external development loans and grants received over the past two decades. Table 6.8 below illustrates.

Table 6.8 The Overall Estimate of the Aid Component (in value and in percentage) in External Development Assistance Received by the Sudan 1960-1980

Period	Rate of Discount Assumed	Number of Loans	Total face value of loans in Ls m.	Estimated value of grant element in Ls m.	Grant element in percentage
A. Loans					
1. 1960-1965	0.075	20	82.4	18.8	0.23
2. 1966-1970	0.095	27	65.7	24.3	0.37
3. 1971-1975	0.10	75	359.7	164.5	0.46
4. 1976-1980	0.12	64	490.9	355.1	0.72
Total loans 1960-1980	-	186	998.7	562.7	56.3
B. Total Grants			282.7	282.7	
C. Total Loans & Grants			1281.4	845.4	65.97

Source: Derived from Table 6.7

2. In all the 186 loans examined the grant element has been positive (that is, the discounted sum of payments of interest and principal is less than the face value of the loan). However, in applying the lower 0.01 margin of the assumed discount rate, four loans (one in

the first period and three in the third period) have showed a negative grant element (that is the discounted sum of payments of interest and principal is greater than the face value of the loan). All the four loans are either credit facilities or suppliers credits or credits obtained from the Euro-dollar market.

3. Ranking the sources of finance according to the degree of concession of their loans, shown by Table 6.9, reveals that the loans extended by the International Development Association (IDA) and the African Development Fund (ADF) have the highest grant element (90% on the average). The standard repayment terms of these sources - which are specially established by the World Bank (in the case of IDA) and the African Development Bank (in the case of ADF) to help the least developed countries within the LDCs club - are 40 years repayment period plus 10 years grace period with no interest rate other than a 0.0075 service charge. However, in contrast with their mother institution the loans from the IBRD and ADB ranked 23rd and 24th with a grant element of 34% and 28% respectively.

All the loans extended by the OECD countries (except Italy) as well as the loans received from Arab fund sources have a grant element of over 50%. In contrast, the loans extended by the Comecon countries have a grant element of less than 45%. This is mainly due to the fact that, although the interest rates charged were relatively low ranging between 0.025 and 0.03, the repayment period is relatively short ranging from 8 to 12 years. The loans extended by the Peoples Republic of China have a high degree of concession (83% grant element).

Export credits and loans received from the financial institutions in the OECD countries and elsewhere were made at almost commercial terms, thus their grant element was low ranging from 21% to 8%

Table 6.9 Ranking the Sources According to the Degree of Concession of Their Authorized Loans

	Source	Weighted Average Grant Element in Percentage
1	The International Development Assoc.(IDA)	90%
2	The AFrican Development Fund (ADF)	90
3	West Germahy	89
4	Denmark	84
5	Peoples Republic of China	83
6	Japan	78
7	The Netherlands	74
8	OPEC Special Fund	70
9	U.S.A.	68
10	France	67
11	Sweeden	66
12	Saudi Fund	65
13	U.K.	63
14	Norway	62
15	Islamic Development Bank	61
16	Abu Dahbi Fund	57
17	Kuwait Fund	53
18	Arab Fund	51
19	German Democratic Republic	42
20	Hungary	41
21	North Korea	40
22	Romania	35
23	IBRD	34
24	African Development Bank (ADB)	28.4
25	Poland	28.3
26	USSR	25
27	Yugoslavia	22
28	Czechoslovakia	20
29	Italy	19

Source: Derived from Table 6.7

- see Table 6.10 below:

Table 6.10. Grant Element for Suppliers Credits and Loans Extended by Financial Institutions

Denmark	21.6
Austria	18.2
Arab Investment Company	17.8
U.S.A.	15.9
France	15.5
Netherlands	13.0
West Germany	12.5
U.K.	12.5
Kuwait	8.7
Belgium	8.6

Source: Derived from Table 6.7

The ranking exercise would suggest that in future, if the Sudan is to receive concessional loans with over 50% grant element, the country should - given the same repayment conditions - rely more on loans from IDA, ADB, the OECD countries (except Italy) and the Arab development funds, in financing development. At the same time export credits and loans from financial institutions in the OECD countries and elsewhere, as well as loans from the IBRD and the ADB, should be avoided because of their very low grant element.

4. There has been an upward trend in the grant element. It has steadily increased - as shown in Table 6.8 - from 23% during the first period 1960-65 to 72% during the fourth period 1976-80. This increasing trend could be explained on the one hand by the higher discount rates assumed for successive periods, given the same repayment terms, and on the other hand by the improvements

made by some donor sources in the terms of repayment of the loans extended. As a matter of fact four OECD countries (West Germany, the Netherlands, UK and USA) have, since 1976, converted their official development assistance to the Sudan from loans to outright grants.

5. The criteria for efficient allocation of external loans to the various sectors of the economy suggest that there should be a close relationship between the aid component of external loans and the sector to which they are directed; that is directly productive sectors, namely the agricultural and the industrial sectors, should receive loans with relatively lower grant elements than the loans directed to social services and infra-structural sectors which are not directly productive sectors. It seems that this criteria has not been strictly followed in the case of allocating the 186 external development loans examined. The agricultural sector - as shown in Table 6.11 - which is a productive sector received on average loans with the highest grant element 56% whereas the social services sector and the infrastructural sector received on the average loans with a grant element of 49% and 54% respectively, which is lower than the grant element of the loans allocated to the agricultural sector. However, the allocation of loans to the industrial sector with the lowest average grant element of 34% seems to be appropriate.

Table 6.11 The Grant Element - Sectoral Comparison

Sector	Grant Element (Weighted Average)
1. Agriculture	56.1
2. Infrastructure	54.4
3. Social Services	49.2
4. Industry	34.0

Source: Derived from Table 6.7 and Appendix Table 6.1.

6.5 CONCLUSIONS

A substantial amount (72%) of the total authorized external development assistance received by the Sudan over the past two decades had been secured during the second half of the 1970s, that is 1974-1980. This period had also been characterized - as we noted in Chapter 5 - by relatively high levels of public sector investment. Prior to the year 1974 public sector investment had almost been stagnant, as was the level of external assistance (only 18% of the total). This observation is likely to suggest that there had been a close association between the flow of external development assistance and the level of investment in the public sector. Further investigation of this observation will be provided in the next two chapters.

Tying of external development assistance - source tying as well as end use tying - is likely to limit its overall effectiveness on growth and production in the recipient country. In the Sudan about 54% of the external development assistance received during the past two decades had been source tied. This tying involves a real loss in the value of the funds received as

the donor countries may not always be the cheapest source of supply of the goods in question. As far as end-use tying is concerned, the bulk of the external development received during the period of study - about 76% - has been tied to specific projects rather than programme or commodity loans which are more likely to be tailored to the needs of the production process than the project loans.

The estimation of the grant element in the external development loans received during the past two decades shows that the Sudan would have paid Ls562.7 million more as additional cost of borrowing from international capital markets if it did not have access to external development assistance. This amount represents 56.3 of the total face value of the external development loans received during the period. If we add to this amount the value of the outright grants extended during the same period this ratio will increase to 66%. This substantial benefit to the economy cannot be overlooked when we assess the overall effects of external development loans on the growth and development of the country.

It is important to note that, whereas the directly productive sectors of the economy, that is agricultural and industrial sectors, received about 38.9% of the total amount of external development assistance, the indirectly productive sectors, that is infrastructural and social services sectors, received 54.6% of the total. Undoubtedly, this allocation policy has important implications on the effects of external development assistance on output and growth. Because infrastructural and social services activities usually have high capital output ratios and their effects on production and growth are long term and indirect. Hence it is important to take into consideration - when we examine the

impact of external development assistance on growth and development in subsequent chapters - the fact that over half of the total foreign assistance received by the Sudan during the past two decades went to indirectly productive sectors.

In the next two chapters we shall confine ourselves to this exercise. In the first chapter (Chapter 7) we shall examine the effects of these flows on domestic savings, and in Chapter 8 we shall analyse its effects on investment, GDP growth rates, sectoral and overall development performance of the economy.

CHAPTER 7

IMPACT OF EXTERNAL DEVELOPMENT AID ON PUBLIC SECTOR'S SAVINGS

7.1 INTRODUCTION

The basic assumption in the literature explaining the impact of foreign capital inflow on economic growth of the LDCs - reviewed in Chapter 2 - was that foreign resources were exactly additive to domestic savings and domestically financed imports. In other words, each dollar of foreign resources would result in an increase of one dollar in imports and investment. The discussion on the role of foreign capital in economic development has also focussed on the catalytic effect of foreign capital in promoting savings and investment from internal sources. This would occur if foreign capital operated as autonomous investment opening new opportunities and generating induced savings and investment.

However, the validity of these contentions - as we have shown in Chapter 3 - has been questioned by several economists. Studies by Rahman (1968), Griffin (1970), Weisskopf (1972), Singh (1975) and Hazari (1975/6) have concluded that only a fraction of foreign resources inflows has been additive to domestic savings, while a large share was used to increase consumption. A number of theoretical mechanisms that lead one to expect a negative correlation between foreign capital inflow and domestic savings have been suggested by them. Empirical evidence for the existence of such inverse relationship has also been reported. A few of them, namely Griffin and Enos (1970) have extended their argument further to suggest that foreign capital inflow is likely to retard rather than promote growth and development in LDCs.

In this chapter the hypothesis put forward by the above-mentioned economists on the adverse effects of foreign capital on domestic savings will be discussed and tested by using time series data from the Sudanese economy over the period 1960-1980, as well as cross-country data from 50 developing countries during the period 1977-79. The extreme view that aid retards growth will be investigated in the next chapter.

7.2 AN EVALUATION OF THE IMPACT OF FOREIGN CAPITAL INFLOW ON DOMESTIC SAVINGS

In evaluating the theoretical arguments and the empirical results of the studies that showed the negative impact of foreign capital inflow on domestic savings, we shall examine the reasonableness of the theoretical explanations put forward in support of the hypothesis as well as the methods used in the empirical analysis. The hypothesis will also be tested by using relatively more recent cross-country data from 50 developing countries, as well as, in view of Sudan's experience over the past two decades.

The hypothesis of the negative association between foreign capital inflow and domestic savings is based mainly on the postulation that when capital inflows are firmly anticipated, they will be treated as part of the total income when expenditure decisions are made. As normal marginal propensity to consume will apply in such cases, capital imports will raise total consumption and reduce domestic savings. Also the governments in LDCs, as Rahman (1968) suggests, relax domestic saving efforts when more foreign aid is expected.

However, there are some plausible arguments which suggest a rise in domestic saving as a result of foreign capital inflow. If production expanded after the inflow of foreign capital - and this is most likely - it may be possible to have increased

consumption without any decrease in saving. In most LDCs investment - as the experience of the 1970s would suggest - is substantially a function of foreign exchange available to import capital goods, spare parts and necessary inputs to create new capacities and to keep installed capacity functioning. To the extent that foreign resources inflow increases investment and subsequently output, both income and saving will increase.

Eshag (1971) stressing on the leverage effects of foreign aid, argued that in the majority of LDCs there exists a substantial reservoir of unemployed labour resources and unutilized land and equipment which could be used effectively if foreign exchange is available. With foreign resources inflow, domestic savings are likely to increase on the grounds that some domestic resources which would otherwise have remained unemployed are used with foreign resources on new investment projects.

Surely, in developing countries with low saving and investment, capital inflows raise the rate of investment leading to higher incomes and subsequently higher saving rates. Even if the inflow is used in part for consumption it may well be argued that additional consumption - over the longer term - may also raise productivity and output thereby causing an increase in savings. All these production and income effects of capital inflows are ignored by the hypothesis of negative association between foreign capital inflow and domestic savings.

Another plausible assumption that foreign resources may lead to an increase in domestic saving is that foreign capital inflow may raise domestic savings by increasing the income of groups like industrialists, exporters, and agents of foreign contractors executing aid-financed projects. This argument, however, holds only if we accept Houthakker's (1965) thesis that savings are

a function of the level and the rate of growth of income of such groups.

The principles that govern the flow of external development assistance in practice, also suggest that governments' savings efforts should be intensified rather than relaxed. As foreign aid loans usually finance the foreign exchange costs of the projects in question, local costs - and in some cases part of the foreign exchange cost - are left to the recipient to secure. Hence, any serious government is likely to intensify its domestic saving effort so that it can meet its obligation to secure the local component of the development programmes and projects whose foreign exchange costs are met by foreign aid loans and grants.

The argument that external development loans increase consumption may be questioned in view of the fact that most aid-giving agencies - bilateral as well as multilateral - follow regulations which permit financing specific development projects - that is, end use tying. Hence, with the exception of food aid which goes directly for consumption - and usually in small magnitudes relative to the total inflows - all foreign resources made available from development aid agencies go for investment directly. However, development aid can increase consumption only indirectly through multiplier effects, as additional investment made available by foreign aid is bound to be accompanied by additional employment for construction of buildings, roads, etc., and the wages paid to the additional workers will lead to an increase in consumption. But this consumption is likely to occur (anyway) whether investment is financed by foreign aid or by domestic savings.

Turning to the empirical evidence supporting the hypothesis of a negative correlation between foreign capital inflow and domestic

savings, we may find that the statistical findings used raise some definitional and methodological problems that warrant further scrutiny.

The negative statistical relationship between domestic savings and foreign capital inflow - as Papanek (1972) has argued - may be in part the result of an accounting convention rather than a behavioral relationship. Domestic savings (S) are calculated according to conventional practice by subtracting net foreign capital inflow (F) from gross investment (I), S = I-F. But in some cases this equation may give misleading results as regards domestic savings. For example, when foreign capital in grant form - which does not represent a claim on past or future savings - is used for what is conventionally regarded as government consumption expenditure such as education and health services or for other consumption purposes. In such cases consumption has increased, and although neither investment nor domestic savings are affected by foreign aid, the conventional method will show a decline in savings. Hence, it will be misleading to subtract all foreign resources regardless of their uses and sources from investment in calculating domestic savings.

A further clarification of this view is provided by Newlyn (1973) who argued that a distinction should be made (as in standard UN proceedures) between capital and current transfers. When this distinction is made consumption grants will be included in current transfers and will therefore not be deducted from investment in calculating national savings. Hence, only when consumption grants are inappropriately treated as capital transfers will the accounting convention S = 1-F give misleading results. However, this classification is made from the standpoint of what ought to happen. In practice foreign grants for consumption - for

example food aid - are shown as part of the current account deficit financed by capital inflow (aid).

In the Sudan for example imports under non-project aid (mainly grants for consumption and some imported goods such as IBM machines for the Statistics Department) for various government departments are taken into account in the total public capital formation[1]. Such imports are reflected in the current account deficit which is financed by foreign aid.

Another important point emphasized by Newlyn that is worth noting is that if domestic savings is obtained as the difference between gross investment (I) and the value of net foreign resource inflow, which is obtained as the deficit on current account "...negative values of the coefficient $\frac{\Delta S}{\Delta F}$ between 0 and -1, which would normally mean a reduction in the dependent variable, actually mean no change in the absolute amount of national resources being used for investment but simply reflect the extent to which foreign resources have been used for consumption. Only if the negative value exceeds unity is there any substitution effect (absolute reduction in the amount of national resources being used for investment). In the unlikely event of positive values these would mean a complementary effect (absolute increase in national resources used for investment" (p.869). In other words, while the reduction in the difference I-F (i.e. national savings) brought about by the use of foreign capital for consumption is correctly shown as dis-saving, national resources used for investment (i.e. domestic savings) are measured by the difference I-F, where F is the amount of foreign capital used for investment.

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1 'Manual for the Calculation of National Income of Sudan 1961/62' Department of Statistics.

The use of the single equation S = I - F in calculating saving is also bound to commit an error, as it implies that there is a joint dependence between saving and investment:

$$S = (I - F, Y) \quad \ldots \quad (1)$$

$$I = (S + F) \quad \ldots \quad (2)$$

Therefore, the relationship between savings and investment cannot be described by the single equation $S = f(I-F)$, but rather by a system of simultaneous equations (1) and (2). Because of the existence of the endogenous variables S and I in the set of the explanatory variables of the functions expressed in (1) and (2), the application of ordinary least squares in estimating the values of S and I in the equation $S = \alpha (I - F)$ yields bias-ed and inconsistent estimates[1]. Two stage least squares could be used in order to eliminate the simultaneous equation bias.

Unfortunately, we cannot test this model using data from the Sudan, because S, F and I are not independently collected. As is apparent from the published data (Appendix Table 8.1) only two series are collected by the Department of Statistics and the third one is obtained by them from the identity I = S + F.

However, Mead Over (1975) has shown that the estimate of $\frac{\Delta S}{\Delta f}$ obtained by ordinary least squares is negative only if foreign aid is exogenously determined. On the basis of his belief that foreign aid is determined "... not exogenously, but to fill the need as measured by the difference between investment and saving" (p. 753), and that investment is exogenously determined by government development plans, he re-estimated the model used by Griffin and Enos (1970) using a system of two equations; in the

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[1] A. Koutsoyiannis "Theory of Econometrics", pp. 321-335, 1973.

first $\frac{F}{Y}$ is regressed on $\frac{I}{Y}$, and in the second equation $\frac{S}{Y}$ is regressed on the theoretical value of $\frac{F}{Y}$ (labelled $\hat{f}$) calculated from the first equation. Using the same data used by Griffin and Enos he obtained the following results:

$$f = \underset{(3.8)}{-4.49} + \underset{(0.22)}{0.51}(i), \quad R^2 = 0.135$$

$$S = \underset{(1.93)}{8.69} + \underset{(0.43)}{0.96}\ (\hat{f})$$

where $f = \frac{F}{Y}$, $i = \frac{I}{Y}$, $S = \frac{S}{Y}$

Clearly, this re-estimation of $\frac{\Delta S}{\Delta F}$ - under the assumption that foreign aid is endogenous - yields a positive value very close to 1.0 (i.e. 0.96) suggesting that foreign aid flows cause an additional matching increase in domestic savings rate which would be a considerable stimulus to growth.

However this result has not been accepted by Enos and Griffin (1975) on the grounds that foreign aid is exogenous given the environment within which foreign assistance is allocated, that is the political factors in lending countries.

Another problem that requires further scrutiny in the statistical findings of a negative association between foreign capital inflow and domestic savings is that, since most of the statistical studies on this relationship had been undertaken for the 1960s - and in some cases for the 1950s - the results may reflect the conditions, domestic as well as global, that characterized that period. A study of this relationship for a more recent period may be useful in explaining whether the negative relationship holds at all times.

Using data published in the World Bank's World Development

Report for the years 1977, 1978, 1979, we regressed the average gross domestic savings as a percentage of GDP ($\frac{S}{Y}$) for the three years on the average level of net foreign capital inflow (F) (public and publicly guaranteed medium and long term loans) for the same period for a sample of 50 low and middle income developing countries (see Table 7.1). The regression result is found to be inconsistent with the general finding of negative association between foreign capital inflow and domestic savings.

$$\frac{S}{Y} = 9.8 + 0.008\ F \qquad R^2 = 0.16$$
$$(1.5)\ \ (0.003)$$

(figures in parenthesis represent the standard error of the regression coefficient).

This regression result suggests that the effect of the level of net foreign capital inflow on domestic savings is positive (or additive), the regression coefficient being positive and statistically significant at the 0.01 level of significance. It may as well give a rough indication that the statistical findings on the relationship between foreign capital inflow and domestic saving at different time periods may produce contradicting results on the account of the domestic as well as the global conditions that prevailed during the period of study. A more refined study would, however, investigate further the specific global and internal characteristics that could explain the sign of the regression coefficient.

Another important point that deserves further discussion is the fact that, whereas the impact has been focused on foreign aid, what is being analysed in the work of the previous investigators is all forms of capital imports. That is, the deficit in the current account of the balance of payments.

Most of the studies on the relationship between capital

Table 7.1 Net Foreign Capital Inflow and Saving/GDP Ratio 50 Developing Countries

Country	Net Foreign Capital Inflows*				Gross Domestic Saving as % of GDP			
	1977	1978	1979	Average 3 years	1977	1978	1979	Average 3 years
Bangladesh	286	437	500	407.6	(1)	..	2	0.3
Etheopia	34	80	109	74.3	9	6	(4)	3.7
Mali	51	62	73	62.0	8	5	(5)	2.7
Somalia	115	111	86	104.0	..	2	2	1.3
Burundi	13	21	36	23.3	9	5	4	6.0
Chad	27	31	12	23.3	(31)	(7)	(14)	(17.3)
Rwanda	27	18	41	28.7	..	4	12	5.3
Upper Volta	46	39	64	49.7	(24)	(3)	(3)	(10)
Zaire	411	6	143	186.7	20	12	12	14.7
Burma	137	277	349	254.3	9	13	15	12.3
Malawi	49	78	127	84.7	10	16	13	13.0
India	628	555	576	586.3	22	20	20	20.7
Niger	31	63	78	57.3	..	12	19	10.3
Afghanistan	125	134	36	98.3	11	10	11	10.7
Pakistan	580	544	610	578.0	8	7	6	7.0
Sierra Leone	20	55	54	43.0	6	9	4	6.3
Tanzania	143	151	198	164.0	17	7	8	10.7
Sri Lanka	48	175	139	120.7	20	17	14	17.0
Haiti	49	35	37	40.3	9	9	9	9
Central African Republic	18	19	12	16.3	..	8	8	8
Kenya	136	165	326	209.0	25	18	15	19.3
Mauritania	54	93	28	58.3	7	7	14	9.3
Sudan	85	250	193	176.0	..	2	5	3.5
Indonesia	1163	639	610	804.0	22	22	30	24.7
Togo	96	168	238	167.3	1	14	11	8.7
Egypt	2278	1642	1489	1803	15	14	16	15
Cameron	198	229	444	290.3	19	21	10	16.6
Ghana	87	58	120	88.3	5	6	5	5.3
Honduras	100	135	148	127.7	18	20	24	20.7
Liberia	62	60	119	80.3	31	18	23	24
Thailand	186	649	992	609	21	22	21	21.3
Senegal	76	121	140	112.3	0.0	11	2	4.3
Philippines	740	932	1171	947.7	25	24	24	24.3
Zambia	102	(41)	161	74.0	21	31	28	26.7
Congo P.R.	62	205	33	100.0	..	8	12	6.7
Morocco	1168	895	1046	1036.3	7	11	9	9.0
Bolivia	352	265	188	268.3	17	13	14	14.7
Ivory Coast	733	725	660	706	26	30	27	27.7
Jordan	189	187	193	189.7	..	(19)	26	2.3
Colombia	194	110	603	302.3	18	25	26	23
Paraquay	91	119	53	87.7	18	20	20	19.3
Ecuador	522	395	595	504.0	26	26	27	26.3
Guatemala	41	98	115	84.7	18	17	14	16.3
Nicaragua	220	93	98	137.0	19	19	12	16.7
Korea R.	1501	2777	2949	2409.0	25	28	28	27.0
Dominican Repub.	100	125	123	116.0	22	18	14	18.0
Peru	879	411	631	640.3	11	17	24	17.3
Tunisia	636	470	591	565.7	22	20	23	21.7
Syria	474	514	307	431.7	10	14	10	11.3
Turkey	566	536	3763	1621.7	16	17	16	16.3

Source: World Bank World Development Report 1977,1978,1979.

* Net foreign capital inflow = public and publicly guaranteed medium & long term loans (in US$ m).

Note: .. = not available

imports and domestic saving consider foreign resources inflow as the difference between current imports and exports of goods and services. A possible error may arise in such a definition of foreign aid. A balance of payments deficit on current account may be financed in a number of ways including running down of reserves, short term capital movements and movements in the long term capital. If the main concern is the effect of foreign aid, then the relevant figures are movements in public long term capital.

A study by Stewart (1971) on the relationship between long term capital inflow and the balance of payments surplus or deficit for a number of Central and South American countries revealed considerable variations in the relationship between long term capital inflow and the balance of payments on current account, both between countries at a single point in time and for one country over time. She concluded from this result that current account deficit cannot represent movements in the long term capital inflow. Therefore the regressions which Rahman, Griffin & Weiskopf ran showed the relationship between the current account of the balance of payments and domestic savings and cannot be interpreted as a guide to the impact of long term capital on domestic savings.

One would not expect foreign aid (that is long term concessional loans) to have the same impact on savings as private foreign investment or short-term capital movements, commercial borrowing and changes in reserves. To draw conclusions about the impact of external development aid on domestic savings, one needs to analyse it separately from other flows. To do this, an attempt is made in this section by fitting time series data from the Sudanese economy over the period 1960-1978 on the same equation used by Rahman (1968) and Griffin and Enos (1970). But the

"current account deficit" is replaced by the external development loans received by the public sector (F_p) - which are generally long term concessional loans, and more likely to represent foreign aid than other capital movements. Also, instead of domestic savings of the national economy, public sectors savings (S_p) are considered (Table 7.2).

Table 7.2 External Development Aid and Public Sector Savings

(In Ls million)

Year	GDP	Public Sector Savings	External Development Aid
1960/61	386.8	12.3	6.9
61/62	420.0	13.2	10.7
62/63	456.2	26.3	9.0
63/64	463.8	15.0	10.9
64/65	476.8	4.1	11.9
65/66	492.0	(9.4)	18.7
66/67	497.6	0.6	12.4
67/68	536.3	15.6	16.1
68/69	583.3	(5.6)	12.2
69/70	602.6	(8.5)	12.8
70/71	637.6	20.7	15.8
71/72	752.1	8.3	17.0
72/73	896.8	3.3	17.9
73/74	1246.2	(30.4)	34.4
74/75	1510.8	(60.2)	44.6
75/76	1848.0	(17.2)	58.8
76/77	2339.7	(46.9)	74.5
77/78	2878.4	37.0	78.8
78/79*	3462.0	(72.9)	74.0
79/80*	4072.1	(37.5)	91.4

Sources: 1. Department of Statistics - Ministry of Finance & Economic Planning
2. Bank of Sudan Annual Reports
3. The Economic Survey, Ministry of Finance & Economic Planning
4. External Loans and Technical Assistance Administration. Ministry of Finance and Economic Planning.

Note: * Provisional estimates for GDP figures.
Brackets indicate a minus sign.

According to Rahman (1968), Griffin and Enos (1970) and Weisskopf (F_p) adversely affects (S_p). They believe that savings in LDCs are substantially determined by government policy and that government's saving effort may be voluntarily relaxed when more foreign aid is available than otherwise. But, the formal mechanisms of foreign aid disciplines may suggest the reverse. Most aid giving agencies, bilateral as well as multilateral, follow regulations that permit only the financing of the foreign exchange costs of aid financed projects and programmes, leaving the local costs - and in some cases part of the foreign exchange cost - for the recipient government to secure. This policy induces the recipient government to maximize efforts to raise local capital through increased taxation and cuts in current expenditure.

The local currency component of the projects or development programmes financed by foreign aid, such as costs of local materials, wages for local labour, local transportation, import duties, etc. vary on average between 40% to 60% or more of the total cost of the projects and or the programmes supported by foreign aid funds. In theory recipient governments have two options to secure the local costs of such projects and programmes. They can:

1. Increase savings through increasing taxation or reducing government expenditure.

2. Borrow from the central bank or from the general public.

The recipient government's saving effort can be enhanced by increasing taxation and reducing current expenditure. Tax receipts can be increased through higher tax rates, introducing new taxes and improving efficiency in collecting taxes. There

are no economic reasons why any or all of these measures should not be adopted. But, tax reform and current expenditure cuts are always politically undesirable particularly for the shakey political regimes that govern most of the LDCs. The other option available for the recipient government to secure the local cost component of projects and plans supported by external development aid is domestic borrowing. Here, the ability of governments in LDCs to borrow is limited. Borrowing from the Central Bank is economically undesirable because of the inflationary pressures it exerts on the economy and the subsequent adverse effects on the balance of payments. We may also find regulations that restrict government borrowing to a certain limit[1]. Borrowing from the private sector, on the other hand, is also limited by the absence and/or the limited financial markets.

In practice, however, recipient governments usually increase taxation and borrow from the Central Bank at the same time, in order to meet their obligation to secure the local cost component of aid financed development programmes, as well as to meet other current expenditure. To the extent that public sectors saving and taxation effort were encouraged as a result of this obligation, then it is not possible to accept the argument that governments saving effort may be voluntarily relaxed when more foreign aid is available than otherwise.

Nevertheless, the experience of the Sudan over the past two decades seems to suggest that government saving effort may be relaxed when more foreign aid is available. As we noted in

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[1] In the Sudan, a ceiling for Central Government borrowing under article 57(1)A of Bank of Sudan Act - is set at 10% of the estimated total revenue for the current financial year.

Chapter Five, despite the increasing reliance on external development aid in financing the import content of development programmes in the Sudan over the past two decades, public sector's saving needed for the local cost component of those programmes has deteriorated. Current government expenditure - in nominal and real terms - is allowed to increase at a rate faster than that of current revenues, tax ratios have declined from 18.9% in 1970/71 to 10.4% in 1979/80, and the financial performance of public enterprises has been poor. Whether the availability of foreign development assistance has led to the relaxation of public sector's saving effort needs to be investigated. This is done by fitting time series data for the period 1960/61 - 1977/78 to a modified version of the regression model employed by Rahman (1968) and Griffin (1970) to allow for the investigation of the relationship between public sectors savings S_p and external development loans received by the public sector F_p. We obtained the following result:

$$\frac{S_p}{Y} = \underset{(2.8)}{5.9} - \underset{(1.1)}{2.5}\left(\frac{F_p}{Y}\right) \qquad R^2 = 0.24$$

(Figures in parenthesis represent standard errors of the regression coefficient)

where $\frac{S_p}{Y}$ is the public sector savings as a per cent of GDP, and

$\frac{S_f}{Y}$ is the external development aid received by the public sector.

Clearly, this result suggests that with more external development aid, public sectors saving's effort has slackened rather than increased. The regression coefficient on $\frac{F_p}{Y}$ was negative and statistically significant at the 5% level of

significance. However in adding time (T) as a variable in the above equation the following result is obtained:

$$\frac{S_p}{Y} = \underset{(2.48)}{6.8} - \underset{(1.03)}{1.5}\left(\frac{F_p}{Y}\right) - \underset{(0.099)}{0.24T} \qquad R^2 = 0.45$$

The coefficient on $\frac{F_p}{Y}$ is also negative, but the negative effect is reduced and the coefficient is not very well determined casting some doubt on the causality implied by the equation. The result also suggests that public sector savings have been declining over time.

The government, in order to meet its obligation to secure the local cost component of the aid financed development programmes has, therefore, adopted the painless policy of borrowing from the Central Bank rather than encouraging public sector savings. Table 7.3 clearly shows the heavy and increasing reliance on public sector borrowing (deficit financing) in financing the local costs of aid financed development programmes.

Table 7.3 Sources of Financing Public Sector Investment Programmes 1965-1980 (in Ls m. and in percentage)

Period / Sources of finance	1965/66-1969/70		1970/71-1974/75		1975/76-1979/80	
	Amount	%	Amount	%	Amount	%
Total public sector investment:	142.5	100	261.8	100	840.1	100
Sources of finance:						
1. External resources	72.2	51	129.7	50	377.5	45
2. Public Sector's Saving	16.2	11	32.3	12	37.0	4
3. Deficit Financing	54.1	38	99.8	38	425.6	51

Source: Constructed from Tables 5.9 and 7.2.

Whereas the share of public sector borrowing in financing public investment has been rising (from 38% to 51%) public sector's savings share - which continued to be the lowest share - declined

to only 4%. However, the existence of any causality for the negative association between S_p and F_p could be questioned on the grounds that in many cases the negative relationship is likely to be the result of exogenous shocks affecting both S_p and F_p[1]. These exogenous shocks or factors may arise because of political disturbances, wars, terms of trade deterioration and weather conditions. This may be true in the case of the Sudan where some exogenous factors have caused S_p to decline and F_p to increase at the same time. For example, following the signing of the Addis Ababa Accord in March 1972 which brought to an end seventeen years of civil war in the Southern region, the Central Government's savings were affected by the extra funds required for rehabilitation and reconstruction as well as the establishment of the new administration (regional government). At the same time foreign aid to the Southern region has increased substantially. Also the refugee problem caused by political unrest in neighbouring Uganda, Chad, Central African Republic and Ereteria during the 1970s has increased government expenditure on refugees, thereby affecting government savings. At the same time the government received increased aid to support the urgent requirements for refugee settlements.

Substantial changes in terms of trade, particularly for countries like the Sudan in which export earnings rely heavily on one commodity (cotton), may also lead to low savings and high foreign capital inflow. A drop in the terms of trade may cause a fall in savings from exports (in Chapter 3, we noted that in LDCs savings is a function of export earnings) at the same time foreign

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[1] Papanek, G.F. "The Effect of Aid and Other Resource Transfers on Savings and Growth in LDCs" Economic Journal 1972.

exchange earnings will be drawn down and resort to foreign capital will be expanded to maintain the level of imports and investment. Papanek (1971) cited Ghana's experience in the 1960s as an example of a country with relatively low savings and high foreign capital inflow arising partly from deterioration in its terms of trade when cocoa prices fell between 1959 and 1965.

The sudden sharp rises in the price of oil in 1974 onwards is also an example of exogenous shocks which simultaneously reduced the economic performance in general and savings as well, and led at the same time to increased capital inflows. This point has been explained in detail with respect to Sudan's experiences in Chapter 5. Another example of exogenous shocks that led to decreases in government saving in the Sudan is that the government has a monopoly on the sugar trade, buying on the international market and selling locally for about 30% profit with minimal costs of storage and distribution. This operation used to bring some Ls40 to 50 million each year to the treasury. In 1974 when international prices for sugar rocketed the situation was reversed, instead of gaining revenue the government had to start subsidizing imported sugar, thereby leading to less government savings.

It is plausible, therefore to accept that exogenous factors such as political and military disturbances, sudden falls in export prices or sudden rises in import prices, bad weather and other shocks, cause high foreign aid inflows and low saving rates simultaneously. Hence the regression results showing a negative correlation between domestic savings and foreign capital inflow should be considered with prudence as time series and most cross

section analysis would be affected by such exogenous temporal factors.

CONCLUSION:

In spite of the statistical findings supporting the view that foreign aid inflows adversely affect domestic saving effort, there are plausible saving functions that may produce a rise in savings as a result of foreign aid flows. Foreign aid resources raise investment, after a time this raises income per head, and after more time the share of income saved also goes up. Also, governments are expected to intensify their saving effort so as to meet their obligations under foreign aid loan agreements to secure the local costs of aid financed projects. The relationship between aid flows and public savings may be influenced by the policies pursued by the recipient as well as on exogenous - domestic or global - factors that characterize the period.

Our analysis of the public sector saving performance in Chapter 5 and the regression results presented in this chapter suggest that in the Sudan with more foreign aid resources public sectors' saving effort has slackened rather than intensified. This is mainly due to inadequate policy measures, inefficient management of public enterprise as well as exogenous shocks such as political instability (domestic as well as regional), and sudden rises in import prices.

In the previous studies, we find that while the criticism has been focused on foreign aid, what is being analyzed is all forms of capital inflows, that is "the current account deficit of the balance of payments". In our analysis of Sudan's experience, however, the external development loans received by the public

sector - thought to be a more appropriate indicator of foreign aid flows than the current account deficit of the balance of payments - has been considered. And, instead of examining the effect of external development aid on aggregate domestic savings, the impact on public sector savings has been investigated. The selection of public sector savings and external development loans has also enabled overcoming the error possibility arising from the claim - explained earlier - that the negative association between foreign capital inflow on domestic savings may be due to the accounting convention S = I - F, and not due to a behavioural relationship.

Whereas it is expected that the recipient of external development aid should intensify public sector saving effort so as to secure the local cost component of aid financed projects and programmes, in the Sudan the government has not adopted the appropriate policy of mobilizing public sector savings through increasing taxation and reducing current expenditure. But rather relied on the relatively painless way of raising funds, that is borrowing from the Central Bank, thereby causing inflationary pressures on the economy.

However, the poor public sector savings performance should not lead us to jump to the conclusion that foreign aid has retarded growth and development in the Sudan. The proper test of the effectiveness of foreign aid is its impact on the level of investment and growth as well as on other development objectives, rather than on savings as conventionally measured.

This point will be elaborated further in the next chapter when we examine the effects of the external development aid on public sectors investment and the growth performance of the various sectors of the economy.

CHAPTER 8

IMPACT OF EXTERNAL AID ON INVESTMENT, GROWTH AND DEVELOPMENT

8.1 INTRODUCTION

The basic argument used in support of external development aid is that it can be used as a basis for a significant acceleration of investment and growth in the LDCs. As we have seen in Chapter 2, many models have been constructed showing how external resources change the aggregate performance of the economy. Their logic is simple. Economic development in the LDCs is frequently constrained by lack of finance. The resources supplied by external aid enable LDCs to overcome this constraint and allow them to take off into self-sustained economic growth. In order to achieve a target rate of growth a country requires a certain amount of investment. If domestic savings is insufficient to finance the required investment - that is a saving gap situation - the growth target will be achieved either by raising domestic savings - which may be impossible in LDCs - or alternatively by an inflow of foreign finance. In many cases, as Chenery-type models suggest, even if a country is able to generate sufficient domestic savings, it may still be unable to reach its growth target, mainly because of the structural inability to earn enough foreign exchange to buy the imported goods that are needed for development.

The forgoing logic would lead one to expect that there will be a positive relationship between external aid and growth. And in practice this relationship has been discovered by some economists Chenery (1970) for example cites the examples of seven countries -

Israel, Taiwan, Jordan, Greece, Puerto Rico, South Korea and Panama - following a high aid strategy in which substantial inflows of foreign capital between 5 to 10 per cent of GNP for sustained periods, have been accompanied by a considerable increase in the investment ratio and a relatively high and generally accelerating growth rate of GNP. Papanek (1973) relates growth to three types of foreign resources, aid, private foriegn investment and other foreign inflows. Using data from eighty-five countries, and including the domestic savings ratio as an additional explanatory variable, he finds that the aid coefficient is both positive and highly significant, and that aid is more productive in generating growth than any other single factor.

However, a considerable amount of scepticism concerning the relevance of foreign aid to growth has been emphasized by several economists. For example, Griffin and Enos (1970) believe that "foreign assistance is not associated with progress and, indeed, may deter it" (p.317). Bauer and Yamey (1981) hold the view that foreign aid contribution to Third World development cannot be significant, and is much more likely to be negative. In this chapter, we shall analyse the theoretical case and the empirical findings put forward in support of the view that foreign aid may not foster development and may even retard it. The impact of external development aid on Sudan's growth and development performance is also examined. In the light of Sudan's experience of development with foreign aid, we draw some conclusions that may be useful in clarifying the debate over the effects of foreign aid on growth and development in the LDCs.

8.2 EXTERNAL AID, GROWTH AND DEVELOPMENT: THE CRITICS' ARGUMENT

The view that external aid may retard rather than accelerate growth and development in the LDCs rests on various theoretical arguments as well as on some empirical findings derived by regression models using cross-country and time series data. In a number of articles Griffin (1970,1971,1972) and Griffin and Enos (1970) argue that foreign aid has little positive effect on development in LDCs, and it may have a negative effect. This is mainly because most foreign aid is used to supplement consumption leaving only a small portion to increase investment. This small addition to investment is likely to be offset by a fall in the overall effectiveness of investment, because "...there are indications that the output - capital ratio falls as aid increases" (1972, p.128). The reason for this, according to Griffin and Enos, is that aid donors concentrate their aid on large projects - despite their low economic return - which will stand as monuments to their generosity because the motives of the donors are largely political. Also, foreign aid agencies have certain ideological biases against government ownership of directly productive activities leading to a change in the pattern of investment in favour of social overhead capital and economic infrastructure such as transport facilities, dams, etc. Hence this general bias against directly productive activities tends to lower the aggregate output-capital ratio. Moreover, there is - apart from the rigid administrative rules and regulations and unnecessary delays - a problem of administrative economies of scale which is manifested by the preference of the aid agencies to lend; for example - a £30 million loan to finance one project costing £30 million rather than to finance ten projects costing £3 million each. In this

way aid agencies will reduce the difficulties of supervision and keep down the administrative costs. Furthermore, as foreign aid finances only the foreign exchange costs of the project, projects which are intensive in foreign exchange are likely to be selected. Also projects are likely to be designed in such a way as to maximize the foreign exchange component of the total cost. This bias towards foreign exchange intensive projects tends to reduce the effectiveness of investment. The practice of aid-tying increases the costs of investment which also lowers the aggregate output-capital ratio. Finally, the flow of aid inhibits - in general - institutional reforms necessary for development.

Bauer and Yamey (1972, 1981) argue that, in practice aid may retard development because foreign aid tends to increase the level of public sector spending, and as the public sector is inherently less efficient than the private sector, economic efficiency and growth will be reduced. They argue further that foreign aid encourages governments to carry out policies which will distort the development process and/or lead to lower growth, such as policies of extravagant government expenditure, wasteful protection of some industries and over-investment in physical infrastructure. It is interesting, however, to note that in citing examples of countries where foreign aid has encouraged such policies, Griffin and Enos (1970) and Bauer and Yamey expressed conflicting views on the kind of policies inimical to growth and development. Griffin and Enos (1970) cited Tanzania as an example of a country which has been denied aid from the West because it was "...intent on reforming the society and re-organizing the economy" (p.325). The same country - Tanzania - has been cited by Bauer and Yamey (1981, p.3) as a "..favoured aid recipient, yet its domestic policies - enforced villagization,

inappropriate land reform, confiscation of foreign enterprises - have seriously undermined the country's economy and made it heavily dependent on aid and imported goods". Clearly, what is considered by Griffin and Enos as policies and institutional changes conducive to development in the case of Tanzania, is seen by Bauer and Yamey as policies inimical to growth.

Empirically, there have been a number of cross-country and time series studies of the effects of foreign capital on economic growth. Griffin and Enos (1970), in an attempt to test their hypothesis of a lack of positive growth effects from foreign capital compared the changes in development aid with the growth rates of national product for 15 African and Asian countries over the period 1962-64. They found no close association between the amount of aid received and the rate of growth of GNP. The correlation coefficient is low and the standard error of the regression coefficient is high. The following regression result has been reported:

$$Y = 4.8 + \underset{(0.26)}{0.18\ {}^{A}/_{Y}} \qquad R^2 = .33$$

where Y = average rate of growth of GNP 1962-64

and ${}^{A}/_{Y}$ = ratio of foreign aid to GNP 1962/64.

Taking the average rate of growth of GNP for 12 Latin American countries over the period 1957-64, they found that the average rate of growth of GNP (Y) is inversely related to the ratio of foreign aid to GNP ${}^{A}/_{Y}$. The regression result was:

$$Y = 42.97 - 6.78\ {}^{A}/_{Y} \qquad R^2 = 0.13$$

Although the association is loose - i.e. the fit was not very good - $R^2 = 0.13$ and the period is short - 1957-64, Griffin

and Enos (1970) maintained that "...the general tendency is that the greater the capital inflow from abroad the lower the rate of growth of the recipient country" (p. 318). Moreover, for a single country and a relatively longer period Griffin and Enos have correlated a one year lagged percentage change in GNP per capital (Q) with the amount of foreign aid received (A) for Turkey over the period 1951-65 (15 years). The relationship between Q and A was negative with a significant regression coefficient at the 0.05 level of significance[1].

$$Q_{t+1} = 12.5 - \underset{(0.011)}{0.047}\ A_t \qquad R^2 = 0.62$$

Nevertheless, a cross-country regression analysis undertaken by Papanek (1973) of 34 LDCs for the 1950s, and 51 LDCs for the 1960s, produced results that contradict the results obtained by Griffin and Enos. The approach used by Papanek differs from that of Griffin and Enos by, first, disaggregating inflows into their principal components, that is, foreign private investments, and aid. Secondly, by assuming that foreign capital inflow and domestic savings are independent variables in explaining growth. Griffin and Enos hold the view that foreign capital inflow and domestic saving are not independent of each other. Thirdly, the sample size is increased to 85 observations, thereby reducing the statistical weakness of the results.

As conventional economic wisdom emphasizes, Papenek regarded investment as one of the major determinants of growth. He examined its effects on growth by separating the contribution of

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1. It is important to note that this result may also be explained in another way, that because countries have low rates of growth they received more aid.

its components, that is domestic savings and various forms of foreign resources inflow[1]. The following regression result is obtained:

$$G = 1.5 + 0.20S + 0.39F_1 + 0.17F_2 + 0.19F_3 \qquad R^2 = 0.37$$
$$\quad (2.5) \quad (5.0) \quad (5.8) \quad (2.5) \quad (2.1)$$

(figures in brackets represent t ratios)

where: G = annual rate of increase of GDP; F_1, F_2 and F_3 represent aid flows measured as the net transfers received by governments plus long term borrowing, foreign private investment measured as private long term borrowing plus net private direct investment, and other foreign inflows measured as net private transfers, short term borrowing and errors of omission in the balance of payments respectively. S represents gross domestic savings. All the independent variables, i.e. S, F_1, F_2 and F_3 are expressed as percentages of GDP.

The results obtained by Papanek suggest that savings and the components of foreign capital inflow explain over a third of growth rate. And foreign aid has a more significant effect on growth than savings or the other forms of foreign resources inflow. It is clear that this result is inconsistent with the results obtained by Griffin and Enos (1970).

In the literature there are also some other empirical studies which indicate both inverse as well as positive relationships between foreign capital inflows and growth. This has been done by making a distinction between the type of economic systems in the recipient countries (Gorgens, 1976), or by analysing the stocks and flows of foreign capital

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[1] Papanek was careful to point out that a complete model would require additional variables to explain growth. But, as the aim of his analysis is the impact of foreign resources on growth his partial analysis may be justified.

inflow separately (Bornschier and others 1978).

Gorgins (1976) relates the effectiveness of foreign aid in promoting growth, to the type of economic systems in LDCs. He believes that the conditions of the economic systems in LDCs have a substantial influence on economic development, hence the growth effectiveness of development aid is also partially determined by these conditions. According to him, a cross-country analysis for 53 LDCs reveal that in planned economy oriented countries (24 countries) no relationship between growth and private or public development aid exists. Also, with rising development aid, the marginal productivity of capital tends to fall slightly, reflecting a general tendency to waste capital as well as inadequate structural allocation of aid resources. On the other hand, in the more free-market-oriented countries (29 countries) - where average growth rates and private foreign investment are distinctly higher than in the planned economy-oriented countries - a positive relationship exists between growth and development aid (the correlation coefficient is +.30). When domestic savings are added as an explanatory variable with foreign aid he found a closer association between growth and the simultaneous impact of domestic savings and foreign capital inflow (the correlation coefficient is + .59). This positive association, according to Gorgens is due to the productivity effect of the private foreign capital in such types of country. Moreover, a comparison of the overall average of both groups together reveal that, whereas in the free-market-oriented countries the share of development aid in GDP of 3.8% compares with an average growth rate of 6%, in planned economy-oriented countries a considerably lower average real growth rate of 4.3% accompanies a higher share of development aid of 4.3%.

The analysis presented by Gorgen does not imply the rejection of the notion that aid promotes growth, but rather suggests securing positive growth effects from foreign aid by reforming the economic system through a lesser intervention in the domestic market and fewer quantitative restrictions in foreign trade as well as policy changes preventing state intervention. For example, export promotion strategy implies less state intervention than import substitution strategy.

Bornschier and others (1978) in an attempt to explain the apparently inconsistent empirical findings of the studies on the effects of foreign capital inflow on growth, proposed a distinction between stocks and flows of investment capital and aid which they believe have opposite effects on growth. In their view the current inflow of foreign investment and aid cause short-term increases in growth due to the contribution to capital formation and demand as foreign corporations purchase land, labour and materials and start production, while the long run cumulative effects of foreign investment and aid operate to reduce the rate of economic growth. Because the long run structural distortions of the economy produced by foreign investment, the exporting of profits and debt servicing, and the diversion of the countries receiving foreign aid from the optimum development strategy, all tend to produce negative effects on economic growth over time. However precise examples for structural distortions of the economy caused by foreign investment and aid are not given.

In testing this hypothesis, Bornschier and his associates compared the results of previous investigators on the impact of foreign capital inflow on growth by distinguishing between the studies using the measure of 'flows' of foreign investment and aid (i.e. current foreign investment and aid flows) with those

using the measure of 'stock'. They found that seven of the eleven studies employing the 'stock' approach reported a negative effect of private foreign investment and aid on growth. On the other hand four of the six studies employing the 'flows' approach reported positive effects. The pattern found by this comparison suggests that the immediate effect of inflows of foreign capital and aid is to increase the rate of economic growth while the long run effects would reduce growth rates. This finding also allowed them to suggest that the inconsistent and contradictory findings of the previous studies could be explained or reconciled by whether one measures foreign investment and aid by 'stocks' or 'flows'. It is important to note, however, that six studies do not fit the pattern suggested by Bornschier. Four of the studies employing the 'stock' approach reported positive effects indicating that the long term effects of foreign investment and aid on growth are positive. Two studies employing the 'flow' approach reported negative effects indicating that the short term effects of foreign investment and aid on growth are negative. This is also an apparent inconsistency which needs to be explained as well.

8.3 EVALUATING THE CRITICS' ARGUMENT WITH REFERENCE TO SUDAN'S EXPERIENCE

8.3.1 Impact on GDP Growth Rate

The critics' argument, as well as the apparently inconsistent empirical findings presented in the previous section, suggest that a blanket rejection of the phenomenon of foreign aid on the grounds that it retards growth is hardly justified. But, rather indicates the need for examining individual countries' experience of growth with foreign aid over time, as well as for greater differentiation

according to the forms of foreign capital inflow and the economic policies pursued in the respective country. So that, appropriate reform measures to foreign aid machinery and to the economic policies of the recipients could be suggested and adopted to ensure maximum effectiveness of foreign resources in promoting growth and development of the recipient country. In the rest of this chapter we shall deal with these issues, but first we shall start by evaluating the hypothesis of a lack of positive growth effects from foreign aid in view of the experience of the Sudan over the past two decades.

As we noted in the previous section the main argument put forward in support of the hypothesis that foreign aid retards growth is based on the statistical findings of inverse relationship between foreign capital inflow and domestic savings (see Chapters 3 & 7) More precisely, the critics claim that capital imports tend to supplement consumption and very little portions of it goes to investment. But we may argue that in the Sudan the reverse has been true. Foreign aid resources received during the past two decades - because of the more or less strict end-use tying - were used directly for financing public sector investment and negligible portions were used for consumption directly through food aid. It is not even possible to claim that foreign aid has increased consumption indirectly through 'fungibility' because successive foreign exchange budgets have always restricted imports of consumption goods to the minimum essential commodities necessary for keeping the economy functioning. In other words the resources allocated to the imports of consumption goods would have been released anyway whether foreign aid resources were available or not. Moreover, foreign aid resources finance only the import content of the projects leaving the rest of the cost for

the recipient to secure from its own resources. Here 'fungibility' or switching is likely to operate in reverse. Instead of setting resources free to carry out another project or to release them for consumption, the limited resources have to be withdrawn from other projects or from consumption to cover the recipient's share in the cost of the investment programme. Needless to say, foreign aid increases consumption indirectly when more jobs in the productive and the services sectors of the economy are created by aid financed projects. More jobs mean more wages and more consumption. But this indirect way of increasing consumption is not an undesirable sequence, as the creation of more jobs, which is likely to improve living standards as well as income distribution, lies in the heart of the objectives of development in LDCs.

The proper test of the effectiveness of foreign aid on the growth process is its effect on a real GDP growth rate, sectoral growth as well as social objectives such as employment and income distribution rather than on savings as conventionally measured. If the major objective of a development plan or programme is to maintain a specific rate of growth over time, then less domestic savings caused by capital inflows do not diminish growth rates if the whole of the negative increment of domestic savings is compensated for by foreign resources or by other domestic sources of finance such as domestic bank borrowing. So long as the desired level of investment is not affected by the substitution effect of foreign aid then the poor domestic savings performance may not be a major factor in failure to meet the required growth rate. And as Rottenberg (1971) argued, ".. if the terms on which foreign assistance is received are such that it costs less than domestic saving; it pays the recipient country to have it, and

its people are on the average better off than if they had rejected assistance" (p. 150). Hence, despite domestic savings deficiency, it is possible to maintain the desired level of investment by increased foreign aid and/or domestic bank borrowing, thereby achieving the target rate of growth. But, clearly such a policy is not without a cost. Although the objective of maintaining the target rate of growth may be realized, the other main objective of the recipient, namely achieving self-sustaining growth, is likely to be delayed or prolonged as a result of the continuous dependence on foreign resources to finance the required investment.

In the Sudan, as we noted earlier, foreign aid resources were used to supplement domestic savings in financing development plans and programmes over the past two decades. During this period - as we shall explain in section 8.3.3 - almost all the major development projects in the major productive and infra-structural sectors of the economy have been prepared, financed, and executed with the support of foreign aid resources (financial aid as well as technical assistance).

The changes over the past two decades of domestic savings, investment and net foreign resources are shown by Table 8.1a and 8.1b and Figures 8.1a and 8.1b, first in terms of actual amounts of flows of the three series and secondly in terms of three years moving averages, which are intended to smooth out the short term fluctuations. It is clear from Fig 8.1 that the period which is associated with substantial increases in the level of investment - namely 1973/74 onwards - coincided with the period of relatively high levels of foreign capital inflows. Between 1960/61 and 1972/73 the investment ratio has averaged 14% per annum compared with a higher average ratio of 18.1% per annum after the year

Table 8.1a. Domestic Savings, Investment and Net Foreign Capital Inflow as a Percentage of GDP 1960/61 - 1977/78

Year	S/GDP	I/GDP	F/GDP
1960/61	12.6	11.9	-0.7
61/62	13.8	16.3	2.5
62/63	14.9	16.8	1.9
63/64	11.8	14.9	3.1
64/65	10.5	14.9	4.4
65/66	10.5	12.8	2.3
66/67	12.3	15.2	2.9
67/68	11.1	13.6	2.5
68/69	10.6	13.9	3.3
69/70	17.6	15.9	-1.7
70/71	12.2	14.0	1.8
71/72	9.0	10.1	1.1
72/73	13.4	11.6	-1.7
73/74	17.6	18.4	0.8
74/75	8.7	17.5	8.8
75/76	14.7	23.1	8.4
76/77	10.1	17.1	7.0
77/78	6.0	14.3	8.3

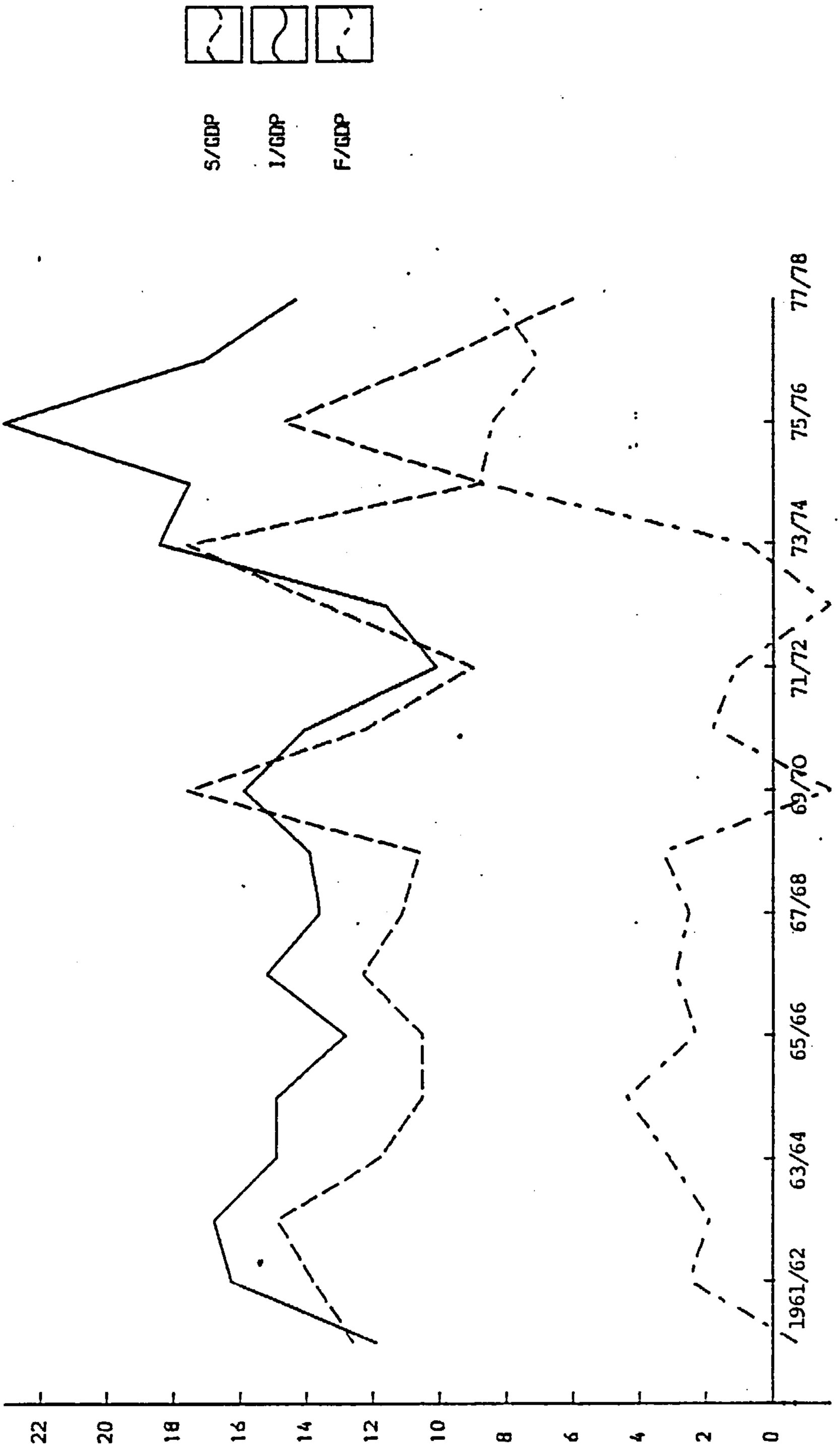
Source: Constructed from Appendix Table 8.1.

Table 8.1b. Domestic Savings, Investment and Net Foreign Capital Inflow as Percentages of GDP 1960/61-1977/78 (Three years Moving Average)

Year	S/GDP	I/GDP	F/GDP
1960/61	12.6	11.9	-0.7
61/62	13.8	15.0	1.2
62/63	13.5	16.0	2.5
63/64	12.4	15.5	3.1
64/65	10.9	14.2	3.3
65/66	11.1	14.3	3.2
66/67	11.3	13.9	2.6
67/68	11.3	14.2	2.9
68/69	13.1	14.5	1.4
69/70	13.5	14.6	1.1
70/71	12.9	13.3	0.4
71/72	11.5	11.9	0.4
72/73	13.3	13.4	0.1
73/74	13.2	15.8	2.6
74/75	13.6	19.7	6.0
75/76	11.2	19.2	8.0
76/77	10.3	18.2	7.9
77/78	6.0	14.3	8.3

Source: Constructed from Appendix Table 8.1

Fig. 8.1a Domestic Savings, Investment and Net Foreign Capital Inflow as Percentages of GDP 1960/61-1977/78



Source: Table 8.1a

Fig. 8.1b. Domestic Savings, Investment and Net Foreign Capital Inflow as Percentages of GDP 1960/61-1977/78
(Three Years Moving Average)

Source: Table 8.1b

1973/74. Foreign capital inflow as a percentage of GDP followed the same pattern, with an average of 1.7% per annum in the former period and a much higher average of 6.7% per annum in the latter period.

The relatively high level of foreign aid flows after the year 1973 has permitted a high level of investment and relatively high growth rates at a time when a severe shortage of foreign exchange became the effective constraint on the economic growth of the country due to the simultaneous increase in import prices - oil in particular - and a fall in export demand for all non-oil producing LDCs of which Sudan is no exception. Table 8.2 and Figures 8.2 and 8.3 show clearly how real GDP growth rates, real per capita GDP growth rates, and foreign capital inflow as a percentage of GDP have followed the same rising pattern after the year 1972/73.

An attempt is also made to test the relationship between foreign capital inflow and the growth rate of GDP as well as per capita growth rate by fitting time series data from the Sudanese economy on - more or less - the same regression model employed by Griffin and Enos, but for a longer and relatively more recent time period 1960/61 - 1977/78 (18 years). The results obtained are contrary to the results found by them for Turkey over the period 1951-65. Regressing the real GDP growth rate (G) (and then the real per capita frowth rate G*) on net foreign capital inflow as a per cent of GDP (F/Y) for the period 1960/61 - 1977/78 (see Table 8.1), the following results were obtained:

$$G = \underset{(0.66)}{2.15} + \underset{(0.22)}{1.22}\ {}^{F}/_{Y} \qquad R^2 = 0.66 \qquad (1)$$

(figures in parenthesis represent the standard error of the regression coefficient)

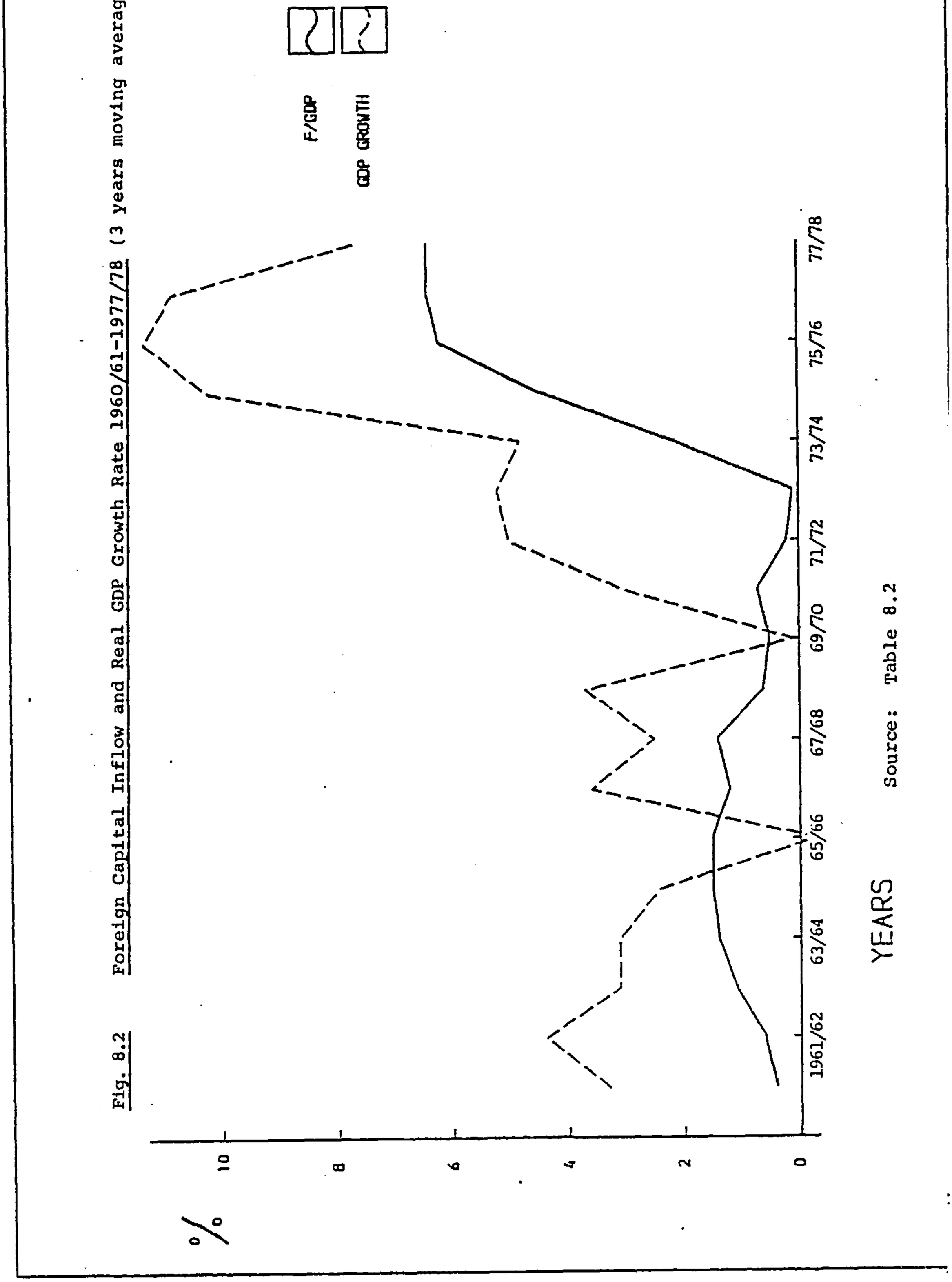
$$G^* = \underset{(0.69)}{-0.14} + \underset{(0.23)}{1.16}\ {}^{F}/_{Y} \qquad R^2 = 0.60 \qquad (2)$$

Table 8.2 Net Foreign Capital Inflow, Real GDP and Per Capita Growth Rates (in percentages three years' moving average)

Year	F/GDP	Real GDP growth rate	Real per capita growth rate
1960/61	0.4	3.3	0.6
61/62	0.6	4.4	0.8
62/63	1.1	3.1	-0.6
63/64	1.4	3.1	0.1
64/65	1.5	2.4	-0.5
65/66	1.5	-0.3	-2.9
66/67	1.2	3.6	1.1
67/68	1.4	2.5	0.3
68/69	0.6	3.7	1.5
69/70	0.5	0.1	-1.7
70/71	0.7	3.0	1.6
71/72	0.2	5.0	4.0
72/73	0.1	5.2	3.7
73/74	2.2	4.8	2.7
74/75	4.5	10.2	7.4
75/76	6.2	11.3	7.6
76/77	6.4	10.8	7.2
77/78	6.4	7.6	7.2

Source: Constructed from Appendix table 8.1.

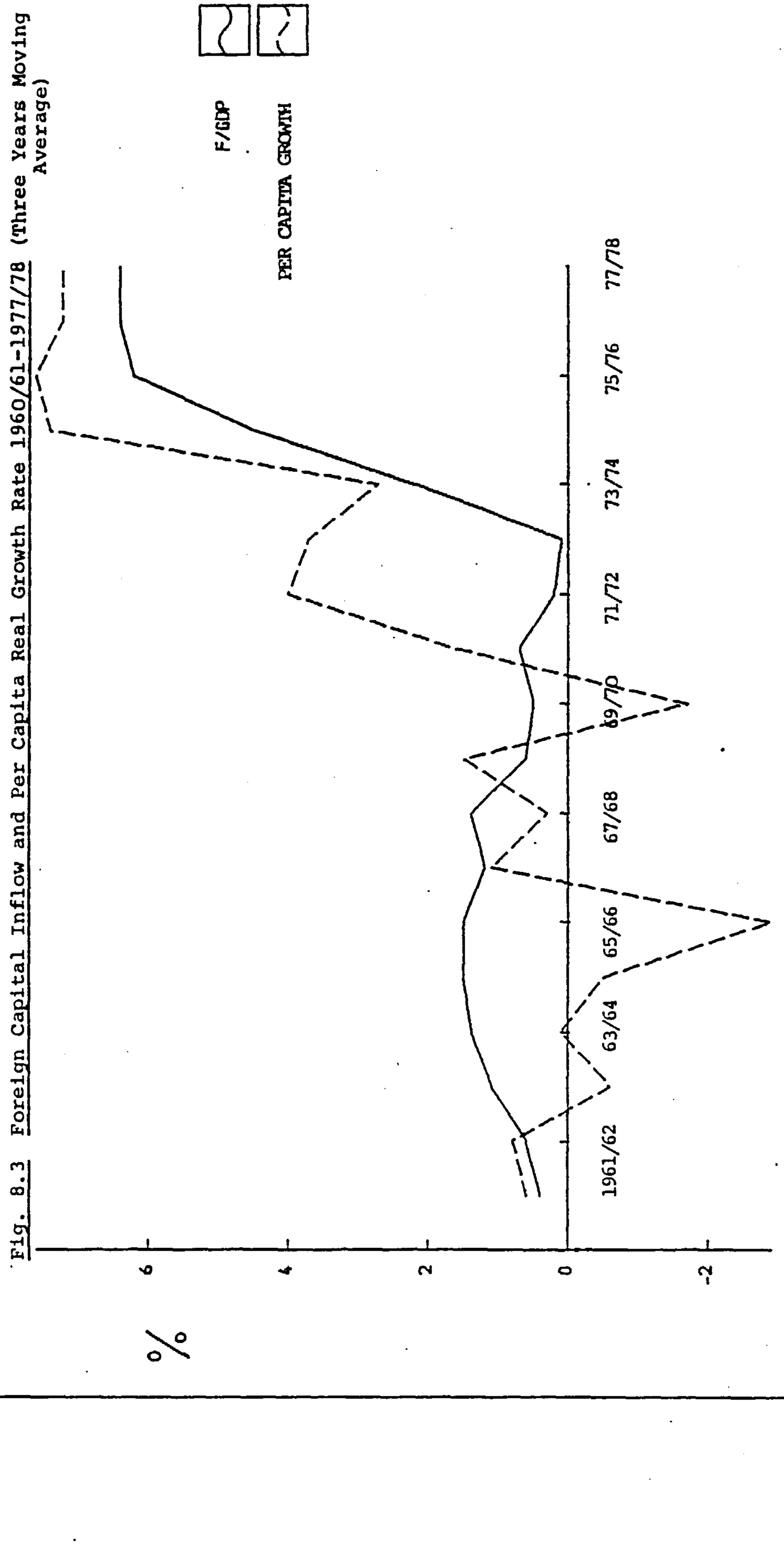
Foreign Capital Inflow and Real GDP Growth Rate 1960/61-1977/78 (3 years moving average)



Source: Table 8.2

Fig. 8.2

Fig. 8.3 Foreign Capital Inflow and Per Capita Real Growth Rate 1960/61-1977/78 (Three Years Moving Average)



Source: Table 8.2

The results in (1) and (2) indicate that foreign capital inflow is positively associated with the real GDP growth rates and the real per capital GDP growth rates. The regression coefficient is positive and statistically significant at the 0.01 level of significance. R^2 is high 0.66 and 0.60 for (1) and (2) respectively. It is important however, to take note of two qualifications with regard to the data used in equations (1) and (2). First, as there is no official GDP deflator for the Sudan, the available price data is used to estimate real GDP growth. Given that GDP consists of consumption plus savings, which could be rewritten as consumption + investment - foreign capital inflow ($Y = C + I - F$), consumers price index is used to deflate consumption expenditure, and the import price index is used to deflate investment and net foreign capital inflow on the assumption that large proportions of investment and foreign capital inflow are spent on imported capital equipment and raw materials. Secondly, a three years moving average of the real GDP growth rates, real per capita growth rate and net foreign capital inflow is used instead of year to year changes. This may help in overcoming the problem of the choice of the appropriate time lag, as it is apparently difficult to determine an appropriate time lag between foreign capital inflow and the real growth of GDP generated by such flows because different types of investments in the various sectors of the economy have different time lags.

8.3.2 Impact on Public Sector Investment

The effect of foreign aid resources in the growth and development of Sudan's economy may also be explored by their contribution to public sector investment. In the Sudan, as we have seen in Chapter 4, the public sector dominates the non-traditional

economic activity, it owns and operates all the public utilities such as railways, steamers, roads, electricity and water, almost all the modern agricultural schemes, and the bulk of industrial activity particularly in sugar and textile industries. It is therefore, justifiable to claim that public sector investment in the Sudan is a major determinant of growth.

As we noted in Chapter 5 public sector investment has been more or less stagnant during the 1960s and early 1970s. Only in the year 1973/74 onwards did the level of public sector investment increase substantially. Though the large increases in public sector investment during the period 1973-80 may in part be explained by cost escalations in almost all development projects caused by international price rises in equipment, machinery, raw materials and oil, the main factor causing the increase in public sector investment has been the ambitious development programme - the Phased Action Programme - that has been launched in 1972. Under this programme, the magnitude of investment in the original plan - the Five Year Plan 1970-1975 - has been increased substantially as a result of introducing a number of large infrastructural projects that aim at containing the transport bottlenecks as well as agricultural and industrial projects to achieve self sufficiency in the basic necessities such as sugar, textiles and food.

The foreign exchange component of this ambitious programme has been financed by high levels of foreign aid resources, thereby allowing the implementation of the development projects embodied in the programme at a time when the growth and development of the country has been severely constrained by widespread shortages of foreign exchange following the 1970s import price rises and the global recession. Table 8.3 shows the actual drawings from

Table 8.3 Actual Drawings from External Development Loans as a Per Cent of Development Expenditure, Imports & Exports 1960/61 - 1979/80

(in percentage)

Years	F_p Actual drawings from external dev't loans (gross) in Ls m	F_p As a per cent of public sector dev't expenditure	F_p As a per cent of imports	F_p as a per cent of exports
1960/61	6.9	30	10	11
61/62	10.7	39	13	16
62/63	9.0	24	10	10
63/64	10.9	23	10	13
64/65	11.9	37	16	18
65/66	18.7	65	24	25
66/67	12.4	44	15.	17
67/68	16.1	64	18	20
68/69	12.2	41	13	13
69/70	12.8	42	14	13
70/71	15.8	59	13	15
71/72	17.0	57	14	16
72/73	17.9	52	16	14
73/74	34.4	64	23	24
74/75	44.6	38	16	28
75/76	58.8	43	22	33
76/77	74.5	45	33	31
77/78	78.8	41	32	40
78/79	74.1	44	24	33
79/80	91.4	52	19	32

Source: Foreign Aid and Technical Assistance Administration - Ministry of Finance and Economic Planning, Bank of Sudan Annual Reports.

official external development loans and grants as a per cent of public sector development expenditure, imports, and exports during the past two decades. During the 1960s foreign aid loans and grants financed on the average 41% of total public development expenditure compared to a much higher average percentage of 50% during the 1970s. Also foreign loans and grants as a per cent of imports and exports followed the same pattern with average percentages of 14.3 for imports and 15.6 for exports during the 1960s compared to a much higher percentage during the 1970s of 21.2 and 26.6 respectively. It is clear therefore that the relatively high levels of external aid resources supplied during the period 1970-80 have permitted higher levels of investment in the public sector than would otherwise have been.

As far as the local currency component of the public investment is concerned, the government and the public enterprises (as we have shown in Chapters 5 and 7), relied on borrowing from the Central Bank to finance the local currency component of the development budgets as well as other current budget deficits.

However, following the critics of foreign aid argument, it may be claimed that, though external development aid has supported higher levels of public investment during the past two decades, the growth effects of such aid financed investment may be very little in view of the claim that foreign aid resources alter the composition of investment to the disadvantage of the recipient country through financing capital intensive projects, foreign exchange intensive projects, large infrastructural projects, monumental projects, thereby raising the capital output ratio which subsequently leads to a fall in the growth rate. Empirical evidence on such relationship between capital output ratio and foreign aid flows has not yet been reported. A simple test of the association

between capital - output ratio and foreign aid resources would be - as Griffin (1970) has suggested - to regress ICOR (K) on the ratio of foreign capital to investment $^{F}/_{I}$. If the association is positive then ICOR increases as foreign aid increases leading to a fall in the rate of growth. And if the association is negative then as foreign aid increases ICOR decreases leading to a rise in the rate of growth.

In view of the fact that about 55% of the external development aid received by the Sudan during the past two decades has been allocated to infrastructural and social services activities (see Chapter 6 Table 6.5) one should expect a positive association between foreign aid and ICOR that leads to lower growth rates. But, an attempt to regress COR (K) on F/I has failed, because year by year there has been extreme variability in the capital output ratio.

However, in a vast country like the Sudan where transport and communication bottlenecks create special constraint to growth and development, the economic return from investment in such types of projects- though long delayed - will be high. In countries like the Sudan where the high costs of infrastructural projects are clearly beyond the means of the government and by their very nature too indiscriminate for private investment, the only way to finance such projects is through concessional foreign aid loans and grants.

It is true that infrastructural and social services projects tend to have a relatively high capital-output ratio as conventionally measured. But the economic justification of such types of investment is that they have external positive effects on the economy so that their economic return to the economy can be very high. The capital output ratio which is relevant in analysing the role of foreign aid in the growth process is not that of isolated

projects but the capital output ratio of the aggregate economy which is likely to fall in the long run as greater availability of foreign aid resources breaks up infrastructural bottlenecks that apparently hamper the growth process and thereby enable the more productive use of the capital resources of the country.

Needless to say, the importance of infrastructure in the growth process in LDCs does not suggest the construction of such installations ahead of development, but rather emphasizes the need to build the basic infrastructural services that are required during the course of the growth process itself. An agricultural scheme for food or export production may not be established unless we construct a dam, which may also be needed for electric power generation. In the Sudan, for example, two major transport projects namely, Khartoum-Portsudan Road (1287 km), and Portsudan-Khartoum petroleum products pipeline have been built mainly with foreign resources after the year 1974 when it became apparently clear that the transport of exports and imports - particularly on the vital Khartoum-Portsudan route - represented a major obstacle to the growth process of the country as the railways, with a single track to Portsudan - have failed to meet the increasing transport needs, and suffered from frequent washouts and sand dunes.

Foreign aid resources which finance social services expenditure such as health and education - conventionally regarded as consumption expenditure - and food aid may not always be undesirable consumption. There are many economists, for example, Kennedy & Thirlwall (1971) and Stewart (1971), who correctly emphasize that expenditure on health, education and nutrition are likely to improve skills, reduce illness and improve diet which ultimately raise the productivity of labour and raise the rate of growth.

More recently, emphasis has been laid on the Basic Human Needs Development Strategy[1] which focuses on achieving equitable society and reducing poverty through the provision of tangible necessities of life such as food, water, shelter, health and education without which a person has little or no chance to lead a fulfilling existence. This approach, however, does not suggest that the development strategy must not provide for increases in the overall GNP growth rates. It rather regards aggregate output growth a necessary, but by no means a sufficient, condition for progress. It will therefore be justifiable to allocate foreign aid resources to such consumption expenditures under the Basic Human Needs approach so long as the ultimate objective of development strategy is to achieve sustainable improvements in the material wellbeing of the individual rather than to increase aggregate output growth that leads usually to income inequality within the recipient country.

However, food aid in particular, with its tangible effect on consumption, is more vulnerable to the argument that foreign aid resources reduce domestic savings and thus future growth. Not only this, but the increase in food supplies provided by food aid depresses prices received by farmers, and encourages recipient governments to adopt inadequate agricultural policies so that food production will eventually decrease. This view is also debatable in view of the main objectives of food aid which can be briefly summarized as: first, food aid provides food for the poor by direct subsidized distribution and by helping to contain food price increases which tend to hit the poorest of the poor. Secondly, it

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1 This approach was first put forth by the ILO at its 1976 World Employment Conference, and was subsequently elaborated by others at the World Bank, the OECD and the US AID. See Streeten, P. and Burki, S.J. (1978), and Crosswell, M. (1978).

provides financing for specific government development projects particularly in the agricultural sector. For example the agreements for American food aid to the Sudan - started in 1978 - contained a number of commitments by both the US AID and the government for expansion and improvement of agricultural production within the framework of Sudan's own targets and plans. Thirdly, food aid can be used to build up stocks which can contribute to both consumers' and producers' welfare by reducing fluctuations and uncertainties. Finally, food aid, as Isenman and Singer (1975) have argued, eases a major constraint on growth in output and employment. In their view in low income countries a high proportion of workers' incomes (two-thirds or more) goes for food - most of it food grains. In such cases, "... increments to public or private employment through fiscal and monetary policy must be measured against food supplies, in many ways as if the whole economy consisted of a public sector food-for-work programme in which all workers were paid two-thirds of their wages in food" (p.2). Hence food aid may permit the recipient to expand employment. Moreover, in their empirical study of the price effect of food aid on food grain output in India, they found that during the food aid period 1956-71, only a short period (1960-62) showed a decline in relative food prices, a conclusion which is inconsistent with the critics' view that food aid leads to a reduction of food production through its depressing effect on prices received by food grain producers.

In the Sudan food aid over the past two decades has not been transferred on large quantities or regular time periods to enable a judgement about its effect on food production. Only in the year 1978 onwards that the country started to receive relatively large quantities of wheat flour (100 thousand tons per year) under the

US AID PL480. Hence any judgement about the effect of food aid on food prices and food production would be premature in view of the short period of food aid and in view of the fact that the major wheat production areas in the Gezera Scheme were adversely affected by floods caused by excessive rains during the 1978/79 season which led to a large drop in wheat production.

It appears however, for food aid - as well as for non-food aid - the negative effects on output may be avoided if appropriate policy measures are adopted by the recipient and donors. The recipient can undertake the necessary self-help efforts to ensure that any disincentive effect is offset by using foreign aid resources as a basis for additional output.

8.3.3 Impact on Sectoral Growth Performance

The impact of foreign aid flows on growth and development of the Sudan over the past two decades may also be shown by a close examination of the effect of foreign aid resources on the growth performance of the major sectors of the economy, namely, agriculture transport and infrastructure, and industry.

In the agricultural sector, all the major agricultural schemes - apart from the Gezera Scheme which was established during the British colonial era - irrigated as well as mechanized rain-fed schemes have been supported by foreign aid resources. The early 1960s witnessed a substantial increase of irrigated land through the Managil Extension Scheme (800,000 feddans and Khashm El Girba (New Halfa) Scheme (400,000 feddans). The foreign exchange costs of both projects were secured from development loans from the World Bank in 1960 and 1961, Kuwait Fund for Arab Economic Development 1965, and Italy 1961. A third major agricultural project which was financed by foreign aid resources is the Rahad

project. The completion of phase 1 of this project in 1976 increased the irrigated areas by about 300,000 feddans. The project produces mainly export crops, namely cotton and groundnuts. All the foreign exchange costs of this project have been secured from development loans from the IDA (1973, 1975) Kuwait Fund for Arab Economic Development (1973, 1975), Saudi Fund for Development (1975) and US AID (1973). The area under mechanized rainfed farming has also increased sharply from about 220 thousand feddans in 1960 to about 4 million feddans in 1980. It is undeniable that the development of mechanized rainfed farming in the Sudan - in Kassala, Blue Nile, Southern Kordfan and Upper Nile provinces - is associated with the external development loans received from the World Bank in 1968, 1972 and 1978 and the Kuwait Fund for Arab Economic Development in 1972, which financed the foreign exchange costs of the mechanized farming projects in these provinces.

Undoubtedly, the economic growth of the Sudan has been influenced by the increases in the agricultural output of these schemes. As we noted in Chapter 4, total agricultural production in volume terms, for the major food and export crops, grew at an average annual rate of 5.1% during the past two decades. Food grain production (sorghum, millets and wheat) has grown at even a faster average annual rate of 9.2%. Moreover, the rapid development of the irrigated areas and the mechanized rainfed farms, which was made possible by foreign aid resources, has enabled the use of a valuable resource of the country - sparsely settled or empty productive land - which would otherwise be difficult or impossible to utilize. Furthermore, apart from their direct valuable contribution to the expansion of food supplies for domestic consumption and of export crops, these schemes did contribute to

the growth and development of the country through the employment opportunities they opened up, the transformation of vast areas from traditional to non-traditional sectors of the economy and through the other social benefits - settlement, education, health - which are difficult to quantify even individual cost-benefit analysis is undertaken to each project separately.

However, it is true that there has been an apparent decline in the growth of production of cotton - the major export crop - after the year 1974, with its subsequent adverse effects on exports and the balance of payments. To recapitulate, the major causes for the deterioration in cotton production which we pointed out in Chapters 4 and 5 were: first, the government policy of diversification in 1974 and the adoption of an incentive scheme which has been advantageous to non-cotton producers (through unfavourable exchange rate, export levies and costs distribution). Secondly, the severe shortage in foreign exchange following the external shocks of the year 1974 onwards and the tying of foreign aid resources to specific projects - mainly new projects - rather than to improve the productive capacity of the old projects particularly the Gezera Scheme and New Halfa projects, led to shortages in essential maintenance equipment and spare parts with the subsequent failure to maintain the irrigation systems at the required level of efficiency. Thirdly, shortages in labour requirements for cotton picking and weather conditions such as the 1978 floods in the Gezera.

The adverse effects of the government policy on cotton production and the donor/government policy of aid allocation - favouring the creation of new capacity rather than improving the existing capacity - have been lately identified. It wasn't until 1979 that the government adopted policy measures designed to encourage

the production of cotton under the Export Action Programme. The exchange rate applicable to cotton exports was reduced from US$2.5 to US$2.0 to the Sudanese pound and the export tax for cotton was abolished. With regard to foreign aid allocation programme loans for agricultural rehabilitation in Gezera and New Halfa have been secured from the World Bank, African Development Bank and the International Fund for Agricultural Development (IFAD). The effectiveness of these policy changes in enhancing the productivity in these schemes is yet to be investigated. But it is clear that a timely provision of these programme loans - perhaps during the early 1970s - together with policy measures designed to encourage cotton production would have been much more effective in increasing agricultural production of the export crops - that is cotton and groundnuts - thereby relieving the general scarcity in foreign exchange that hampered the growth process of the country during the decade of the 1970s.

In the field of infrastructure, the major significant contribution of foreign aid resources has been the construction of vital inter-city roads. The number of road projects that have been planned financed and executed with the use of foreign aid loans, technical assistance, and grants during the 1970s indicate something of a transport revolution in the country. As we have seen in Chapter 4 (Table 4.4) the length of the road network has increased by about 325% over the pre-1970 length, and if we add the length of the roads currently under construction this rate will be about 528%. As a result of this remarkable performance, the share of the road sector in GDP has increased substantially from 2.7% in 1972 to 7.5 in 1977/78. The number of licenced lorries and trucks increased from 11.0 to 34.0

thousand between 1970 and 1978[1]. Clearly this performance is associated with the foreign aid resources that financed about 84%, on the average, of the road construction investment programme during the 1970s. Table 8.4 shows that Ls 224.8 million of external development loans and grants, that is, 35% of the total foreign resources allocated to infrastructure during the past two decades - with a high grant element of 77.6% on the average - has been allocated for financing road construction during the 1970s.

It is true that investment in transport is generally capital intensive. To begin with the unit cost of it is relatively high, and for the Sudan in particular this cost is greater than in many other countries as economic activities are spread over a vast land mass. But the long run effects of such investment on growth and development will be substantial. The development of roads in the Sudan during the decade of the 1970s - made possible by foreign aid resources - would lead in the long run to considerable reductions in the operating and maintenance costs of the normal, diverted and generated road traffic, saving in time for both freight and passengers, expanding employment in trucking and bussing operations and in repair and maintenance shops for trucks and automobiles, and the stimulation of the overall economic development of the country by bridging considerable distances in the central and eastern parts of the country (including the single port) where the major share of agricultural, industrial and commercial activities are concentrated.

The contribution of foreign aid resources to transport sector development in the Sudan can also be seen in the construction of the Khartoum-Portsudan petrolium products pipeline which

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1 Transport and Statistical Bulletin 1978/79. Ministry of National Planning.

Table 8.4 Magnitude, Sources and Grant Element of Foreign Financing of Asphalted Road Projects during the 1970s

Road Projects	Length in Km	Source of Foreign Financing	Magnitude in Ls m	Grant Element
1. Wadmedani/Elgedarif	228	Government of the Peoples Republic of China	16.0	82.9
2. ElGedarif/Kassala	220	Arab Fund for Economic & Soc. Dev.	25.3	48.3
		African Dev't Bank	2.0	88.2
3. Kassala/Haya	348	Saudi Fund for Dev't	13.7	66.8
		Saudi Government	5.0	66.8
		OPEC Fund	5.5	71.6
4. Haya/Suakin/Port Sudan	204	Government of Abudahbi	27.0	100.0
5. Wadmedani/Sennar/Kosti	217	UK (ODA)	12.1	100.0
		OPEC Fund	1.6	71.6
6. Sennar/Damazin	285	Kuwait Fund for Arab Ec.Dev.	17.2	62.5
		Arab Fund for Econ.& Soc.Dev.	21.2	57.7
7. Neyala/Kas/Zalenji	210	Government of F.R. of Germany	9.2	100.0
		Saudi Fund for Dev.	35.0	66.8
		Islamic Dev. Bank	4.5	66.5
8. Jebel Aulia/Dueim	158	International Dev.Assn (IDA)	15.6	91.7
9. Dueim/Rabak	109	West Germany	13.9	100.0
Total	1979		224.8	77.6*

Source: Ministry of Finance and Economic Planning, Transport Sector Administration, Foreign Aid and Technical Assistance Administration

Notes: Projects 6,7,8,9 are currently under construction.

* This is the average grant element. Figures for the grant element are estimated in Chapter 6 (Table 6.7).

was financed by two external development loans from the Kuwait Foreign Trading and Contracting Company. The pipeline - though working well below its design capacity since its completion in 1977 - has helped in relieving congestion on railway traffic from the port to the major production and consumption areas as well as in supplying petroleum products to the major consumption areas during the rainy season when the rail track washouts are frequent. But a major drawback in financing this project is that despite the fact that it is an infrastructural project, the repayment terms of the two loans were almost commercial terms with a grant element - estimated in Chapter 6 - of only 8.7%. The appropriate type of finance for such projects which can neither earn or save foreign exchange and whose output-capital ratio is low, is long term concessional loans with high grant element.

The railways - which have occupied a predominant place in the Sudan's transport system - have also benefited from foreign aid resources during the past two decades. They enabled the construction of important extensions of the railway line in the early 1960s, adding 767 kilometers to the total length of the line[1]. The most notable of these extensions were the lines to Nyala in Southern Darfur and Wau in the Southern region which connected most of the resourceful south-western part of the country with the central and eastern parts (including the port). During the 1970s when the railway suffered frequently from insufficient locomotives and rolling stock as well as shortages of spare parts and maintenance equipment, foreign aid resources have helped to a great extent in relieving these shortages.

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1 The Economic Survey 1961 p. 37 Ministry of Finance and Economics.

However, in spite of this contribution, the operational performance of the railways - as we noted in Chapter 4 - has generally been poor during the 1970s. This can be explained in part by the insufficient and untimely supplies of the required foreign exchange caused mainly by the limited amounts of the foreign aid resources available to the country with many other foreign exchange starved sectors competing to obtain such scarce resources; and - as we shall explain in the next chapter - by the lengthy procedures of obtaining foreign aid resources. But among the major reasons for the declining railway traffic performance during the 1970s were: first, the effect of traffic diversion to the relatively faster road transport which grew rapidly during the 1970s. Secondly, inefficiency in the management of the industry, overstaffing[1] and low productivity of workers at the main workshop at Atbara caused by frequent industrial and political unrest. Thirdly, weather conditions such as washouts in the rainy season and sand storms and excessive heat in the dry season frequently caused considerable delays.

Among other important contributions of foreign aid resources to the development of infrastructure were the financing of two major telecommunications projects during the 1970s. Namely the Microwave Transmission Project connecting Khartoum with Atbara and Portsudan and the establishment of 14 domestic earth satellite stations in the rest of the major cities and provincial capitals. These two projects are essential for the development process particularly in a large country like the Sudan, as they provide direct telephone dialling services, telex and television services as well as improving telecommunications with the rest of

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1 "Growth, Employment Equity: a Comprehensive Strategy for the Sudan". ILO 1976.

the world.

However, a drawback in financing the earth satellite stations project may as well be pinpointed. This project has been financed by a US$10 m concessional loan from the Saudi Development Fund with an estimated grant element of 66.8%. This is an appropriate type of financing, but the other two external loans which were used to finance the project with the first loan were non-concessional loans. Namely a US$12 m syndicated loan with an estimated grant element of 10% and a US$ 7 million loan from the Arab Investment Company with an estimated grant element of 17%. Clearly, a more concessional type of loan with a much higher grant element - perhaps similar to the Saudi Fund loan - would have been more appropriate in financing such a project. This example and the example cited earlier with regard to the financing of the Khartoum-Portsudan petroleum products pipeline represent an apparent deficiency in foreign aid allocation policy in the Sudan.

In the field of electric power generation - as we noted in Chapter 4 - 70% of the total electricity generating capacity in the Sudan is hydro-generated. This hydro-generated capacity is associated directly with the external development loans that financed the construction of Sennar, Khashm El Girba and El Rosseris hydro-electric power stations. The construction of the dams at Khashm El Girba and El Rosseris has also been financed with foreign aid resources during the 1960s. Hence, the steady growth in electric power generation - which, as we noted in Chapter 4 has been on the average about 10% over the period 1966-80 - was mainly due to foreign aid loans which permitted investment in such costly operations which otherwise may not have been possible. The contribution of the generated electricity of these stations in

the growth and development of agriculture (irrigation) and industry has been considerable over the past two decades. But the electricity supply, since the mid-1970s, had been uncertain and inadequate causing a major bottleneck in industrial production and economic activity in general. The deficiency in electricity supply is explained mainly by large increases in demand for electricity for domestic and commercial sectors due to rapid urbanization, the importing of domestic electric appliances by the Sudanese migrant workers abroad, and the development of numerous new irrigation schemes and manufacturing industries. Electricity supply itself has also been affected frequently by the siltation problem.

The role of foreign aid resources in the development of the industrial sector may be detected in two major import substitution industries, namely sugar and textiles.

As far as the sugar industry is concerned, all the five sugar factories in the country at Elgenoid, El Girba, Sennar, Assalaya and Kinana[1] - with a total capacity of 670,000 tons per annum - were established during the past two decades (two during the 1960s and three during the 1970s) with concessional as well as non-concessional external loans. The contribution of these factories in realizing the import subsistation policy in sugar can be seen by the fact that in the year 1980, the combined production of these factories (284 thousand tons) covered about 71% of the total local consumption of 400 thousand tons[2]. This ratio, however is well below the sugar investment plan target set in the Six Years Plan to achieve by the year 1979/80 self sufficiency and the export of about 160 thousand tons of sugar[3]. Failure to achieve the sugar investment programme targets

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1 Kinana sugar factory is the largest with a capacity of 300 thousand tons per annum. This is partially supported by private foreign investment (a joint venture).

2 Bank of Sudan Annual Report 1980.

3 The Six Year Plan of Economic And Soc. Dev. 1977/78-1982/83, Vol.2 p.46.

is explained on the one hand by initial delays in implementation which led to escalations in the new projects costs due to international inflation, the excessive delays in obtaining external loans plus the usual problem of management typical in most LDCs. On the other hand, the operation of both newly completed as well as the old ones (Elgenoid and Elgirba) has been well below their design capacity. In the newly established factories namely Sennar and Assalaya technical faults caused serious delays and low capacity utilization. For example in Sennar the factory foundations moved as a result of soil subsidence, there were also troubles with steam control, the oiling mechanism, and overheating bearings. The delays in the operation of the factory put it out of phase with the sugar cane cycle causing further delays. In Assalaya technical problems were confined to the boiler house[1]. In the old factories the lack of spare parts, maintenance equipment needed for the factories as well as the cane plantations, shortages in petroleum products, shortages in electricity supply and production relationships were the main causes for the underutilization of capacity.

The fact that the external development loans allocated for the sugar investment programme during the 1970s were used exclusively for creating new capacity rather than being partially used for improving the existing capacity could be a reason for the poor performance of the old sugar factories, particularly at a time when foreign exchange shortage was severe. Capacity utilization in the sugar factories would have been improved significantly if a timely balanced combination of both programme loans for the rehabilization of the existing projects - to be

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1 Ministry of Industry, Sudanow February 1982, p.12.

used for the supply of spare parts, maintenance equipment, replacement of obsolete and inefficient machinery as well as project loans for the new investments were obtained.

However, despite the apparent deficiencies in the development of sugar industry in the Sudan with external development loans - which are attributable only partially to foreign loans allocation policy - the sugar production capacity created so far with the help of foreign resources would transform the country into a net exporter of sugar if the necessary measures to rehabilitate the sugar factories and secure optimum capacity utilization were adopted. So far the present production levels - which are below the design capacity - cover 70 to 75% of domestic consumption of sugar thereby saving foreign exchange which would otherwise be used to import sugar. Apart from this direct contribution, the sugar factories and cane plantations have contributed significantly to employment, and economic activity in the areas where they were established; and as Dr Nicholas - an agricultural adviser to the Sudanese Sugar Corporation - put it "...the success side should not only be measured in terms of sugar produced, but also in the fact that something like one per cent of the population is now living in or around sugar factories in land which a few years back was desert and now is boasting towns, schools, hospitals and new communities"[1]. Moreover, the establishment of the sugar industry itself has opened up opportunities for the development of ancillary industries such as alcohol, paper from bagasse and animal feed.

In the field of textile industry, all the public sector textile production capacity - which was installed relatively

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1 Sudanow Vol. 6 No. 11 November 1981, p. 23.

recently - after 1975 - was created by the use of external development loans, namely the operation of El Hasa Heissa textile factory with a capacity of 14 million meters of popular cloth, six regional weaving factories at Shendi, Nyala, Kosti, Kadugli, Dueim and Mangalla with a capacity of 9.2 million meters per annum each; as well as three spinning factories at Hag Abdalla, Portsudan and Khartoum North, with a combined capacity of 17,050 tons of fine yarn to feed the weaving factories and for export, and a spinning and weaving factory at Gado with a capacity of 14 million tons[1]. The implementation of the latter three spinning factories and the spinning and weaving factory at Gado has suffered from a number of problems that caused excessive delays in their operation. The problems range from technical problems as in Hag Abdalla which led to increases in costs and the subsequent delays in obtaining the extra funds from the donor, to electricity supply problems as in the case of Portsudan spinning factory, to other problems of shortages in building materials - cement in particular - transportation of equipment from the port to the site as well as shortages of local funds (liquidity problem).

However, as a result of the operation of the weaving factories the output of public sector textile industry - as we noted in Chapter 4 - has increased rapidly from 5.8 million meters in 1976/77 to 17.0 million meters in 1979/80, with an average annual increase of 43% over the four years. But the overall effect of the public sector investment in textile production - supported mainly by foreign development loans - on the growth of production of textiles and the consequent saving in foreign exchange and

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1 The Six Year Plan of Economic and Soc. Dev. 1977/78-82/83 Vol.2 p. 47-8.

export earnings cannot be fully realized unless the three spinning factories become operational and the optimum capacity utilization in all factories is achieved.

8.4 CONCLUSION

Qualitative and rough quantitative analysis of the Sudan's growth performance with external development aid over the past two decades clearly indicates that the rejection of foreign aid on the grounds that it retards growth cannot be justified.

Simple regression models - using few variables - show that the association between real GDP growth rates, real per capita growth rates and net foreign capital inflow over the period 1960-1978 is positive. It is true, however, that public sector savings performance has been poor particularly during the 1970s, but this did not prevent the financing of relatively high levels of public sector investment using mainly external development loans and domestic bank borrowing. The high level of public sector investment has contributed significantly to the development performance of the major sectors of the economy namely, agriculture (irrigated as well as mechanized rain-fed), infrastructure (roads, railways, telecommunications, pipe line and electric power generation), and industry (sugar and textile).

Needless to say, the process of development with external aid in the Sudan has suffered from numerous setbacks on account of managerial & technical skills and policy deficiencies as well as on the account of factors outside domestic control such as international inflation, the high prices of oil and migration of skilled manpower to the Gulf countries. Undoubtedly development is a complex process in which economic, social, political and

global factors are interrelated to produce growth and change. Therefore, the availability of foreign aid resources alone will not be sufficient in the absence of the other factors. Hence, when we claim that foreign aid resources promote growth and development we mean that it is a necessary but not a sufficient condition for growth.

Most of the objections of the critics of foreign aid deal with the policies and practicalities of aid programmes, such as the forms of aid, repayment terms, and aid allocation policy. Such objections should not suggest that we bring it to a halt, but rather suggest the identification of the specific problems and policies in the aid machinery and aid programmes as well as recipient and donor policies that hindered the effective use of aid resources so that the appropriate reform measures to overcome such problems can be suggested and adopted. For example, by reducing the extent to which aid is tied, by making it more appropriate to the resource requirements of the recipient, and by shortening the lengthy procedures involved in the aid machinery itself.

In the next chapter we shall identify the specific problems and policies that hindered the effective utilization of foreign aid resources in the Sudan.

CHAPTER 9

THE FACTORS THAT LIMITED THE EFFECTIVENESS OF FOREIGN AID RESOURCES IN PROMOTING GROWTH AND DEVELOPMENT IN THE SUDAN

9.1 INTRODUCTION

The discussion on the role of foreign aid resources in the growth process presented in the previous chapters as well as the experience of Sudan's growth and development with foreign aid resources over the past two decades, indicate that foreign aid resources did contribute to the growth process in the Sudan by financing higher levels of public sector investment than what would otherwise have been - particularly at a time when external shocks caused continuous balance of payments deterioration and by financing the foreign exchange costs of most - if not all - of the major projects in agricultural, infrastructural and industrial sectors of the economy. However, it was also apparent that shortcomings of foreign aid programmes and administrative constraints were involved. These were due to aid policy inadequacies and administrative inefficiencies of both the Sudanese side and its donors. Such shortcomings were compounded by other problems, political, geographical, as well as other exogenous factors which together limited the effectiveness of aid resources in the growth and development of the country.

Nevertheless, these shortcomings should not suggest the need to reject foreign aid resources altogether, but rather to build on what has been achieved so far by aid, identifying the specific factors and policies that limited the effectiveness of such resources and suggesting reform measures for recipients' policies and donor approaches as well as for the aid machinery

in general, thereby maximizing the efficiency with which such resources are translated into income and growth. This chapter examines some specific problems that hindered the effective utilization of foreign aid resources in the Sudan during the past two decades, and highlights the main areas in which fundamental reform measures are needed.

9.2 THE EFFECT OF POLITICS AND DONORS OBJECTIVES

It is argued by many economists that the effect of foreign aid resources in the growth process of the recipient is limited because the objective of the donors are political. It is true that the objectives of the donors generally range through a spectrum of humanitarian (moral), economic, strategic and historical (colonial) grounds. In many cases these objectives are mixed and may not be mutually exclusive. However, among all these objectives, the political objective appears to be one of the limiting factors affecting the efficiency of development aid. Surely, politics influences not only foreign aid but also all other international economic activities such as trade, technology transfer, etc., but foreign aid by its nature is more vulnerable to the political constraint than the other forms of international transfers and payments, simply because of the grant element associated with it, and because it is tax payers' money collected through the political process and hence its allocation and the regulations that govern its use are bound to take into consideration the political interest.

In the Sudan two examples may be cited showing how politics can affect the effectiveness of development aid. After the 1967 war in the Middle East, USA and West German development aid to the

Sudan has been cut off in response to the government's decision to break diplomatic relations with both donors. The flow of development aid from these two sources which were among the important donors to the country was not restored until the year 1972/73 (after 5 years). Development loans from the USSR and most of the East European Socialist countries have also been suddenly suspended on political grounds following an abortive communist coup in 1971. Since that date no development aid has been received from the USSR. The sudden termination of development aid to Sudan on political grounds has limited the effectiveness of foreign aid in two ways: first, it reduced the magnitude of foreign development aid resources available to the country. Secondly, many of the projects financed by loans from those sources were either left incomplete such as the Khartoum-Meddani Road under the US AID or operate below their design capacity because of the lack of spare parts such as - in the case of the fruit and vegetable canning factories in Karima, Wau, the onions dehydration plant in Kassala and Babanosa milk processing factory under the USSR development aid.

Although the possibility of removing foreign aid from the political arena is difficult to achieve, the adverse effects of this political constraint can be contained or restricted by laying more emphasis on multilateralism, more awareness of the need to increase international cooperation as emphasized by the Pearson Report (1969), and the recognition of the mutuality of interests and interdependence between nations stressed by the Brandt Report (1980).

9.3 TYING OF AID RESOURCES

As we explained in Chapter 6, there are conditions - apart

from the repayment terms - and regulations adopted by almost all bilateral donors which tend to limit the effectiveness of aid resources, namely the tying of aid - procurement tying as well as end-use tying. Project tying, though advantageous as it controls tightly the opportunity for abuse of aid resources, always focuses on new projects, which is likely to lead to the neglect of capacity utilization in the existing productive capacity of the economy. In the Sudan, as we noted earlier, the project approach adopted during the 1970s has led to underutilization of capacity in the existing agricultural schemes and industrial plants. At a time when the foreign exchange scarcity has been the major cause of capacity underutilization, the foreign exchange made available by foreign aid loans and grants went to new projects. Perhaps a mixed balance between project and programme loans might have been much more effective in the overall output growth than project loans alone. However, towards the end of the 1970s more attention has been given to programme loans aiming at the rehabilitation of the major irrigation projects such as Gezera and New Halfa, and industry particularly sugar industry. However, the opportunity for abuse of programme loans can be - as in the project loans - tightly controlled through procurement practices which incorporate competitive bidding.

Procurement tying on the other hand adds to the cost of borrowing. The recipient - as we noted in Chapter 6 - is likely to purchase goods from the donors at prices often substantially above those in competitive world markets. And for procurement under the loans from the East European Socialist countries, this problem is compounded by the absence of competition within the donor country as all industrial corporations are owned by the State.

9.4 AID MACHINERY AND THE DISBURSEMENT RATE

9.4.1 Procedural Problems

The effectiveness of foreign aid resources in promoting growth is also influenced to a great extent by the efficiency of the recipient's and donor's aid machinery in completing without delay the procedures involved in the project/loan cycle, including feasibility studies, loan application, negotiation, approval and effectiveness, disbursement of loan funds, and implementation of the project. There are two aspects of the project/loan cycle where problems exist. First, the delays in the process of acquisition of the loan (or the grant) and the effectiveness of the loan (or grant) agreement - that is, making the funds ready for disbursement. Secondly, delays in the implementation of the project financed by foreign aid resources. Both factors lead to excessive delays and cost overruns which in turn cause further delays thereby affecting the growth effects of the projects and programmes financed by foreign aid.

The procedures required - from both the recipient and the donor - for completing the stages of acquisition of external loans and their effectiveness are very long, and sometimes are described as being complicated[1]. The time lag between the initial stage of project identification to loan approval (identification missions, pre-feasibility and feasibility studies, preliminary and detailed engineering studies, and appraisal missions) takes as long as two to three or four years.

Usually, prior to the approval of a certain loan, each donor either makes the feasibility study for the project in question by itself or asks the recipient government to undertake it. Undoubtedly, economic and technical feasibility studies are

1. OECD Compendium of Aid Procedures (p.59) Paris 1981.

indispensible for efficient utilization of aid resources, but in the Sudan - as in many other LDCs - the absence of an inventory of projects in varying stages of preparation which would enable the government to present a list of well defined priority projects to donors at any given time makes the process of foreign resources acquisition a lengthy one. And as the business (private as well as government) of project preparation is not yet well developed, project appraisal is mostly carried out by foreign consulting firms which is always time consuming and costly.

There is also a time lag between commitment of aid funds and actual disbursement, that is, between the point at which funds are put aside for an agreed purpose (signing of the loan agreement) and the point where bills must actually be paid. This lag may range - as shown in Table 9.1 - from six to fifty months. This prolonged delay is mainly due to the long procedures involved in satisfying the conditions precedent to the effectiveness of the loan agreement, and the failure of the government to establish an efficient aid machinery.

Usually, the actions required to satisfy the conditions prior to the first disbursement from the loan include the provision to the donor of evidence of rati fication of the agreement and the legal opinion, the procedures for competitive bidding (tendering and contracting documents), any subsidiary loan agreement between the recipient's government and a public enterprise involving on-lending arrangements, the recruitment of the project manager, specimen signatures, and in the case of co-financing, the effectiveness depends on the signing of similar agreements with other donors as well as satisfying the respective conditions prior to the first disbursement (cross-effectiveness condition). In the Sudan, in order to ensure a timely fulfilment of these

Table 9.1 Time Lag Between Signature of Loan Agreement and the First Disbursement from the Loan

Source and Name of Loan	Date of signature	Date of 1st disbursement	Time lag in months
World Bank (IDA & IBRD)			
1. Mechanized Farming (1)	6.9.1968	22.3.69	6.5
2. " " (2)	12.6.1972	22.9.73	15.5
3. Road project	29.9.1972	22.3.73	6.0
4. Industrial Bank	14.12.1973	25.7.74	7.5
5. Railways (3)	31.1.1974	9.4.75	14.5
6. Project Preparation Unit	7.4.1976	30.10.78	31.0
7. Railways (4)	8.7.1977	31.3.79	21.0
8. Mechanized Farming	13.7.1978	11.80	28.0
9. Jebel Aulia Rabak Road	10.3.1979	3.80	12.0
Kuwait Fund			
10. Rahad Project	17.4.1973	5.11.73	6.5
11. Project Preparation Unit	19.8.1976	6.79	36.0
12. Sennar/Damazin Road	5.6.1977	1.7.78	13.0
13. Railways	4.7.1978	24.5.79	11.0
Saudi Fund			
14. Rahad Project	24.6.1975	24.2.76	8.0
15. Education	1.10.1977	29.11.79	26.0
16. Kassala/Haya Road	9.1.1977	10.77	9.0
17. Portsudan Airport	9.1.1977	3.81*	50.0
18. Civil Aviation	2.7.1977	12.79	29.0
19. Nyala/Zalengi Road	29.6.1978	4.80	22.0
African Development Bank			
20. Railways (1)	7.12.1971	19.7.73	19.5
21. Railways (2)	12.3.1974	6.3.75	12.0
22. Agro-Industrial Project	9.5.1978	4.8.80	27.0
23. Primary Health Care Project	26.2.1979	3.81*	24.0
Arab Fund			
24. Gedarf/Kassala Road	13.4.1974	12.5.75	13.0
25. Sennar/Damazin Road	26.12.1976	5.78	16.0
26. Railways	26.12.1977	15.1.79	13.0
Abu Dahabi Fund			
27. Hag Alalla Spinning Factory	20.7.1976	8.12.77	17.0

* To the date of collection of information in March 1981 no disbursement took place.

Source: Collected from the External Loans and Technical Assistance Section Ministry of Finance and Economic Planning (Planning) February 1980.

conditions the External Loans and Technical Assistance Section must be efficient enough to complete these procedures which involve the executing ministry or agency, the Council of Ministers, the Peoples' Assembly, the Presidency of the Republic, the Attorney General's Chamber, the Ministry of Foreign Affairs and the Central Purchasing Administration of the Finance Ministry. In practice however, the completion of the requirement prior to the first disbursement took much longer than necessary. This is explained by the fact that during the 1970s, whereas Sudan's volume of external borrowing increased substantially (see Chapter 6) and the number of donor organizations expanded considerably (thirty or more), the aid machinery in the Sudan did not change to cope with these increasing tasks. The External Loans and Technical Assistance section in the Planning Ministry has been kept continuously understaffed and seriously underequipped with some simple and basic typewriting, photocopying and translation services. The available staff was kept fully occupied with fulfilling the required procedures for the conclusion and the effectiveness of the loan agreements. Hence, little or no attention was paid to the follow up and co-ordination of the actual implementation of the projects concerned, or to initiating new structures for policy making. Even the completion of the requirements of effectiveness (usually set in the loan agreements to be completed in 3-4 months) has by far lagged behind schedule. A sample of 27 loan agreements (from multilateral and bilateral sources), listed in Table 9.1, shows that it takes on the average 18 months from the signing of the loan agreement to the first disbursement from the loan. Undoubtedly, this excessive delay in completing procedural requirements has caused many projects to run behind schedule and the resulting cost overruns led to further delays.

Apart from these procedural delays there are also further delays which occur during the course of implementation of the projects owing to inadequacies in management and coordination between the executing agencies and the central planning department, bad project planning, shortages of building materials and local funds and transport problems. In the next section we shall examine these problems.

9.4.2 Implementation Problems

There were some problems associated with inadequacies in project preparation and coordination between the central planning department and the executing agencies which led to delays in the implementation of development projects financed by foreign aid funds. A typical case that combines all sorts of project planning and coordination deficiencies in the Sudan is the Port Sudan water supply project. This project - which was a high priority project in view of the severe shortages of water supply in the single port of the country - was studied by a French consulting firm in 1969. The executing agency - the Public Electricity and Water Corporation (PEWC) - submitted the project, which consists mainly of building an underground dam in Khor Arbaat, to the Planning Ministry for financing. The Planning Ministry formally submitted the project in December 1975 to the African Development Bank (ADB) for financing the foreign exchange costs. An appraisal report by an ADB mission identified the project as being technically feasible, economically viable and satisfying the criterion of African Development Fund (ADF) financing. Subsequently a loan was approved by the ADF and the agreement was signed in July 1976. Until the year 1979 all but one of the three conditions prior to the first disbursement had

been completed, namely the provision by the executing agency (PEWC) of a detailed list of goods and services to be financed from the loan agreement. Over the three years following the signature of the loan agreement the External Loans and Technical Assistance Section nearly lost communication with the project and its progress after many attempts to find an explanation from PEWC for the failure to provide a detailed list of goods and services. The reason - which the external loans section in the Planning Ministry discovered lately - was that the project was disputed by the Rural Water Corporation and the Geology Department on the grounds that the construction of the underground dam was not technically feasible. Neither the External Loans Section nor the donor were informed about this dispute but another section within the Planning Ministry was involved. Eventually the loan agreement was cancelled in 1980 and an alternative project was considered by another donor (West Germany). This case is surely indicative of bad project planning and lack of coordination even within the various sections of the Planning Ministry itself. The example cited earlier, of establishing six regional weaving factories before establishing the spinning factory which was planned to feed them with the yarn, is yet another proof of planning and coordination deficiencies. These inadequacies in project planning and co-ordination were exacerbated by the absence of a follow-up unit for aid funded projects and the continuous occupation of the external loans administration with the process of completing the lengthy requirements for effectiveness of new loan commitments.

Another major problem that hampered the implementation of aid funded projects has been the shortage of the local currency component of projects. As most of the foreign development loans

finance only the foreign exchange costs of the projects in question, the government is obliged to secure the local currency component. In the Sudan budgetary problems during the financial year frequently lead to the rationing of local currency - usually referred to as the liquidity problem - that is, even if the funds are budgeted they may not be available when they are needed. Because of this deficiency in the supply of local resources for development, the executing agencies had to queue for the funds in accordance with the priority list set by the Planning Ministry. This process entails the postponing and delaying of the implementation of the projects even though foreign aid resources are available to finance their foreign exchange cost.

Among other major problems that hampered the execution of development projects financed by foreign aid resources we find the transport problem - which is emphasized earlier - caused prolonged delays in delivery and handling of materials to respective sites, thereby leading to rises in the estimated erection prices. The shortages of building materials particularly cement, the shortages of basic petroleum products such as benzene and gazolene, the shortages of qualified and experienced personnel and high rates of turn-over in government services due to migration to oil rich Arab countries, and the absence of a well developed building and construction industry and the consequent reliance on foreign building and contracting firms which is again costly and time consuming, all caused excessive delays in the implementation of the development programmes financed by foreign aid resources. Hence, the available foreign aid resources in most cases were disbursed more slowly than programmed. The following table (Table 9.2) shows for example the disbursement rate of the IBRD/IDA loans over the period 1976-1979 compared to the bank-wide

Table 9.2 Disbursement Rate of World Bank Loans 1976-1980

	1976	1977	1978	1979	1980*[1]
Disbursement rate*[2] (Sudan)	17.2	21.5	20.6	13.7	15.6
Bank-wide average	28.5	25.8	21.5	20.9	16.0

Source: World Bank: Country Implementation Review 1980

1. Up to May 1980
2. Disbursement rate = $\frac{\text{Total disbursement during the year}}{\text{Undisbursed balances during year}}\%$

average. It is clear from Table 9.2 that the disbursement rate[1] has been lower than the bank-wide average which itself is low. The lower the actual disbursement from available aid resources the longer the time it takes to transform such resources into output.

9.5 OTHER PROBLEMS

In the Sudan there were some specific problems, geographical, political as well as regional and global which constrained the development process in general, and at the same time adversely affected directly or indirectly the role of foreign aid resources available to the country in promoting output growth.

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[1] It is important to note that the disbursement rate should be viewed only as a rough indicator to loan disbursement, as it tends to underestimate or overestimate the actual disbursement rate given the magnitude of the new commitments during the year in question.

The country's size - as we noted in Chapter 4, poses special development problems. As many potentially rich parts of the country are 1000 miles or more away from the port, and given the population size (18.0 million) and its distribution, special transport problems arise. This special transport problem has limited the growth contribution of foreign aid resources in two ways. First, larger shares of the foreign resources available were allocated to transport and communication projects, which would otherwise be used to help more directly productive sectors of the economy (agricultural sector in particular). Secondly, the transport bottleneck itself - as we noted previously - turned out to be one of the major problems that delayed the implementation of development programmes which were mainly financed by foreign aid resources.

The development process in the Sudan has been adversely affected by political instability. Since independence in 1956 the Sudan has lived through periods of internal strife and political upheavals. The parliamentary instability after independence invited a military coup in 1958. In 1964 the Multiparty system was restored again following a civilian revolution. Five years later a military takeover in 1969 brought the present political system into power, which has survived three abortive coups in 1971, 1975 and 1976. Moreover the development process has also been affected by the presence of an armed confrontation in the Southern region for 17 years (1955-72). During the 17 years, the resource-rich Southern region - instead of positively contributing to the growth and development of the country - continued to be a heavy burden on the treasury on account of expenditure on defence and security. This political instability has led to frequent

changes in the ministries and departments carrying out the development programmes thereby affecting adversely the development effort. If we take for example the Planning Ministry itself - which is directly responsible for formulating development plans and executing those plans in coordination with the rest of the ministries - we find that it has been subjected to frequent changes. The structure of the Planning Ministry which was established in 1969, has changed from a Central Ministry to a National Planning Council, to a National Planning Commission, to a State Ministry, to a Central Ministry again and finally to a department within the Ministry of Finance and Economic Planning. Eleven ministers have taken the office of the Planning Minister in 13 years. The National Plans themselves - as we noted in Chapter 4 - have either been suspended or significantly modified and extended. This administrative instability could similarly be traced for the major ministries and departments responsible for the execution of development projects. Clearly, the adverse effects of this instability on the implementation capacity of the key ministries cannot be overlooked.

Among other factors which have also affected the development performance in general and the effectiveness of aid resources at the same time we find some exogenous factors. In the Sudan a number of development problems - particularly during the 1970s - were caused to a large extent by factors outside the government's domestic control such as international inflation, high prices of oil and the severe and sudden brain drain. We explained in Chapter 5 how global inflation and increasing oil prices led to balance of payments deterioration and the development performance in general.

Moreover, with its geographical position, Sudan's trade was particularly affected when the Suez Canal was closed in 1967

following the 1967 war in the Middle East. Freight costs to and from West Europe (the main trade partner) increased and shipments were delayed.

Regional problems also caused difficulties. With eight neighbouring countries political instability and refugees from Chad, Uganda, Etheopia, Zaire and Central African Republic necessitating a high level of expenditure on security which would otherwise be saved. Moreover, because some of its neighbours are land-locked, considerable smuggling operations of domestic and imported commodities to those countries were undertaken.

CHAPTER 10

ESTIMATING SAVINGS AND FOREIGN EXCHANGE GAPS FOR THE SUDAN 1983/84 - 1988/89

10.1 INTRODUCTION

In this chapter an estimate of the saving-investment and foreign exchange gaps for the Sudan over the period 1983/84-1988/89 is provided on the basis of the two-gap framework outlined and discussed in the previous chapters. As the latest published data on National Income Accounts are for the year 1977/78, we use this year as the base year for projections of the two gaps. Hence the period for projections will cover the current Six Year Plan 1977/78-1982/83 and the forthcoming Second Six Year Plan 1983/84-88/89 representing the first and the second phases of Sudan's long term 18 year Perspective Plan set for the period 1977/78-1994/95.

The theoretical framework of the two gap models reviewed in Chapters 2 and 3 is employed because it embraces the classic view of foreign resources as a means for supplementing domestic savings in the recipient country (Rosenstein-Rodan 1961, Fei and Paauw 1965) as well as the realistic view that in LDCs foreign resources are required to relieve a foreign exchange constraint - which is independent from the saving constraint - because investment and import requirements in LDCs are bound to be rigid and the scope for substitutability between domestic and foreign resources is limited as many strategic capital goods and raw materials needed for growth cannot be produced domestically and must therefore be imported.

As we noted in Chapters 2 and 3, the existence of two gaps ex-ante has been criticized by several economists who questioned the validity of the assumptions of a fixed relationship between investment requirements, import requirements and growth and the lack of substitutability between domestic and foreign resources. However an ex-ante difference between the two gaps is possible as long as the substitution between foreign and domestic resources is slow and relatively inflexible. A situation which is foreseeable in a country like the Sudan in view of the early stage of development that the country is undergoing, the very low level of industrialization, dependence on imported capital goods and on agricultural and industrial inputs, and the heavy reliance on export of a single primary commodity (cotton). Even attempts to avoid this phenomenon through export diversification in 1974 has - as we have seen in Chapters 4 and 5 - failed because of short-run structural rigidities in the agricultural sector. Moreover, in the Sudan following the 1973 oil price rises and the global inflation - like many other non-oil producing developing countries - a foreign exchange limit - as we have shown in Chapters 4 and 5 - has developed and represented a separate limit to growth and development in the country. The effects of such external factors on the development performance of the country are likely to persist in the rest of the 1980s.

In order to estimate the saving gap the growth identity $g = {}^{S}/_{K}$ is employed, where g is the target growth rate, S is the savings (investment) ratio, and K is the incremental capital output ratio (ICOR). Investment requirements can therefore be calculated as g.K given the target rate of growth (g) and the ICOR (K). The saving-investment gap is then calculated as the difference between investment requirements and the forecast saving at the target level

of income (Y).

The foreign exchange gap is estimated as the difference between forecast export earnings and import requirements. The foreign resources requirement at any given target rate of growth will be determined by the larger of the two gaps.

As the two gaps must be determined with careful attention to the conditions of the recipient country, its objectives and its ability to use external resources as manifested by its performance, the estimate derived is based on the following analytical elements:

1. Past performance of the economy 1960-78.

2. The objectives of the Perspective Plan (1977/78-1994/95) and the current Six Year Plan 1977/78-1982/83 represented by the Plan target rate of growth.

3. Estimates of the principal parameters of the model that is the import function, estimates of past exports growth and savings.

4. Estimates of foreign aid resources are provided in view of two alternative growth rate targets. An (optimistic) target growth rate of 0.075 representing the growth goals established by three successive development plans, and a (realistic) target rate of growth of 0.049 representing the past performance of the economy.

10.2 ESTIMATING THE SAVING GAP

10.2.1 Investment Requirements

Taking the Harrod-Domer assumption that a specified amount of investment is needed to increase output, the ICOR is used to predict the level of investment required to achieve the target rate of growth of income. However, it is important to note that

the choice of the correct ICOR is of particular importance for the reliability of the calculation of foreign resources requirements. Foreign resources requirements - as we explained in Chapter 2 - are very sensitive to changes in the value of the ICOR. To determine the correct behaviour of ICOR is a problematic exercise as it is determined by a number of factors including the availability of human skills, the capacity to combine and organize the factors of production in an optimal way, natural resources endowment, the sectoral distribution of investment and the rate of capacity utilization. An attempt to estimate ICOR on the basis of historical time series over the period 1960-1978 has failed in view of the very wide fluctuations in the ICOR which did not follow any uniform trend. However taking the average COR over the period 1960-1978 produced a figure of 2.91 which is almost similar to the assumed Six Year Plan figure of 3. Hence, in our alternative estimates for investment requirements the plan figure will be used. Given the two alternative target rates of growth and the ICOR of 3, the corresponding investment ratio I/GDP will be as follows: $\bar{g} \times K = \frac{I}{GDP}$

1. For the (high) optimistic target rate of growth $0.075 \times 3 = 0.225$
2. For the realistic target rate of growth $0.049 \times 3 = 0.147$

10.2.2 The Savings Function

In general, the Keynesian explanation of saving behaviour in developing countries is widely accepted and empirically tested. However a number of econometric studies - as we have shown in Chapter 3 - emphasize the need to modify the savings function in LDCs to include exports (Maizels 1968; Chenery and Eckstein 1970; Papanek 1973), foreign capital inflow (Griffin & Enos 1970; Singh 1972; Papanek 1972; Weisskopf 1972) and the structure of the

financial markets and the density of financial intermediation (Hitiris and Wiseman 1981).

The discussion in Chapter 7 on the relationship between foreign capital inflow and domestic savings indicates that the statistical findings of a negative relationship between the two variables is questionable on the grounds that the negative relationship may represent an ex-post accounting convention rather than a behavioural relationship, or it may be due to exogenous shocks leading to an increase in foreign capital inflow and a fall in domestic savings at the same time, or it may be due to the conditions (economic or otherwise) that prevailed during the time of the studies which were mainly undertaken for periods covering the 1950s and the early years of the 1960s. A cross country study for 50 LDCs - as we have shown in Chapter 7 - for a more recent period 1977-1979,produced a significant non-negative relationship.

Institutional factors such as the business structure, saving institutions emphasized by Hitiris & Wiseman (1981) are important factors affecting domestic saving, but the estimation of their effect on domestic saving is a difficult problem.

In order to estimate the saving function for our projections, an attempt is made to include income and exports following the work of Maizels (1968) and Chenery and Eckstin (1970). But in regressing the level of domestic saving on GDP and export earnings for the period 1960-1978, the saving coefficient attached to exports is found to be statistically insignificant. A saving-income ratio of 0.121 reflecting the saving performance over the period 1960/61 - 1977/78 is therefore assumed and used in projecting domestic savings.

10.3 ESTIMATING THE FOREIGN EXCHANGE GAP

10.3.1 Import Function

Most foreign resources requirement models consider imports to be a function of income and estimate import requirements in a way analogous to the calculation of investment requirements shown in Section 10.2.1. However, some studies such as Chenery and Eckstein's (1970), introduced additional variables to the import function to include in addition to changes in income, increases in investment, consumption, and the availability of foreign exchange measured by the reserves of gold and foreign exchange available to the country and export earnings from goods and services. The variations in the ICOR itself have also been emphasized as one of the factors affecting the propensity to import in LDCs, on the grounds that as most of the imports in LDCs are capital goods, improvements in the COR imply less capital investment and hence less imports. Moreover, government policies regarding foreign trade such as quotas, duties, foreign exchange control, changes in the prices of domestically produced substitutes, terms of trade, are factors which are also likely to affect imports behaviour.

Recognizing the heavy dependence of the Sudan on imports of investment goods (capital goods and intermediate goods) as well as some basic consumption goods, a simplified version of Chenery and Eckstein's (1970) import function for Latin American countries, which includes investment and consumption as separate determinants of import requirements, seems to be practicable. Hence in estimating the import coefficients attached to consumption (C) and investment (I) the following equation is used:

$$M = a + a_1 C + a_2 I$$

where a_1 and a_2 are the import coefficients attached to consumption

and investment. a_1 and a_2 are then used in projecting import requirements consistent with the levels of consumption and investment as determined by the target rate of growth.

In fitting the above equation to data from the Sudanese economy over the period 1960/61-1977/78 the following result is obtained:

$$M = 25.8 + 0.10C + 0.41I \qquad R^2 = 0.98$$
$$\qquad\quad (0.02) \quad (0.08)$$

The much higher import coefficient attached to investment is expected as it reflects the country's dependence on investment goods imports while a much higher proportion of consumption is on domestically produced goods as imported consumption goods are strictly controlled and some basic imported consumption goods (such as wheat flour and sugar) have been rationed during most of the 1970s.

10.3.2 Export Growth Rate

The export growth rate used in projecting foreign resources requirements is determined exogenously. The exogenous postulation of the export growth rate is explained - as in many aid requirement models - by the heavy dependence of the export of primary goods on exogenous factors which cannot be easily forecasted; such as the unstable foreign demand conditions and prices, trade barriers as well as domestic supply conditions and weather conditions. Because of the difficulties in predicting export demand and supply a simple average rate of growth of exports of 0.091 for a ten-year period (1968/69-1977/78) is assumed.

10.4 ESTIMATING THE TWO GAPS

The parameter estimates are now used in calculating the saving-gap and the export-import-gap for each year for the two alternative growth paths. Table 10.1 and Table 10.2 show the annual estimates of the two gaps at a realistic 0.049 target growth rate and an optimistic (plan) target rate of growth of 0.075 respectively.

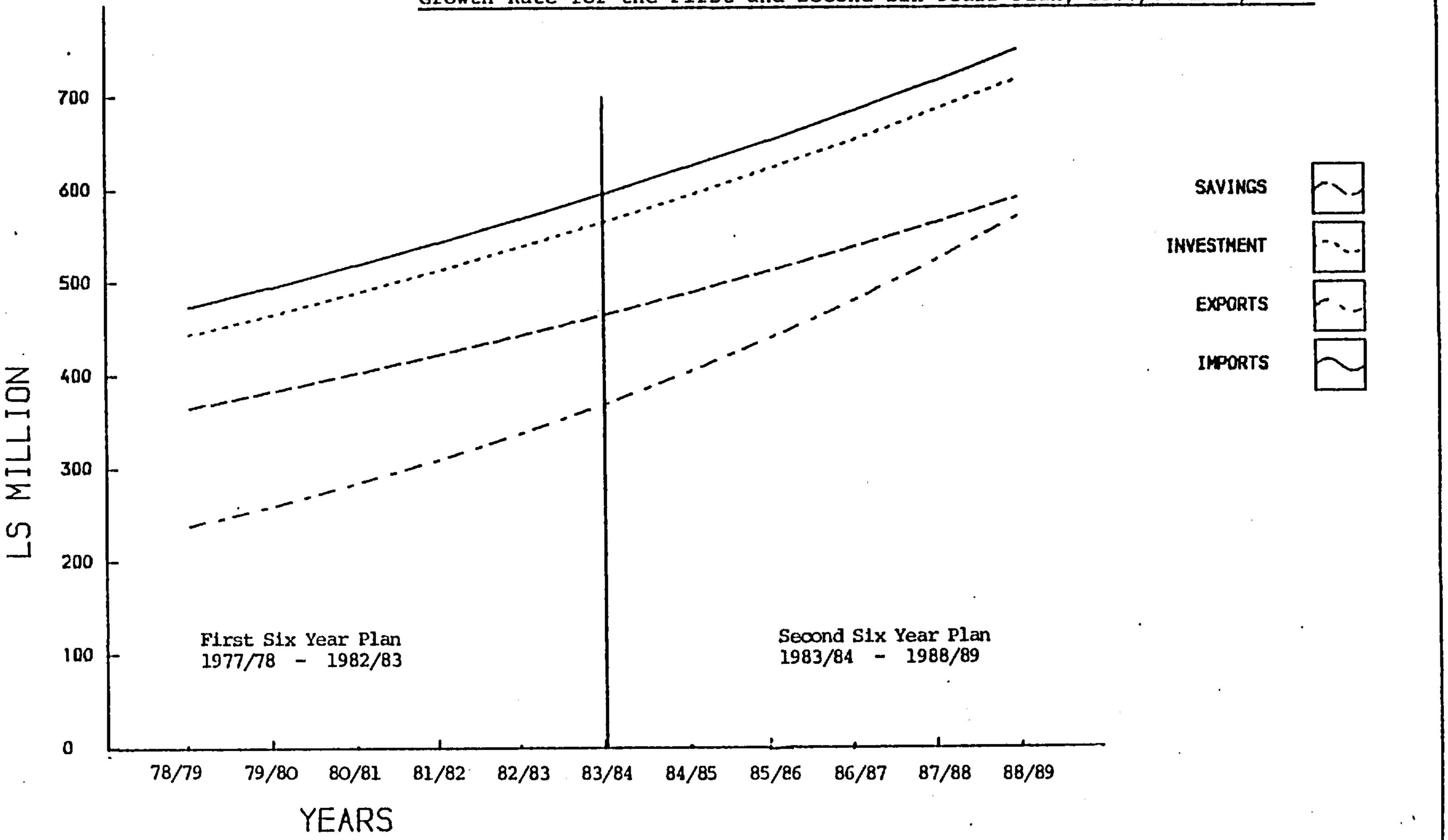
In examining the results of the estimates the projections are divided into two periods, the first period covers the current Six Year Plan (1977/78-1982/83) and the second one represents the second phase of the 18 year long term Perspective Plan (1977/78-1994/95) namely the second Six Year Plan (1983/84-1988/89). Ideally one should test the reasonabliness of the estimates we made for the current Six Year Plan with the actual performance of the Plan and then use the model (if appropriate) to estimate the requirements of foreign resources for the second Six Year Plan. Unfortunately, the comparison of our estimates with the actual performance of the Six Year Plan is not possible because the latest published figures on National Income Accounts is for the year 1977/78 which is the first year of the Six Year Plan.

However, given the assumptions of our projections, a comparison of our estimates of foreign resources requirements for the Six Year Plan (1977/78-1982/83) with the initial plan estimates - shown by Table 10.3 - indicates that the initial plan projections have underestimated the magnitudes of both gaps. Moreover, whereas the initial plan estimates make the saving-investment gap the larger (or the dominant) gap, our estimates indicate that the two gaps are of roughly the same magnitude with the export-import gap being the larger. And in considering our estimates using the

Table 10.1 Estimates of the Savings/Investment Gap and Export/Import Gap at the Realistic 0.049 GDP Growth Rate for the First and Second Six Year Plans 1977/78-1988/89

	Base Yr 77/78	78/79	79/80	80/81	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89
1. GDP at 4.9% growth rate	2878.4	3019.4	3167.4	3322.6	3485.4	3656.2	3835.4	4023.3	4220.4	4427.2	4644.1	4871.7
2. Consumption	2705.9	2654.1	2784.1	2920.6	3063.7	3213.8	3371.3	3536.5	3709.7	3891.5	4082.2	4282.2
3. Saving	172.5	365.3	383.3	402.0	421.7	442.4	464.1	486.8	510.7	535.7	561.9	589.5
4. Investment	413.7	443.9	465.6	488.4	512.4	537.5	563.8	591.4	620.4	650.8	682.7	716.1
5. Saving-Investment Gap (4-3)	241.2	78.6	82.3	86.4	90.7	95.1	99.7	104.6	109.7	115.1	120.8	126.6
6. Imports	459.4	473.2	495.1	518.1	542.3	567.6	594.1	622.0	650.8	681.8	713.9	747.6
7. Exports	218.2	238.1	259.7	283.4	309.1	337.3	367.9	401.4	437.9	477.8	521.3	568.7
8. Export-Import Gap (6-7)	241.2	235.1	235.4	234.7	233.2	230.3	226.2	220.6	212.9	204.0	192.6	178.9

Fig. 10.1 Savings/Investment Gap and Export/Import Gap at the Realistic 0.049 GDP Growth Rate for the First and Second Six Years Plan, 1977/78-1988/89

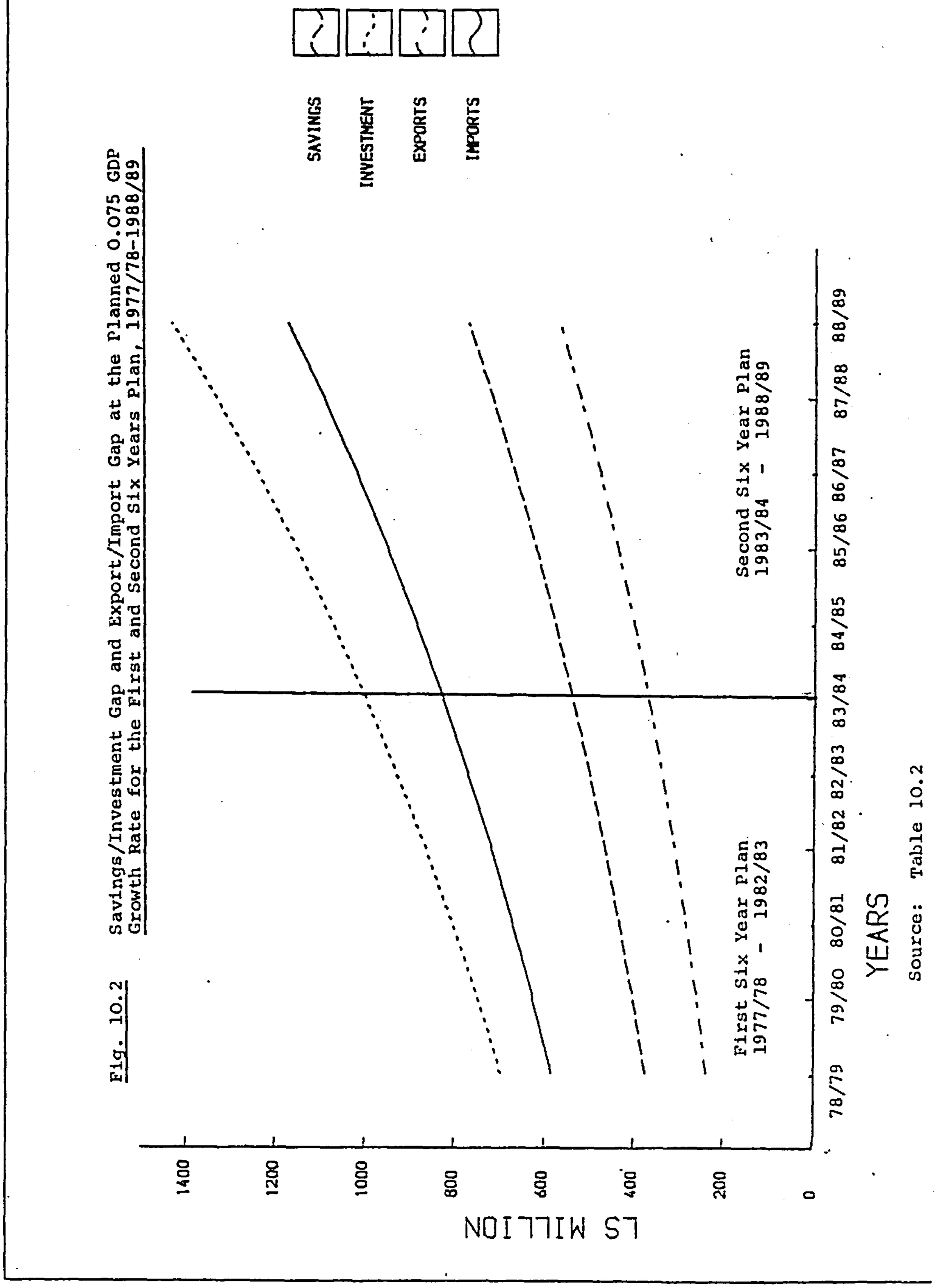


Source: Table 10.1

Table 10.2 Estimates of the Saving/Investment Group and Exports/Imports Gap at the Planned 0.075% GDP Growth Rate for the First and Second Six Year Plans 1977/78-1988/89

	77/78	78/79	79/80	80/81	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89
1. GDP at 7.5% Plan Growth Rate	2878.4	3094.3	3326.4	3575.8	3844.0	4132.3	4442.2	4775.4	5133.6	5518.6	5932.5	6377.4
2. Consumption	2705.9	2719.9	2923.9	3143.0	3378.9	3632.3	3904.7	4197.6	4512.4	4850.8	5214.7	5605.7
3. Saving	172.5	374.4	402.5	432.7	465.1	500.0	537.5	577.8	621.2	667.8	717.8	771.7
4. Investment	413.7	696.2	748.4	804.6	864.9	929.8	999.5	1074.5	1155.1	1241.7	1334.8	1434.9
5. Saving-Investment Gap (4-3)	241.2	321.8	345.9	371.9	399.8	429.8	462.0	496.7	533.9	573.9	617.0	663.2
6. Imports of Goods & Services	459.4	583.2	625.0	670.0	718.3	770.2	826.1	886.1	950.6	1020.0	1094.6	1174.7
7. Exports of Goods & Services	218.2	238.1	259.7	283.4	309.1	337.3	367.9	401.4	437.9	477.8	521.3	568.7
8. Export-Import Gap (6-7)	241.2	345.1	365.3	386.6	409.2	432.9	458.2	484.7	512.7	542.2	573.3	606.0

Fig. 10.2 Savings/Investment Gap and Export/Import Gap at the Planned 0.075 GDP Growth Rate for the First and Second Six Years Plan, 1977/78-1988/89



Source: Table 10.2

Table 10.3 A Comparison Between the Initial Plan Estimates and Our Estimates: at 0.075 GDP Growth Rate (in Ls m)

	Six Year Plan Initial Estimates 1977/78-1982/83	Our Estimates 1977/78-1982/83
Saving Investment Gap	1583	2105
Export Import Gap	1327	2180

Source: The Six Year Plan of Economic & Social Development - Ministry of National Planning 1977, Vol.1, p. 34.

- Table 10.2

realistic 0.049 GDP growth rate the export-import gap is found to be - as Figure 10.1 clearly illustrates - the dominant gap during the plan period. A situation which more or less represents the actual performance of the economy during the past six years with four successive currency devaluations in 1978, 79, 81 and 82 - emphasized in Chapter 5 - and two debt rescheduling arrangements in 1980 and 1981 that clearly point to the dominance of the external sectors constraint on growth.

Turning now to the estimate of the foreign resources requirements for the forthcoming Six Year Plan (1983/84-1988/89) which is the main aim of this chapter, we give in Table 10.4 an estimate for the magnitudes of the two gaps at 1977/78 prices for the realistic 0.049 GDP target growth rate and for the optimistic (plan) GDP target rate of growth of 0.075, given the assumptions about the parameter estimates for investment, saving, exports and imports explained in Sections 10.2 and 10.3

It is clear from Table 10.4 and Figure 10.1 that at the

Table 10.4 An Estimate for the Saving-Investment Gap and Export Import Gap for the Second Six Year Plan 1983/84-1988/89 at 0.049 and 0.075 GDP Growth Rates (Cumulative Totals in Ls million)

GDP Growth Rate / Gap	0.049	0.075
Saving - Investment Gap	672.3	3346.9
Export - Import Gap	1235.2	3177.1

Source: Derived from Tables 10.1 and 10.2

realistic target rate of growth of 0.049, the dominant gap will continue to be the export-import gap, as the foreign resources requirements will be determined by the foreign exchange gap with a magnitude of Ls 1235.2 at 1977/78 prices. However, for the higher optimistic plan target rate of growth of 0.075 the two gaps are of roughly the same magnitude with the saving-investment gap slightly larger than the export-import gap. This may be explained by the high level of investment needed to sustain the higher level of output growth rate. Hence, assuming a 0.075 plan target rate of growth, the foreign resources requirements will be determined by the saving-investment gap with a magnitude of Ls3346.9 million at 1977/78 prices.

It is important to note, however, that, in order to determine the overall foreign resources requirements we need to adjust the magnitude of the dominant gap to take into consideration the following factors: First, the magnitudes of the two gaps will increase in absolute terms by inflation and the export-import gap will also widen by deterioration in the terms of trade. Secondly, the amortization of foreign debts outstanding at the beginning of the plan period and of new loans to be contracted

during the plan should be added to the estimate. Thirdly, the undisbursed balances of foreign loans at the beginning of the plan and the newly committed loans and grants should be subtracted from the estimates.

Clearly, the projection results indicate that the Sudan will continue to depend on foreign resources during the rest of the 1980s in order to maintain a realistic 4.9% or an optimistic 7.5% GDP growth rate. And as shown by Figs 10.1 and 10.2 both gaps are not likely to close thereafter. The question that poses itself here is that although foreign aid resources had been flowing to the Sudan since 1960,, after 30 years - that is in 1989 - the country will continue to depend on foreign resources. This would appear to contradict the basic assumptions of aid growth models that the gaps can be closed and that the existence of structural rigidities - on which two gap models are based - is a short term phenomenon.

However, a recapitulation of the factors that caused a prolonged period of dependence on foreign aid without a forseeable aid termination date to the end of the 1980s, would explain this seemingly inconsistant experience. As we noted earlier - in Chapter 9 in particular - there were external (exogenous) as well as internal factors that hampered the effective use of foreign aid resources leading to excessive delays in the process of structural transformation. First: the oil crises of the 1973-onwards period, and the consequent international inflation and recession in the major industrial countries have, as we noted in Chapter 5, adversely affected the balance of payments position and the performance of the economy as a whole. These external shocks, which were sudden and excessive, occurred (unfortunately) at a time when the country had already embarked on the implementation

of an ambitious development programme through The Interim Action Programme which aimed at achieving self sufficiency in basic imported goods, and breaking infrastructural bottlenecks particularly transport bottlenecks. The external shocks compounded by other internal implementation problems, transport problems, scarcities in basic inputs (including skilled manpower) have led to excessive delays in the implementation of the development programme. These delays caused cost escalations which in turn led to further delays.

Secondly, there are institutional constraints which also adversely affected the process of growth with foreign aid. The shortcomings in the aid machinery itself (particularly at the recipients' end) with regard to the proceedures of acquisition of external loans and their effectiveness, as well as the coordination and implementation of aid financed projects, have adversely affected the speed with which foriegn aid resources are transformed into income and growth.

Thirdly, as we noted in Chapter 6, 72% of the total authorized external development loans to the Sudan had been secured during the period 1974-1980. The years preceding 1974 were characterized by very low levels of foreign capital inflow (only 18% of the total in the 20 year period studied, representing on the average 2.9% of GDP annually). This time profile of the flows should be taken into account when we consider the length of the period of dependence on aid resources. In other words, the period of Sudan's dependence on foreign aid, in effect may be considered as 1974 onwards. Moreover, the fact that about 50% of foreign aid resources were allocated to infrastructural activities - which is justifiable in view of Sudan's natural and economic characteristics - which can neither earn or save foreign exchange directly and their impact on the

economy is long term should also be taken into account.

Fourthly, political instability in the Sudan and the consequent administrative instability have also contributed to the delay in the process of structural transformation.

However, one is inclined to suggest that the possibility of closing the gap during the next decade cannot be ruled out. There are good prospects for a start of a marked improvement in foreign exchange earnings towards the end of the 1980s.[1] This is likely to occur because it is expected that the country will start exporting oil (which was discovered in 1979) towards the end of the decade. Though the quantities to be exported are relatively small (50 thousand barrels per day) it is likely to help in relieving the balance of payments pressures. Moreover, the Export Action Programme launched in 1979, which is now under implementation, is likely to increase export earnings from Sudan's major export crops (cotton and groundnuts). Furthermore, the rising trend in the magnitude of the remittances of the Sudanese migrant workers is likely to have considerable contribution to the country's foreign exchange earnings if appropriate policies towards attracting such remittances are pursued. Finally, as most of the basic infrastructure (the roads network in particular) is likely to be completed by 1985, foreign aid resources are likely to be - perhaps they should be - allocated to export promotion and import substitution activities. As a matter of fact, for the export-import gap to disappear, a greater proportion of foreign aid resources (the available as well as the forthcoming) should be devoted to structural changes in the export sector so that export

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[1] These prospects are not accounted for in our projection of export earnings, as our export projections are based on the export performance of the period up to 1978.

earnings rise to a level sufficient to meet the import requirements of the target rate of growth set. As the room for import controls is very limited due to long periods of imports restriction, emphasis should also be placed on import substitution activities.

SUMMARY OF CONCLUSIONS

The two gap approach to the theory of foreign aid is a useful framework for analysing the role of foreign aid resources in the growth process in LDCs and in estimating foreign resources requirements. Given the structural rigidities and the limited transformation possibilities in developing countries, it correctly focuses on the probable limits to accelerate growth and the extent to which they can be overcome through the use of foreign aid resources. It also incorporates estimates of the effects over time of policies designed to accomplish structural changes leading to increased savings and export earnings needed to support self sustained growth in the future.

The main criticisms of the two gap models can be summarized in first: a neoclassical critique which denies the validity of the trade limit concept and secondly, the claim that foreign resources inflow discourages domestic saving and is likely to retard growth rather than promote it.

The analysis of the features and development performance of the Sudanese economy over the past two decades - particularly during the 1970s - suggest that the existence of a foreign exchange limit - separate from the saving limit - is a real possibility. The weak external sector's performance has been the major impediment to growth and development. It has been mainly due to the heavy dependence on a single export crop (cotton), and structural rigidities in the agricultural sector have limited the possibilities of diversification of exports. Moreover, dependence on imported capital goods, raw materials and other vital inputs needed for agricultural and industrial production which are not produced domestically made it difficult to reduce imports without adversely

affecting domestic production. These rigidities were exacerbated by the international inflation during the 1970s which was fuelled by excessive rises in energy prices (oil), and the sluggish export demand caused mainly by the recession that characterized the economies of most of the industrial-primary products importer-countries. As a result of these structural and exogenous factors a foreign exchange limit has developed and represented a major constraint to the growth and development of the country. Attempts to relieve this constraint by currency depreciation in 1972 were undermined by the rigid dependence on imports, the limited scope of import substitution, supply rigidities in the export sector and sluggish export demand as well as the adverse inflation-ary effects of devaluation itself on the external sector perform-ance. The series of devaluations adopted in 1978, 1979, 1981 and 1982 are also likely to be undermined by such structural rigidities.

The statistical finding of a negative relationship between foreign capital inflow and domestic savings is questionable on the grounds that it may represent an ex-post accounting relation-ship rather than a behavioural relationship, or it may be due to exogenous shocks causing an increase in foreign aid and a fall in domestic savings at the same time, or it may be due to the conditions (economic or otherwise) that prevailed during the time of the studies which were mainly carried out for periods covering the 1950s and the early 1960s. Nevertheless in analysing the argument that aid discourages domestic savings and retards growth in view of Sudan's experience, we found that whereas the external development aid to the Sudan during the past two decades has been rising, public sectors savings has been declining and totally inadequate to finance the local cost component of aid financed investment programmes. The government has not adopted the

appropriate policy of mobilizing public savings - through increased taxation or reduced government expenditure - needed to finance the local cost components of aid financed development programmes but rather relied on borrowing from the Central Bank thereby causing inflationary pressures on the economy.

The poor public sector savings performance, which may be explained by inadequate policy measures, inefficient management of public enterprise as well as exogenous factors, should not lead us to the conclusion that foreign aid retards growth and development. The discussion on the role of foreign aid resources in the growth process in the light of Sudan's experience over the past two decades indicate that foreign aid resources did contribute to the growth process in the Sudan by financing higher levels of public sectors investment than what would otherwise have been, particularly at a time (1973/74 onwards) when external shocks caused continuous and severe foreign exchange scarcity. The high level of investment made possible by foreign aid resources has contributed significantly to the development of the major sectors of the economy and raised the overall output growth rates. Moreover, the impact of foreign aid on development should also be examined on what might otherwise have been if the Sudan did not have access to foreign aid resources. The Sudan, according to our estimate of the grant element in the foreign aid received during the period 1960-1980, would have paid 66% of the total face value of the aid received as additional cost of borrowing from international capital markets if it did not have access to external development assistance.

The rejection of foreign aid on the grounds that it retards growth cannot be justified in the light of Sudan's experience of growth with foreign aid in the past two decades. The criticisms

raised against the forms and use of aid resources, should not suggest the termination of aid flows but indicate the need for identifying the specific factors and policies that limited the effectiveness of such resources and suggesting reform measures for recipient's policies and donor's approaches as well as the aid machinery in general, so that the efficiency with which such resources are translated into income and growth is maximized. This can be achieved by untying of procurement under aid resources, adopting the appropriate mix between project and programme loans to be tailored to the stage of development and conditions prevailing in the economy of the recipient, and introducing fundamental changes in the aid machinery and procedures for the acquisition and effectiveness of loan agreements so that the excessive delays involved in such process is minimized.

Finally, an estimate of the saving-investment gap and exports-imports gap for the forthcoming Six Year Plan 1983/84-1988/89, indicates that - given the structure of Sudan's economy during the period 1960-1978 - the Sudan will continue to depend on foreign resources if a realistic 4.9% or an optimistic 7.5% target rate of growth is to be maintained during the rest of the 1980s.

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Appendix Table 4.2 Trends in Industrial Production of Selected Public Sector Industries

Commodity	Years / Unit	1962/63	63/4	64/5	65/6	66/7	67/8	68/9	69/70	70/1	71/2	72/3	73/4	74/5	75/6	76/7	77/8	78/9	79/80
1. Sugar	Thousand metric tons	13.3	19.5	16.6	26.2	71.0	93.3	82.1	75.3	72.6	91.4	112.6	120.6	128.7	113.9	138.7	138.2	119.6	129.8
2. Cement	"	-	-	-	73.2	101.1	128.7	140.7	194.0	229.0	200.6	201.2	209.1	217.7	167.0	177.0	141.5	185.0	173.3
3. Karima Date Proc. Factory	Metric tons	-	-	-	255	324	107	333	226	257	133	300	107	243	125	145	111	23	70
4. KassalaOnion dehyd.Factory	"	-	-	-	-	172	184	216	132	361	140	179	620	610	329	444	353	418	265
5. Karima Fruit Processing	Million tins	-	-	-	-	0.7	2.9	5.6	5.5	11.9	6.8	11.9	13.3	8.6	15.2	10.7	10.2	7.2	9.3
6. Wau " "	"	-	-	-	-	-	0.4	1.1	1.0	7.5	2.3	9.2	6.7	3.3	2.9	1.2	0.9	NA	NA
7. Abu Naama Kenaf Factory	Thousand sacks	-	-	-	-	-	-	-	-	-	-	-	-	-	-	715	2257	1784	1172
8. Textile[1]	Million metres	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.8	8.0	11.0	17.0

Source: Industrial Production Corporation and Customs Department.

Notes: NA Not available

1 Combined production of four factories at Hassahisa, Shendi, Kosti, Douim.

Appendix Table 6.1 Sources, Amounts, Repayment Terms, and Areas of Utilization of Authorized External Development Loans 1960-1980

Source, Date & Title of Loan		Authorized Amount & Repayment Terms				Sectoral Allocation				
		q	r	g	t	AGR.	INF.	IND.	Soc. Ser.	Multi Sec.
I Multilateral & Regional Sources										
A. The World Bank Group:										
i. IBRD										
1. Managil Extension	6.1960	5.4	6.0	3	17	5.4	-	-	-	-
2. Rosseris Dam	6,1961	6.8	5.75	7	18	-	6.8	-	-	-
3. Railways II	12,1965	10.8	5.5	5	20	-	10.8	-	-	-
4. Mechanized Farming	9,1968	1.9	6.25	5	20	1.9	-	-	-	-
5. Power I	1,1968	8.3	6.25	5	20	-	8.3	-	-	-
6. Civil Aviation	7,1976	7.0	4.75	5	20	-	7.0	-	-	-
7. Railways IV	7,1977	4.8	8.2	5	20	-	4.8	-	-	-
ii. IDA										
8. Mechanized Farming II	6,1972	3.9	0.0	10	40	3.9	-	-	-	-
9. Highway I	9,1972	2.4	0.0	10	40	-	2.4	-	-	-
10. Rahad Project I	3,1973	14.6	0.0	10	40	14.6	-	-	-	-
11. Industrial Bank I	12,1973	1.4	0.0	10	40	-	-	-	1.4	-
12. Railways III	1,1974	8.4	0.0	10	40	-	8.4	-	-	-
13. Southern Region	6,1974	3.7	0.0	10	40	3.7	-	-	-	-
14. Rosseris Dam	6,1961	4.5	0.0	10	40	-	4.5	-	-	-
15. Education I	6,1968	2.9	0.0	10	40	-	-	-	2.9	-
16. Education II	5,1975	3.5	0.0	10	40	-	-	-	3.5	-
17. Rahad Project II	7,1975	7.0	0.0	10	40	7.0	-	-	-	-
18. Power II	6,1975	8.0	0.0	10	40	-	8.0	-	-	-
19. Industrial Bank II	11,1975	2.4	0.0	10	40	-	-	2.4	-	-
20. Civil Aviation	7,1976	3.1	0.0	10	40	-	3.1	-	-	-
21. Project Preparation Unit	4,1976	1.4	0.0	10	40	-	1.4	-	-	-
22. Savanah Development	6,1977	6.8	0.0	10	40	6.8	-	-	-	-
23. Railways IV	7,1977	3.2	0.0	10	40	-	3.2	-	-	-

24. Port Development	6,1978	8.8	0.0	10	40	-	8.8	-	-	-
25. Meat Marketing Project	6,1978	10.0	0.0	10	40	10.0	-	-	-	-
26. Mechanized Farming III	7,1978	6.4	0.0	10	40	6.4	-	-	-	-
27. Agric.Research	7,1978	6.0	0.0	10	40	6.0	-	-	-	-
28. Highway II	3,1979	16.4	0.0	10	40	-	16.4	-	-	-
29. Agric. (Southern Region)	5,1979	6.0	0.0	10	40	6.0	-	-	-	-
30. Agricultural Rehabilitation	4,1980	52.0	0.0	10	40	52.0	-	-	-	-
31. Power III	4,1980	52.0	0.0	10	40	-	52.0	-	-	-
32. New Halfa Agric-ultural Project	5,1980	32.0	0.0	10	40	32.0	-	-	-	-
B. Regional Sources										
i. Arab Fund for Economic & Social Dev.										
1. Gedarif/Kassala Highway	4,1974	9.6	4.0	5	15	-	9.6	-	-	-
2. Telecommunication	1,1975	5.7	4.0	5	15	-	5.7	-	-	-
4. Rahad Roads	1975	6.4	4.0	5	15	-	6.4	-	-	-
5. Sennar/Damazin Highway	12,1976	15.9	4.0	5	15	-	15.9	-	-	-
6. Railways	12,1977	6.3	4.0	5	15	-	6.3	-	-	-
7. Gedarif/Kassala Highway	1,1980	14.9	4.0	2	12	-	14.9	-	-	-
ii. Kuwait Fund for Development										
1. Railways	3,1962	6.8	4.0	4	6	-	6.8	-	-	-
2. Girba Sugar Factory	7,1965	1.7	3.5	3	11	-	-	1.7	-	-
3. Land Reclamation	8,1967	4.9	2.5	3	17	4.9	-	-	-	-
4. Mechanized Farming	3,1972	1.6	2.5	5	20	1.6	-	-	-	-
5. Sennar Sugar Factory	7,1973	4.4	4.0	5	10	-	-	4.4	-	-
6. Rahad Project I	4,1973	3.2	3.0	5	25	3.2	-	-	-	-
7. Rahad Project II	6,1975	14.2	3.0	5	25	14.2	-	-	-	-
8. Industrial Bank	6,1975	1.9	4.0	5	10	-	-	1.9	-	-
9. Project Preparation Unit	8,1976	1.1	1.0	10	20	-	1.1	-	-	-
10. Sennar/Damazin Rd	6,1977	10.8	3.0	5	15	-	10.8	-	-	-
11. Railways	7,1978	6.0	3.5	5	15	-	6.0	-	-	-
12. Kennana Sugar Fact.	5,1979	10.7	3.5	5	15	-	-	10.7	-	-
13. Rahad Roads	1,1980	2.3	3.0	3	25	-	2.3	-	-	-

iii. Saudi Fund for Development

1. Rahad Project	6,1975	9.7	3.0	5	15	9.7	-	-	-	-
2. Port Sudan Airport	1,1977	3.5	2.0	5	15	-	3.5	-	-	-
3. Kassala/Haya Rd	1,1977	9.2	2.0	5	15	-	9.2	-	-	-
4. Savanah Development	7,1977	3.9	2.0	5	15	3.9	-	-	-	-
5. Earth Satellite Stns	7,1977	3.5	2.0	5	15	-	3.5	-	-	-
6. Civil Aviation	7,1977	2.4	2.0	5	15	-	2.4	-	-	-
7. Education	10,1977	1.2	2.0	5	15	-	-	-	1.2	-
8. Nayala/Zalengi Rd	6,1978	14.0	2.0	5	15	-	14.0	-	-	-
9. Kennana Sugar Fact.	3,1979	17.8	2.0	5	15	-	-	17.8	-	-

iv. Abu Dahabi Fund

1. Hag Abd Allah Spinning Factory	7,1976	6.4	5.0	3	10	-	-	6.4	-	-
2. South Darfor Dev.	12,1976	1.3	3.0	5	15	1.3	-	-	-	-
3. Railways	12,1977	3.8	3.0	5	15	-	3.8	-	-	-
4. Hag Abd Allah Spinning Factory II.	9,1977	0.4	3.0	5	15	-	-	0.4	-	-

v. African Development Bank

1. Quarantine Station	12,1971	0.3	6.0	2	8	0.3	-	-	-	-
2. Railways I	12,1971	1.0	6.0	3	10	-	1.0	-	-	-
3. Railways II	3,1974	1.1	6.0	3	10	-	1.1	-	-	-
4. Power	7,1974	1.5	6.0	5	10	-	1.5	-	-	-
5. Bridges	7,1974	1.5	0.0	10	40	-	1.5	-	-	-
6. Water Supply	7,1976	2.0	0.0	10	40	-	2.0	-	-	-
7. Milk Farm	5,1978	1.9	7.0	5	15	1.9	-	-	-	-
8. Health Care	2,1978	4.2	0.0	10	40	-	-	-	4.2	-

vi. Islamic Development Bank

1. Education	5,1977	1.3	0.0	2	16	-	-	-	1.3	-
2. Nayala/Zalengi Rd.	5,1977	1.9	0.0	2	28	-	1.9	-	-	-

vii. OPEC Special Fund

1. Kassala/Haya Rd	10,1977	1.7	0.0	5	15	-	1.7	-	-	-
2. Power	12,1978	3.8	0.0	5	15	-	3.8	-	-	-
3. Kassala/Haya Rd II	1,1980	3.9	0.0	5	10	-	3.9	-	-	-

viii. International Fund for Agricultural Development

1. Southern Region Agric.	5,1979	7.6	0.0	10	40	7.6	-	-	-	-
2. New Halfa Agric. Project	6,1980	7.5	0.0	10	40	7.5	-	-	-	-

II Bilateral Sources

A. OECD Group

i. United Kingdom

1. Aircraft	1962	2.7	5.5	2	8	-	2.7	-	-	-
2. General Devt	5,1963	4.9	5.5	5	10	-	-	-	4.9	-
3. Railways	12,1968	0.2	0.0	2	23	-	0.2	-	-	-
4. Sennar Dam I	8,1969	0.4	0.0	2	23	-	0.4	-	-	-
5. Sennar Dam II	1,1972	0.3	0.0	2	23	-	0.3	-	-	-
6. Northern Province Pump Schemes	1,1972	1.1	0.0	2	23	1.1	-	-	-	-
7. Medani/Sennar/Kosti Rd	11,1973	8.6	0.0	5	10	-	8.6	-	-	-
8. Agriculture	2,1976	3.4	-	-	-	3.4	-	-	-	-
9. " & Infrastructure	1,1978	9.5	-	-	-	5.6	3.9	-	-	-
10. " "	12,1978	10.2	-	-	-	1.3	8.9	-	-	-
11. Cement Factory	1979	3.6	-	-	-	-	-	3.6	-	-
12. Power	1980	62.2	-	-	-	-	62.2	-	-	-

ii. West Germany

1. Genoid Sugar Fact.	1960	3.9	5.0	1	4	-	-	3.9	-	-
2. Rosseris Dam	1961	6.4	4.75	8	12	-	6.4	-	-	-
3. Girba Sugar Factory	1962	1.9	6.0	1	12	-	-	1.9	-	-
4. General Devt	3,1972	5.5	2.0	10	40	-	1.5	-	-	4.0
5. 1973 Loan	7,1973	6.0	0.75	10	40	-	1.0	-	-	5.0
6. 1974 Loan	6,1974	5.9	0.75	10	40	1.2	2.9	-	-	1.8
7. 1975 Loan	6,1975	11.1	0.75	10	40	-	6.8	0.7	0.3	3.3
8. 1976/77 Loan	10,1976	22.0	0.75	10	40	-	19.8	-	-	2.2
9. 1978 (grant)	4,1978	15.2	-	-	-	-	11.4	-	-	3.8
10. 1979 "	4,1979	17.1	-	-	-	-	13.3	-	-	3.8
11. 1980 "	2,1980	44.3	-	-	-	-	17.5	-	-	26.8

iii. Netherlands

1. Aircrafts	1962	1.3	5.75	-	5	-	1.3	-	-	-
2. General Devt	2,1965	1.0	5.75	7	19	-	0.1	0.1	0.7	0.1
3. 1975 Loan	4,1975	1.5	2.5	8	30	0.1	0.7	0.5	0.1	0.1
4. 1976 Loan	3,1976	1.7	0.75	10	40	0.2	1.2	0.3	-	-
5. Telecommunication	3,1977	0.6	4.75	3	13	-	0.6	-	-	-
6. Trucks	3,1977	0.6	4.75	3	13	-	0.6	-	-	-
7. 1977 Grant	3,1977	5.2	-	-	-	2.3	1.5	0.6	0.8	-
8. 1978 Grant	3,1978	6.7	-	-	-	2.2	2.3	1.0	0.8	0.4
9. 1979 Grant (1)	4,1979	6.7	-	-	-	2.2	2.2	0.1	1.9	0.3
10. 1979 Grant (2)	6,1979	8.0	-	-	-	3.8	3.0	-	-	1.2

11. 1980 Grant	3,1980	11.0	-	-	-	1.9	6.9	0.3	-	1.9
iv. U.S.A.										
1. Industrial Bank	1962	0.7	0.75	5	25	-	-	0.7	-	-
2. Rahad Project	3,1973	3.8	2.0	10	40	3.8	-	-	-	-
3. Rural Agriculture	9,1978	4.8	-	-	-	4.8	-	-	-	-
4. Primary Health Care	8,1978	2.3	-	-	-	-	-	-	2.3	-
5. Manpower	8,1978	2.1	-	-	-	-	-	-	2.1	-
6. Agricultural Research	9,1978	8.0	-	-	-	8.0	-	-	-	-
v. Italy										
1. Girba Agric. Project	1961	2.5	5.5	2	8	2.5	-	-	-	-
2. " " "	1961	0.9	5.4	2	8	0.9	-	-	-	-
3. General Devt	12,1967	4.0	4.5	2	10	0.2	3.3	-	0.5	-
4. Airport Feasibility	1972	0.4	6.5	2	8	-	0.4	-	-	-
5. Highway Study	1971	0.07	6.5	1	5	-	0.07	-	-	-
6. Kassala/Haya Rd	1973	1.5	6.5	1	5	-	1.5	-	-	-
7. Kosti Bridge I	6,1975	5.5	6.5	3	10	-	5.5	-	-	-
8. Kosti Bridge II	2,1979	6.9	6.5	3	10	-	6.9	-	-	-
vi. Denmark										
1. Loan I	1971	0.7	0.0	8	17	0.7	-	-	-	-
2. Loan II	3,1974	1.1	0.0	10	25	1.1	-	-	-	-
3. Loan III	3,1978	2.4	0.0	10	25	0.3	2.1	-	-	-
vii. Sweden										
1. Loan I	1,1966	2.4	2.0	5	20	2.4	-	-	-	-
2. Loan II	4,1970	1.0	2.0	10	15	1.0	-	-	-	-
viii. Norway										
1. River Transport	2,1979	13.9	5.65	10	15	-	13.9	-	-	-
ix. Japan										
1. Road Construction	8,1976	3.4	3.0	10	20	-	3.4	-	-	-
2. Railways & Rural Water	2,1978	6.8	2.0	10	20	2.4	4.4	-	-	-
x. Canada										
1. Road Construction	6,1977	0.53	-	-	-	-	0.53	-	-	-
xi. France										
1. Loan I	2,1978	5.6	8.5	2	6	-	5.6	-	-	-
2. Loan II	11,1979	19.6	8.5	2	6	-	14.6	2.4	-	2.6

B. Comecon Group										
I. USSR										
1. Loan I	11,1961	8.0	2.5	0.0	12	-	3.5	3.5	-	1.0
2. Loan II	11,1969	2.0	2.5	-	-	-	-	-	2.0	-
II. Yugoslavia										
1. Loan I.	7,1959	7.8	3.0	0.0	8	-	6.0	1.8	-	-
III. Czechoslovakia										
1. Loan I	1,1965	3.5	3.0	0.0	8	0.9	1.2	-	0.8	0.6
2. Loan II	7,1973	7.0	3.0	0.0	8	-	3.5	3.5	-	-
IV. East Germany										
1. 1969 Loan	11,1969	3.3	2.5	3	12	-	1.0	-	0.4	1.9
V. Hungary										
1. 1970 Loan	6,1970	3.5	2.5	3	10	-	3.5	-	-	-
VI. Romania										
1. 1972 Loan	4,1972	25.0	2.5	2	8	-	-	2.9	7.4	14.7
VII. Bulgaria										
1. 1969 Loan	3,1967	5.0	2.5	0.0	8	-	-	-	-	5.0
C. Other Bilateral										
I. Peoples Republic of China										
1. Loan I	8,1970	14.1	0.0	15	10	8.6	9.8	5.6	4.2	-
2. Loan II	12,1971	14.1	0.0	15	10					
3. Loan III	12,1979	8.5	0.0	-	10	-	8.5	-	-	-
II. North Korea										
1. 1970 Loan	8,1970	1.3	0.0	1	10	-	-	-	1.3	-
III. Credit Facilities, Suppliers' Credits & Commercial Credits										
A. OECD Countries										
I. United Kingdom										
1. Sennar Sugar Factory	1,1974	8.3	6.0	2.5	7	-	-	8.3	-	-
2. Satellite Project	12,1976	4.2	10.0	2.0	8	-	4.2	-	-	-
3. Rural Water	1969	0.14	6.25	-	5	0.14	-	-	-	-
4. Assalaya Sugar Fact.	7,1975	9.95	9.0	2	4	-	-	9.95	-	-
II. West Germany										
1. Port Sudan Spinning Factory	11,1975	2.8	8.95	3	5	-	-	2.8	-	-
2. " " " "	11,1975	5.1	8.0	3	5	-	-	5.1	-	-
3. " " " "	11,1975	1.4	7.5	3	5	-	-	1.4	-	-

III. Netherlands											
1. Telecommunication	12,1965	0.9	6.5	-	10	-	0.9	-	-	-	
2. "	3,1966	0.04	6.5	-	10	-	0.04	-	-	-	
3. "	3,1967	0.03	7.75	-	10	-	0.03	-	-	-	
4. "	10,1967	0.02	6.75	-	10	-	0.02	-	-	-	
5. "	4,1968	0.036	7.0	-	10	-	0.036	-	-	-	
6. "	6,1968	0.045	7.0	-	10	-	0.045	-	-	-	
7. "	8,1969	0.08	7.75	-	10	-	0.08	-	-	-	
8. "	9,1969	0.40	7.75	-	10	-	0.40	-	-	-	
9. "	11,1970	0.18	7.75	-	10	-	0.18	-	-	-	
10. "	1,1971	0.02	7.75	-	10	-	0.02	-	-	-	
IV. U.S.A.											
1. Aircraft 1	1973	3.6	8.0	2	5	-	3.6	-	-	-	
2. " 2	1973	3.6	6.0	7	5	-	3.6	-	-	-	
3. " 3	1973	1.4	8.5	2	7	-	1.4	-	-	-	
4. Satellite Station	1973	1.2	7.0	3	7	-	1.2	-	-	-	
V. Italy											
1. Rural Water	1968	0.4	6.5	2	5	0.4	-	-	-	-	
2. Rural Water	1969	1.0	5.0	3	4	1.0	-	-	-	-	
3. Kenaf Factory (Abu Naama)	7,1972	1.6	6.0	4	8	-	-	1.6	-	-	
4. Tong Kenaf	11,1973	2.4	6.5	4	8	-	-	2.4	-	-	
5. " " (Agric.)	7,1975	4.1	8.5	2.5	5	4.1	-	-	-	-	
6. Gado Weaving Fact.	3,1975	13.7	8.0	3	7	-	-	13.7	-	-	
7. Kenaf Ag. Equipment	7,1975	2.9	8.5	3	5	2.9	-	-	-	-	
VI. Denmark											
1. Rural Water	1969	0.5	0.0	-	9	0.5	-	-	-	-	
2. Agric. (Southern Region)	12,1974	2.3	9.0	2	8	2.3	-	-	-	-	
VII. France											
1. Medani Tannery	8,1972	1.7	7.9	3	7	-	1.7	-	-	-	
2. Hag Abdalla Spinning Factory	1976	6.2	7.5	3	7	-	6.2	-	-	-	
3. Port Sudan Spinning Factory	11,1975	1.5	7.2	3	5	-	1.5	-	-	-	
VIII. Belgium											
1. Melut Sugar Fact.	11,1974	12.6	8.5	3.5	7	-	-	12.6	-	-	
2. Six Weaving "	11,1974	8.5	9.0	-	5.5	-	-	8.5	-	-	
3. Wau Brewery	1974	1.3	6.5	1	5	-	-	1.3	-	-	
4. " "	1974	0.8	9.5	3	4	-	-	0.8	-	-	
5. River Transport	9,1976	1.8	7.0	2	3	-	1.8	-	-	-	

IX. Austria											
1. Suki Irrigation Project	1969	0.5	5.5	-	5	0.5	-	-	-	-
2. Kenaf Agriculture	1973	0.4	6.5	-	5	0.4	-	-	-	-
3. Southern Region Agric.	7,1975	2.7	8.0	1	8	2.7	-	-	-	-
4. " " "	11,1976	4.8	7.5	3	8	4.8	-	-	-	-
5. Rural Water	7,1977	2.0	6.5	1.5	8	2.0	-	-	-	-
B. Comecon Countries											
I. Yugoslavia											
1. Rural Water	1969	3.9	3.0	-	7	3.9	-	-	-	-
2. Govt. Buildings (Juba)	1973	1.0	6.0	-	7	-	-	-	1.0	-
3. White Nile Tannery	1973	1.3	3.0	2	8	-	-	1.3	-	-
II. East Germany											
1. Khartoum North Spinning Factory	3,1975	1.5	2.5	2	8	-	-	1.5	-	-
III. Poland											
1. Electrical Equipment	5,1977	8.4	6.0	2	8	-	8.4	-	-	-
C. Other											
1. Pipe Line 1	12,1973	8.3	8.5	3	7	-	8.3	-	-	-
2. Pipe Line 2	4,1975	12.5	8.5	3	7	-	12.5	-	-	-
3. Assalya Sugar	4,1975	0.6	9.0	1	2	-	-	0.6	-	-
4. Six Weaving Factories	12,1974	7.3	9.5	4	2	-	-	7.3	-	-
5. Satellite Project	7,1976	2.4	5.0	4	6	-	2.4	-	-	-

Source: Published and Unpublished Data Collected from the Ministry of National Planning (Foreign Aid and Technical Assistance Section) Bank of Sudan, Ministry of Industry Feb 1981.

Note:
q = authorized amount of loan
r = rate of interest in percentage
g = grace period (in years)
t = repayment period (in years)
AGR = agriculture
INF = infrastructure
IND = industry
Soc.Ser. = social services
Multi.Sec. = multi sectors

Appendix Table 8.1 Expenditure on Gross Domestic Product at Current Market Prices 1960-1978 (in Ls million)

Year	GDP (Y)	Consumption (C)			Savings S	Invest-ments I	Net Foreign Capital Inflow F	Exports of Goods and Services X	Imports of Goods and Services M
		Private	Public	Total					
1960/61	386.8	303.3	34.8	338.1	48.7	46.2	2.5*	65.6	63.1
61/62	420.0	323.7	38.3	362.0	58.0	68.4	10.4	65.1	75.5
62/63	456.2	345.9	42.0	387.9	68.3	76.6	8.3	77.7	86.0
63/64	463.8	361.4	47.9	409.3	54.5	69.1	14.6	90.3	104.9
64/65	476.8	370.9	55.9	426.8	50.0	70.9	20.9	86.3	107.2
65/66	492.0	377.3	63.2	440.5	51.5	62.9	11.4	82.3	93.7
66/67	497.6	342.7	93.6	436.3	61.3	75.6	14.3	89.0	103.3
67/68	536.3	371.7	105.2	476.9	59.4	73.2	13.8	93.4	107.2
68/69	583.3	409.2	112.1	521.3	62.0	80.8	18.8	103.4	122.2
69/70	602.6	348.5	147.7	496.2	106.7	96.0	10.5*	115.6	104.9
70/71	637.6	400.6	159.0	559.6	78.0	89.6	11.6	123.4	135.0
71/72	752.1	543.4	141.0	684.4	67.7	76.1	8.4	125.8	134.2
72/73	896.8	611.0	165.5	776.5	120.3	105.2	15.1*	151.3	136.2
73/74	1246.2	846.0	180.5	1026.5	219.7	229.3	9.6	167.1	176.7
74/75	1510.8	1170.7	207.8	1378.5	132.3	265.0	132.7	183.5	316.2
75/76	1848.0	1340.6	236.0	1576.6	271.4	427.5	156.1	206.4	362.5
76/77	2339.7	1827.1	278.3	2105.4	234.3	399.7	165.4	230.1	395.5
77/78	2878.4	2375.2	330.7	2705.9	172.5	413.7	241.2	218.2	459.4

Source: 1. Department of Statistics - National Accounts Section

2. UN Statistical Office, Monthly Bulletin of Statistics, random issues.

* Indicates an outflow